

Chris L. Gibson · Marvin D. Krohn  
*Editors*

# Handbook of Life-Course Criminology

Emerging Trends and Directions for  
Future Research

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## Preface: Life-Course Developmental Criminology, Past and Future

This book brings its readers up to date on the very latest empirical findings from life-course developmental criminology, a science that delves into human development aiming to understand and prevent crime. Each of the book's 18 chapters has been written by knowledgeable authors who are leaders in multiple fields of behavioral science. The chapters come not just from the fields that traditionally worry about crime, such as sociology, criminal justice, and economics. They also come from developmental psychology, public health epidemiology, biological psychology, and education. This melting pot of disciplines is one of the elements that have made life-course developmental criminology so hugely successful.

But this book does more than update us on findings from different disciplines. The book's most important gift is signposts pointing readers toward research targets that will yield the highly cited empirical findings of the future. These signposts are to be found at the end of each chapter, where authors present their best-bet research agendas. Here, the experts give us their real treasure; they articulate their insights about the most promising directions for future research, innovative methods, and intriguing hypotheses. This kind of horizon-scanning took some serious intellectual effort, generosity, and real bravery. Effort, because it is much easier to describe what has already been found than to envisage new research heretofore unattempted by anyone. Generosity, because once authors do the hard mental work to formulate an exciting new hypothesis, it is terribly tempting to keep it secret until they can test it themselves! Bravery, because some of the novel ideas put forward in this book are inevitably not going to work out, as is natural with scientific innovation. But if we knew now how the research would turn out, we wouldn't need to do it.

I'll call out just a few examples of research ideas from the book's chapters, beginning with childhood, proceeding to adolescence, and ending with adulthood. Neuroscience research into crime will collect repeated neuroimaging measurements while young people in longitudinal cohorts grow up, to track whether changing brain development tracks with changing crime participation (Portnoy et al., Chap. 2). Research into genetics will undertake genotyping of participants in criminology studies, to find out how social environments can curb, or unleash, inherited criminal propensities (Beaver and Connolly, Chap. 3). This same kind of research will reveal whether genotypes previously assumed to instill only vulnerability might also predispose children to

blossom if they are given safe, stable, and nurturing social environments (Simons and Lei, Chap. 4). Neighborhood studies will become longitudinal, to track changes over years in the qualities of a neighborhood *and* changes over years in the antisocial activities of the young people living there, to ask whether these two levels of analysis are synchronized. Research into adolescence-limited and life-course persistent offenders will tell us how these groups' crime participation is now being altered by the prolonged adolescence of emerging adulthood in modern life, and by today's dwindling economic opportunities for young men (Piquero et al., Chap. 8). Research into youth gangs will investigate how internet technology and social networking affect offenders' prosocial bonds as well as their opportunities for finding victims (Decker et al., Chap. 9). Research into criminal desistance will reveal what career offenders do to adopt a new personal identity as a non-offender (Bushway and Paternoster, Chap. 13). Longitudinal research into work will illuminate the downward spiral in which crime leads to punishment, which diminishes employability, which leads to more crime (Lageson and Uggen, Chap. 12).

Why am I so excited about the potential of Chris Gibson and Marv Krohn's book to grow the future of life-course developmental criminology? A short history will explain. Compared to other fields in the behavioral sciences, life-course developmental criminology is still an infant, or at most a toddler. Today, virtually every criminology textbook and anthology of crime theories sets aside an entire section to cover developmental or life-course approaches. Students can be forgiven for taking this hegemony for granted. But life-course developmental work was not always so ubiquitous in criminology; it was rather more marginal as recently as the 1980s. While thinking about writing this preface, I revisited the tables of contents and indexes of the most popular textbooks on crime and delinquency from 25 years ago. I found nary a mention of life-course, development, or anything near synonymous.

There were earlier formative longitudinal studies, such as Eleanor and Sheldon Glueck's 1950 book *Unravelling Juvenile Delinquency* and Lee Robins' 1966 book *Deviant Children Grown Up*. However, the field began to gain traction in mainstream criminology only 40 years ago with Marvin Wolfgang's 1972 book *Delinquency in a Birth Cohort* and Donald West and David Farrington's 1973 book *Who Becomes Delinquent?* Serious funding was injected only when criminology's leading grant-making agencies and private foundations were persuaded to invest in developmental criminology by a pair of field-defining books, the 1986 book by David Farrington et al. *Understanding and Controlling Crime: Toward a New Research Strategy* and the 1991 book by Michael Tonry et al. *Human Development and Criminal Behavior: New Ways of Advancing Knowledge*. About the time these books were written, funders launched several longitudinal cohort studies of delinquency, as described in Akiva Lieberman's 2008 book, *The Long View of Crime*. Fresh ideas were soon imported from developmental psychology and life-course sociology that enriched the theoretical base of the field, as exemplified by Terrie Moffitt's 1993 theoretical article "Adolescence-Limited and Life-Course Persistent Antisocial Behavior," and Rob Sampson and John Laub's 1993 book *Crime in the Making*. This cross-pollination was hailed by

Wayne Osgood's thoughtful 1998 essay in *The Criminologist*, "Interdisciplinary integration: Building criminology by stealing from our friends." The development of girls' delinquency emerged as a priority topic in the late 1990s, as an example see Moffitt's 2001 book, *Sex Differences in Antisocial Behaviour*. Next came new methodological tools and technologies for getting the most out of developmental life-course data. Daniel Nagin's methods for group-based modeling of developmental trajectories enabled a wave of theory testing that helped put developmental criminology on a new empirical footing; see his 2005 book, *Group-Based Modeling of Development*. By the start of this century, life-course developmental criminology had gone global, as illustrated by Arjan Blokland and Paul Nieuwbeerta's 2006 compendium of Dutch research, *Developmental and Life Course Studies in Delinquency and Crime*. Another accomplishment is that along with the rest of criminology, life-course developmental criminologists are embracing experimental testing of their approaches to crime prevention, using randomized trials. This advance is nicely illustrated in the 2006 book *David Olds and the Nurse Home-Visiting Program*. Life-course developmental criminology has by now made its mark; as evidence, in 2011 Ellen Cohn reported that eight of the top dozen most highly cited criminologists are now life-course developmental criminologists (<http://dx.doi.org/10.1080/10511253.2011.556134>).

Now on a firm theoretical and empirical foundation, this new science that delves into human development aiming to understand and prevent crime is ready to make some really big discoveries. We need some big discoveries, because preventing and controlling crime is essential for enhancing the healthy human development of everyone, everywhere. This book is the start.

South London, UK

Terrie E. Moffitt





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**Part I**

**Childhood**



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# Development of Antisocial Behavior During Childhood

1

Richard E. Tremblay

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## Abstract

This chapter describes recent research results on the development of different forms of antisocial behavior from infancy to adolescence. Prior to these studies two theoretical models had strongly influenced research on antisocial behavior: social learning and disease onset. According to these developmental perspectives, children learn antisocial behaviors from their environment and onset is triggered by accumulated exposition to antisocial models in the environment, including the media. Most of the evidence came from studies of school age children and adolescents. Longitudinal studies tracing developmental trajectories of antisocial behavior from early childhood onwards suggest an inversed developmental process. Antisocial behavior is universal during early childhood. With age, children learn socially acceptable behavior from interactions with their environment.

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## Keywords

Antisocial behavior • Development • Trajectories • Childhood • Adolescence

*an evil man is rather like a sturdy boy, or a man of childish mind, and evil is simply want of reason at an age when it normally accrues to men by nature governed by discipline and experience of harm.*

Thomas Hobbes (1647)

Thomas Hobbes' perspective on human nature was inspired by the classical Greek-Roman philosophical tradition which perceived young children as guided by instinct more than by reason and in need of early education. More than a century before Hobbes, in his essay "On Education," Erasmus (1529/1985)

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suggested that the “pagan” philosophers were perplexed by their observation that young children were instinctively inclined to evil behavior. He attributed the perplexity to their lack of understanding “original sin”: “since Adam, the first man of the human race, a disposition to evil has been deeply ingrained in us.” Jean-Jacques Rousseau tried to counter 2,000 years of philosophical thinking with his magnum opus on education, “Emile” (1762/1986), arguing that children are born good and corrupted by their environment. This self-reassuring idea is still omnipresent in modern social thinking. It drove much of the research on antisocial behavior (ASB) and more specifically aggression over the past half century through the influence of “social learning” (e.g., Zimbardo, 2007), although more than a century ago Charles Darwin (1872/1998) had given a powerful explanation for the mechanisms by which Adam and Eve inherited “original sin” and transmitted it to all their descendents. This chapter reviews the state of knowledge on the developmental origins of ASB which include behaviors such as: physical aggression, opposition, defiance, overt disregard for rules, lying, rule breaking, and theft-vandalism.

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## Physical Aggression

Physical aggression is a crucial component of human’s behavioral heritage. Our ancestors needed to be skilled in the art of physical aggression to eat, to defend themselves against predators, to compete for mating, to protect their brood, and to acquire resources. However, all animals need to learn to use aggression sparingly because physically aggressive encounters can be fatal, and lack of self-control among social animals can lead to social exclusion (Boivin, Vitaro, & Poulin, 2005).

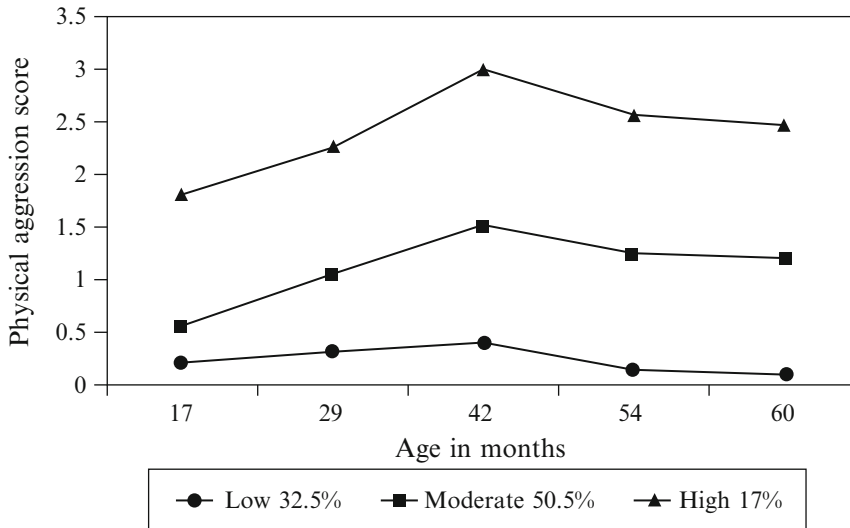
Because survival of civilized twenty-first century humans is rarely dependent on physical aggression, it is easy to forget that the life of our close ancestors was, in the words of Hobbes, “solitary, poor, nasty, brutish and short” (Hobbes, 1651/1958). Historical analyses of homicide rates indicate that physical violence has systematically and substantially decreased among European citizens over the

past 500 years (Eisner, 2003). Homicides in European cities decreased from 40 to 1 per 100,000 citizens per year. Compared to the estimated 261 per 100,000 among chimpanzees (Wrangham, Wilson, & Muller, 2006), we can conclude with Elias (1939) that the civilizing process has brought some advantages to humans, although, surprisingly, we often look back nostalgically to our primitive nature! However, 25,000 years is a short time for biological evolution and a newborn today does not know if he will have to survive with his physical strength in the jungle among wild animals or with his wits in Universities among academics.

## Definition

Aggression was intensively investigated by biologists, psychiatrists, psychologists, and sociologists over more than a century (Tremblay, 2000a). The results of these studies shed light on its development and functions, but these scientific results also created some confusion. For example, under “aggress” the *American Heritage Dictionary* (1985) wrote “Though the verb *aggress* has a long and honorable history, it has lately come to be associated primarily with the jargon of psychology and is often objected to.” Aggression has indeed become a symptom of mental illness. The aggressor is considered in need of treatment rather than praise or punishment.

The simplest way to define a “physical aggression” is to follow the ethological approach and list the physical aggressions in agonistic encounters (Blurton-Jones, 1972). However, it is difficult to make a complete list of the multitude of means humans invented to physically hurt other humans. Examples of the most basic physical aggressions should be sufficient to make the concept clear: hitting, slapping, kicking, biting, pushing, grabbing, pulling, shoving, beating, twisting, choking. Some scales use terms such as fighting and bullying to summarize these behaviors. Threatening to physically aggress, use of objects and weapons to aggress is also included in the definition used by ethologists. In a playful context these behaviors are defined as playful aggression. For example, the Olympic Games reward humans who are best at the basic war like behaviors a 2 year old



**Fig. 1.1** Development of physical aggression from 17 to 60 months Côté, Boivin, et al. (2007)

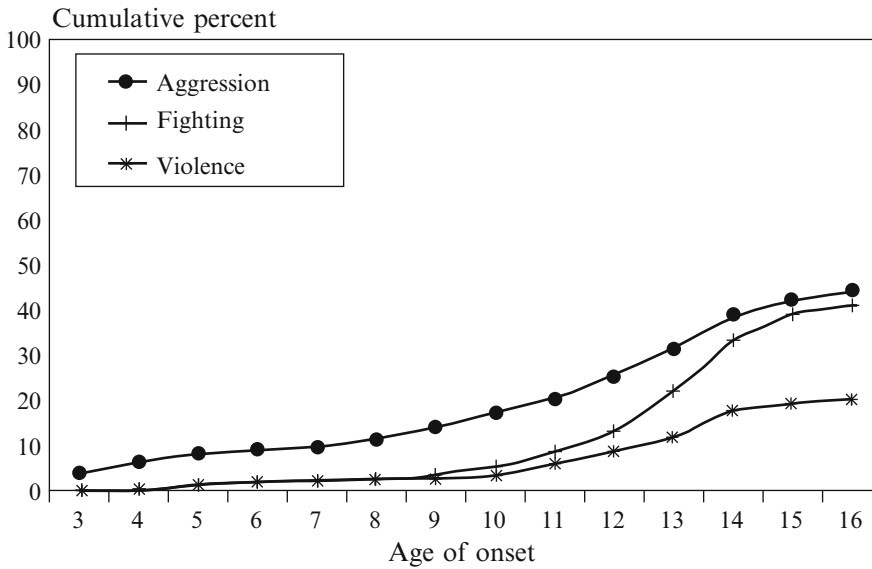
does: run, throw, hit, push, pull, etc. An agonistic interaction context is needed to conclude that the behavior is a physical aggression.

Chronic physical aggression (CPA) can be defined as a tendency to use physical aggression more frequently than the large majority of a birth cohort over many years. Thus repeated assessments over many years (longitudinal studies) of random samples of new born populations are needed to estimate the prevalence of CPA during development. Such studies provide an opportunity to assess the different developmental trajectories of physical aggression in a population and estimate the proportion of individuals on a CPA trajectory (Nagin & Tremblay, 1999).

### Early Childhood Developmental Trajectories

Figure 1.1 illustrates the results of physical aggression developmental trajectory analyses with data from a birth cohort during early childhood (Côté, Boivin, et al., 2007). We can see that half of the children are in the middle trajectory of physical aggression frequency, a third are on a low trajectory, while 17% are on a high trajectory. Such analyses are based on prospective repeated assessments of a behavior problem over many

years. From this perspective developmental trajectories should be a better estimate of a chronic behavior problem than an assessment at a given point in time, even if that assessment attempts to reconstruct past behavior. Longitudinal data has shown that within a year mothers do not recall the age of onset of their children's physical aggressions (Tremblay, 2000b). In a clinical study of boys between 7 and 12 years of age, the mean age of physical aggression onset reported by parents was 6.75 years (Frick et al., 1993). Retrospective information collected in the Pittsburgh Youth Study (Loeber & Hay, 1997; Loeber & Stouthamer-Loeber, 1998) compared to prospective data is a good example of the problem with retrospective dating of onset. The subjects ( $N=503$ ) represented the Pittsburgh public schools male eighth graders and were close to 14 years old ( $mean\ age=13.8$ ;  $SD=0.80$ ) at the first data collection. Figure 1.2 presents the cumulative age of onset of aggressions reported by the mothers and the boys at that first data collection point. We can see that before age 5 less than 5% of the boys were reported to have initiated aggressions and almost no one had initiated fighting. In sharp contrast, prospective data on physical aggression from the end of the first year after birth indicates that children who do not initiate physical aggression before 3 years of age are extremely rare. These prospective studies



**Fig. 1.2** Cumulative onset curves for minor aggression, physical fighting, and violence in the oldest sample of the Pittsburgh Youth Study (from Loeber & Hay, 1997; Loeber & Stouthamer-Loeber, 1998)

suggest that the peak frequency in physical aggression for most humans is somewhere between 2 and 4 years of age (see Fig. 1.1 and NICHD Early Child Care Research Network, 2004).

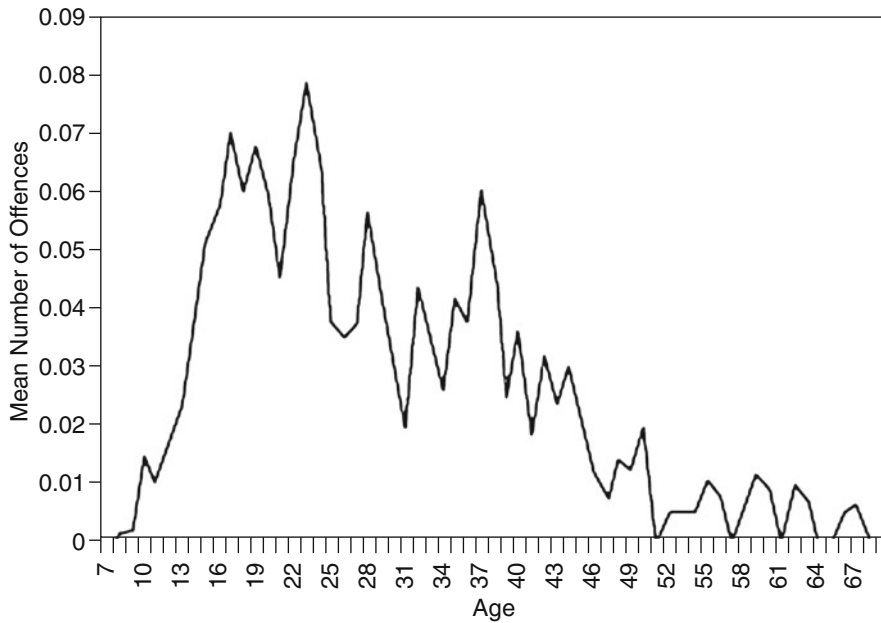
### Developmental Trajectories After Early Childhood

Based on the results from seven large longitudinal cohort studies of children from Canada, the Netherlands, New Zealand, and the USA (Bongers, Koot, van der Ende, & Verhulst, 2004; Broidy et al., 2003), we can expect between 7 and 11% of elementary school children on a trajectory of CPA. That percentage tends to be higher for preschool children (Côté, Boivin, et al., 2007) and lower for adolescents (Brame, Nagin, & Tremblay, 2001). This decrease in CPA cases with age corresponds to the general decrease in frequency of physical aggression with age (Nagin & Tremblay, 1999). Indeed, most children learn to use alternatives to physical aggression with age, and this applies to a number of chronic cases during early childhood and preadolescence (Nagin & Tremblay). In fact there is good evidence

that the learning process to gain control over physical aggression continues throughout adulthood. A longitudinal study from adolescence to old age showed that the number of violent offenses decreased with age even for the most delinquent during adolescence (Fig. 1.3 from Sampson & Laub, 2003). Crime records from the middle ages to modern times suggest that this phenomenon is not new. The likelihood of committing a homicide and most other crimes decreases from late adolescence and early adulthood to old age (Eisner, 2003; Quetelet, 1833/1984). Trajectories of physical aggression covering different age periods (early childhood to childhood, childhood to adolescence, adolescence to adulthood) also indicate that CPA very rarely onsets after early childhood (Barker et al., 2007; NICHD Early Child Care Research Network, 2004; van Lier, Vitaro, Barker, Koot, & Tremblay, 2009).

### Severity of Aggressions

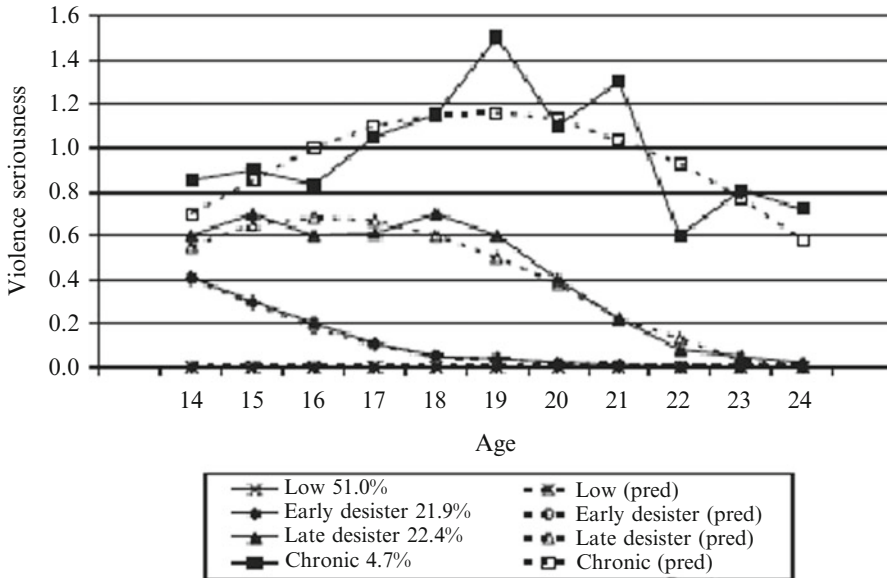
Two qualifications of physical aggression have led to much confusion in the literature on the



**Fig. 1.3** Mean number of violent crimes from 7 to 70 years in a sample of juvenile delinquents (from Sampson & Laub, 2003)

development of physical aggression: severity and intentionality. The severity issue is essentially related to the consequences of the aggression for the victim. Pushing and slapping generally have less serious consequences than choking and stabbing. However, from a developmental perspective one needs to take into account that age, from birth to adolescence, is positively correlated with increase in physical strength, cognitive development, and unsupervised access to objects that can be used as weapons. A punch from a 6 foot, 250 lb, 17 year old potentially has more serious consequences than a punch from the same individual when he was 24 month old. A boy looking for revenge will have easier access to a knife or a gun at 12 than at 3 years of age. Thus severity of physical aggression generally increases with age, but this does not mean that a 16 year old who is committing the most serious physical aggressions for his age was not committing the most serious physical aggressions for his age when he was 2 year old. To my knowledge there are no intra-individual studies of the severity of physical aggression development with reference to the norm of a given age group from early childhood onwards. It would be surprising if

severity adjusted for age was not highly correlated to frequency of physical aggressions. Figure 1.4 from the Pittsburgh Youth Study (Loeber et al., 2005) can be used as an example of the severity assessment problem. The authors used a seriousness of violence scale based on the potential harm of the behavior to the victim. Teacher, parents, and self-reports were used to rate three levels of violence for the sample of males: no violence; moderate violence measured with “gang fighting” and “carrying a weapon”; serious violence measured with “attack to seriously hurt” and “attack to kill.” An individuals’ score represented the most serious violent offense committed during a given time interval, thus the minimum was 0 and maximum 2. Results from the trajectory analysis shown in Fig. 1.4 confirm the conclusions from the review of the development of physical aggression frequency described above: (1) violence seriousness decreases steadily from 14 to 24 years of age except for a small part of the sample (4.7%) who’s seriousness increases slightly from 14 to 19 year of age and then decreases to the 14 year level; (2) the high level trajectory nicely mirrors Quetelet’s early nineteenth century age crime curve as well as the desistance curve of the



**Fig. 1.4** Trajectories of serious violence from 14 to 24 years (from Loeber, Lacourse, & Homish, 2005)

delinquent sample in Fig. 1.2. Importantly, the boys who reached the highest peak of serious violence at 19 years of age are those who were at the peak of serious violence at age 14. To understand to what extent an individual increases or decreases his level of “violence severity” with reference to his age group over time, we need longitudinal data on seriousness of violence from early childhood to adolescence with scales that are age appropriate in terms of violence seriousness. What we know for the moment is that: (a) frequency of physical aggression generally decreases with age after a peak between 2 and 4 years; (b) seriousness of physical aggression generally decreases from 14 to 24 years; (c) the small group of individuals who increase in frequency and seriousness during adolescence were most likely on the highest trajectory in terms of frequency and seriousness since early childhood.

### Intentionality of Aggressions

The intentionality issue is nicely illustrated by the seriousness scale used in the Pittsburgh Youth Study described above. Two items were used to measure serious violence: “attack to seriously

hurt” and “attack to kill.” These items clearly refer to the intention of the aggressor. Many have argued that intent to harm is required to conclude that behavior is aggressive. The “intent” criterion has significantly limited the study of the early development of aggressive behavior because it was assumed that young children cannot aggress since they cannot intend to hurt others. After a 6-year-old boy gunned down a 6-year-old girl in their classroom, one of the frequently asked questions was: “did the boy really understand what he had done?” The intent question is interesting in itself; however, it is a different question from the fact that infants physically aggress when angry or when they want to take something from someone. Research on aggression among mice, rats, and monkeys has not been inhibited by the intentionality issue, while most aggression investigators kept away, until very recently from studying aggression in infants and toddlers. The intent criterion is a problem not only for human infants and non-human animals. Behavior driven by anger and fear is often not under the control of one’s will, even during adulthood. Many, if not most, of the aggressive behaviors following intense frustration are impulsive behaviors that were not “planned.” Numerous physical aggressions are related to

Gray's (1982) "fight-flight system" which controls behavioral reactions to unconditioned punishment and non-reward.

Lewis and his colleagues showed that infants will express facial anger when they are prevented to activate a stimulating toy they had learned to activate. A few months later, when the infants have gained better control over their limbs, they start hitting and kicking when they cannot achieve their goal (Tremblay, 2008; Tremblay et al., 1999). Recent longitudinal studies of physical aggression from the end of the first year of life show that there is continuity of physical aggression from early childhood onwards: infants who frequently used physical aggression are those most likely to use physical aggression throughout childhood (NICHD Early Child Care Research Network, 2004).

## Conclusions

From the available data on the development of physical aggression, we can conclude that: (a) the vast majority of preschool children use physical aggression; (b) the vast majority also learn with age to use other means of solving problems; (c) some need more time than others to learn; (d) girls learn more quickly than boys; (e) by adolescence not much more than 5% of males can be considered cases of CPA, while female cases are exceptional; (f) most of the CPA cases during adolescence were CPA cases since early childhood.

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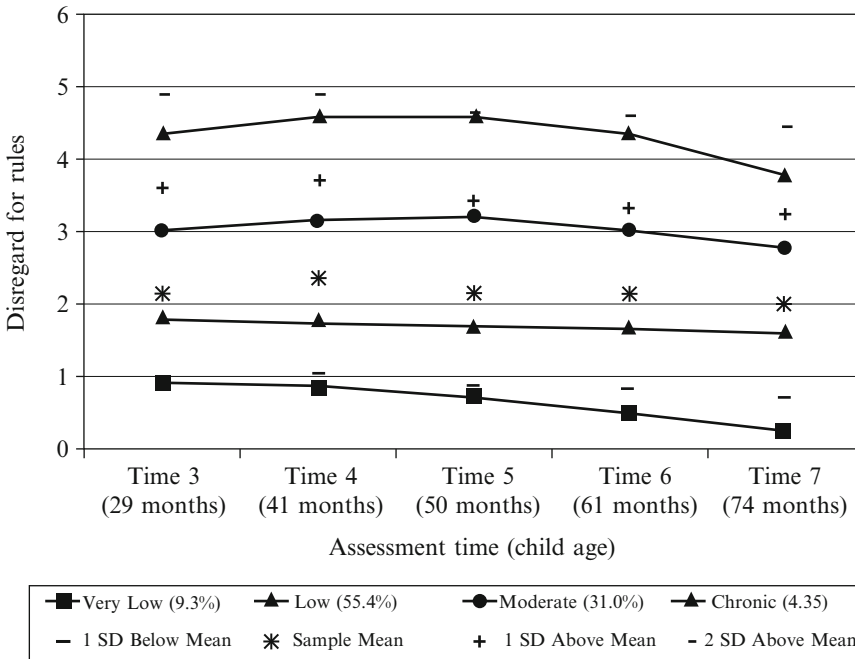
## Oppositional Behavior

The development of oppositional behavior (e.g., disobedient, blames others, defiant, stubborn, tells lies, talks back, disrupts class, inconsiderate, irritable, doesn't share) has been studied from behavioral, emotional, and personality perspectives (e.g., Frick & Viding, 2009; Lahey et al., 2009). Surprisingly, few long-term developmental studies of these disruptive problems with population samples led to publications on their developmental trajectories. One recent population sample did trace developmental trajectories from 2.5 to 6

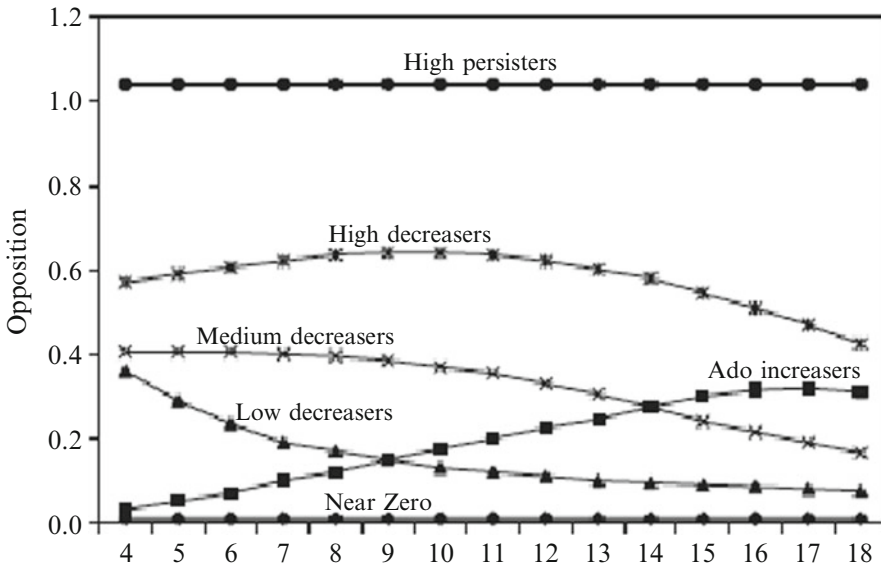
years (Petitclerc, Boivin, Dionne, Zoccolillo, & Tremblay, 2009) with the following items: refuses to comply with adults' requests or rules, does not seem to feel guilty after misbehaving, punishment does not change behavior. Results illustrated in Fig. 1.5 are somewhat similar to the physical aggression levels at these ages (Fig. 1.1), except that there is no clear peak in any of the trajectories. There is no continuous increase with age, as would be expected from a "learning to oppose-defy" developmental model. The substantial differences in frequency of disregard for rules among groups appear stable from 2.5 to 6 years, indicating that those who disregard rules most frequently at 2.5 years are still doing it most frequently at 6 years. Interestingly, a study which aggregated physical aggression, temper tantrums, and oppositional behaviors between 2 and 8 years led to developmental trajectories that appear to be a cross between Figs. 1.1 and 1.5 (Shaw, Gilliom, Ingoldsby, & Nagin, 2003).

A comparison of six longitudinal studies with elementary school children from 6 to 12 years in Canada, New Zealand, and the USA (Broidy et al., 2003) reported that the mean frequency in oppositional behaviors (disobedient, blames others, defiant, stubborn, tells lies, talks back, disrupts class, inconsiderate, irritable, doesn't share) was stable in one study, increased slightly in three, and decreased slightly in two. The minor differences could be due to differences in items between the studies. Fortunately, developmental trajectories of oppositional symptoms (argues, disobedient, stubborn, sulks, teases, temper tantrums) from 4 to 18 years were traced with a large sample from an accelerated-longitudinal design in the Zuid Holland province of The Netherlands (Bongers et al., 2004). Results (Fig. 1.6) indicated that, in line with physical aggression, the frequency of these behaviors, over a 14 year period, decreases with age for the large majority of boys and girls, except for a group of highly chronic cases (7%) and a group (6%) showing no indication of problems at 4 years but increasing the frequency, particularly between 9 and 15 years. Note that the maximum level attained is very far from the level of the "high persisters." Nonetheless, this is one of the





**Fig. 1.5** Trajectories of children’s overt disregard for rules between 29 and 74 months of age ( $N=1,942$ ; from Petitclerc et al., 2009)



**Fig. 1.6** Developmental trajectories of oppositional-disobedient-defiant behaviors (from Bongers et al., 2004)

very few observed examples of “late onset” overt ASB. It would be useful to identify the behaviors that are increasing for this group, their early risk factors, and the consequences of this trajectory on other behavior problems and social adjust-

ment problems. However, it is difficult to imagine that this group is generating the “late onset” antisocial cases (Moffitt & Scott, 2008), since the frequency of oppositional symptoms is relatively modest.



## Conclusions

From the available data on the development of overt anger, opposition, defiance, and overt disregard for rules, which is admittedly thin, we can conclude that: (a) the vast majority of preschool children manifest these behaviors; (b) the vast majority also learn with age to use other means of solving problems; (c) some need more time than others to learn; (d) there does not appear to be substantial differences between females and males; (e) approximately 7% of children could be considered chronic cases from childhood to adolescence; (f) it appears that approximately 6% of children increase the frequency of oppositional-defiant behavior from preadolescence to mid-adolescence; however, these cannot be considered clinical cases because the frequency of the overt is 60% less frequent compared to the chronic group, in fact the increase simply placed them close to the mean level.

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## Rule Breaking

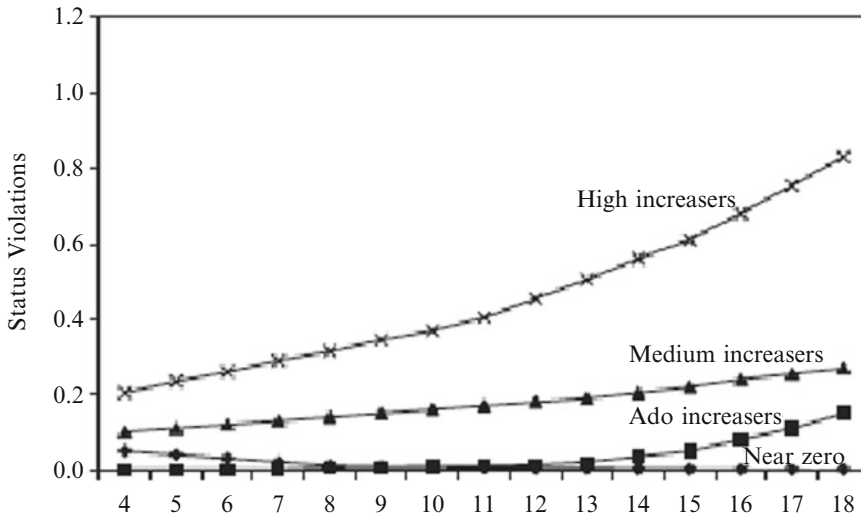
There is almost no developmental study of the DSM-IV Conduct Disorder (CD) “rule breaking” symptoms, probably because they are the strangest when looked at from a developmental perspective. There is no doubt that children with CD break rules, but why specifically choose “staying out late,” “truanting from school,” and “running away from home” before age 13? It is easy to imagine that asking mothers of young children if they truant from school or run away from home would spark laughter or indignation. This is not because young children do not break rules, they constantly do. Children run away from parents as soon as they start running. They will truant from tasks they do not like whenever they have an opportunity and they will often stay out playing until you physically bring them back while they are throwing a temper tantrum.

The individual differences observed in the development of physical aggression and opposition must also exist for “age appropriate serious rule breaking.” The problem with the criteria tra-

ditionally used for “rule breaking” is the concept of “seriousness” or “severity,” as discussed for aggression above. The severity of a given rule breaks changes with age and must take into account its frequency. Truanting from school can be considered more serious at 10–11 than at 15–16 years from a “disorder” perspective. The three rule breaking symptoms of the DSM-IV CD criteria can be considered covert behaviors (Frick et al., 1993) while the disregard for rules symptoms described in the previous section are overt behaviors. Children high on disregard for rules will openly refuse to obey parents while those who run away from home and truant generally attempt to hide from the authority figure. The ability to do so successfully increases with age because of cognitive and physical development. However, there are precursors that need to be included in our assessments. For example, overt disregard for rules in early childhood may well be transformed for some individuals into covert rule breaking in adolescence.

## Developmental Trajectories

From my reading of published studies, the best developmental data we have is from the Zuid-Holland accelerated-longitudinal study described above (Bongers et al., 2004). They analyzed the developmental trajectories of “status violations” from 4 to 18 years with the following parent reported items: swearing or obscene language, running away from home, truanting from school, use of alcohol and drugs. Figure 1.7 appears to strongly confirm the social learning hypotheses: as children grow older they learn from their environment to violate rules. However, results still indicate that children on the two highest trajectories during adolescence (28%) were on the highest trajectories during childhood, so that even when using mostly early-adolescent types of rule breaking symptoms there is no evidence of late onset. One would expect that the most frequent rule breaking behavior from the four items at the younger ages was “swearing or obscene language,” while use of alcohol or drugs would be the most frequent behavior of the “adolescent



**Fig. 1.7** Developmental trajectories of status violations (from Bongers et al., 2004)

onset” group who remains at a level remarkably near zero. However, this would mean that overt behavior such as swearing and obscene language towards parents in early childhood would develop into covert behavior such as running away from home and truanting. It would be interesting to reanalyze these data without the swearing-obscene language symptom.

## Conclusions

Better data is needed to understand the development of covert rule breaking from early childhood to adolescence. To collect the appropriate data it will be important to re-think where rule breaking fits in the AS spectrum. The present criteria are by definition creating an adolescence-onset group because they do not apply to young children. Appropriate rule breaking criteria for each developmental period are needed. Truanting from school, staying out late, and running away from home are pre-early-adolescence behaviors apparently more closely equivalent to preschoolers refusing to comply with adult rules than to violation of other people’s rights by aggression, theft, and vandalism. Finally, since we are dealing with a covert behavior, we need to take into account the source

of the information. Self-reports are difficult to obtain and to rely on during early childhood, while parents’ reports are most probably underestimating their frequency.

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## Stealing and Vandalism

The first man who, having enclosed a piece of ground, bethought himself of saying This is mine, and found people simple enough to believe him, was the real founder of civil society. From how many crimes, wars and murders, from how many horrors and misfortunes might not any one have saved mankind, by pulling up the stakes, or filling up the ditch, and crying to his fellows, ‘Beware of listening to this impostor; you are undone if you once forget that the fruits of the earth belong to us all, and the earth itself to nobody’

(Rousseau, 1755/1991)

## Definition

To understand the development of theft and vandalism, it is important to clearly distinguish these ASBs from physical aggressions, i.e., differentiate overt and covert behavior towards property. Most justice systems classify crimes in two general categories: “property” and “violent”

offences. Property offences generally include burglary, arson, larceny/theft, and motor-vehicle theft. In the developmental psychopathology literature burglary, theft and vandalism have been considered destructive covert behaviors (Frick et al., 1993) because the offender attempts to hide his behavior from the property owner. Violent offenses such as homicide and rape are overt physical aggressions against persons rather than property. When physical aggression against a person is used to steal property, the crime against property also becomes a crime against a person and, by definition, an overt ASB.

Interestingly, the developmental study of these behaviors from birth onwards shows that crimes against persons (overt and violent) “onset” before covert property offences. Indeed, by the end of the first year after birth humans do not have sufficient control over their muscles for property crimes such as burglary and motor-vehicle theft; they also lack the control over their emotions to take the time to covertly steal an object they desire. However, overt physical violence towards persons is frequent. For example, a 12 month old who sees an attractive toy in the hands of a peer will not say “please will you lend me the toy?” He will try to take the toy from the hands of the peer and physical aggression will often ensue if the latter resists.

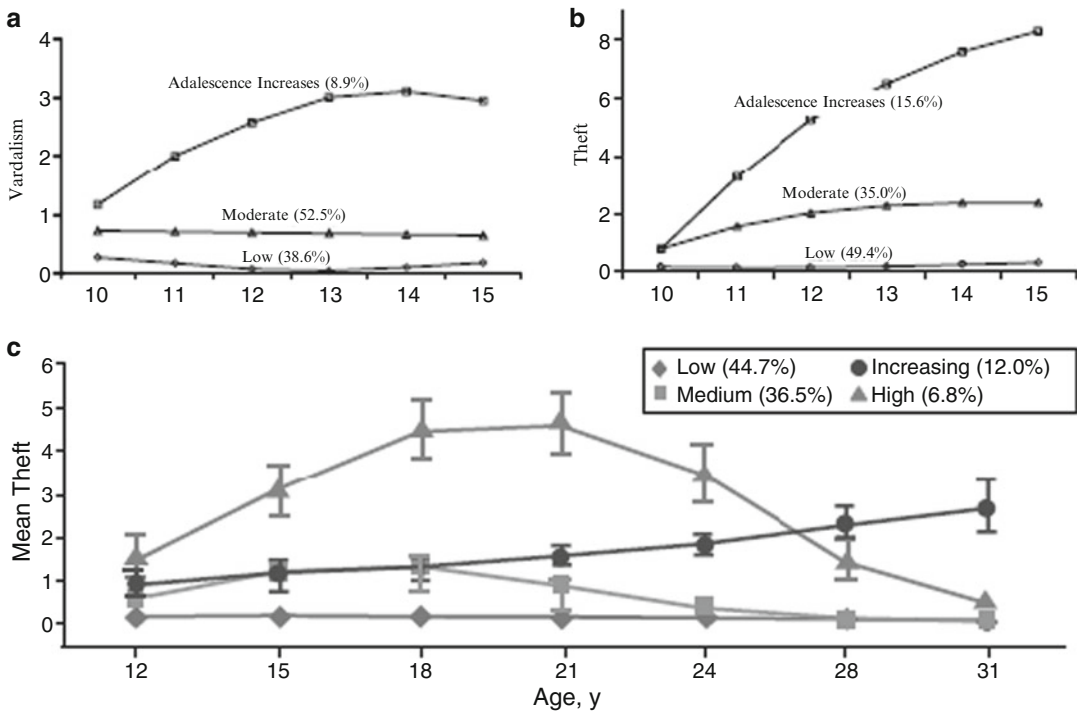
## Developmental Trajectories

Taking someone’s property by force or threat of force is a violent crime, if you are old enough to be considered responsible under the law. Most physical aggressions among infants and toddlers are related to competition for property (attractive objects). Infants, especially toddlers, also fight to take or defend territory. For example, they will fight for a specific place in a room or for proximity to a person. Unfortunately, research has focused on the fighting more than the stealing that leads to the fighting, probably because adults have difficulty seeing children as property owners, even if children use the word “mine” very early in life and will throw a temper tantrum or

hit if their sense of property is not respected. The “sense of property” did not suddenly appear in the mind of an evil adult, as Rousseau wanted us to believe. We obviously inherited the “sense of property” from our very distant ancestors (e.g., Aureli, Schaffner, Verpooten, Slater, & Ramos-Fernandez, 2006; Borchelt, 1983).

Very few longitudinal studies have traced the development of stealing and vandalism from early childhood. In the Quebec Longitudinal Study of Child Development, the frequency of mother reported stealing was stable from its first assessment at 3.5–8 years (Tremblay, unpublished data). Fortunately, again the Zuid-Holland accelerated-longitudinal study discussed above provided an opportunity to trace deceptive behavior rated by parents from 4 to 18 years of age with the following items: lies, cheats, steals, vandalizes, sets fires, cruel to animals (Bongers et al., 2004). The frequency of these behaviors for each trajectory was remarkably stable. Less than 1% of the subjects were on the extremely high chronic trajectory and 5% on the following trajectory. Thus the frequency of parent reported deceptive behavior was very low and stable.

By definition assessments of deceptive behaviors by parents or other “observers” are less valid than self-reports, and self-reports are difficult to obtain from large population samples before 10 years of age. van Lier et al. (2009) traced the developmental trajectories of self-reported theft and vandalism from 10 to 15 years with a large sample of males from poor neighborhoods in Montreal (see Fig. 1.8a, b). Vandalism was low for all at 10 years and increased substantially only for one group (8.9%). The frequency of theft increased for all groups, but most remarkably for a relatively substantial group (15.6%) who were not different from the rest of the sample at 10 years. Similar results were obtained from trajectory analyses of self-reported theft with a large sample of middle class males from New Jersey followed from 12 to 31 years of age. Figure 1.8c shows that the increase in theft was maintained up to the start of adulthood for 43% of the subjects and up to 31 years of age for 12% of the sample (Barker et al., 2007).



**Fig. 1.8** (a) Developmental trajectories of self-reported vandalism (from Van Lier et al., 2009). (b) Developmental trajectories of self-reported theft (from Van Lier et al.,

2009). (c) Developmental trajectories of self-reported theft (from Barker et al., 2007)

## Conclusions

The comparison between developmental trajectories of theft and physical aggression is striking. Frequency of physical aggression apparently decreases substantially from the preschool years to the end of adolescence, except for a very small group, while frequency of theft apparently increases for all from 10 years onwards at the latest. This developmental difference makes it hard to understand why diagnostic categories, developmental theories, etiological studies, and studies meant to test preventive and corrective interventions aggregate physical violence and theft assessments (e.g., Lahey et al., 2008; Moffitt & Scott, 2008; Tremblay, Pihl, Vitaro, & Dobkin, 1994; Wilson & Lipsey, 2007). A good example of the problems created by the aggregation tendency can be seen in the Dunedin study (Odgers et al., 2008). Stealing and fighting were assessed with the present-absent measurement strategy to create a ASB scale. Percentage of males fighting from 7 to 18 years did not appear to significantly decline (59–

52%) and a decline of only 10% was observed for females (from 48 to 38%). For stealing the expected increase was not observed: it varied around 24% for males and 16% for females. The most obvious explanation for the differences in development of ASB between this New Zealand sample and the others (Canadian, Dutch, the USA) described above is the present-absent scale used for each symptom to measure total ASB. With this type of scaling it is impossible to capture the variability in the frequency of a behavioral dimension over time and thus impossible to compare behavioral dimension. ASB seriousness is measured by the variety of ASB rather than the frequency of behaviors. Not only do we lose the variability in the development of different forms of disruptive behaviors, we lose the frequency of different types of behavior at a given point of assessment. For example, an individual who steals cars every day would have a lower ASB score than someone who lies and truants once in a while.

Physical aggression and theft have different destructive consequences (person vs. property),

are at opposite ends of the overt-covert continuum, and require different skills (brawn vs. brain). There are good reasons why infants start by physically aggressing to obtain property rather than commit simple theft: they do not have the cognitive control needed for the covert behavior, but they have the strong desire and enough impulsive brute force for the overt behavior. It seems obvious that physical violence and theft require different bio-psycho-social skills and different interventions are needed to prevent or correct these problems. Yet they have been systematically aggregated to create ASB scores and developmental taxonomies. We need to study more attentively theft before the age when self-reporting becomes reliable. It is clear that taking things from others (with and without force) starts during early childhood, and it is most likely that the individual differences in the frequency of this behavior are as stable as physical aggression. What is changing with time is the type of property which is stolen. The chronic stealer will steal the stylish red Tonka car at 3 years and the stylish red BMW at 17 years. However, it appears clear that theft, like indirect aggression, substantially increases among humans with increase in cognitive ability and opportunity. Interestingly, although extremely disruptive for victims and society, the more skilled at these covert behaviors generally managed not to be perceived as ASB cases.

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## General Conclusions on Developmental Trajectories of ASB

*Developmental taxonomies:* Developmental trajectories of the two overt behavioral categories (physical aggression and opposition-defiance) and the two covert behavioral categories (rule breaking and theft-vandalism) indicate that the frequency of overt behavior generally decreases with age while the frequency of covert behavior generally increases with age. If we included indirect aggression, we would also see that indirect aggression increases with age (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Keenan, Coyne, & Lahey, 2008). These developmental differences are not surprising when we consider the behavioral

impact of brain maturation which increases the ability to inhibit impulses with age. Because aggregated scales of ASB have been the norm, very few studies have addressed these issues (Barker et al., 2007). The available studies suggest very strongly that the a priori developmental taxonomy “early and late onset” of ASB or conduct disorder (American Psychiatric Association, 2000; Moffitt & Scott, 2008) confounds early development of overt ASB and later development of covert ASB. The aggregation of overt and covert ASB also masks the timing of the appearance and disappearance of important sex differences.

*Sex differences:* Most studies indicate that males are largely over-represented in the chronic trajectories of each ASB categories (e.g., Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; NICHD Early Child Care Research Network, 2004; Tremblay et al., 2004). The best available data is for aggression. Sex differences increase with age; however, these tendencies are inverted for overt (physical) and covert (indirect) aggression (Côté, 2007). Girls appear to learn the covert aggression strategy earlier and increase their frequency up to late adolescence. These sex differences can best be observed among the chronic cases. Physical violence of females during adolescence is generally so rare that modeling their developmental trajectories fails (Barker et al., 2007). Thus the differences in type of aggression between males and females are at their peak when they start mating (Archer & Côté, 2005).

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## Research Questions for the Next Few Decades

### Descriptions and Causal Explanations

We know that extensive descriptions of a problem are needed before we can find its causes. However, we are all eager to find causal explanations. Descriptions are boring. Peer reviews of articles describing new developmental trajectories of a behavior problem generally include the following comment “this is interesting but what about the risk and causal factors?” In hindsight we would find amusing a peer reviewer that would

have reacted in the same way to Kepler's description of the solar system or to the description of the DNA structure by Crick and Watson. Description of the variability of behavior development from birth to death would be a major "discovery" in itself. It would take at least 90 years to achieve, an amazing intergenerational scientific feat in itself. But we all agree that we need to go beyond description of behavior development. We need developmental descriptions of the potential causal factors. If parenting is believed to be an important causal factor for a form of ASB development, we need to understand the developmental trajectories of parenting and their association with the ASB developmental trajectories. If brain functioning is believed to be a causal factor for ASB development, we need developmental trajectories of brain functioning. This is also true for other biological problems associated with ASB including the new field of epigenetics, i.e., the impact of environments on gene expression (DNA methylation) (Tremblay & Szyf, 2010). The amount of developmental work needed to do these descriptions and find the causal relations among the different levels of development is difficult to grasp and to accept. We always hope that a few million dollars over a few years will do the trick. In fact the effort needed to describe the complete development of the different bio-psycho-social levels involved in ASB is by far greater than the effort needed to map the genes of the human genome. The only short-cut available is through experiments. However, the last half century has provided much fewer experiments than longitudinal studies and most of the longitudinal studies targeted individuals long after the development of ASB. To seriously advance our knowledge base, we will also need large international collaborative efforts over at least a few decades. The cost of ASB problems to society is certainly worth the investment.

## Development and Taxonomies

Although the importance of disaggregating ASBs was highlighted a long time ago, the developmental taxonomies of ASB created in the 1990s

were based on studies which aggregated different behavior problems into an ASB score and compared this score at two or three age periods (e.g., Lahey et al., 1998; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Tremblay et al., 1994). Over the last decade developmental trajectory analyses traced the development of ASB using frequent repeated assessments (often annual) from early childhood to adolescence and disaggregated the subtypes of ASB. These studies indicate that overt ASB (physical aggression, opposition, defiance, disregard for rules) start in infancy and decrease with age, after a peak between 2 and 4 years of age. They also suggest that onset of chronic overt ASB after early childhood (childhood or adolescence-onset) is rare. Developmental trajectories of covert ASB (rule breaking, theft, vandalism, and indirect aggression) suggest an increase with age. Covert ASB appears later than overt ASB, most likely because they require greater cognitive skills; however, there is accumulating evidence that they still appear during early childhood, albeit in a primitive form. We need age appropriate assessments of covert behavior during early childhood and childhood to understand to what extent the frequency does increase with age. The chronic form of covert ASB in preadolescence and adolescence may simply be a continuation of a chronic early childhood form that has not been assessed.

This advance in knowledge on the development of ASB has important consequences for developmental taxonomies of childhood behavior problems. By definition, developmental taxonomies need to reflect development. Aggregation of subtypes (e.g., overt and covert, destructive and not destructive) into a total ASB score and aggregation of assessment time points (e.g., annual or biennial) into global periods (e.g., childhood, adolescence, and adulthood) mask essential aspects of development not only for the purpose of understanding, but especially for implementing successful interventions. For example, if we aggregate two types of behaviors, one that increases with age (e.g., indirect aggression) and another that decreases with age (e.g., physical aggression), we will come to the conclusion that there is no change with age. Efforts to create



useful developmental taxonomies should start by representing as best as possible the nature of development over the whole developmental period and for all of the behavioral dimensions.

The introduction of the developmental perspective in criminology was an important step in making professionals aware of developmental issues. However, professionals are not doing prospective developmental studies with their cases and the retrospective information they obtain is clearly inadequate to determine the individual's developmental trajectories. Developmental taxonomies require after the fact (post mortem) diagnoses. The job of a professional is to make diagnoses that will help change the developmental trajectory before it reaches its end point, not observe its natural development. Professionals need to concentrate on the types of ASB the individual is manifesting. Does this person use only covert or only overt ASB? Does he use both? What type of overt and what type of covert ASB? The professional should have a good idea of the prognosis and the required intervention if he takes into account the age of the individual, investigates comorbid conditions and familial context, and understands four basic findings from developmental trajectories: (a) chronic overt problems start very early in life and decrease in frequency with age while increasing in dangerousness for the victims; (b) covert problems start later and tend to increase with age; (c) destructive ASB, compared to not destructive ASB, have more serious consequences on the environment and the environment's reaction towards the aggressor; (d) all other things being equal, the younger the individual the better the prognosis if there is an adequate treatment available.

*Situational cases of ASB* is an important issue for professionals and is generally not discussed in developmental taxonomies of ASB. Developmental taxonomies are meant to represent long-term developmental trends for groups of individuals. When individual trajectories are plotted we see that there is much individual variability over time. There are at least two categories

of individuals who may appear to be pathological ASB cases when they are assessed at a given point in time within one of the major developmental periods (early childhood, childhood, adolescence): (1) the chronic cases, who reach the high frequency level at most of the assessment points; (2) the situational cases, who reach the high frequency level at one or possibly two assessment points. The chronically physically aggressive male does not hit every person he meets. There can be relatively long periods when he appears to have gained control over himself. Similarly, individuals who never had any serious problems of aggression may find themselves in conditions that will spark serious physical aggressions. We regularly hear of the perfect citizen who suddenly killed someone, often a family member. Atrocities during wars are often committed by somewhat "normal" citizens. The extremely popular idea that "good people are turned into evil" by circumstances (Zimbardo, 2007) is easy to link with the idea that situations can bring back the primitive instincts that we have learned to control during childhood (Tremblay & Nagin, 2005). Socialization is a thin veneer which the beast of the original sin can easily break if challenged. However, the idea of late onset may lead professionals to classify a situational case as a late onset case. For example, the observation that the increase in truancy for females explodes (from 7 to 33%) between two assessment points in the Dunedin study (Odgers et al., 2008) suggests that adolescence-onset ASB is fueled by school truancy in early adolescence. From this perspective many "successfully" treated late onset cases could be situational cases, i.e., individuals that would not have been identified as a late onset case 1 or 2 years later even if they had not been treated. We need research that will estimate the proportion of individuals who could be defined as situational cases at different periods of development, estimate the extent to which different types of situational cases in a given age period are likely to recidivate in that age period or a following age period, and do randomized control trials to verify if treatment of these cases is useful.

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# The Biology of Childhood Crime and Antisocial Behavior

# 2

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## Abstract

Research into the biological underpinnings of antisocial behavior has not only been increasingly integrated into criminological research, but has also expanded its scope to focus on antisocial behavior that develops during childhood. Many of the biological risk factors that are associated with antisocial behavior during adulthood have also been found to characterize young antisocials. Structural and functional brain imaging studies have implicated several brain regions in the development of antisocial behavior in children, including the amygdala, the ventromedial prefrontal cortex, and the temporal region. Neuropsychological studies indicate that antisocial children display multiple behavioral indices of brain dysfunction, including executive dysfunction and IQ deficits. Psychophysiological studies have revealed that antisocial children are characterized by underarousal and diminished responses to stimuli and stressors. Early health factors, including minor physical anomalies and prenatal nicotine exposure, both independently and in interaction with social risk factors are associated with antisocial behavior

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in children. Future research should focus on incorporating a life-course criminological perspective into the study of the biology of childhood crime and antisocial behavior. Longitudinal studies that measure both biological and social risk factors over time will be critical to advancing our understanding of the development of antisocial behavior both during childhood and throughout the life-course.

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**Keywords**

Biosocial • Psychophysiology • Neuropsychology • Brain imaging  
• Autonomic

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**Introduction**

In recent years, research into the biological underpinnings of criminal and antisocial behavior has slowly, but increasingly, been integrated into criminological research. The results of this research have shown that numerous biological risk factors are likely to play a role in the development of antisocial behavior. Although much of the past biological research has focused on adults, recent technological advances have extended the toolkit used to study neurological risk factors for crime to children and adolescents. Driven in part by these advances, researchers have shown increasing interest in the neurobiology of childhood antisocial behavior. Childhood studies have shown that many findings from adult populations also generalize to children. However, there may be some differences in the manifestation of biological risk factors for antisocial behavior across the life-course, making it important to examine these risk factors during childhood, as well as adulthood. Additionally, some research suggests that the presence of biological risk factors during childhood in particular increases the risk for later, more serious criminal behavior during adulthood.

The results of studies of genetics, structural brain imaging, functional brain imaging, neuropsychology, the autonomic nervous system, electrocortical activity, and early health risks have each contributed to our understanding of the development of antisocial behavior during childhood. In the following sections, we briefly review the relevant research findings in these domains. We discuss some adult studies in order to provide

a context and point of reference for the discussion of the childhood research. We conclude with a research agenda for innovative new research in this area which can contribute to life-course criminology.

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**Genetics**

The quest to understand antisocial and criminal behavior often begins with the blueprint of the human being: DNA. However, long before DNA sequencing and other relevant technology were easily accessible, scientists found ways to search for the genetic underpinnings of antisocial behavior. Often, this was done using behavioral genetics studies, which utilize twin or adoption designs to estimate the proportion of genetic vs. environmental influence. One meta-analysis that examined a large number of such studies found considerable heritability for antisocial behavior and estimated that 41% of the variance in antisocial behavior is due to genetic factors, with the remaining 59% due to environmental factors (Rhee & Waldman, 2002). In particular, this meta-analysis found children to show stronger heritability for antisocial behavior than adults, suggesting that as we age, environmental factors become more important to the development of antisocial behavior. However, this also suggests that genetic influences are more pronounced and more relevant for understanding childhood antisocial behavior.

Behavioral genetic studies have been crucial to the field of criminal genetics, as they confirmed

for scientists that there is good reason to search for specific genetic markers that predict antisocial behavior. The search for specific candidate genes often begins with an examination of specific systems known to be involved in the relevant behavior. For example, hormonal systems, such as testosterone, and neurotransmitter systems, such as norepinephrine, dopamine, and serotonin, have all been implicated in antisocial behavior, both in animals and in humans (Arce & Santisteban, 2006), rendering all of these useful clues in the search for specific genes related to antisocial behavior. By examining genes related to these systems, numerous candidate genes have been identified in recent years. However, as candidate genes that predict antisocial behavior are reviewed in detail elsewhere in this volume, they are not discussed here. Instead, we focus primarily on the biological processes and structures to which these genes, coupled with environmental influences, give rise.

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## Functional Brain Imaging

Although brain imaging methods in youth were previously limited due to potential hazards of administering radioactive isotopes or ionizing radiation, the development of magnetic resonance imaging (MRI) techniques has allowed for the extension of brain imaging studies to youth. Studies of youth with conduct disorder have produced results that are largely similar to those in antisocial adults, suggesting that the brain impairments observed in adults likely exist at an early age. However, some inconsistencies in findings do exist.

Functional brain imaging studies in antisocial adults, particularly those with psychopathic traits, have consistently observed reduced activity in the amygdala. The amygdala is important in classical conditioning, which forms the basis of conscience development and the generation of anticipatory fear that normally deters individuals from committing antisocial acts (Blair, 2004). More specifically, the amygdala is necessary for the formation of stimulus-reinforcement associations, which are necessary for individuals to

learn to associate their harmful actions with the pain and distress of others, thus facilitating empathy for victims and discouraging antisocial behavior (Blair, 2006). It is also involved in the production of emotional states (Phillips, Drevets, Rauch, & Lane, 2003) and enhancing attention to emotional stimuli, such as facial expressions of emotion (Adolphs et al., 1999). Finally, the amygdala has been identified as a region important in moral judgment (Greene, Nystrom, Engell, Darley, & Cohen, 2004).

Several functional MRI (fMRI) studies have demonstrated reduced activity in the amygdala of youth with conduct disorder. Sterzer, Stadler, Krebs, Kleinschmidt, and Poustka (2005) found reduced activation in the amygdala in aggressive children with conduct disorder while viewing negative emotional pictures. Jones, Laurens, Herba, Barker, and Viding (2009) found that boys with conduct problems and callous-unemotional traits demonstrated reduced activity in the amygdala when viewing fearful faces compared to control participants. Similarly, Marsh et al. (2008) found that children with callous-unemotional traits demonstrated reduced amygdala activity to fearful facial expressions, but not to neutral or angry expressions.

Another study by Passamonti et al. (2010) compared two subtypes of youth with conduct disorder—those with antisocial behavior that emerged in either childhood or adolescence. One of the key findings was that though both groups of participants demonstrated reduced amygdala activity in response to sad facial expressions, this effect was more pronounced in the childhood onset group. The authors suggest that more pronounced reductions in amygdala functioning in the childhood onset group may explain why childhood onset conduct disorder is more severe and persistent than adolescent-onset conduct disorder.

In the study by Marsh et al. (2008), abnormalities were also observed in the connectivity between the amygdala and ventromedial prefrontal cortex, a region in the front of the brain located just behind the eyes, in children with callous-unemotional traits. The orbitofrontal/ventromedial region is commonly implicated in antisocial

behavior in adults. It is thought to play a role in decision-making (Bechara, 2004), affective theory of mind (Shamay-Tsoory, Tomer, Berger, Goldsher, & Aharon-Peretz, 2005), processing reward and punishment information (Rolls, 2000), inhibiting responses (Aron, Robbins, & Poldrack, 2004), and regulating emotions (Ochsner et al., 2005). In the study by Marsh et al. (2008), youth with more severe callous-unemotional traits were found to have reduced connectivity between these regions. The authors suggest that the connectivity between these regions is important because it allows for emotion-related input from the amygdala to guide behavioral selection processes in the ventromedial prefrontal cortex. Other studies have also identified deficits in the ventromedial/orbitofrontal region in antisocial youth. Finger et al. (2008) found abnormal ventromedial prefrontal cortex functioning in children and adolescents with callous-unemotional traits and disruptive behavior disorders during a reversal learning task. In a later study, Finger et al. (2011) again found reduced orbitofrontal responsiveness to stimulus-reinforcement exposure and to rewards in youth with disruptive behavior and psychopathic traits.

Additional regions that have demonstrated reduced functioning in fMRI studies of youth with conduct disorder include the insula, hippocampus, and anterior cingulate during a rewarded continuous performance task (Rubia et al., 2009), and the posterior cingulate and temporal-parietal regions during an inhibition task (Rubia et al., 2008). Reduced activity in the medial and orbitofrontal prefrontal cortex and the temporo-parietal junction has been observed in adolescents with conduct disorder when viewing scenes of pain being intentionally inflicted on another individual (Decety, Michalska, Akitsuki, & Lahey, 2009). Similar to findings by Marsh et al. (2008), adolescents with conduct disorder also exhibited less co-occurring activation between the amygdala and prefrontal cortex when perceiving others in pain, which may reflect impairment in the ability to regulate emotions.

Some discrepancies exist in the literature on antisocial youth. Rather than observing reduced activity, Herpertz et al. (2008) found *increased*

left-sided amygdala activity in boys with conduct disorder when viewing negative pictures and no evidence of reduced functioning in orbitofrontal, anterior cingulate, or insular cortices. Similarly Decety et al. (2009) found greater activity in the amygdala and temporal pole in adolescents with aggressive conduct disorder compared to healthy adolescents when perceiving other individuals in pain. In this study, it was hypothesized that this activation may reflect an aroused state of enjoyment or excitement at viewing others in pain. It is important to keep in mind that “antisocial” is a rather heterogeneous category, and this may be the source of some of the discrepancies in the literature. For example, there are likely neurobiological differences in youth with and without callous/unemotional traits.

For the most part, findings from neuroimaging studies in antisocial youth tend to parallel those of adult antisocial individuals, suggesting that brain abnormalities likely exist early in life. However, the comparison of imaging data from adult and youth samples can be challenging, partly because the brain undergoes substantial structural development throughout childhood and adolescence (Koenigs, Baskin-Sommers, Zeier, & Newman, 2011). For example, the volume of white matter increases throughout childhood and adolescence, which underlies greater connectivity and synchronization between different regions of the brain (Lenroot et al., 2007). Gender differences in developmental trajectories are also important to consider. Total brain volume peaks at approximately 10.5 years in females and 14.5 years in males. Unlike the continual increase of white matter during childhood and adolescence, gray matter volumes follow an inverted U-shaped developmental trajectory, and peak approximately 1–3 years earlier in females (Gogtay et al., 2004). These typically occurring increases should be considered when interpreting anatomical data from patient populations. Cross-sectional studies, which are only able to test for differences in absolute brain volume at a single point in time, may be less informative than longitudinal studies, which assess differences in the trajectory of growth of brain regions across developmental periods.

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## Structural Brain Imaging

With the advance in recent years in imaging technologies and analysis methods, structural brain abnormalities among delinquents have also been gaining research interest in the hope of understanding neurobiological characteristics that can explain criminal behavior across the lifespan. Despite strong evidence accumulated from findings of frontal and temporal deficits and antisocial, aggressive behavior in adults (e.g., Gao, Glenn, Schug, Yang, & Raine, 2009; Yang & Raine, 2009), structural brain imaging studies of delinquents are still rare. In the following section, we examine the neuropathology underlying delinquent behavior in children and adolescents using findings from traumatic brain injuries (TBIs), structural magnetic resonance imaging (sMRI), and diffusion tensor imaging (DTI), both of which use MRI. The technology of MRI is based on the principle that atoms in the human brain are like small bar magnets that possess magnetic charge in random orientations. When immersed in a strong magnetic field (usually 0.5–3 T), the nuclei of these atoms tend to align and reach an equilibrium state. A radiofrequency electromagnetic field is then briefly introduced to excite the atoms and induce a transient phase coherence among the nuclei that creates a signal, which can be detected by the MRI scanner receiver. Typically, MRI detects the resonance of  $^1\text{H}$  atoms in water, and because this element is abundant in the brain, images with excellent anatomical details can be produced without the use of radiation. More importantly, the MRI has the flexibility of acquiring images with different image contrast that highlight different properties of the nuclei of  $^1\text{H}$  atoms such as sMRI (using three-dimensional T1-weighted MP-RAGE images), which provides superb gray and white matter contrast, and DTI, which maps microscopic details about white matter fiber tracts.

For decades, clinicians have been documenting functional impairments that increase the risk of delinquent behavior in children and adolescents who suffered TBIs. For example, Hux, Bond, Skinner, Belau, and Sanger (1998) reported

that half of the delinquents they studied had experienced a TBI (defined as having ever received a “blow to the head”), while one third of delinquents with TBIs were thought (by their parents) to have suffered adverse, long-term behavioral problems including diminished attentional capacity, impaired interpersonal skills, and poor school performance. Another study conducted by Carswell, Maughan, Davis, Davenport, and Goddard (2004) found 27.7% of the delinquents to have TBIs (defined as a “significant head injury involving loss of consciousness/amenia with ongoing cognitive or social impairment”). These findings are consistent with several longitudinal studies that used large samples to show an elevated incidence of delinquency among children and adolescents who had experienced brain trauma (Asarnow, Satz, Light, Lewis, & Neumann, 1991; Bloom et al., 2001; Butler, Rourke, Fuerst, & Fisk, 1997; McAllister, 1992; Rantakallio, Koironen, & Möttönen, 1992; Rimel, Giordani, Barth, Boll, & Jane, 1981; Rivara et al., 1994). Although the definition of TBI varied between these studies, findings provided strong evidence suggesting a causal relationship between the occurrences of brain lesions and the subsequent development of delinquent behavior.

More recently, researchers have been applying novel brain imaging analysis methods to reveal global and regional alterations in brain morphology and disturbances in connectivity in individuals with delinquent behavior using sMRI and DTI. The majority of the studies today have focused on children who exhibit strong conduct disorder and disruptive behavior disorder symptoms, for they tend to exhibit high levels of aggression throughout adolescence until adulthood (Gretton, Hare, & Catchpole, 2004; Rutter, 2005). By examining these so-called “early starters,” researchers could reveal neurobiological precursors that may contribute not only to delinquent behavior in childhood but also antisocial, criminal behavior in adulthood.

Consistent with lesion studies, sMRI studies to date have found volumetric and morphological abnormalities in several frontal and temporal regions in children and adolescents with conduct disorder and/or antisocial, aggressive behavior.



For example, Kruesi, Casanova, Mannheim, and Johnson-Bilder (2004) showed reduced temporal gray matter and smaller prefrontal volume in children with conduct disorder compared to healthy controls. On the other hand, Sterzer, Stadler, Poustka, and Kleinschmidt (2007) found reduced gray matter volumes in the amygdala and insula in adolescents with conduct disorder compared to healthy controls. Consistent with these findings, Huebner et al. (2008) showed reduced gray matter volumes in the orbitofrontal and temporal regions (including the amygdala and hippocampus) in children with conduct disorder compared with healthy controls. Similarly, Boes, Tranel, Anderson, and Nopoulos (2008) found significantly reduced gray matter volume in the right anterior cingulate cortex in boys with high levels of aggression-defiance ratings compared to those with low ratings. Dalwani et al. (2011) reported that adolescents with severe conduct and substance problems showed significantly reduced gray matter volume in the left dorsolateral prefrontal cortex compared to healthy controls. They further found a significant association between reduced dorsolateral prefrontal volume and impulsivity within controls. On the contrary, for the subgroup of children with conduct disorder who present callous-unemotional traits, they were found to show significantly increased gray matter concentrations in the medial orbitofrontal, anterior cingulate and temporal cortices compared to typically developing children (De Brito et al., 2009). Although the gray matter integrity of delinquents remains inconclusive, these findings provide initial evidence indicating neuroanatomical correlates of disruptive behavior that likely involve abnormalities in the fronto-temporal circuitry that may predispose to delinquent behavior in children and adolescents and may further contribute to the continuation of engaging in antisocial, criminal behavior across the lifespan.

The relatively new imaging technique of DTI is promising in that it provides information regarding white matter development in the brain that can be used to map neuronal connectivity. A commonly used metric in DTI studies is fractional anisotropy (FA), which estimates the direc-

tional diffusivity of water molecules within white matter fiber tracts (Basser & Pierpaoli, 1996). Lower FA values in white matter pathways have been argued to reflect a reduced extent of myelination and less coherent fiber tracts. This technique has been used in estimating the microstructural integrity of white matter pathways within neural networks in various populations. However, very few studies have employed it in the examination of disturbances in white matter pathway connectivity associated with delinquent behavior. The only study to our knowledge was conducted by Li, Mathews, Wang, Dunn, and Kronenberger (2005), which showed a 13% reduction in the FA at the left arcuate fasciculus (a major fiber tract connecting the amygdala and the orbitofrontal cortex) and in the prefrontal cortex in adolescents with disruptive behavior disorders as compared to normal controls. Findings are consistent with a recent report by Graig et al. (2009) revealing reduced FA in the uncinate fasciculus in adult psychopaths with criminal convictions compared to healthy controls. FA deficiencies in specific brain regions have been linked to impaired cognitive performance, such as language ability (Klingberg et al., 2000). These DTI studies provide initial evidence suggesting that disturbed structural integrity in the morphometry and connectivity of the fronto-temporal regions plays a crucial role in the development of disruptive behavior and emotional deficiency that, especially in the presence of environmental and/or social risk factors, could escalate into delinquency and ultimately a lifetime of persistent criminal, violent offending.

Overall, findings have provided initial evidence suggesting that brain structural variations may contribute to functional variations that predispose one to delinquent behavior. However, it is clear that there is a complicated neural mechanism at work here in children and adolescents with delinquent, disruptive behavior, which could be due to the fact that the developing brain is still going through various maturation processes including synaptic pruning and myelination. Thus, more neuroimaging studies focusing on children and adolescent samples are necessary to improve our understanding of the biological

underpinnings of antisocial, delinquent behavior in childhood and adolescence and ultimately the origin and development of criminal behavior in adulthood.

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## Neuropsychology

Neuropsychology is the study of the behavioral expression of brain dysfunction. Like brain imaging studies, neuropsychological investigations of violent, aggressive, and antisocial behavior have contributed significantly to our current understanding of the neurobiological antecedents, concomitants, and etiological factors of crime and antisocial behavior across the life-course.

## Intelligence

Intelligence is the best-replicated correlate of antisocial, violent, and criminal behavior among non-mentally ill individuals (Wilson & Herrnstein, 1985), and Full-Scale IQ deficits have been found in specific antisocial populations such as pedophiles (Cantor et al., 2004) and other types of sex offenders (Cantor, Blanchard, Robichaud, & Christensen, 2005). Both verbal and spatial IQ deficits have also been observed in child and adolescent antisocial populations.

*Verbal deficits:* Numerous studies report lowered verbal as opposed to spatial/performance IQ in antisocial adult populations (Raine, 1993)—a finding thought to represent left hemispheric dysfunction. Verbal IQ reductions have also been widely reported in antisocial populations of children and adolescents (Barker et al., 2007; Brennan, Hall, Bor, Najman, & Williams, 2003; Raine, 1993; Teichner & Golden, 2000; Vermeiren, De Clippele, Schwab-Stone, Ruchkin, & Deboutte, 2002)—though these findings may be somewhat confounded by conceptual and methodological issues (Teichner & Golden, 2000). Verbal deficits (which may result from posterior temporal and parietal lobe injury) may play a critical role in the development of self-control (Luria, 1966) by following verbal instructions and subsequent internal-

ization of verbal-based self-control mechanisms (a process mediated by intact receptive speech, verbal memory, and verbal reasoning). Compromised development may produce a limited repertoire of appropriate verbally mediated behavior, impulsivity, aggression, and hostility (as the condition is exacerbated by environmental influences; Teichner & Golden, 2000), and ultimately socialization failure (Eriksson, Hodgins, & Tenström, 2005). Juvenile offenders with compromised verbal development are generally characterized by reduced verbal intelligence, reading problems, speech delays, and verbal memory dysfunction. However, prognosis may be comparatively good, as environmental modifications and therapy (e.g., training in identifying alternative response solutions) can lead to effective control and mediation of impulses in this group (Teichner & Golden, 2000).

*Spatial impairments:* The classic view of verbal but not performance intelligence impairments in antisocial individuals—derived primarily from neuropsychological studies of institutionalized populations—has been recently questioned by community-based investigations. For example, Raine et al. (2005) found spatial as well as verbal impairments in a community sample of 325 adolescent schoolboys. These findings have been explained using an early starter spatial impairment model of antisocial behavior (Raine et al., 2005), which proposes that early visuospatial deficits may interfere with mother-infant bonding via impaired orienting to and recognition of the preverbal infant's mother's facial expression, leading to limited reciprocal expressive responses to the mother, thus eliciting more negative parenting from the mother. This in turn may reflect right hemisphere dysfunction that disrupts emotion processing and regulation, which ultimately contributes to life-course antisocial and aggressive behavior.

## Executive Functioning

Executive functioning (EF), thought to represent frontal lobe activity, is an umbrella term that refers to the cognitive processes that allow for goal-oriented, contextually appropriate behavior



and effective self-serving conduct (Lezak, Howieson, Loring, Hannay, & Fischer, 2004; Luria, 1966; Morgan & Lilienfeld, 2000; Spreen & Strauss, 1998). Executive dysfunction—indicated by poor strategy formation, cognitive inflexibility, or impulsiveness—is represented by performance errors on neuropsychological measures such as category tests, maze-tracing tests (e.g., the Porteus Maze Test), Stroop interference tests, card sorting tests (e.g., the Wisconsin Card Sorting Test), verbal fluency tests, and tower tests (e.g., the Tower of London). Also demonstrating effectiveness in this area have been go/no-go tasks and the Bechara Gambling Task.

Evidence for executive dysfunction in conduct disordered adolescent populations varies depending upon the characteristics of the delinquent sample, control groups, assessment measures, and methodology (Teichner & Golden, 2000). Antisocial behavior and EF deficits may be related developmentally, and certain EF deficits may have serious developmental consequences such as inattention, impulsivity, and difficulty understanding the negative implications/impact of behavior. This may lead to an impaired ability to mentally maintain abstract ideas of ethical values and future contingencies while focusing upon immediate rewards and to inhibit or modify behavior in response to social feedback (Moffitt & Henry, 1989). Earlier investigations of EF in children have produced mixed evidence for a link between delinquency and EF deficits, though this may be due to methodological weaknesses, inconsistent definitions/operationalizations of EF, or both (Moffitt & Henry). More recent findings are also mixed, and EF deficits have been reported in some antisocial youth populations (Nigg et al., 2004; Raine et al., 2005; White et al., 1994) but not in others (Moffitt, Lynam, & Silva, 1994; Nigg et al., 2004).

*Biological vs. social influences:* The impact of social influences upon neuropsychological functioning in general and EF performance in particular must also be considered, as these influences may work in concert with biological factors to produce developmental neuropsychological deficits leading to antisocial behavioral trajec-

ries in children. Earlier prospective longitudinal studies found interactions of neuropsychological/neurobiological dysfunction and adverse social/environmental influences to produce significantly increased levels of later violence, aggression, crime, and antisocial behavior over either influence alone (Raine, 2002).

Brennan et al. (2003), in a later study of 370 Australian adolescents, found the interaction of biological risk factors (including age 5 low vocabulary ability, age 15 poor VIQ and executive functioning, prenatal/birth complications, maternal illness during pregnancy, and infant temperament) and social risk factors (including poor parenting, poverty, and a high number of disruptive family transitions) predicted early-onset persistent (i.e., LCP) aggression in boys and girls and predicted LCP vs. adolescent-onset (i.e., AL) aggression in boys. Though social risk factors appeared to be stronger predictors of later aggression than biological risk factors, these authors suggest an interaction of early social risks with later biological risks in predicting persistent aggression. It was also argued that lifetime, cumulative interactions of these risks are stronger predictors of persistent aggression in boys than are childhood- or adolescence-specific risks.

The chronological sequencing of neuropsychological deficits and antisocial behavior must also be considered. Some theorists (e.g., Moffitt, 1993) speculate that neuropsychological dysfunction precedes antisocial behavior, while others contend that antisocial behavior may in some cases be an antecedent to neuropsychological impairment (e.g. Lewis, Yeager, Blake, Bard, & Strenziok, 2004; Teichner & Golden, 2000). For example, it is known that head injury may result in specific neuropsychological deficits. Children characterized by problematic behavioral or temperamental characteristics may be more vulnerable to head injury by nature of increased exposure to situational adversities—such as recurrent physical fights, thrill-seeking behaviors (e.g., Lewis et al., 2004), or evoked severe parental corporal punishment (Teichner & Golden, 2000). Alcohol and illegal drug use in children and adolescents may also lead to acute brain impairment and long-term neuropsychological decline

(Teichner & Golden). Additionally, low verbal scores may be an artifact of academic underachievement (Moffitt et al., 1994).

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## Autonomic Nervous System

With the advantages of relatively easy data collection and noninvasive recording features, psychophysiological measures have proved to be valuable, especially in child and adolescent populations, in filling the gap between genetic risk for crime and the brain abnormalities which give rise to antisocial and criminal behavior. Most psychophysiological research has assessed autonomic and central nervous system (CNS) functioning at a baseline level or in response to external stimuli using measures such as skin conductance, heart rate, startle blink, and respiratory sinus arrhythmia.

Reduced classical fear conditioning has been a key concept in theories of aggressive/antisocial behavior and crime. It has been conceptualized that a conscience is a set of classically conditioned emotional responses and impaired conditioning may result in a lack of conscience that predisposes individuals to antisocial behavior (Eysenck, 1977). Empirical studies have consistently shown that poor skin conductance fear conditioning is associated with aggressive and antisocial behavior in children and adolescent populations (Fairchild, Stobbe, van Goozen, Calder, & Goodyer, 2010; Fairchild, van Goozen, Stollery, & Goodyer, 2008; Gao, Raine, Venables, Dawson, & Mednick, 2010). Increased conditioning responses, as well as high autonomic arousal and orienting, distinguished adolescents who desisted from crime by age 29 from those who did not (Raine, Venables, & Williams, 1995, 1996), suggesting a protective role of these mechanisms against antisociality.

Fewer non-specific skin conductance responses and reduced skin conductance levels have been found in non-psychopathic antisocial individuals in comparison to normal controls. For example, a prospective study has shown that in a sample of behaviorally disordered children, low skin conductance levels measured at age 11 years pre-

dicted institutionalization at age 13 years (Kruesi et al., 1992). In sum, although not all studies reveal skin conductance underarousal in antisocials (Glenn, Raine, Venables, & Mednick, 2007), there is some evidence associating low skin conductance activity with general antisocial behavior.

Low resting heart rate is the best-replicated biological correlate of antisocial behavior in children and adolescents (Lorber, 2004; Ortiz & Raine, 2004). Furthermore, low heart rate is diagnostically specific of conduct disorder, and has demonstrated value as a childhood predictor of adolescent aggression (Raine, 1996; Raine, Venables, & Mednick, 1997) and life-course persistent offending (Moffitt & Caspi, 2001). Additionally, *high* resting heart rate appears to protect against the development of criminality, characterizing antisocial boys who later desist from adult criminal offending (Raine et al., 1995). It has been proposed that arousal levels are consistently lower in antisocials, and that aggressive youths bring their arousal to an optimal level by engaging in pathological stimulation-seeking behaviors. Alternatively, autonomic hypoarousal (e.g., low heart rate) may indicate lack of fear or anxiety, which in turn may reduce the effectiveness of punishment, impede socialization processes, and eventually predispose individuals to antisocial behavior (Raine, 1993). It is also plausible that low heart rate and reduced autonomic conditioning reflects a disruption in the somatic marker network, which leads to inappropriate decisions (Damasio, 1994) and thus increased risky behavior.

Startle reflex studies measure the eye blink response to an unexpected stimulus of strong intensity or rapid onset that typically occurs while the subject is engaged in some other primary task. The startle reflex tends to be smaller when the primary task is more interesting or requires greater attention and is larger in amplitude when the primary task stimulus is unpleasant (Hugdahl, 2001). Startle potentiation deficits have been found in criminal and noncriminal male psychopathic samples, as well as in women with psychopathy (Patrick, 2006; Patrick, Bradley, & Lang, 1993), although this index has received

relatively less attention in child and adolescent populations. Fairchild and colleagues have found startle reflex deficits in both early-onset and adolescent-onset conduct disordered boys (Fairchild et al., 2008), and in female adolescents with conduct disorder (Fairchild et al., 2010), suggesting an emotional deficit underlined by amygdala dysfunction in individuals with severe behavior problems (Blair, 2010).

Psychophysiological risk factors also interact with psychosocial factors in predisposing certain individuals to aggressive and antisocial behavior. For example, it has been reported that boys with low resting heart rate are more likely to be rated as aggressive by their teachers if their mother was pregnant as teenager, if they were from a low social class family, or if they were separated from a parent before age 10. They are also more likely to become adult violent criminals if they also have a poor relationship with their parents and come from a large family (Farrington, 1997). Studies have also shown that poor skin conductance conditioning is a characteristic for antisocial schoolboys from relatively good social backgrounds (Raine & Venables, 1981), and that low heart rate at age 3 years predicts aggression at age 11 years in children from high but not low social classes (Raine et al., 1997). Using a variety of psychophysiological measures, including skin conductance and respiratory sinus arrhythmia, El-Sheikh and colleagues have reported that autonomic measures moderate the associations between children's exposure to marital conflict and externalizing behaviors (El-Sheikh, Hinnant, & Erath, 2011; El-Sheikh et al., 2009).

Prevention and intervention programs aimed at reducing antisocial behavior would benefit enormously by directly improving psychophysiological functioning or by targeting their efforts on selected individuals based on their psychophysiological characteristics. For example, better nutrition, more physical exercise, and cognitive stimulation from ages 3 to 5 years have been shown to produce long-term psychophysiological changes 6 years later at age 11 years (including increased skin conductance levels and responding and more alert, aroused EEGs) and to reduce criminal offending at age 23 years (Raine,

Mellingen, Liu, Venables, & Mednick, 2003; Raine et al., 2001). It has been reported that a cognitive-behavioral intervention program for children with externalizing behaviors was of greater benefit to children with high heart rate levels compared to those with low heart rate levels (Stadler et al., 2008). Similarly, in a pilot study on adolescents who were at high risk for drug abuse, individuals who were unresponsive to interventions demonstrated fewer skin conductance responses to a continuous performance test and delay of gratification and displayed higher skin conductance responses to the risky choices in a more stimulating task, relative to those who had better responses to the intervention program (Fishbein, Hyde, Coe, & Paschall, 2004).

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## Electrocortical Activity

Additional psychophysiological research has focused on measuring the brain's electrical activity using electroencephalography (EEG). EEG uses electrodes placed at several sites on the scalp to measure the electrical potentials generated by the synchronized firing of neurons. The EEG waveform is usually classified according to activity (or power) within several frequency bands, which range from slow-wave frequencies (delta [generally below 4 Hz] and theta [4–8 Hz]), to more moderate frequencies (alpha [8–12 Hz]), and to high frequency activity (beta [12–30 Hz] and gamma [above 30 Hz]). The different frequency bands are associated with different mental and physiological states, with higher frequencies generally corresponding to higher levels of activation and arousal (Hugdahl, 2001). Age has also been found to be reliably associated with the dominant frequencies present in EEG, such that, with age, the relative amount of slow-wave EEG declines and higher frequency EEG activity increases (Banaschewski & Brandeis, 2007; Barry & Clarke, 2009). Thus, EEG activity is often interpreted as reflecting either level of physiological arousal or cortical maturity.

Antisocial behavior has been found to be associated with an altered pattern of EEG activity across the lifespan. Several studies have found

evidence for increased delta and theta power, or slow-wave power, in adults with antisocial behavior (e.g., Fishbein et al., 1989; Knyazev et al., 2003; Lindberg et al., 2005). Increased slow-wave power has also been reported in studies of children and adolescents with antisocial behavior. For instance, Knyazev, Slobodskaya, Aftanas, and Savina (2002) found that theta power was positively correlated with parent ratings of delinquent behavior and teacher ratings of conduct disorder in a sample of 9–13-year-old children. Similarly, in a prospective longitudinal study, Raine, Venables, and Williams (1990a) found that males who would become criminals by age 24 had more theta power at rest than their non-criminal peers at age 15. However, some studies have reported no difference between controls and children with antisocial behavior in slow-wave EEG activity (e.g., Satterfield & Schell, 1984; Surface, 1995), and at least one has reported a decrease in slow-wave EEG activity in children with antisocial behavior (Gilbert, Gilbert, Johnson, & McColloch, 1991). A recent meta-analysis that incorporated data from studies on antisocial behavior as well as attention-deficit/hyperactivity disorder found that, while externalizing behavior was generally associated with increases in delta and theta power, externalizing behavior was associated with decreased delta power when EEG was recorded with participants' eyes open (Rudo-Hutt, unpublished manuscript). In addition to increases in slow-wave power, antisocial behavior has also been found to be associated with decreases in higher frequency (alpha, beta, and gamma) EEG activity in children and adolescents (Knyazev et al., 2003; Surface, 1995) as well as adults (Knyazev et al., 2003; Lindberg et al., 2005).

Taken together, findings for increased slow-wave and decreased fast-wave EEG activity have been interpreted by some as evidence for decreased CNS arousal in antisocial populations. Alternately, the increased slow-wave and decreased fast-wave power seen in antisocial populations has been proposed to reflect cortical immaturity or delayed maturation. As noted above, the relative power in each EEG frequency band changes with age, such that delta and theta

decrease and alpha and beta increase with development. Thus, the “young” pattern of EEG seen in antisocial populations, with increased slow-wave and decreased fast-wave activity, may reflect a delay or disruption in cortical maturation. At present, it is unclear which theory more accurately describes the data. However, the hypoarousal theory has the advantage of converging evidence of hypoarousal using other measures of nervous system activity, including heart rate and skin conductance data (see “Autonomic Nervous System” section, this chapter).

Another measure of electrocortical activity that has been of interest to researchers is the relative amount of activity in the right and left hemispheres of the brain. The difference between right and left hemisphere activity, known as asymmetry or laterality, is calculated by subtracting the amount of alpha band power at a left hemisphere electrode from the alpha power at the corresponding right hemisphere electrode, most often at frontal lobe sites. This research is predicated on the “anterior asymmetry and emotion” model developed by Davidson and colleagues, which proposes that asymmetry in frontal brain activity contributes to an individual's affective style (Davidson, 1998; Tomarken, Davidson, Wheeler, & Doss, 1992). Studies of frontal alpha asymmetry in antisocial populations have found increased right laterality, that is, increased activity in the right hemisphere compared to the left, in both children (Rickman, 1997; Santesso, Reker, Schmidt, & Segalowitz, 2006) and adults (Deckel, Hesselbrock, & Bauer, 1996) with antisocial behavior. Santesso et al. (2006) suggested that this pattern of brain activity may reflect difficulties with emotion regulation and a tendency to experience negative emotion, which could lead individuals with this pattern of activation to engage in maladaptive behavior when exposed to stress.

Event-related potentials (ERPs; also called evoked potentials) have also been used to study antisocial behavior. An ERP is a deflection in brain electrical activity that is time-locked to a specific event or stimulus presentation. The deflection may be positive (P; traditionally depicted downward) or negative (N) and occurs within milliseconds of the stimulus.

Three commonly studied ERP components, N1, P2, and P3, occur at about 100, 200, and 300 ms, respectively, and therefore are also called N100, P200, and P300. ERPs are thought to be correlates of specific psychological processes (Hugdahl, 2001). For example, the P3, which is elicited when participants are asked to respond selectively to a rare target stimulus, is thought to be an indicator of selective attention and memory processing (Polich, 2007).

Studies of antisocial behavior using ERPs have found a number of differences between antisocial participants and controls. The P3 ERP has been the focus of much of this research. A meta-analysis of 38 studies of P3 in antisocial participants found small, but statistically significant, effects for reduced P3 amplitude and increased P3 latency (Gao & Raine, 2009). Early-onset conduct problems appear to be particularly associated with smaller P3 amplitudes. For example, Iacono and McGue (2006) found that, as the number of conduct problems present before age 15 increased, the P3 amplitude decreased. It has been suggested that these P3 abnormalities reflect poor allocation of neural resources, which leads to difficulties sustaining attention (Gao & Raine, 2009). Inattention may lead to school and occupational failure, which predisposes to criminal offending (Moffitt, 1993). It is noteworthy that some studies have found possible evidence of enhanced attention in antisocial populations. For instance, greater N1 amplitude and faster P3 latency at age 15 have been found to predict criminal status at age 24 (Raine, Venables, & Williams, 1990b). However, such findings may represent abnormal information processing, rather than enhancement (Ishikawa & Raine, 2002).

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## Early Health Risks

Persuasive evidence suggests that a number of early health risk factors, including minor physical anomalies (MPAs), prenatal nicotine and alcohol exposure, birth complications, and malnutrition significantly elevate risk for antisocial and criminal behavior across the lifespan, including during childhood.

## Minor Physical Anomalies

Minor physical anomalies (MPAs) consist of fairly minor physical aberrations, such as adherent ear lobes, a single palmar crease, and a furrowed tongue. MPAs have been linked to pregnancy disorders and are viewed as biomarkers for fetal neural maldevelopment near the end of the first trimester (Firestone & Peters, 1983). Since the epidermis and the CNS have shared embryological origins, MPAs are considered indicators of atypical CNS and brain development.

A number of studies have found a relationship between elevated numbers of MPAs and increased antisocial behavior in children, adolescents, and adults (Raine, 1993). MPAs have been particularly linked to violent as opposed to nonviolent offending. For instance, Arseneault, Tremblay, Boulerice, Seguin, and Saucier (2000) showed that MPAs measured at age 14 years in 170 males predicted violent but not nonviolent delinquency at age 17 years. The authors reported that these effects were independent of childhood physical aggression or family adversity. In another study, an increased level of MPAs in childhood was associated with recidivistic violent criminal behavior in early adulthood (Kandel, Brennan, Mednick, & Michelson, 1989). These studies suggest that prenatal insults toward the end of the first 3 months of pregnancy may increase risk for violent behavior as a result of abnormal brain development.

Several studies have reported that MPAs interact with psychosocial factors in predisposing to crime. Although many of these have examined MPAs in relation to violent behavior in adulthood (Brennan, Mednick, & Raine, 1997; Mednick & Kandel, 1988), a study by Pine, Shaffer, Schonfeld, and Davies (1997) examined whether MPAs interacted with environmental risk factors in predicting later disruptive behavior disorders in adolescence. They found that individuals with both increased MPAs and environmental risk assessed at age 7 had an elevated risk for disruptive behavior in general, and conduct disorder, in particular, at age 17. Research thus suggests that subtle neurological impairments such as MPAs may heighten vulnerability to environmental risk factors for crime and violence.



## Prenatal Nicotine and Alcohol Exposure

Numerous studies have demonstrated that children who are exposed to maternal smoking during pregnancy have an elevated risk of later criminal behavior throughout the life-course (see Wakschlag, Pickett, Cook, Benowitz, & Leventhal, 2002, for a review). Research has found that maternal prenatal smoking predicts childhood externalizing behavior, conduct disorder, and delinquency, as well as adult criminal and violent offending (Brennan, Grekin, & Mednick, 1999; Brennan, Grekin, Mortensen, & Mednick, 2002; Fergusson, Horwood, & Lynskey, 1993; Fergusson, Woodward, & Horwood, 1998; Orlebeke, Knol, & Verhulst, 1997; Rantakallio, Laara, Isohanni, & Moilanen, 1992; Wakschlag et al., 1997; Weissman, Warner, Wickramaratne, & Kandel, 1999). Researchers have also found that smoking during pregnancy predicts early-onset offending (Gibson, Piquero, & Tibbetts, 2000), as well as life-course persistent offending that begins early in life and continues into adulthood (Piquero, Gibson, Tibbetts, Turner, & Katz, 2002).

Fetal alcohol exposure is also an established risk factor for antisocial behavior in children, adolescents, and adults (Fast, Conry, & Loock, 1999; Olson et al., 1997; Streissguth, Barr, Kogan, & Bookstein, 1996). Fetal Alcohol Syndrome (FAS) is characterized by a host of cognitive, behavioral, social, and physical deficits and results from heavy alcohol consumption during pregnancy. However, deficits are observed even in those who have been prenatally exposed to alcohol yet do not meet diagnostic criteria for FAS (Schonfeld, Mattson, & Riley, 2005). For example, two studies found high rates of delinquency in children and adolescents with heavy fetal alcohol exposure, even if they did not have FAS (Mattson & Riley, 2000; Roebuck, Mattson, & Riley, 1999). In addition, research has demonstrated that adolescents who were prenatally exposed to alcohol are overrepresented in the juvenile justice system. For example, Fast et al. (1999) found that 3% of adolescents in a juvenile inpatient forensic psychiatry unit were diagnosed with FAS and 22% were diagnosed with fetal alcohol effects, rates much higher than the gen-

eral population. Another study reported that 61% of adolescents, 58% of adults, and 14% of children between the ages of 6 and 11 with fetal alcohol exposure had a history of trouble with the law (Streissguth et al., 1996).

## Birth Complications

Birth complications, which consist of delivery problems such as premature birth, low birth weight, placement in a neonatal intensive care unit, forceps delivery, Cesarean section, anoxia, resuscitation after delivery, pre-eclampsia in the mother, and low Apgar score, are believed to negatively impact brain function (Liu, 2004; Liu & Wuerker, 2005). Several studies have revealed interactions between birth complications and various psychosocial risk factors in predisposing to delinquency and violent crime (Raine, Brennan, & Mednick, 1994, 1997; Werner, 1987). These findings have been replicated in large samples across the world (Arseneault et al., 2002; Brennan, Mednick, & Mednick, 1993; Hodgins, Kratzer, & McNeil, 2001; Piquero & Tibbetts, 1999).

## Malnutrition

Another early health risk factor that has been shown to contribute to criminal and antisocial behavior is malnutrition. In addition to epidemiological studies that show a relationship between vitamin and mineral deficiency and aggression (Breakey, 1997; Werbach, 1992), research has found micronutrient deficiencies in incarcerated juvenile delinquents (Rosen et al., 1985) and violence-prone, assaultive young males (Walsh, Isaacson, Rehman, & Hall, 1997). Further support for the relationship between malnutrition during childhood and antisocial behavior in later life comes from a prospective longitudinal study which found that children with iron, zinc, or protein deficiencies at age 3 exhibited more aggression at age 8, more externalizing behavior at age 11, and more conduct disorder at age 17 (Liu, Raine, Venables, & Mednick, 2004).

Nutritional interventions and randomized controlled trials also provide persuasive evidence that malnutrition relates to criminal behavior. For example, a large randomized, double-blind, placebo-controlled trial revealed that public-school children given a daily vitamin and mineral supplement showed a reduction of 47% in antisocial behavior after 4 months compared with children given the placebo, although findings from this study remain controversial and require replication (Schoenthaler & Bier, 2000). Another randomized controlled trial found that an enrichment program from ages 3 to 5 significantly reduced antisocial behavior at age 17 and criminal behavior at age 23 (Raine et al., 2003). While the enrichment program consisted of nutrition, education, and physical exercise, the authors showed that the intervention was most beneficial for children who exhibited signs of malnutrition at age 3, implying that the nutritional components of the intervention were the active ingredients in the enrichment program.

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## Conclusions

Research in each of the biological domains reviewed here has contributed to our understanding of the development of criminal and antisocial behavior during childhood. Structural and functional brain imaging studies have implicated several brain regions in the development of antisocial behavior, including the amygdala, the ventromedial prefrontal cortex, and the temporal region. Consistent with the findings of brain imaging studies, neuropsychological studies have found that antisocial youth are characterized by multiple behavioral indices of brain dysfunction, including executive dysfunction and IQ deficits. Psychophysiological studies, which provide less direct information about brain activity than imaging studies, but are relatively easier to operationalize, show that antisocial children are characterized by underarousal and diminished nervous system responses to stimuli and stressors. Early health factors, including minor physical anomalies and prenatal nicotine

exposure, also appear to play a role in the etiology of childhood antisocial behavior. Generally speaking, many of the biological deficits and abnormalities observed in adult antisocial populations also appear to characterize young antisocials.

There is also evidence showing that the presence of biological risk factors during childhood predicts later offending and antisocial behavior during adulthood. Such findings provide some support for a key developmental criminological theory. Moffitt's developmental taxonomy (Moffitt, 1993) predicts that more serious life-course persistent offenders (who engage in antisocial behavior during childhood and persist in offending into adulthood) will be characterized by neuropsychological deficits during childhood as compared to adolescent-limited offenders (who only engage in antisocial behavior during adolescence), whose behavior is largely normative and likely results from mimicking the behavior of their life-course persistent peers.

Taken together, the studies reviewed here suggest the importance of early interventions that take into account biological risk factors for crime and antisocial behavior. Programs applied early in life that combine multidisciplinary health services from clinical, social, and educational domains may have the potential to improve brain functioning and make a public health contribution to the reduction of criminal offending. Programs that focus on pre- and early perinatal healthcare in pregnant women may represent a particularly promising avenue for future prevention efforts. One such program, the Nurse Family Partnership, provides low-income mothers with home visits from nurses during pregnancy through the first 2 years of the child's life (Olds, 2007). A randomized trial showed that participation in the program improved maternal health behaviors during pregnancy and reduced negative pregnancy outcomes (Olds, Henderson, Tatelbaum, & Chamberlin, 1986). Additionally, adolescents born to high-risk, nurse-visited mothers reported fewer arrests and convictions than controls that did not receive nurse home visits (Olds et al., 1998).

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## Directions for Future Research

Our understanding of the biological risk factors for childhood antisocial behavior is far from complete, leaving several promising avenues for future research. Research questions and hypotheses that will be particularly important to address and test in future research include the following:

(1) Do the biological risk factors for antisocial behavior differ in youth who develop antisocial behavior in childhood vs. adolescence? Similarly, does the underlying pathology of adolescence-limited offenders differ from that of life-course persistent offenders? It is hypothesized that youth who develop antisocial behavior during childhood, as well as those who display life-course persistent patterns of offending, will be more strongly characterized by biological risk factors than youth who offend only during adolescence. (2) Is the trajectory of brain development different in antisocial youth? We predict that longitudinal research that utilizes brain imaging will reveal distinct neurological developmental trajectories in antisocial youth as compared to non-delinquent controls in addition to the already observed cross-sectional differences in the brain structure and function of young antisocials. (3) Are biological risk factors for antisocial behavior limited to specific subtypes of antisocial youth (e.g. youth with callous-unemotional traits vs. those with low levels of these traits)? We hypothesize that future research will replicate the limited number of studies that have already found distinct biological risk factors for youth with callous-unemotional traits vs. those without these traits. There may also be biological differences between violent and nonviolent delinquents. (4) Does neurological and biological functioning mediate (or partially mediate) the relationship between environmental/social risk factors and behavior? We predict that negative social and physical environments may disrupt brain and biological functioning, which in turn results in an increased predisposition for antisocial behavior.

Research that tests these hypotheses will be a crucial next step in advancing the state of life-course criminological theory and research. Many

of these research questions also point to the more general need for longitudinal research that measures biological risk factors at multiple time points throughout the life-course, beginning in childhood. This is necessary, in part, in order to establish the chronological sequencing of biological risk factors and antisocial behavior. For instance, longitudinal studies will allow us to determine whether biological risk factors, such as head injuries, precede the development of antisocial behavior during childhood rather than occurring as the result of the risky and impulsive behavior that often accompanies antisocial behavior. Future longitudinal research may also help to better elucidate the mechanisms linking biological risk factors to antisocial behavior. For instance, investigating the pattern of EEG activity across the lifespan, especially in old age, would do much to help resolve the question of whether increased slow-wave EEG activity in antisocial children reflects delayed cortical maturation or instead reflects chronic underarousal. Given that the developing brain is still undergoing various maturational processes during childhood, the incorporation of brain imaging into longitudinal research would also greatly contribute to our understanding of how brain structure and functioning relates to the development of criminal behavior during both childhood and adulthood.

Additionally, longitudinal studies are needed in order to examine biosocial interactions within a developmental framework. Most existing studies have examined biosocial interactions in relation to *between*-individual differences in antisocial behavior. However, it is also possible that biological risk factors impact *within*-person changes in antisocial behavior as a function of the changing social environment. This idea is suggested by a key developmental criminological theory. According to Moffitt's developmental taxonomy (Moffitt, Caspi, Harrington, & Milne, 2002), not only are life-course persistent individuals characterized by neuropsychological deficits experienced early in life, but this biological risk is exacerbated by high-risk social environments whose content changes across the life-course. During childhood, factors such as inadequate parenting, disrupted family bonds,



and poverty comprise the relevant environmental risk. However, as the child ages, environmental risk factors expand to include poor relations with peers and teachers, and later poor relations with partners and employers.

Moffitt's theory also points to the importance of considering the dynamic interplay between biological and social risk factors that unfolds over time. Early in life, Moffitt (1993) argues that children with neuropsychological problems and difficult temperaments are more likely to evoke negative parental responses and poor parenting, which in turn exacerbates their predisposition for criminal behavior. Later in life, personal characteristics, such as impulsivity and poor self-control, increase the likelihood that individuals will make decisions that lead to opportunity-blocking outcomes, such as teenage pregnancy and school dropout. Longitudinal research that measures both biological and social risk factors over time will allow researchers to clarify the precise nature of this ongoing and likely reciprocal interaction between biological and social risk factors over the life-course.

In sum, there are many promising avenues through which biosocial research has the continued potential to contribute to our understanding of the development of criminal and antisocial behavior during childhood and across the life-course. Though some sociologically trained criminologists may feel ill-equipped to incorporate biological research methods into their research, biological research need not be costly nor complex. Psychophysiological research (especially heart rate) is relatively simpler and less costly to operationalize than other biological measures (such as brain imaging), making it a particularly accessible option for criminologists interested in incorporating biological risk factors into their research agendas. Through such research, developmental criminologists have the potential to contribute to a more integrated, multidisciplinary approach to understanding antisocial behavior both during childhood and across the life-course. Indeed, it is suggested that criminologists are perhaps better placed than other scientists to reap the benefits gleaned from the past decades of research into the biology of antisocial behavior in children, and to develop exciting and

novel biosocial research studies that will result in groundbreaking advances into our understanding of early factors during development which result in adult crime and violence. Such interdisciplinary collaborations have the promise of revolutionizing the field of criminology.

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# Genetic and Environmental Influences on the Development of Childhood Antisocial Behavior: Current Evidence and Directions for Future Research

Kevin M. Beaver and Eric J. Connolly

## Abstract

During the past couple of decades, there has been a tremendous amount of empirical research examining the genetic foundation to antisocial behaviors at various stages of the life course. The results of these studies have consistently revealed that about 50% of the variance in antisocial behaviors is the result of genetic factors, with most of the remaining variance being attributable to nonshared environmental influences. More recently, there has been a significant focus on trying to identify the specific genes that might be involved in the etiology of these types of behaviors. Although the findings have been relatively inconsistent and mixed, there is an emerging body of research indicating that genes have their most consistent and powerful effects when they are paired to environmental risk factors. Unfortunately, most of this genetic research has yet to be integrated into life-course criminology. The purpose of the current chapter is to review some of the research bearing on the genetic underpinnings to antisocial behaviors and discuss the various ways that it has application to criminological theory and research and to offer avenues for future research.

## Keywords

Biosocial • Diathesis-stress • Differential susceptibility • Genetics • Twins

## Introduction

One of the hallmarks of human nature is the strong degree of relative stability in behaviors and traits over long swaths of the life course.

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Beginning in infancy, measures of temperament have been shown to predict behaviors and traits in adolescence and even adulthood (Tremblay et al., 2004). As infancy rolls into childhood, the degree of stability becomes even more pronounced. Personality traits measured in children as young as 3 years of age, for example, have been shown to predict those same personality traits nearly 20 years later (Caspi, Harrington, et al., 2003; Moffitt, 1990). What this means is that children who are characterized as being shy, aggressive, or



impulsive are likely to develop into adolescents who are also described as being shy, aggressive, or impulsive. That there is such a high degree of stability during a period in the life course that spans across significant social and biological development underscores the fact that human nature is essentially built on stability. Stability also appears to be the general rule for antisocial behaviors. A long line of research has revealed, for instance, that one of the strongest and most consistent predictors of adolescent delinquency and adult criminal behavior is a history of antisocial behavior that dates back to childhood (Campbell, Shaw, & Gilliom, 2000; Farrington, 1991; Loeber, 1982; Olweus, 1979). The effect sizes associated with childhood antisocial behavior tend to be stronger than those of most known predictors of crime and delinquency, including poverty, gender, and race. Perhaps that is why one of the more well-known criminological adages is that “adult criminal behavior virtually requires a history of childhood antisocial behavior” (Robins, 1978, p. 611).

Although antisocial behavior is known to emerge in childhood and remain relatively stable up through adulthood, most criminological theories that attempt to explain the origins of criminal behavior focus on factors evident in adolescence or adulthood. Some of the more dominant explanations of criminal behavior, for example, focus on adolescent social bonds, exposure to delinquent peers, drug use, employment status, and school-level factors, to name a few. The problem with most of these theoretical explanations is that they do not comport with the empirical evidence related to the stability of antisocial behaviors. Rather than attempting to uncover the factors that ultimately give rise to childhood antisocial behavior, these theories ignore childhood antisocial behavior and instead argue that the rapid rise in delinquent behavior during adolescence has to be explained by factors that are evident in adolescence. This assertion is particularly problematic because since antisocial behavior surfaces in childhood and remains relatively stable over time, this necessarily means that the causes of criminal behavior are not likely to be found in adolescence or adulthood, but rather in childhood. A complete

explanation of delinquent and criminal behavior therefore necessitates peeling back time and exploring factors associated with antisocial behaviors that are evident during childhood, infancy, or perhaps even earlier.

Even though criminologists have largely ignored the role of childhood in the etiology of later-life criminal and delinquent behaviors (but see Gottfredson & Hirschi, 1990), there has been a huge amount of attention given to the link between childhood and subsequent human development among researchers in other disciplines, such as psychology and psychiatry. Overall, this line of research has focused on two broad groups of factors that have been shown to consistently explain variance in an assortment of childhood behaviors: genetic factors and environmental factors. The proceeding section will examine how genetic and environmental effects are estimated. Importantly, some of the most cutting-edge research in criminology and behavioral genetics has drawn attention to the various ways in which environmental factors moderate the effects of genetic tendencies (and vice versa) in the production of childhood antisocial behaviors. This research will be reviewed and explained in terms of its implications for criminological theory and research. Last, the chapter will conclude by discussing policy implications and directions for future research.

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### **Genetic and Environmental Effects on Childhood Antisocial Behavior**

Whereas most criminological research focuses almost exclusively on environmental influences to behavior, research focusing on childhood routinely explores the genetic and environmental underpinnings to childhood behaviors, including antisocial behaviors. In order to examine the dual effects of genetic and environmental factors, it is almost a requirement that at least two children per household are included in a research sample (except in the case of adoption studies). The most straightforward and perhaps most widely used methodology that includes two children per household is the twin-based research design

(Plomin, DeFries, McClearn, & McGuffin, 2008). The twin-based methodology takes advantage of a naturally occurring experiment known as twinning. Twinning occurs when two (or more) siblings are conceived during the same pregnancy. There are two types of twins: monozygotic (MZ) twins and dizygotic (DZ) twins. MZ twins are genetic clones of each other and thus share 100% of their DNA, while DZ twins are, genetically speaking, just as similar to each other as regular biological siblings, meaning that they share about 50% of their DNA. Both types of twins, however, are assumed to share environments that are roughly comparable (referred to as the equal environments assumption). For example, twins from MZ pairs and twins from DZ pairs typically are raised by the same parents, are reared in the same households, exposed to the same neighborhoods, attend the same schools, and frequently share many of the same peers. If the equal environment assumption is fulfilled, then the only difference between MZ twins and DZ twins is the amount of genetic material they share.

To estimate genetic and environmental effects, the behavioral similarity of twins from the same MZ twin pair is compared to the behavioral similarity of twins from the same DZ twin pair. Genetic effects are detected when the similarity of MZ twins exceeds the similarity of DZ twins. And, as the similarity of MZ twins increases in relation to the similarity of DZ twins, the genetic effect becomes stronger. The proportion of variance that genetic factors account for is referred to as heritability. In addition to estimating genetic effects, twin-based research designs are also able to estimate environmental influences. Unlike most criminological research, studies employing the twin-based research design make the distinction between two types of environments: shared environments and nonshared environments. Shared environments are environments that are indistinguishable between siblings and that work to make siblings more similar to each other. Some of the more common examples of shared environments include parental-wide socialization techniques, family socioeconomic status, and neighborhood-level structural conditions. Nonshared environments, in contrast, are envi-

ronments that are unique to each sibling and that operate in a fashion that makes siblings different from each other. Child-specific parenting, different peer groups, and random events are some examples of nonshared environments. The nonshared environmental component also captures the effects of error. In total, heritability, the shared environment, and the nonshared environment account for 100% of the variance in the trait or behavior of interest (Plomin et al., 2008).

Twin-based research designs have been used to estimate genetic and environmental influences on variance in virtually every measurable human phenotype. Overall, the results have been quite consistent in revealing that most human traits and behaviors are about 50% heritable, about 10% due to the shared environment, and about 40% the result of nonshared environmental factors (Mason & Frick, 1994; Miles & Carey, 1997; Rhee & Waldman, 2002). This same pattern of findings has been detected for an array of antisocial behaviors that begin to emerge very early in the life course. For example, conduct disorder, oppositional defiant disorder, and other indicators of misbehavior in childhood have been shown to be about 50–80% heritable (Arseneault et al., 2003; Coolidge, Thede, & Young, 2000; Moffitt, 2005; Raine, 1993; Reiss, Neiderhiser, Hetherington, & Plomin, 2000). These findings are unlikely the result of a methodological or statistical artifact because they have been detected across different studies, analyzing different samples, and using different analytical techniques.

Critics of genetic research often argue that there are some limitations with twin-based research that artificially increase heritability estimates while, at the same time, artificially decrease environmental (both shared and nonshared) estimates. The most common attack centers on violations of the equal environments assumption. According to this argument, MZ twins are treated more similarly than are DZ twins. As a result, their increased similarity is the result of environmental factors, not genetic ones. Although there is evidence suggesting that the equal environments assumption is frequently met (Cronk et al., 2002; Gunderson et al., 2006; Kendler, 1983; Kendler, Neale, Kessler, Heath, & Eaves, 1993;

Morris-Yates, Andrews, Howie, & Henderson, 1990), any violation of this assumption could produce biased parameter estimates. Fortunately, there are other research designs that can be used to estimate heritability, shared environmental, and nonshared environmental influences. While providing an in-depth discussion of these alternative methodologies is beyond the scope of this chapter, it is worth mentioning that the findings generated from traditional twin-based research designs have been replicated using adoption research designs, family-based research designs, and even research designs that focus on MZ twins who were separated at birth and reunited in adulthood (Plomin et al., 2008). Very few social science findings have been replicated as extensively as those that underscore the role of genetic factors in the development of human behaviors, including childhood antisocial behaviors.

The connection between childhood antisocial behaviors and later-life crime and delinquency may also be partially explained by genetic factors. Researchers have extended the univariate twin-based research design to a bivariate twin-based research design (e.g., correlated factors model or bivariate Cholesky decomposition models) as a way to decompose the covariance between two behavioral measures. These types of modeling strategies can be applied to the study of behavioral stability to estimate the extent to which genetic, shared environmental, and nonshared environmental factors are responsible for the covariance (or stability) in behaviors over time. Studies using these bivariate genetic modeling strategies have examined the extent to which genetic factors account for stability in antisocial behaviors over different parts of the life course. The results of these studies have consistently revealed that genetic factors account for a significant proportion of the variance in behavioral stability as well as stability in antisocial personality traits (e.g., Beaver, Wright, DeLisi, & Vaughn, 2008; Haberstick, Schmitz, Young, & Hewitt, 2005; Johnson, McGue, & Krueger, 2005; Larsson, Larsson, & Lichtenstein, 2004). For example, van Beijsterveldt, Bartels, Hudziak, and Boomsma (2003) analyzed a sample of twin children and adolescents to estimate genetic

influences on the stability of aggression. The results of their longitudinal genetic analysis revealed that genetic factors accounted for 65% of the stability in aggression over time.

In summary, the existing evidence indicates that antisocial behavior emerges in childhood and that it is about 50% heritable. Childhood antisocial behavior, moreover, is relatively stable, meaning that children who display signs of antisocial behavior are more at-risk for persisting with antisocial behavior into adolescence and adulthood than children who do not show signs of antisocial behavior. And the stability in antisocial behavior over the life course is partially the result of genetic factors. Taken together, the extant literature underscores the importance of genetic factors in the development of childhood behavioral problems as well as the importance of genetic factors to understanding stability in antisocial behaviors.

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## Gene-Environment Interaction

Thus far we have discussed the etiological origins of childhood antisocial behaviors as though genetic effects could be neatly divided from environmental effects and the two could be studied independently of each other. In reality, though, genes and the environment are highly intertwined, mutually interdependent, and work in an interactive way in a process known as a gene-environment interaction. Much of the most cutting-edge research, for example, has highlighted the ways in which genetic factors modify the effects of environmental factors and the ways in which environmental factors moderate the effects of genetic factors (Beaver et al., 2007; Caspi et al., 2002; Cleveland, Wiebe, & Rowe, 2005; Foley et al., 2004; Kim-Cohen et al., 2006; Vanyukov et al., 2007). When viewed through a gene-environment interaction lens, it is relatively easy to see why trying to study the effects of genes independent of the environment (and vice versa) truly misses the mark.

A rapid growing body of research has examined gene-environment interactions in relation to diseases, disorders, personality traits, and behaviors.

Although gene-environment interactions can be tested using a range of different analytical techniques, two commonly employed methods are through stratification and through multiplicative interaction terms. With stratification, a twin-based analysis is conducted to estimate genetic, shared environmental, and nonshared environmental effects on the phenotype of interest, such as childhood conduct disorder. The potential environmental moderator (i.e., the “environment” in a gene-environment interaction) is then divided into different categories or often simply dichotomized. The genetic analyses are then recalculated for each separate category. The variance components estimates are then compared to see if they vary as a function of exposure to the environment of interest. If heritability estimates differ significantly between or among categories, then this is often interpreted as evidence of a gene-environment interaction. For example, Asbury, Wachs, and Plomin (2005) employed this approach to study gene-environment interactions on verbal and nonverbal skills in children. Their analysis revealed evidence that certain environments were able to moderate genetic influences on verbal and nonverbal skills. Similar results have also been reported for delinquency, violence, and victimization when estimated using the stratification approach (Beaver, 2011).

The second main way to test for gene-environment interactions is by creating a multiplicative interaction term between a measured gene and a measured environment. To understand this method of examining gene-environment interactions, it is necessary to introduce some basic terminology regarding genetics. Genes are strings of DNA that work together to code for the production of proteins. All people inherit two copies of each gene that is located on the autosomes: one copy is inherited maternally and one copy is inherited paternally. For most genes there is only one copy of the gene in existence and thus all people have the same copies for that gene (i.e., there is not any genetic variation for these genes). For a small percentage of all genes, though, there are two or more different copies of the gene available. Genes that vary are referred to as genetic

polymorphisms and alternative copies of the gene are referred to as alleles.

Particular interest lies with genetic polymorphisms because the various copies of these genes produce genetic variation and genetic variation has the potential to explain variation in phenotypes. Focusing on genes that do not vary would be, in many ways, relatively useless because it would be akin to trying to explain a variable (e.g., variation in childhood antisocial behavior) with a constant (i.e., a gene that does not vary). (However, as a side note, because of complex splicing mechanisms, genes that do not vary can actually code for the production of different proteins. A discussion of this topic, however, falls outside the scope of the current chapter.) Of all the genetic polymorphisms that have been studied in relation to antisocial behaviors, those that are involved in neurotransmission are the most promising candidate genes linked to the development of antisocial behaviors.

Neurotransmission, in very general terms, refers to the process by which neurons communicate with one another. Neurons are brain cells that consist of a cell body as well as axons and dendrites that are interconnected with each other. When a message (i.e., an electrical impulse) needs to be transmitted across the brain, it runs through a complex web of neurons, where the message is transferred from neuron to neuron until it reaches its final destination. Neurons, however, are not physically wired together, but rather are separated by a gap referred to as a synapse or synaptic gap. In order for a message to be transmitted from one neuron to another, the synapse must be bridged in some capacity. This is where neurotransmitters come into play. Neurotransmitters are chemical messengers that are released from the vesicles of the presynaptic neuron, where they cross the synapse, and lock into receptors on the postsynaptic neuron. Different effects will be generated from the neurotransmitter depending on the type of neurotransmitter released and depending on where the postsynaptic neuron is located and the density of receptor sites. Some neurotransmitters have inhibitory properties while others have excitatory properties. Dopamine, serotonin, and

norepinephrine are some of the more commonly studied neurotransmitters in terms of human behaviors and traits.

After neurotransmitters have delivered the message to the postsynaptic neuron, they need to be removed from the synapse. There are two key ways that neurotransmitters are eliminated from the synaptic gap. First, in a process known as reuptake, transporter proteins are released that ultimately seek out and capture neurotransmitters from the synapse where they are returned to the presynaptic neuron. Second, enzymes can be produced that breakdown neurotransmitters from the synapse into inactive particles where they are flushed from the synaptic gap. Monoamine oxidase A (MAOA), for example, is an enzyme that metabolizes neurotransmitters, such as dopamine and serotonin. Importantly, both of these processes are controlled in large part by genetic factors. For example, the production of transporter proteins and the production of enzymes that degrade neurotransmitters are coded for by genes and, in some cases, genetic polymorphisms. Some of these genetic polymorphisms have also been shown to have functional consequences wherein certain alleles are responsible for producing proteins and enzymes with different activity levels or other functional differences.

Now that we have covered some of the basics of genetics, we can return to the original issue about how to test for gene-environment interactions using a multiplicative interaction term. Typically, the genetic polymorphism is coded either trichotomously (to reflect the total number of “risk” alleles a person carries) or dichotomously (for genes located on the sex chromosomes or when employing a recessive or dominant coding scheme). This genetic variable is then multiplied by an environmental measure, which is typically coded the same way it would be when used in a traditional standard social science methodology. The resulting product term is then entered into a regression equation along with the constituent variables to predict variation in some phenotype, such as an antisocial behavioral phenotype (e.g., low self-control, aggressiveness, hyperactivity, etc.). If the interaction term is a statistically significant predictor of the pheno-

type, then the results indicate that at least part of the variation in the phenotype is the result of a gene-environment interaction. What is important to bear in mind, however, is that a multiplicative interaction term only reveals whether there is a statistically significant interaction effect; it does not reveal any information about the underlying mechanisms that give rise to the interaction nor does it provide any detail about theoretical perspectives that might be able to explain the precise ways in which the gene and the environment interact. There are two overarching explanations that have been advanced to help explain the mechanisms by which genes and the environment interact: the diathesis-stress model and the differential-susceptibility model. The following section will discuss the diathesis-stress model in detail and provide a brief overview of the differential-susceptibility model (for more on the differential-susceptibility model see Simons & Lei, 2012).

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## Explanations of Gene-Environment Interactions

The most commonly employed perspective to explain gene-environment interactions is known as the diathesis-stress model. Under this explanation, a person born with a genetic predisposition for a certain phenotype is only likely to develop that phenotype when they are exposed to an environmental liability in a sufficient dosage. Without the presence of the environment, the “trigger” needed to make their genetic potential realized is absent and thus their genetic potential remains muted. When the environmental liability is present, however, it acts as a trigger on the genetic effect and, as a result, increases the likelihood of the phenotype to surface. The diathesis-stress model has been used to explain the etiological origins to a wide range of psychopathologies, including depression (Caspi, Sugden, et al., 2003), schizophrenia (Walker & Diforio, 1997), antisocial behaviors (Jaffee et al., 2005), and many other disorders and diseases.

Recently, however, an alternative to the diathesis-stress model has been offered by Belsky



(Belsky & Pluess, 2009) in his advancement of what is known as the differential-susceptibility model. According to the differential-susceptibility model, genetic variants should not necessarily be viewed as risk factors that predispose to antisocial and negative phenotypes, but rather should be viewed as markers for how susceptible individuals are to their environments (for more see Simson and Lei, 2012).

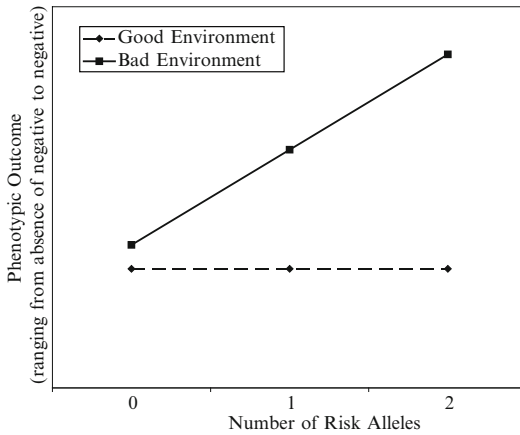
Nevertheless, most gene-environment studies are not uniquely designed to test directly the predictions made by differential susceptibility. For example, gene-environment research almost exclusively characterizes genes as risk factors, measures maladaptive environments, and focuses on negative phenotypes. The diathesis-stress model would predict that the more risk alleles a person possesses the more likely they are to score high on a negative phenotype when exposed to a maladaptive environment. The prediction that separates the two models has to do with what happens when risk/plasticity alleles are paired with a positive environment. According to the diathesis-stress model, risk alleles should have no effect on the phenotype when paired with a positive environment, whereas the differential-susceptibility model would predict that subjects who have a relatively large number of plasticity alleles and who are faced with a positive environment should score the lowest on the negative phenotype of interest.

Given that both the diathesis-stress and differential-susceptibility models make the same predictions about the interaction between genes and the environment in the prediction of negative phenotypes, it is nearly impossible to glance at the results of a statistical interaction and determine which of the two perspectives is supported. To help interpret any statistically significant gene-environment interactions, researchers usually plot the interactions by estimating the predictive values/probabilities on the outcome measures across different genotype/environment combinations. The precise ways in which the gene-environment interactions are plotted vary depending on the type of environmental variable employed (e.g., dichotomous vs. continuous) as well as how genotype is measured (e.g., through

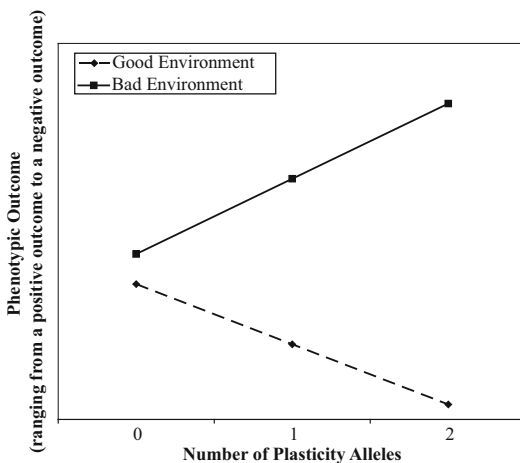
a single gene or through a system of genes). In general, though, the point of departure between the two models has to do with the combination of scoring high on the genotype measure (i.e., a high number of risk/plasticity alleles) and being exposed to a positive environment. Figure 3.1 shows the predictions for the diathesis-stress model. As can be seen, there is a linear association between the number of risk alleles and scores on the phenotypic outcome (ranging from absence of a negative outcome to a negative outcome) for subjects who are exposed to “bad” environments. For persons who are exposed to “good” environments, there is no association between the number of risk alleles and scores on the phenotypic outcome. In short, according to the diathesis-stress model, risk alleles only matter in the prediction of phenotypic outcomes when they are paired to bad environments.

Figure 3.2 depicts a gene-environment interaction that would be consistent with the differential-susceptibility hypothesis, but not the diathesis-stress model. As can be seen, there is a positive association between the number of plasticity alleles and the phenotypic outcome (ranging from a positive outcome to a negative outcome) for subjects who were exposed to “bad” environments. In contrast, there is a negative association between the number of plasticity alleles and the phenotypic outcome for subjects who were exposed to “good” environments. When looking only at subjects who had three plasticity alleles, it is easy to see that those who were exposed to “bad” environments scored the worst on the phenotype, while those who were exposed to “good” environments scored the best on the phenotype. This better-or-for-worse phenomenon is precisely what is predicted by differential susceptibility, but not by the diathesis-stress model.

Keep in mind that a direct test of the differential-susceptibility hypothesis would necessitate an environment that is situated along a continuum where the lowest scores would represent a “good” environment and the highest scores would represent a “bad” environment. Similarly, the outcome measure should be measured such that a low score represents a “positive” outcome and a high score represents a “negative” outcome. For the



**Fig. 3.1** Graphical depiction of a gene-environment interaction predicted by the diathesis-stress model



**Fig. 3.2** Graphical depiction of a gene-environment interaction predicted by the differential-susceptibility model

most part, gene-environment studies employ environmental measures and outcome variables where a high score represents a negative environment/outcome and a low score represents the absence of a negative environment/outcome. The absence of a negative environment/outcome does not usually equate to a positive environment/outcome. For example, not being the victim of childhood abuse is not necessarily a positive rearing environment; rather, a positive rearing environment would entail high levels of maternal and/or paternal warmth, supervision, and attachment.

A number of studies have emerged that have attempted to directly test the differential-sus-

ceptibility model in relation to a series of different phenotypes. Overall, the results have been largely consistent with the predictions of this explanation. Much of these studies focus on adolescents and adults with findings indicating that gene-environment interactions work in a better-or-for-worse fashion for outcomes, including self-regulation (Belsky & Beaver, 2011), depressive symptoms (Taylor et al., 2006), and child affective problems (Mills-Koonce et al., 2007), among others (see Belsky & Pluess, 2009). There are also some studies indicating that differential susceptibility has application to childhood antisocial behaviors. To illustrate, Bakermans-Kranenburg, van IJzendoorn, Pijlman, Mesman, and Juffer (2008) and Bakermans-Kranenburg, van IJzendoorn, Mesman, Alink, and Juffer (2008) examined the effects of positive parenting interventions on children with different alleles for a polymorphism in the DRD4 gene. They found that children with the 7-repeat allele, only after being exposed to positive parental discipline, showed a significant decrease in externalizing behavior problems whereas children without the 7-repeat allele did not. Findings from this study suggest that children may be differentially susceptible to environmental changes, such as maternal discipline, based on their genotype.

Interest in the gene-environmental basis to childhood antisocial behaviors has gained a significant amount of traction recently. With the advancement of the differential-susceptibility model, even more interest in the various ways in which genes and the environment combine together to create phenotypic variation early in the life course is likely to be realized. If the results continue to underscore the dual role of genetics and the environment in antisocial behaviors, then criminological theory and research will have to make a concerted effort to study these effects in a more precise and scientific way. Below we detail some of the avenues for future research, but before doing so we briefly outline some of the policy implications that can flow from gene-environment research.

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## Policy Implications

The findings generated from behavior genetic and biosocial criminological research provide some guidance as to potential policies that could prevent and reduce antisocial behaviors. Specifically, there are three main ways in which biosocial research can guide and inform policy. First, these studies indicate the time period during which prevention programs should be implemented: childhood. Unfortunately, the overwhelming amount of criminological research focuses on identifying the etiological factors for antisocial behaviors by examining samples that consist of adolescents and young adults. As a long line of research reveals, however, antisocial behavior has its roots in childhood and once it emerges it remains relatively stable (Loeber, 1982; Olweus, 1979). Thus, the most effective way to reduce adolescent delinquency and adult criminal behavior is to prevent it from surfacing during childhood. Intervention research has supported this claim by showing that early intervention programs are among the most effective at preventing antisocial behaviors and the earlier the intervention is implemented, the larger the reduction in antisocial behaviors (Lipsey & Wilson, 1998; Olds et al., 1998; Yoshikawa, 1995).

Second, biosocial criminological research draws attention to the types of environmental factors that should be the focus of prevention and intervention programs: nonshared environmental factors. Recall that nonshared environmental factors account for about 40% of the variance in antisocial behaviors, while shared environmental factors account for about 10% of the variance in antisocial behaviors. Using these findings as a guide, prevention and intervention programs should try to identify salient criminogenic nonshared environmental factors and then attempt to reduce exposure to these environments. For example, Olds et al. (1998) Nurse-Family Partnership has been shown to be quite effective at preventing the emergence of antisocial behaviors. Perhaps this should not be too surprising as this program focuses on a significant number of

nonshared environments that have been linked to antisocial behaviors, including reducing exposure to toxins in utero. Efforts designed to reduce antisocial behaviors by focusing on shared environmental factors are unlikely to exact any type of long-term behavioral change. Currently, though, most programs focus on criminogenic environments that would fall under the rubric of shared environments, which perhaps explains why so many of these programs are not very effective at changing antisocial behaviors.

Third, biosocial criminological research can be used to help identify the specific children who are most likely to benefit from prevention and intervention programs by focusing on genetic factors. Whether one adheres to a diathesis-stress model or a differential-susceptibility model in the interpretation of gene-environment interactions, both models point to the same conclusion: children with the greatest number of risk/plasticity alleles are the same children who would benefit the most from intervention programs. To illustrate, according to the logic of the diathesis-stress model, children who are at greatest risk for developing antisocial behaviors are those children who have a genetic predisposition for antisocial behavior and who also are exposed to criminogenic or disadvantaged environments. If either of these factors drop out of the equation, then antisocial behavior is unlikely to emerge. Since it is not possible to alter DNA sequences, the most effective way to use the information from the gene-environment research is to focus on environmental factors that act as triggers for genetic predispositions. By changing exposure to the environment, the genetic liability should never materialize and the odds of antisocial behavior should fall as well. Keep in mind that children who do not have a genetic predisposition for antisocial behavior would be unlikely to engage in antisocial behaviors and thus pulling them into a prevention program would not be an effective use of resources.

Similar logic can be applied when using the differential-susceptibility model. According to this perspective, children who have the greatest number of plasticity alleles are the ones who are the most likely to be molded by their environments. This bodes extremely well for intervention and



prevention programs which attempt to change antisocial behaviors or prevent the propensities for antisocial behaviors from materializing. Programs based on the foundation of differential-susceptibility thesis would benefit by identifying those children with a relatively “plastic” genotype as these would be the same children who would be affected most by the program. Using genetic information in this way would help to (1) identify children who are most likely to benefit from the program, (2) reduce the number of children who would be funneled through a program and likely not be affected by it, and (3) channel scarce resources to those who are most likely to be affected. If these short guidelines are followed, there is a good chance that crime and delinquency would drop among program participants and that the cost effectiveness of programs would increase.

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## Future Directions

The study of genetic and gene-environment interactions in relation to antisocial behaviors and later-life criminal behaviors remains on the fringes of the criminological discipline. Only recently has there been a significant number of studies published that deal precisely with issues related to the genetic and gene-environment underpinnings to antisocial behaviors and, as a consequence, there remains much unknown about this line of inquiry. Below, we sketch three main ways in which criminologists should attempt to weave this perspective into their own research.

First, and perhaps more importantly, there needs to be a serious effort to integrate genetic findings and genetic concepts into existing life-course/developmental theories of crime. This certainly will not be an easy task, but the payoff could be quite lucrative. For example, within the life-course perspective, there is a considerable amount of interest in examining factors that are associated with the stability and change of antisocial behaviors. While there is evidence that genetic factors account for both behavioral stability and change (Rhee & Waldman, 2002), almost no criminological research entertains this possibility. Merging together behavior genetic meth-

odologies with some of the more widely used criminological methodologies to study stability and change (e.g., group-based modeling) is needed. Similarly, research guided by Sampson and Laub’s (1993) theory has examined the various life-course transitions that might deflect an individual off of an antisocial pathway and onto a prosocial one. Salient life events, such as marriage, have been shown to facilitate the desistance process (Bersani, Laub, & Nieuwebeerta, 2009). What has not been explored in great detail, however, is why there is so much heterogeneity in response to these transitions—that is, some offenders benefit from marriage, but most offenders who marry continue to offend. Examining whether certain genes may moderate the influence of life-course transitions on desistance is another way in which genetic research could be used to guide life-course criminological research. Importantly, integrating genetic findings into criminological theories would result in more explanatory power and less error in predicting who will be affected by life-course transitions and other theoretically relevant variables. This is just one of the many ways that genetic research could be folded into developmental theories without changing the thrust of the theory and without changing many of the assumptions of human nature that these theories are built upon.

Second, criminological research needs to employ genetically sensitive research designs that are able to estimate genetic, shared environmental, and nonshared environmental effects on antisocial behaviors in childhood, adolescence, and adulthood. Across the entire life course, genetic and nonshared environmental factors have been shown to be the two dominant sources of variation in antisocial behaviors (although shared environmental influences matter in childhood). Virtually all criminological research, however, employs standard social science methodologies which are unable to separate the effects of genetics, shared environments, and nonshared environments (Wright & Beaver, 2005). In short, the findings flowing from criminological research are likely misspecified and thus could be contributing to a knowledge base that is partially or wholly incorrect (Beaver,

2009). The only way to correct this serious limitation is by sampling multiple children from the same household which would allow criminologists to provide relatively accurate parameter estimates for genetic factors, shared environmental factors, and nonshared environmental factors. Failure to implement such changes in the way criminological research is conducted will likely lead to a marginalization of the criminological discipline.

Third, genotypic information needs to be included in criminological samples. By genotyping respondents, criminologists will be placed in a unique situation where they will be able to test for gene-environment interactions that might ultimately give rise to antisocial and criminal behaviors. A handful of criminological samples, such as the Add Health, the National Youth Survey (NYS), and the National Longitudinal Study of Youth 1979 (NLSY79), already include sibling pairs and/or genotypic information that can be used to examine gene-environment interactions in relation to life-course criminology. Large scale longitudinal data sets such as the Pittsburgh Youth Survey (PYS), the Rochester Youth Development Study (RYDS), and the Cambridge Study in Delinquent Development would greatly benefit from including genetic measures that could be used to explore gene-environment interactions across different periods of the life course. The findings generated from these studies can even be used as a springboard to amend existing criminological theories and even create new theories designed to explain antisocial behaviors over the life course. Much of the gene-environment research that is currently being produced is flowing out of other disciplines, such as psychology, psychiatry, and genetics. These other disciplines, however, do not have the intimate knowledge that criminologists possess about how and in what ways environmental factors ultimately lead to antisocial behaviors. By drawing on their expertise in crime and the environmental correlates to it, criminologists will likely be able to add greatly to the understanding of how gene-environment interactions are related to the development of antisocial behaviors.

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## Conclusion

Antisocial behavior is a highly complex phenotype that is produced by a wide array of environmental and genetic factors, each of which has independent and interactive effects. For the most part, criminological theory and research has only focused on the effects of environmental factors and has ignored the potential role of genetics in the etiology of antisocial behaviors. Research from multiple disciplines, however, reveals that this narrow focus is obfuscating the true causes of crime and more attention should be placed on criminogenic factors that span multiple units of analysis ranging from the molecular level to the macro level. Biosocial criminological research is trying to do just this, and it is our hope that more criminologists will join these efforts and begin to trek into this exciting area that holds particular promise for unpacking the causes of antisocial behavior across all sections of the life course.

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# Enhanced Susceptibility to Context: A Promising Perspective on the Interplay of Genes and the Social Environment

# 4

Ronald L. Simons and Man Kit Lei

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## Abstract

The goal of this chapter is to demonstrate the importance of incorporating gene by environment (G×E) interactions into criminological research. In pursuit of this aim, the chapter is organized in the following way. We begin by providing a brief primer on genetic variation. We then turn our focus to the explosion of G×E research that has occurred in the past decade. These studies find that genetic variation often interacts with environmental context to influence the probability of various behaviors, including delinquency and crime. Importantly, in many, and perhaps most, of these studies the genetic variable, unlike the environmental variable, has little if any main effect on the outcome of interest. Rather, the influence of the genetic variable is limited to its moderation of the effect of the environmental construct. Such research does not undermine the importance of environmental factors; rather it shows how social scientific explanations of human behavior might be made more precise by incorporating genetic information. Finally, we consider various models of gene–environment interplay, paying particular attention to the differential susceptibility to context perspective. This model of G×E posits that a substantial proportion of the population is genetically predisposed to be more susceptible than others to environment influence. We discuss the methodological and theoretical implications of this perspective and argue that it is particularly relevant to the field of criminology.

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## Keywords

Genetics • Gene-environment interaction • Biosociology • Criminology

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Past research has provided strong evidence that exposure to community disorganization (Sampson, Morenoff, & Gannon-Rowley, 2002), harsh parenting (Reid, Patterson, & Snyder, 2002), deviant peers (Warr, 2002), racial discrimination (Simons, Chen, Stewart, & Brody, 2003), and a wide variety of other adverse circumstances (Agnew, 2006) increase the chances that a youth will engage in delinquent or criminal behavior. Studies have also established, however, that there is striking variation in the amount of deviant behavior displayed by children and adolescents exposed to such conditions (Luthar, 2006; Masten & Obradovic, 2006). While abusive parenting, for example, increases the probability of delinquency, the majority of abused youth do not manifest this response. Such findings raise questions regarding the factors that account for this variability in response to the hazardous circumstances specified by criminological theories. In the past decade, a profusion of studies has investigated the extent to which genetic variability might operate as important moderators of the association between environment adversity and adolescent involvement in antisocial behavior. Findings from these gene by environment ( $G \times E$ ) studies suggest that our traditional theories of delinquency and crime can be made more precise by incorporating genetic variables. This chapter is concerned with showing how this is the case.

We begin with a brief primer on genetics and then provide an overview of  $G \times E$  research on antisocial behavior. Most of these studies utilize the diathesis-stress perspective which assumes that some individuals are vulnerable to maladjustment because they possess genes that cause them to respond more strongly than others to adverse environmental circumstances. We argue that much recent research supports an alternative point of view usually labeled the differential susceptibility perspective (Belsky, Bakermans-Kranenburg, & von Ijzendoorn, 2007; Belsky & Pluess, 2009; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van Ijzendoorn, 2011). This model posits that some people are genetically predisposed to be more susceptible to environmental influence than others. This suggests that those persons most vulnerable to adverse social

environments are the same ones who reap the most benefit from environmental support. In other words, some people are programmed by their genes to be more sensitive to environmental context, for better or worse (Belsky et al., 2007). After reviewing the evidence supporting this view, we discuss various theoretical, methodological, and treatment implications of this model for criminology.

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## Brief Introduction to Genetics

The genetic code is composed of nucleotide base pairs (bps) that are organized into genes. Genes represent segments of the genome that contribute to particular phenotypes or functions through coding for the production of proteins and enzymes. Many genes are polymorphic in that their structure varies somewhat across individuals. Each variant is labeled an "allele." One type of variation involves the number of times that a particular set of base pairs is repeated. This type of variability is referred to as a Variable Number Tandem Repeat (VNTR). VNTRs are important as they often alter the product of the gene if they occur in the coding region or they may influence the amount of the product (e.g., protein) if they occur in the promoter region. The other type of genetic variation is Single Nucleotide Polymorphisms, frequently called SNPs, which involves variation in a single nucleotide base pair. Like VNTRs, SNPs can influence the quality and amount of product produced by a gene. Much of the research on antisocial behavior has focused upon VNTRs. For example, researchers often compare persons with short vs. long alleles in genes such as the dopamine receptor gene (DRD4), the serotonin transporter gene (5-HTT), and the monoamine oxidase A gene (MAOA) (Guo, Roettger, & Cai, 2008). Increasingly, however, studies have broadened their focus to include SNPs in genes such as the gamma-aminobutyric acid receptor gene (GABRA2) or the dopamine receptor gene DRD2 (Shanahan, Vaisey, Erickson, & Smolen, 2008). What all of these genes have in common is that they influence the availability of biochemicals fundamental to neurotransmission

in the brain. Hence, to varying degrees, they affect the way that we perceive, feel, think about, and respond to environmental events.

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### **Evidence That Genes Interact With the Environment to Influence Antisocial Behavior**

In 2002, Caspi et al. (2002) published an article in *Science* reporting an interaction between child maltreatment and variants of the MAOA gene in predicting antisocial behavior of young adult males. The results indicated that abusive treatment had a main effect on antisocial behavior whereas MAOA variation did not. Rather, the effect of the variation in this gene was limited to its moderation of the impact of child maltreatment. Maltreatment was a strong predictor of subsequent involvement in antisocial behavior for men with MAOA low activity alleles but had little impact on the probability of such behavior for those with high activity alleles. This study created a flurry of research investigating the extent to which various genetic polymorphisms interact with the environment to foster conduct problems and delinquent behavior. In 2009, Belsky and Pluess published a list containing scores of studies reporting a G×E effect on child and adolescent behavior problems. Many more articles have appeared since their publication. Most of these studies focused upon variants of the genes DRD4, DRD2, MAOA, 5-HTT, and GABRA2. In a few instances, the genes in these studies demonstrated a small main effect and without the gene-environment correlation effect. In the majority of cases, however, the environmental variable demonstrated a rather strong main effect and the impact of the gene was limited to its moderation of the environmental variable.

Genetically informed social science requires models of the manner in which genetic variables combine with environmental context to influence behavioral outcomes (Freese, 2008; Shanahan & Hofer, 2005, 2011). The model utilized in the vast majority of G×E studies of antisocial behavior, as well as other adjustment problems, assumes

that allelic variation in a particular gene amplifies the chances that exposure to some adverse social condition (e.g., abusive parenting, racial discrimination, economic hardship) will result in delinquent behavior. In psychology and psychiatry, this is labeled the diathesis-stress perspective. This model assumes that some individuals possess alleles that operate as diatheses that intensify the effects of environmental stress or adversity. This approach assumes that some individuals are by nature more vulnerable than others as they possess dysfunctional “risk alleles” that foster maladjustment in the face of deleterious environmental conditions.

This assumption is contradicted by the fact that over the past several thousand years, evolution seems to have conserved these various alleles (Ellis et al., 2011; Homberg & Lesch, 2011). While truly dysfunctional genetic variants should largely disappear over time, most of the so-called risk alleles studied by behavioral science researchers are highly prevalent, often being present in 40–50 % of the members of the populations being investigated (Ellis et al., 2011). Thus contrary to the negative view usually taken of these alleles, this suggests that, at least in certain contexts, these genetic variants must provide advantages over other genotypes. This idea is an essential component of the alternative model of gene by environment interaction recently proposed by Jay Belsky and his colleagues (Belsky et al., 2007; Belsky & Pluess, 2009; Ellis et al., 2011).

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### **The Differential Susceptibility Perspective**

In contrast to the diathesis-stress model, Belsky and his colleagues (Belsky et al., 2007; Belsky & Pluess, 2009) have suggested that the polymorphisms used in most G×E studies of child and adolescent adjustment have the effect of enhancing environmental influence, regardless of whether the environment be adverse or favorable. Thus those persons most vulnerable to adverse social environments are the same ones who reap the most benefit from environmental support. Belsky and company label this view of G×E the



differential susceptibility perspective. Their model assumes that some individuals are programmed by their genes to be more sensitive to environmental influence than others. In other words, they are more *plastic*. Indeed, Belsky and his colleagues often refer to genetic variants thought to enhance sensitivity to social context not as risk alleles but as plasticity alleles.

Support for the differential susceptibility or plasticity argument is evident when the slopes for a gene by environment interaction show a crossover effect with the susceptibility group showing significantly worse outcomes than the comparison group when the environment is negative but demonstrating significantly better outcomes than the comparison group when the environment is positive (Belsky et al., 2007; Belsky & Pluess, 2009). In a recent article, Belsky and Pluess (2009) reviewed scores of studies reporting a  $G \times E$  effect on child or adolescent adjustment. Many of these studies focused on outcomes involving conduct problems and related deviant behaviors. Although these studies appeared to support a stress-diathesis model, Belsky and company concluded that a careful inspection of the results pointed to a different interpretation. All of the studies included in the review showed a crossover effect. This included the *Science* article by Caspi et al. (2002).

Respondents with so-called risk alleles showed more problem behavior than other genotypes when their environment was adverse but manifested fewer problems than other genotypes when their environment was more supportive. Thus, rather than simply showing that some individuals are more vulnerable to adverse conditions than others, the data supported the idea that some people are genetically predisposed to be more susceptible to environment influence than others. The findings suggested that what were assumed to be risk alleles are in actuality plasticity alleles. In most of these studies, however, this pattern was not recognized or discussed because the authors were operating out of the stress-diathesis paradigm.

Since Belsky and Pluess published their review article, a number of additional papers supporting the differential susceptibility perspective have

been published. This includes a meta-analysis (Bakermans-Kranenburg & Van Ijzendoorn, 2011) of studies showing that the dopamine receptor gene, DRD4, interacts with rearing environment in a differential susceptibility fashion in predicting youth externalizing problems. Indeed, a recent issue of *Development and Psychopathology* (February, 2011) focused entirely upon research supporting the differential susceptibility perspective. Among the interesting results reported was the finding that putative plasticity alleles interact with rearing environment to foster prosocial behavior in a manner consonant with differential susceptibility (Bakersman-Kranenburg & Van Ijzenfoorn, 2011; Knafo, Isreal, & Ebstein, 2011). Thus the evidence suggests that in response to poor parenting individuals with plasticity alleles show higher levels of antisocial behavior and lower levels of prosocial behavior than other genotypes, whereas in response to positive parenting they demonstrate lower levels of antisocial behavior and higher levels of prosocial behavior than other genotypes.

While these findings are interesting, they beg the question of how genes would cause some individuals to be more sensitive than others to their environment? The candidate genes utilized in any  $G \times E$  study need to be selected based upon neuroscientific findings regarding their effects (Belsky & Pleuss, 2009; Caspi & Moffitt, 2006). The genes analyzed in most studies of child and adolescent adjustment problems, including those concerned with antisocial behavior, involve neurotransmitters concerned with the dopaminergic system (MAOA, DRD2, DRD4, COMT, DAT1) which has been implicated in reward sensitivity and sensation seeking, the serotonergic system (5-HTT) which has been linked to sensitivity to punishment and displeasure, and the neurotransmitter gamma-aminobutyric acid or GABA (GABRA2, GABRG1) which influences general levels of disinhibition and excitability in the brain (see Carver, Sheri, Johnson, & Joormann, 2008; Edenberg et al., 2004; Frank, D'Lauro, & Curran, 2007).

These genes also influence a wide variety of other biochemicals within the brain. In general, the low activity or minor alleles associated with

these genes tend to increase the activity of the brain's limbic system, especially the amygdala, thereby increasing emotional responsiveness to environmental events. For example, the short allelic variant of the serotonin transporter polymorphic region (5-HTTLPR), which is linked to reduced serotonin transporter protein availability and function, has been shown in a variety of studies to foster hyper-vigilance to environmental cues, including increased sensitivity to both aversive and rewarding social stimuli (Homberg & Lesch, 2011). Thus the differential susceptibility model assumes that persons with plasticity alleles may be more readily shaped by environmental rewards and punishments than other genotypes. Although each of these various genes has been shown to have their own unique biochemical effect upon the brain, there is also reason to believe that each of them, in their own way, influences a person's responsiveness to environmental events.

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### Cumulative Plasticity

If there are a number of genetic alleles that operate to enhance plasticity or susceptibility to context, it stands to reason that the more plasticity alleles one carries, the more susceptible he or she will be to environmental context, whether for better or worse. Belsky and Pluess (2009) therefore suggest that researchers create composite scores based on multiple plasticity alleles, in much the same way that multiple environmental risk factors are often summed to form indices of cumulative environment risk. To date, at least three papers have reported support for this idea. Belsky and Beaver (2010) formed a cumulative plasticity measure using five genes—DAT1, DRD2, DRD4, 5-HTTLPR, and MAOA. Consistent with the differential susceptibility model, the more plasticity alleles adolescent males carried, the more and less self-control they manifested in response to supportive and unsupportive parenting, respectively. Using two genes—5-HTT and DRD4—Simons et al. (2011) found cumulative plasticity enhanced the probability of aggression in response to environmental adversity but decreased the

probability of aggression when the environment was supportive. Similarly, Simons et al. (2011) reported that cumulative plasticity based on three genes—MAOA, DRD4, and 5-HTT—interacted with variation in various community and family factors to predict involvement in criminal behavior in a manner consistent with the differential susceptibility perspective. Thus the evidence to date seems to support the idea of summing across genes to formulate measures of cumulative plasticity.

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### Schemas, Traits, and Emotions as Intermediate Phenotypes

The field of criminology is concerned with explaining delinquency and crime. Using the language of genetic researchers, these are the *phenotypes* of primary interest. Most of our theories begin with a well-established relationship between a set of adverse circumstances (e.g., inept parenting, community disadvantage) and increased risk for crime, and then proffer arguments regarding the factors that likely explain or mediate this association. These mediating factors usually consist of personal characteristics such as low self-control, chronic anger, a hostile attribution bias, or commitment to the code of the street. Using the parlance of genetics research, they represent *intermediate phenotypes*. Recently, Simons et al. (2011) argued that one of the implications of the differential susceptibility perspective is that persons with plasticity alleles should learn the lessons inherent in recurrent environmental events more quickly than other genotypes. These individuals are genetically predisposed to be more sensitive to their environment than others, and consequently they should learn the skills, schemas, attitudes, and values communicated by their environment more quickly than other genotypes. If this is the case, it follows that persons with plasticity alleles should be more likely than others to acquire the personal characteristics that lead to crime (e.g., low self-control) when they grow up in an adverse environment, whereas they are more likely than others to develop the personal characteristics associated with prosocial behavior (e.g., high self-control) when they are

raised in a favorable environment. In other words, individuals with plasticity alleles would be expected to conform more strongly to the predictions of the various theories of crime and deviance than those lacking these alleles. Several recent studies by Simons and company support this idea.

The first study (Simons et al., 2011) examined three personal characteristics—anger, concern with being tough, and a hostile attribution bias—that criminological theory has identified as mediators of the effect of environmental adversity on aggression. Their findings indicated that individuals with seven or more repeats allele on the dopamine receptor gene (DRD4) and the short allele on the serotonin transporter gene (5-HTT) scored higher on anger, toughness, and hostile view of relationships than other genotypes when the social environment was characterized by discrimination, harsh parenting, criminal victimization, and deviant peers. On the other hand, persons with the two plasticity alleles reported less anger and concern with toughness and were more trusting of people than other genotypes when the environment was characterized by supportive parenting, religious affiliation, school involvement, and conventional peers. These finding provide strong support for the differential susceptibility perspective. Further, the analyses indicated that the interaction of genotype and maltreatment on aggression was fully mediated by the effect of  $G \times E$  on anger, toughness, and hostile view of relationship. In other words, the results supported a mediated moderation model where the effect of  $G \times E$  on aggression was explained by its impact on mediating emotions and schemas.

The second study (Simons et al., 2012) focused on adoption of the street code. In his well know ethnographic study of inner city Philadelphia, Anderson (1999) argued that exposure to community disadvantage, racial discrimination, and criminal victimization leads to adoption of the code of the street, and in turn involvement in criminal behavior. Importantly, however, while the adverse circumstances described by Anderson increase the probability of adopting the code of the street, most of those exposed to these difficult

social conditions do not do so. Simons et al. (2012) examined the extent to which genetic variation accounts for these differences. Using longitudinal data from several hundred African American adolescents, they investigated the moderating effect of three genes: 5-HTT, DRD4, and MAOA. Consistent with the differential susceptibility hypothesis, individuals with these genetic variants manifested *more* commitment to the street code and aggression than those with other genotypes when exposed to the adverse conditions described by Anderson, whereas they demonstrated *less* commitment to the street code and aggression than those with other genotypes when the social environment was more favorable. And, once again there was evidence of mediated moderation. Much of the effect of  $G \times E$  on aggression was explained by its impact on street code.

In a third study, Simons et al. (in press) found that variation in the GABRA1 gene interacts with the social environment to influence learning of prototype images of substance users that, in turn, impact the use of substances. The pattern of this interaction was consistent with the differential sensitivity to context hypothesis in that carriers of GABRG1 minor alleles demonstrated significantly more positive images of substance users than other genotypes when the environment was favorable to substance use (viz., substance use prevalent in the community, family, and peer group) but more negative images of substance users than other genotypes when the environment was adverse to substance use (viz., little support for use within the community, family, or peer group). There was also a  $G \times E$  effect on substance use and it also was consistent with the differential susceptibility perspective. However, the  $G \times E$  effect on substance use was no longer significant once the  $G \times E$  effect on prototype was taken into account, indicating a pattern of mediated moderation.

Finally, support for the idea that genetic variation influences the acquisition of beliefs, values, and attitudes comes from a study by Gibbons et al. (2012). The authors of this study found that African American adolescents with minor alleles for either DRD4 or 5HTT, or both, were more responsive to racial discrimination. Consonant

with the differential susceptibility perspective, the respondents demonstrated more positive prototype images of persons who engage in various types of deviant behavior than other genotypes when discrimination was high but more negative prototype images of deviant individuals than other genotypes when discrimination was low. These prototype images, in turn, predicted involvement in substance use and risky sexual behavior.

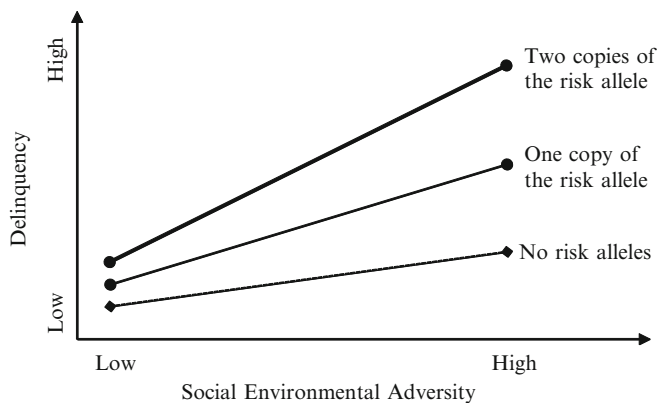
## Methodological Issues

As noted earlier, almost all  $G \times E$  research on crime and delinquency has employed a diathesis-stress model. Graphing this type of interaction produces a fan-shaped pattern where the effect of the environment on some outcome becomes greater as the number of copies of a particular risk allele increases. Figure 4.1 depicts a hypothetical example of such an interaction. The figure indicates that environmental adversity has an effect on delinquency regardless of genotype, but that the effect is weakest for those with no copies of the risk allele, stronger for those with one copy of the risk allele, and strongest for those with two copies of the risk allele. Such a pattern is consistent with the idea that some individuals are genetically predisposed to be more vulnerable or reactive to adverse conditions than others.

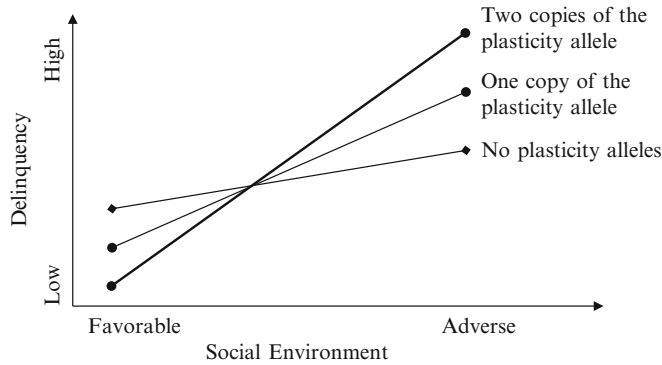
In contrast to this fan-shaped pattern,  $G \times E$  interactions indicating differential susceptibility

show a crossing pattern. Figure 4.2 provides a hypothetical example of such an interaction. The figure shows that the social environment influences delinquency regardless of genotype, with those exposed to favorable environments showing less delinquency than those exposed to adverse environments. Most importantly, however, the graph also indicates that what the diathesis-stress model considers to be a risk allele is actually a plasticity or sensitivity allele. This is suggested as individuals with one or two copies of the allele show higher levels of delinquency than those with no copy when the environment is adverse but show lower levels of delinquency than those without a copy when the environment is favorable. Further, those with two copies of the allele are more delinquent under conditions of adversity and less delinquent when the environment is favorable, than those carrying one copy of the allele. When the researcher obtains a crossing pattern like that shown in Fig. 4.2, the next step is to test whether the slopes differ from each other at both ends of the graph. Support for the differential susceptibility hypothesis requires that those with the putative plasticity allele show significantly poorer adjustment than other genotypes when the environment is adverse but significantly better adjustment than other genotypes when the environment is supportive.

As is evident in Fig. 4.2, a stringent test of the differential susceptibility model requires that the researcher utilize the full range of the social



**Fig. 4.1** The diathesis-stress model



**Fig. 4.2** The differential susceptibility model

environment, from very favorable to very adverse (Belsky & Pleuss, 2009; Dick, 2011). Most  $G \times E$  studies, including those concerned with explaining delinquency and crime, only focus upon variation in adversity. Several  $G \times E$  studies, for example, have focused upon the way that genes moderate the impact of variation in harsh parenting. These studies do not consider the full range of parenting from harsh to warm, supportive. Research that only considers variation in adversity is apt to obtain a fan-shaped pattern in keeping with the diathesis-stress model even when the true effect is that of differential susceptibility. By truncating the measure of the environment, the researcher is essentially eliminating the left half of the graph presented in Fig. 4.2.

In some studies, however, the susceptibility effect is so strong that a significant crossing pattern is obtained even when the researcher only assesses variation in adversity (see Belsky & Pleuss, 2009). While individuals with plasticity alleles show higher rates of problem behavior than other genotypes when the environment is adverse, they sometimes show better adjustment than other genotypes when the environment becomes less aversive, even if this more benign environment simply involves the absence of adversity and not the presence of a truly supportive milieu (Belsky & Pleuss). Although this effect occasionally occurs, a stronger and more appropriate test of the differential susceptibility hypothesis requires using the full range of the naturally occurring environment, from favorable to adverse.

## Theoretical and Policy Implications

In large measure, criminology is concerned with the manner in which the social environment influences involvement in antisocial behavior. Given this focus, it has never been clear how findings from behavior genetics might be incorporated into the theory and research of the discipline. This is not the case, however, regarding molecular genetics. Models testing traditional criminological theories can simply be elaborated by incorporating genotypic variation as an additional variable. As noted earlier, such research usually finds that the environmental variable of interest has a main effect on antisocial behavior whereas the genetic variable does not. The gene's influence is usually limited to its moderation of the environmental variable (Belsky & Pleuss, 2009; Moffitt, Caspi, & Rutter, 2006; Rutter, Moffitt, & Caspi, 2006). Including this moderation effect provides a more precise prediction of the circumstances under which the environmental variable increases the probability of delinquency or crime.  $G \times E$  studies have added to our understanding, for example, of which individuals are most likely to become violent in response to abusive parenting. A recent meta-analysis (Kim-Cohen et al., 2006) of research on abused children reported that those with particular variants of the MAOA gene are much more likely than other genotypes to grow up to be aggressive adults.

Such findings are usually interpreted within the diathesis-stress perspective. Thus it is asserted that some children possess risk alleles that cause

them to react more strongly to adverse treatment than other children. The profusion of recent findings supporting the differential susceptibility model argues for a different interpretation. They suggest that individuals at genetic risk for the highest rates of aggression and antisocial behavior in response to adversity are also genetically predisposed to show the highest rates of prosocial adjustment when they grow up in a favorable environment. Although they are more likely than others to develop anger, a hostile view of people, a concern with toughness, and aggression in reaction to an adverse environment characterized by factors such as criminal victimization, parental mistreatment, racial discrimination, and violent peers, they are also more likely than others to develop a peaceful, sanguine orientation in response to a favorable social environment characterized by conditions such as parental support, school involvement, religious participation, and informal social control.

Possessing one or more of these sensitivity or plasticity alleles is not a liability or risk factor for antisocial behavior as these genotypes also increase responsiveness to favorable events. Individuals with these alleles are no more genetically predisposed to become delinquent in response to poverty and neglect than they are to become a responsible student in response to neighborhood and family support.

These findings present a more optimistic view of delinquent and antisocial individuals. Whereas the stress-diathesis perspective paints such individuals as difficult to change given their genetic tendency to be hyper-responsive to adversity, the differential susceptibility model argues that their environmental sensitivity makes them good candidates for intervention. They are more likely than those with differing genotypes to learn the lessons being taught by a new, more favorable environment.

This idea is supported by recent intervention studies. Bakermans-Kranenburg et al. (2008) found, for example, that children with the l-allele DRD4 showed the largest decline in conduct problems in response to parent training. Brody et al. (2009) recently reported that a family-based intervention with African American teens was

most effective in reducing risky behavior for those with s-allele 5-HTTLPR, and Beach, Brody, Lei, and Philibert (2010) reported similar findings for l-allele DRD4 and substance use. These interventions lasted only a few months and provide support for the differential susceptibility hypothesis whereas they are contrary to the diathesis-stress perspective.

Of course, these interventions all focused upon children and adolescents. The schemas and behavior patterns of adults are apt to be much more stable and resistant to change. Still, there is compelling evidence, including studies of previously incarcerated individuals, indicating that antisocial adults often adopt a more conventional outlook and life style in response to life changes such as marriage and employment (Laub & Sampson, 2003; Savolainen, 2009). The differential susceptibility perspective suggests that it is those with plasticity alleles who are most likely to change in response to such new circumstances. We are aware of only one study that has provided evidence bearing on this idea. Consistent with the differential susceptibility perspective, Beaver et al. (2007, 2008) found that men with the so-called risk variants of 5-HTT, DAT1, DRD2, DRD4, and MAOA showed greater desistance from crime following marriage than other genotypes. Given the large number of longitudinal studies that have begun to collect genetic data, much more research regarding this issue is likely to be published in the near future.

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## Conclusion

Criminology is largely concerned with the effect of social context on people's behavior. Importantly, genetic variability is a factor that has been shown to influence a person's response to his or her social environment (Freese, 2008). We are optimistic that criminology can incorporate the interplay of genes and environment into its theoretical perspectives without sacrificing human agency for biological determinism. Although a wide variety of perspectives have emerged regarding the complex manner in which genes and the social environment might interact over the life course



(Shanahan & Hofer, 2005, 2011), recent results provide rather strong support for the differential susceptibility model which posits that a substantial proportion of any population is genetically predisposed to be more responsive to their social environment than those with other genotypes. The fact that genetic data is now available in many of the large-scale social scientific data sets (e.g., Adolescent Health) means that criminologists are now able to test the differential susceptibility model, as well as a variety of other perspectives, regarding the complex interplay of genes and social context. The consequence will most certainly be more precise and comprehensive explanations for delinquent and criminal behavior.

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# Neighborhood Influences on Antisocial Behavior During Childhood and Adolescence

5

Holly Foster and Jeanne Brooks-Gunn

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## Abstract

This chapter reviews recent research on neighborhood influences on children's and adolescents' antisocial behavior. Building on reviews in this area, we focus on recent developments pertaining to life course criminology. We have five main aims in this chapter. First, we engage General Strain Theory along with stress process perspectives to further theorize neighborhood structural and processual influences both in the short-term and dynamically over time. Second, we examine findings from cross-sectional research on neighborhood structure and process influences on a range of antisocial behaviors in both childhood and adolescence, considering direct and indirect links as well as moderating factors. Third, we use a life course criminology framework to examine antisocial behavior trajectories in the context of neighborhood residence. Studies in this area include results of both semi-parametric mixture models as well as hierarchical linear growth models of antisocial behavior trajectories. Fourth, we examine emerging research on neighborhood dynamics. Fifth, we consider research on the timing of neighborhood influences. We conclude with a summary of major findings and suggestions for future research on neighborhood influences on young people in life course criminology.

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## Keywords

Neighborhoods • Antisocial behavior • Stress • Trajectories • Childhood/adolescence

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## Introduction

This chapter reviews recent research on neighborhood influences on children's and adolescents' antisocial behavior. Building on reviews in this area, we focus on recent developments pertaining to life course criminology (Ingoldsby & Shaw, 2002; Leventhal & Brooks-Gunn, 2000;

Leventhal, Dupere, & Brooks-Gunn, 2009; Sampson, 2012; Sampson, Morenoff, & Gannon-Rowley, 2002). We have five main aims in this chapter. First, we engage General Strain Theory (GST) (Agnew, 1997, 2001, 2006) along with stress process perspectives (Aneshensel & Sucoff, 1996; Pearlin, 1989, 1999; Pearlin, Menaghan, Lieberman, & Mullan, 1981) to further theorize neighborhood structural and processual influences both in the short-term and dynamically over time. Second, we examine findings from cross-sectional research on neighborhood structure and process influences on a range of antisocial behaviors in both childhood and adolescence, considering direct and indirect links as well as moderating factors. We draw on distinctions between neighborhood structural characteristics (e.g., socio-economic status) and neighborhood social processes (e.g., social cohesion, social disorder) (Leventhal & Brooks-Gunn, 2000). Third, we use a life course criminology framework to examine antisocial behavior trajectories in the context of neighborhood residence. Fourth, we examine emerging research on neighborhood dynamics. Fifth, we consider research on the timing of neighborhood influences. We conclude with a summary of major findings and suggestions for future research on neighborhood influences on young people in life course criminology.

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### **Life Course Stress and Strain Theoretical Perspectives**

Prominent theoretical explanations of neighborhood influences draw on social disorganization theory and developmental ecological models (Leventhal & Brooks-Gunn, 2000; Sampson, Raudenbush, & Earls, 1997; Shaw & McKay, 1942). Life course theoretical perspectives further underpin the investigation of neighborhood influences on child and adolescent antisocial behavior. Elder's (1998) guiding principles for life course research highlight two relevant foci. The life course principle of historical time and place holds "that the life course of individuals is embedded in and shaped by the

historical time and places they experience over their life time" (1998, p. 3). This principle along with Brofenbrenner's (1989) ecological approach points to neighborhood contexts as influencing childhood development. In elaboration of this principle, a focus on neighborhood dynamics (Sampson et al., 2002) expands a cross-sectional view of neighborhood contexts to include long-term patterns of stability and change in environmental influences over the early life course. Second, the principle of timing in lives states that "the developmental impact of a succession of life transitions or events is contingent on when they occur in a persons' life" (Elder, 1998, p. 3). Recent work suggests the importance of attending to the timing of exposure to neighborhood influences on development (Leventhal et al., 2009; Wheaton & Clarke, 2003). This life course principle guides efforts to consider the salience of neighborhood contexts across developmental stages on the course of antisocial behavior.

We further augment theoretical perspectives on neighborhoods by highlighting GST of delinquency (Agnew, 1997, 2006) and stress process perspectives to make more explicit the role of social stress exposure in understanding short- and long-term neighborhood influences on antisocial behavior. Stress theories of neighborhood influences emphasizing exposure to violence are discussed among the range of perspectives in Ingoldsby and Shaw's (2002) review on young children, yet this perspective is most often only implicit in contemporary empirical work. Furthermore, a variety of neighborhood stressors need to be considered. We briefly outline these stress and strain perspectives.

General Strain Theories of delinquency posit that exposure to negative stimuli will stimulate antisocial behavior (Agnew, 2001). Among strains most likely to cause crime is residence in economically deprived neighborhoods (Agnew, 2006). Early tests of GST support an influence of neighborhood problems on increasing delinquency (Agnew & White, 1992; Paternoster & Mazzerole, 1994). An empirical linkage to community strain has been supported at the micro-level, net of other strains, on increasing

delinquency (Agnew, Brezina, Wright, & Cullen, 2002). Theoretical extensions of GST connect strain to community differences in crime rates at the macro-level (Agnew, 1999). We consider emerging literature on how long-term dynamic exposure to neighborhood strains may also be influential on individual-level crime and delinquency.

We further draw upon stress process perspectives in mental health research (Aneshensel & Sucoff, 1996; Fitzpatrick & LaGory, 2000; Pearlin, 1999) to highlight the complementary role of social stress to current theoretical work on neighborhood structural and processual influences. Stress process research holds that social structural conditions influence social stress exposure which in turn affects mental health problems (Aneshensel, 1992; Pearlin, 1989; Pearlin et al., 1981). Definitions of neighborhood stress vary. Structural conditions include neighborhood contexts as an objective form of social stress (Santiago, Wadsworth, & Stump, 2011). Subjective indicators of neighborhood context include perceptions of pervasive problems or threatening conditions in the neighborhood environment (Sampson, 2012) or “ambient hazards” (Aneshensel & Sucoff, 1996; Pearlin, 1999). These strains are structurally linked to neighborhood contexts (Aneshensel & Sucoff, 1996). They are ambient in that they are pervasive: they involve concerns that cut across multiple social roles (Pearlin, Schieman, Fazio, & Meersman, 2005). These ambient strains may include uncertainty about personal security, the physical state of the neighborhood surroundings, crowded and dilapidated housing as well as logistical obstacles to services and transportation (Pearlin, 1999; Pearlin et al., 2005).

Mediation models of neighborhood disadvantage are supported where it works through perceived social disorder and ambient strains to influence mental health problems among adults and adolescents (Aneshensel & Sucoff, 1996; Ross, 2000). Thus, stress may act as part of the pathway through which neighborhoods affect young people. A stress process model of neighborhood risk effects through child stressors on

externalizing problems has been supported among young adolescents (Roosa et al., 2005). Family stress models have also been elaborated to discern mediating pathways from neighborhood disadvantage through parental mental health and punitive parenting on child behavior problems (Conger, Ge, Elder, Lorenz, & Simons, 1994; Gonzales et al., 2011; Kohen, Leventhal, Dahinten, & McIntosh, 2008).

Stress process models further conceptualize socially distributed personal and social resources as mediating and moderating the influence of stress on distress (Aneshensel & Sucoff, 1996; Pearlin et al., 1981; Turner & Roszell, 1994). These include neighborhood resources (e.g., religious institutions, residential stability) (Stockdale et al., 2007) and neighborhood social processes (e.g., collective efficacy) (Sampson et al., 1997). Moderational models of “stress-buffering” are also supported where structural and perceived neighborhood conditions buffer the effects of other risk factors on health and antisocial behavior (Boardman, 2004; Maimon & Browning, 2010; Silk, Sessa, Morris, Steinberg, & Avenevoli, 2004). Stress-buffering may involve neighborhood risks and protective resources or may be multi-leveled involving family factors. Furthermore, theoretical moderational models of “amplified disadvantages” (Jencks & Mayer, 1990; Lima, Caughy, Nettles, & O’Campo, 2010; Roche & Leventhal, 2009; Simons, Simons, Burt, Brody, & Cutrona, 2005) where the impact of family risk may be heightened in disadvantaged neighborhoods are consistent with a stress framework as “stress amplification.” Stress and strain perspectives on neighborhood influences could be further developed in research on younger children’s antisocial behavior.

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## Cross-Sectional Studies

Comprehensive reviews of the literature on neighborhood influences on children and adolescents conclude that low neighborhood SES is persistently associated with more externalizing problems including delinquency and aggression net of

family factors (Leventhal & Brooks-Gunn, 2000; Leventhal et al., 2009). We add to reviews on the influences of neighborhoods on child and adolescent externalizing behavior problems by distinguishing recent studies by short- and long-term research designs.<sup>1, 2</sup> In this section on cross-sectional influences, we highlight recent research on young children as life course research has shown early neighborhood contexts have long-term influences on externalizing problems (Wheaton & Clarke, 2003). We therefore attend to research in this early phase of the life course (Ingoldsby & Shaw, 2002). We further examine evidence for stress-buffering and stress-amplifying models of neighborhood influences. In subsequent sections of the chapter, we examine results from longitudinal studies, including behavioral trajectories or those studies examining growth in antisocial behavior

over time, as well as neighborhood dynamics consistent with life course criminological concerns.

Classic research in the early life course found a lower percentage of managerial/professional workers in the neighborhood (census tracts) directly increased total behavior problems on 3 year olds (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993). In more recent research, both neighborhood structural influences and neighborhood process influences have become evident on young children's externalizing behavior problems. In a cross-sectional study, Kohen, Oliver, and Pierre (2009) investigate neighborhood influences on behavior problems among Kindergartners (with an average age of 5.83 years) using Canadian data and cross-classified multi-level models with child, family, and school controls. They find that low-income neighborhoods (measured by census tracts and census subdivisions in rural areas) indicated by Canadian census data increase parent-reported child conduct disorder/physical aggression behaviors. Kohen et al. (2009) also found that more recent ( $\leq 10$  year) immigrants in the neighborhood are associated with more conduct disorder and physical aggression behaviors among Kindergartners. Using the first wave of the Los Angeles Family and Neighborhood Survey (L.A. FANS), Jones, Pebley, and Sastry (2011) find an observer-based measure of physical disorder increased children's externalizing behaviors among 3–17 year olds net of family and neighborhood controls. However, as found by Kohen et al. (2009), a higher level of immigrant concentration was associated with more externalizing problems. In contrast to this work inclusive of younger children, an increased percent of first generation immigrants in the neighborhood is found in American research with older adolescents to protect against violent behavior (Sampson, Morenoff, & Raudenbush, 2005). Thus, while cross-nationally consistent influences are found for young children with a risk effect of low neighborhood SES, more work needs to be done on other dimensions of neighborhoods across national contexts as well as developmental stages of children.

<sup>1</sup>Neighborhood influences have been measured at different levels of analysis including census tracts, block groups, face-blocks as well as administrative areas including precincts. Neighborhood clusters have also been formed where relatively homogeneous census tracts have been combined (Sampson et al., 1997). Neighborhood structural features are often measured with U.S. Decennial data, while neighborhood processes are measured through a variety of measures including systematic social observations by researchers, community surveys, and respondent's perceptions of neighborhoods (Leventhal et al., 2009). Most studies do not specify neighborhood boundaries when respondent perceptions are used (Leventhal & Brooks-Gunn).

<sup>2</sup>Neighborhoods have been studied through different research designs including data gathered for other purposes, neighborhood cluster studies, and relocation experiments (Fauth & Brooks-Gunn, 2008). Cross-sectional or longitudinal data with census data appended for measuring neighborhood effects were among the earlier studies of neighborhood influences on child outcomes, but have limitations for estimating these. Neighborhood cluster designs are specifically designed to study neighborhood influences by sampling children and families from neighborhoods in a longitudinal design (e.g., Project on Human Development in Chicago Neighborhoods [PHDCN] and the Los Angeles Families and Neighborhoods Study [L.A. FANS]). These studies permit reliable estimates of within and between neighborhood variance in child outcomes. Third, relocation experiments randomly select families residing in public housing in disadvantaged neighborhood and give them the opportunity to relocate to less poor neighborhoods (e.g., the Moving to Opportunity Demonstration [MTO]). Studies using each of these methods are included in this review.



Stress-buffering influences of neighborhood processes on family strains have been found in some studies of younger children. Silk et al. (2004) found with a small sample of young children (average age of 7.5 years) and their mothers in a cross-sectional study that both mother- and child-perceived neighborhood involvement and cohesion buffered the influences of maternal hostility on teacher-reported child externalizing problems. The effect of maternal hostility on increasing child externalizing problems was decreased in neighborhoods with higher involvement and cohesion. This finding supports a “stress-buffering” effect of neighborhood processes and resources on hostile parenting influences on child externalizing behavior. Interactive effects were not found with neighborhood structure variables obtained from Census information. Yet with toddlers (average age of 2 years old), Callahan, Scaramella, Laird, and Sohr-Preston (2011) did not find interactive influences of neighborhood danger and harsh parenting on externalizing behavior problems at conventional levels of significance. However, this cross-sectional study of toddlers’ behavior problems found a direct effect: more neighborhood danger was positively associated with a total maternal-reported child behavior problems score.

Stress-buffering influences are also supported between neighborhood stressors and resources. Among a diverse sample of first graders in a cross-sectional study, Caughy, Nettles, and O’Campo (2008) found neighborhood potential for community involvement with children, or social cohesion in the neighborhood and collective socialization of children, reduced the impact of high concentrated economic disadvantage on child externalizing problems in census block groups in Baltimore City. However, upon controlling for parent/child interaction, this effect showed only a trend toward significance. Furthermore, they did not find significant cross-level interactions between parenting behaviors and neighborhood characteristics. Finally, Aneshensel and Sucoff (1996) tested but did not find significant interactive effects between neighborhood ambient hazards and neighborhood social cohesion on adolescent problem behaviors.

Other moderational research between family and neighborhood factors supports instead an “amplified disadvantages model” (Roche & Leventhal, 2009) where neighborhood disadvantages exacerbate family risk influences. In a stress framework, this model could be conceptualized as evidence of stress amplification. Lima et al. (2010), with a diverse sample of first graders in Baltimore City, found that higher parent-reported perceived negative social climate in census blocks exacerbates the effect of family risks on increasing CBCL parent-reported externalizing behavior problems, net of family poverty, and neighborhood disadvantage. Also consistent with stress amplification, recent research on gene-environment interactions further theorizes how neighborhood disadvantage may moderate individual genetic risks for antisocial behavior (Beaver, Gibson, DeLisi, Vaughn, & Wright, 2012). This work conceptualizes neighborhood disadvantage as a source of stress. Using cross-sectional data on males from the National Longitudinal Study of Adolescent Health, Beaver et al. (2012) found that genetic factors increase violent delinquency only under conditions of neighborhood disadvantage. Genetic risk is therefore amplified under stressful neighborhood conditions. Further work on this moderational model is needed with other stressors as well as females in the case of genetic risks (Beaver et al.).

Mediational models involving neighborhood and family factors have also been supported on child and adolescent antisocial behaviors with cross-sectional data. Mrug and Windle (2009) find indirect influences of concentrated neighborhood poverty on externalizing problems through neighborhood disorder and poor parenting. These associations are consistent with neighborhood and family stressors as intervening variables. A more direct test of childhood stress as a mediator was employed by Roosa et al. (2005) in an explicit stress process model of neighborhood influences on child externalizing behavior. They found child stressful life events (e.g., “your parent lost a job,” “you changed schools”) mediated the effect of neighborhood context on child-reported externalizing behavior problems among fourth to sixth graders among a disadvantaged sample of



Mexican-Americans and Anglos. This pathway suggests social stressors are among the factors transmitting neighborhood influences.

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## Longitudinal Studies

We next review studies using longitudinal research designs investigating neighborhood influences on antisocial behavior of children and adolescents. These studies support direct, indirect, and moderational models. These models are often consistent with stress frameworks. While factors in these models tend to be age-graded according to child developmental stage (Sampson & Laub, 1993/1995), with family processes emphasized in literature on neighborhood influences with younger children and peer and community processes with older children and adolescents, recent work with young children has proposed a synthesis of mediating processes drawing on both neighborhood and family processes (Kohen et al., 2008). A number of the longitudinal studies also take into account earlier behavioral problems permitting analysis of changes in antisocial behavior. We will examine growth models of trajectories of antisocial behavior in the next section.

## Childhood

A group of recent studies support direct associations of neighborhoods with longitudinal data on younger children's antisocial behavior. With a sample of African American and European American boys, Winslow and Shaw (2007) find living in an underclass neighborhood (measured as the average neighborhood disadvantage score across 4 time points) was directly positively associated with increases in overt behavior problems at age 6 from age 2. Their findings were obtained net of a range of family covariates that may influence selection into neighborhood contexts. Also supporting direct associations with a sample of boys and girls is research by Bowes et al. (2009) using longitudinal data from a twin study in England and Wales examining neighborhood influences at age 5 on being a bully, victim, or a

bully-victim at age 7. Net of individual, family, and school factors, they found more mother-reported neighborhood problems increased the risk of being a bully-victim (i.e., having been victimized by bullying and also engaging in bullying) but not being a bully or being a victim on their own. Neighborhood social processes also have direct influences. With children between the ages of 6 and 9 from the children of the NLSY data, Pachter, Auinger, Palmer, and Weitzman (2006) found a direct effect of higher maternal perceived neighborhood social capital (i.e., in the form of a latent variable measuring social capital or perceptions about the neighborhood in terms of respecting rules, employment, and childrearing) on decreasing child externalizing problems among black and white youth but not among Latinos. More work is needed with diverse samples to explain ethnic group similarities and differences. Therefore direct influences on young children's antisocial behavior involve subjective neighborhood stressors, neighborhood social processes, as well as objective neighborhood structural disadvantages.

Mediational models explaining how neighborhoods influence young children's antisocial behavior have also been investigated longitudinally. Pachter et al. (2006) examined family processes as mediators of neighborhood social processes. They found an indirect effect among 6–9 year olds where higher neighborhood social capital increased the quality of home environment and parenting behaviors which in turn decreased child externalizing problems. However, the indirect effect was again found only among black and white youth and not among Latinos. Kohen et al. (2008) combine the explanatory power of both neighborhood and family processes in their work on neighborhood influences among children aged 4–5 at Wave 3 of a longitudinal Canadian sample. Using structural equations modeling on a measure of total behavior problems (combining externalizing and internalizing problem behaviors), they found an indirect effect where neighborhood structural disadvantage decreased neighborhood social cohesion, which increased maternal depression. Maternal depression was positively associated with punitive parenting

practices which increased preschoolers' behavior problems. This model is one of the first with young children to combine both neighborhood and family processes as explanatory factors in neighborhood structural influences. Their conceptual model combines a focus on family factors from the family stress model (Conger et al., 1994) as well as neighborhood processes in social disorganization literature (Sampson et al., 1997).

Stress-buffering interactional models evident in cross-sectional studies have also been examined longitudinally pertaining to neighborhood influences and family factors among young children. Supplee, Unikel, and Shaw (2007) with a low-income high-risk sample of boys found interaction effects between maternal monitoring and neighborhood quality on their externalizing behavior problems at ages 4 (maternal reports) and 5 (teacher reports). Neighborhood quality was measured by overcrowding in the neighborhood, crime rates, and percentage of people in the census tract living below poverty line or predominantly structural features. Poor neighborhood quality was associated with higher levels of maternal-reported child externalizing behavior at age four when boys experienced low rather than high maternal monitoring when the child was 3 years old. Under conditions of high maternal monitoring, poor neighborhood quality was not associated with children's externalizing problems. Furthermore, poor neighborhood quality was also associated with higher teacher-reported child externalizing problems under conditions of low rather than high maternal monitoring. Again, under conditions of high maternal monitoring, poor neighborhood quality was not associated with externalizing behavior problems. Maternal monitoring thus attenuated the associations between poor neighborhood quality and children's subsequent externalizing behavior problems. These results are consistent with stress-buffering models of family resources on neighborhood influences among young children.

Stress amplification models have also been supported between child risk factors and neighborhood risk environments on children's externalizing problems. The transition to self-care among children is perhaps a near-universal turning point in

the lives of children, but it can be associated with stressful challenges in some circumstances more so than in others (Belle, Norell, & Lewis, 1997). Research by Lord and Mahoney (2007) with a longitudinal racially and ethnically diverse sample of first to third graders (ages 6.3–10.6 years) examines the influence of neighborhood crime levels on changes in child externalizing problems under varying levels of child self-care arrangements. Across two measures of aggressive behaviors, this study found interactive effects between neighborhood crime levels and levels of child self-care. Children living in high-crime neighborhoods indicated by census blocks (with crime levels measured by geocoded resident complaints to the police) with moderate to high amounts of self-care were more likely to be nominated by their peers for fighting, compared to children with the same amount of self-care living in average-crime areas, and with children with low self-care levels (Lord & Mahoney). In the same study, there was also a significant interaction effect between self-care and neighborhood crime level on teacher-reported aggression. For children living in high-crime areas, increasing levels of self-care were associated with higher aggression, net of neighborhood disadvantage, and family covariates. This association was not observed among children living in average-crime neighborhoods. These findings are supportive of stress amplification models in a stress framework between individual risks and neighborhood risks on increasing aggressive behaviors among children.

## Adolescence

Direct influences of neighborhoods on adolescent antisocial behavior have been established across a range of research designs. Further evidence is found in longitudinal studies. Sampson et al. (2005) used multi-level logistic regression models of violent behavior of youth in Cohorts 9–18 (ages 8–25) followed longitudinally over three waves in the Project on Human Development in Chicago Neighborhoods (PHDCN) data. Their research shows that neighborhood conditions explain race and ethnic differences in violent

behavior. Net of numerous controls, protective neighborhood influences were found including a higher immigrant population in the neighborhood and a higher percentage of individuals in professional/managerial occupation which reduce violent behaviors. Risk factors include the neighborhood social process factor of moral/legal cynicism at the neighborhood level and neighborhood violent crime which are positively associated with violent behavior. Gonzales et al. (2011) found with a sample of Mexican-American adolescents that neighborhood familism values, measured by aggregating parent reports of familism orientation (e.g., support and emotional closeness, obligations, and family as a referent) within each family by block groups, directly decreased externalizing problems from Grade 5 to 7. This study with Latino youth identifies a new social process in the neighborhood influences literature that is protective on externalizing problems among Mexican-American youth. More evidence of direct associations comes from research on re-arrest among a sample of male juvenile offenders (Grunwald, Lockwood, Harris, & Mennis, 2010). Net of a range of child and family factors, including receipt of public assistance, neighborhood disadvantage increased drug re-arrest while neighborhood social capital reduces it. Finally, using the community-based PHDCN data, Molnar, Cerda, Roberts, and Buka (2008) found more neighborhood organizations and services directly decreased the odds of aggressive behavior at Wave III among youth in cohorts aged 9–15 at Wave I (Molnar et al.). However, the main effect of neighborhood social organizations was not found for delinquency.

Mediational processes involved in transmitting neighborhood influences in adolescence include family processes as well as age-graded mediators that become salient in adolescence as evident in several studies. Gonzales et al. (2011) found in addition to a direct effect noted above, neighborhood familism was also positively associated with warmer parenting as reported by mothers which in turn decreased adolescent externalizing problems as reported by mothers and children. Furthermore, an indirect pathway from maternal perceptions of neighborhood dan-

ger was negatively associated with warm parenting which in turn decreases externalizing problems. An interactive effect was also found between neighborhood disadvantage and neighborhood perceptions of danger, again working through warm parenting in affecting externalizing behavior problems. Thus, maternal warmth is a central family process through which neighborhood conditions influence Mexican-American adolescents. Also in support of mediational influences, Haynie, Silver, and Teasdale (2006) found using the Add Health data from Waves 1 to 2 that neighborhood disadvantage in census tracts increased serious adolescent violence at Wave 2, net of wave 1 fighting, and numerous family controls. A network-based measure of peer fighting was further found to mediate the influences of neighborhood disadvantage on serious violent behavior.

Consistent with stress process perspectives on the structural contexts of personal coping resources (Turner & Roszell, 1994), recent research has conceptualized a new resource for navigating neighborhood environments: street efficacy (Sharkey, 2006). Street efficacy is “the perceived ability to avoid violent confrontations and find ways to be safe in one’s neighborhood” (Sharkey, p. 827). Street efficacy is shaped by neighborhood context including concentrated disadvantage and collective efficacy. Furthermore, street efficacy reduces changes in violent behavior from Wave I to Wave III of the PHDCN data among those aged 9, 12, and 15 years old. The effect of neighborhood concentrated disadvantage is slightly mediated by street efficacy, although other factors fully explain this association. Street efficacy adds to the literature on youth resources connected to the neighborhood contexts.

The above studies supporting mediational models delineate pathways through which neighborhoods affect antisocial behavior in longitudinal community samples of adolescents. In further support of indirect associations using a longitudinal research design, a study with former female offenders first interviewed in correctional facilities found neighborhood disadvantage consistently predicted exposure to violence which predicted increased self-reported antisocial

behavior at follow-up (Chauhan & Reppuci, 2009). The model includes a number of family and individual covariates including a maternal risk measure (i.e., convicted or arrested for a crime, problems with drugs or alcohol) but does not include a measure of family socio-economic status.

Moderational models have also been supported among adolescents using longitudinal data in predicting antisocial behavior problems. Three studies support stress-buffering models, while studies have not yet found evidence of stress amplification in this age group. In support of stress-buffering with longitudinal data, Kurlycheck, Krohn, Dong, Hall, and Lizotte (2012) found support for a moderating role of neighborhood social process factors from mid-adolescence on individual, peer, and school risk factors in early adolescence on late adolescent violent behaviors. Neighborhoods were identified through a separate study based on demographic and interactional patterns. Neighborhood integration reduced the impact of individual risk factor, peer risks, and school risks. Peer risks were buffered when parents knew and interacted with neighbors. School risks were also buffered by social integration and neighbor support. Finally, a protective effect of social integration in the neighborhood was found on a measure of total risk on violent behavior. Furthermore, Maimon and Browning (2010) use Cohorts 9 and 12 (ages 8–13) of the PHDCN study examining violent behavior at Wave III. They combined routine activities theory with collective efficacy theory to explain violent behavior. Unstructured socializing with peers increased violent behavior. However, a cross-level interaction was found in that the promotive effect of unstructured socializing with peers on increasing violence was decreased in areas with more collective efficacy. This finding may be interpreted in terms of stress-buffering influences also from stress and strain perspectives. Unstructured socializing may increase susceptibility to victimization and peer pressure to engage in deviance. Unstructured socializing in the absence of guardians may therefore involve sources of stress for adolescents. Collective efficacy is a neighborhood

resource that may buffer these stress influences on violence.

A third study supported moderational models in longitudinal analyses also from the three wave PHDCN study (Molnar et al., 2008). Cross-level interactions between neighborhood organizations and personal resources were found. Higher levels of neighborhood organizations and services combined with the presence of pro-social peers to reduce the odds of adolescents' aggressive behavior. Moderating cross-level interactions effects between neighborhood collective efficacy and each of family support, pro-social peers, and non-parental mentors were also found on reducing aggression. A protective interactive effect was also found for delinquency: neighborhoods with high collective efficacy and an increase in the level of pro-social peers decreased the odds of delinquency. This study suggests the advantages of pro-social peers may confer behavioral advantages to youth only in the presence of neighborhood resources including collective efficacy and neighborhood organizations and services (Molnar et al.).

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### **Trajectories of Antisocial Behavior in Childhood and Adolescence**

Life course criminology is concerned with the course of antisocial behavior. This focus has been reflected extensively in research on crime and antisocial behavioral trajectories (Piquero, 2008). Classic work in life course criminology initiated the examination of neighborhood influences on antisocial behavior trajectories in the early life course (Ingoldsby & Shaw, 2002; Loeber & Wikstrom, 1993). Three recent developments in neighborhood influences research have particular relevance to life course criminology. First, research has begun to investigate neighborhood influences on long-term trajectories of antisocial behavior using multi-level and latent growth models as well as semi-parametric mixture models (discerning distinct groups) among both children and adolescents. Next, research is emerging on the dynamics of neighborhood change for externalizing behavior problems (Leventhal &

Brooks-Gunn, 2011; Sampson et al., 2002). We develop the interpretation and potential of this work with reference to stress and strain perspectives. Finally, research considers the relative timing of neighborhood influences (Leventhal et al., 2009; Wheaton & Clarke, 2003). This is consistent with Elder's (1998) guiding life course principles. These three topics constitute the remainder of this chapter.

## Childhood

Four studies on neighborhood influences on antisocial behavioral trajectories among young children have recently been conducted. The first examines both neighborhood structure and neighborhood process influences. Building on developmental literature showing a general decline in the frequency of antisocial behavior across the early life course (Tremblay, 2000), Odgers et al. (2009) ask whether neighborhood factors explain why some children's antisocial behavior does not decline across childhood. They use longitudinal data on 5-year-old male and female children as they develop to age 10 from the E-Risk Longitudinal Twin Study in England and Wales. Strengths of this study include the use of an independent survey to measure neighborhood characteristics (e.g., collective efficacy, neighborhood problems) rated by community members in the same post-codes as study families along with "A Classification of Residential Neighborhoods" or ACORN ratings to index neighborhood deprivation levels from Great Britain census data. Using latent growth curve analyses, Odgers et al. (2009) found that children in deprived neighborhoods had higher initial levels of antisocial behaviors (as measured by mother and teacher-reported aggressive and delinquent behaviors) and slower rates of decline in antisocial behavior over ages 5–10 than children in affluent neighborhoods. This pattern was observed among both males and females. Therefore, living in a deprived neighborhood is associated with more persistent antisocial behavior trajectories. This finding is consistent with prior research on children finding a risk effect of low SES neighborhood conditions

on antisocial behavior (Leventhal & Brooks-Gunn, 2000; Leventhal et al., 2009). However, Odgers et al. (2009) elaborate this pattern by considering overall antisocial behavioral trajectories. They add that neighborhood deprivation increases initial levels of antisocial behavior and further slows rates of change in these behaviors between ages 5 and 10 compared to living in an affluent neighborhood. Furthermore, Odgers et al. (2009) found neighborhood collective efficacy was influential on behavioral trajectories. Multivariate models found higher collective efficacy decreased initial levels of antisocial behavior but not its rate of decline. A moderating effect was also found involving the neighborhood resource of collective efficacy, where it was protective on initial levels of antisocial behavior trajectories in deprived but not affluent neighborhoods. This finding extends research on stress-buffering influences involving neighborhood disadvantage and neighborhood collective efficacy to behavioral trajectories. Although this study has numerous strengths, the sample was predominantly white and further testing is needed with more diverse samples.

Another study of antisocial behavioral trajectories with older children again included males and females and examined neighborhood structural influences. Vanfossen, Brown, Kellam, Sokoloff, and Doering (2010) used multi-level growth models with data from Baltimore on teacher-reported aggression trajectories from Grades 1 to 7 among predominantly African American boys and girls. This study examined neighborhood structural influences from census and police data (operationalized at census tract level) net of family level factors. They examined direct neighborhood influences on initial levels of aggressive behavior or intercepts of trajectories and on change in level of aggression or the slopes of trajectories. Neighborhood structural influences were found on aggressive trajectory slopes among boys and girls in separate analyses. Among girls, they found neighborhood violence and the percentage of single males in the neighborhood increased aggressive behavior by positively affecting slopes, while male employment and neighborhood median income



decreased changes in aggressive behavior. Among males, there were similarly risk influences of neighborhood percentage of single males and neighborhood violence and additionally of neighborhood percentage of female headed households on accelerating aggressive behavior. As for females, neighborhood male employment and neighborhood median income led to lower levels of aggressive behavior among males. The results add to prior work by extending research on neighborhood SES (Leventhal & Brooks-Gunn, 2000) to consider influence on behavioral trajectories. Vanfossen et al. (2010) show higher neighborhood SES is associated with decelerating aggressive behaviors for both males and females. Furthermore, neighborhood violence accelerates aggressive behavior trajectories among males and females. Results from these studies of children's trajectories tend to show similarities in neighborhood influences by gender. Both Odgers et al. (2009) and Vanfossen et al. (2010) further find neighborhood structural conditions affect the slopes of antisocial behavioral trajectories.

With data from a longitudinal prospective study in Tennessee and Indiana, Beyers, Bates, Pettit, and Dodge (2003) engage in one of the early studies to use multi-level growth models to examine neighborhood influences on trajectories of teacher-reported externalizing behavior problems in pre- to early adolescence between ages 11 and 13. They incorporate structural features of census tracts to measure neighborhood characteristics and examine their associations net of family- and individual-level controls. Beyers et al. (2003) find evidence of cross-level interaction effects involving neighborhood structure on initial levels or intercepts of externalizing behavior problems but no influences of neighborhood factors on growth or slopes in externalizing problems. In accordance with modifying models, and consistent with stress-buffering models, they found more parental monitoring predicted lower initial levels of externalizing problems at age 11 (intercepts) but this association was stronger in neighborhoods with more residential instability. Thus family resources were protective on initial levels of externalizing problem trajectories in

residentially unstable neighborhoods. Although this sample had some racial and ethnic diversity including 15% African Americans, results would again be strengthened with further testing on more diverse samples. Odgers et al. (2009) also found a protective effect of the neighborhood resource of collective efficacy on initial levels of antisocial behavior problems under deprived neighborhood structural conditions. Thus, both family and neighborhood resources are protective on initial levels of externalizing behavior trajectories from childhood to pre- and early adolescence.

Finally, Ingoldsby et al. (2006) used semi-parametric mixture models (Nagin, 1999) with longitudinal data on a low-income sample of African American and European American boys followed from ages 5 to 10 to identify four distinct pathways of antisocial behavior in middle childhood: a low/stable group, a low initial/decreasing group, a high initial/decreasing group, and finally a moderate initial/increasing group or "early starters." Net of other covariates, maternal perceived neighborhood problems increased the likelihood of belonging to the high initial/decreasing trajectory group compared to the low antisocial behavior groups. This finding is in keeping with interpreting neighborhood problems as an ambient strain or source of neighborhood stress. However, neighborhood problems did not distinguish membership in the early starter trajectory group (or moderate initial/increasing groups) from the low antisocial behavior trajectory groups. Furthermore, neighborhood disadvantage measured through census variables also did not distinguish group membership. There was a trend toward neighborhood problems increasing the likelihood of belonging to the early starter group and high initial/decreasing group compared to the low antisocial behavior trajectories in subsequent multivariate analyses. Together these findings suggest maternal perceived neighborhood problems are consistent with a stimulating effect of neighborhood stressors (Agnew, 2006; Aneshensel & Sucoff, 1996). More work on neighborhood problem influences on antisocial behavior trajectories is needed with diverse samples inclusive of Latinos.



## Adolescence

While Ingoldsby et al. (2006) used semi-parametric mixture models with young boys to analyze neighborhood influences of types of trajectories of externalizing behaviors, Chung, Hill, Hawkins, Gilchrist, and Nagin (2002) provided one of the first studies with adolescents examining trajectories of offending over time incorporating neighborhood influences. Using data from a broad community sample of adolescents on offending behaviors between 13 and 21, they found using semi-parametric mixture models that a five class model provided the best fit to their data describing trajectories of chronic offenders, escalators, desisters, late onsetters, and non-offenders. They found the perceived availability of drugs in the neighborhood increased the likelihood of belonging to the minor offending group (members of the escalator and desister trajectories) compared to the no offending onset group. They also found neighborhood availability of drugs increased the likelihood of belonging to the serious offenders group (members of the chronic trajectory) compared to the no offending group. Finally, neighborhood availability of drugs increased the likelihood of group membership in the serious compared to the minor offending groups. These results were obtained net of a range of individual, family, and school factors.

Also using semi-parametric mixture models to discern internally homogeneous latent class trajectory groups of antisocial behavior trajectories (Nagin, 1999, 2005), Stiffman, Alexander-Eitzman, Silmere, Osborne, and Brown (2007) analyzed a total behavior problem index among a prospective sample of American Indian youth (average age of 15 at Wave I of four wave study) that included internalizing problems (e.g., depression) as well as externalizing problems (e.g., delinquency, aggression). Stiffman et al. (2007) found a five group model fit the data. They then analyzed predictors differentiating membership in the high chronic group from the high level improver group, also known as desisters in life course criminology. They found high level improvers or desisters had significantly lower levels of youth self-reported neighborhood prob-

lems than youth in high chronic problem behavior trajectories. These findings are consistent with stress and strain perspectives (Agnew, 2001, 2006) where more neighborhood stress may be associated with membership in riskier antisocial behavior trajectories. As will be elaborated when we examine neighborhood dynamics, this study begins to show mean levels of neighborhood problems decreased from 2001 to 2004 among the high level improver group. This neighborhood dynamic is consistent with “stress-offset” perspectives associated with an improving course of antisocial behavior.

It is also important for life course criminology to complement work with general community samples with those of arrested youth to examine re-offending trajectories. Van Domburgh, Vermeiren, Blokland, and Doreliejers (2009) examined official offending trajectories among children arrested in a Dutch sample before the age of 12. This group was followed up for 5 years through police records. A postal code or neighborhood-based socio-economic status measure was constructed based on mean income, employment, and education. Semi-parametric mixture models were used to determine three re-offending trajectories including low, escalating, and high offenders. In multivariate logit models, low neighborhood SES predicted group membership in the escalating re-offending trajectory compared to membership in the low re-offending group. Although the analyses are multivariate, the data did not include family-based measures other than the parent being notified of the child’s first police contact that assist in specifying neighborhood influences. This study is also supportive of the stimulating influences of neighborhood social strains on escalating trajectories of officially reported antisocial behavior (Agnew, 1997, 2006).

Two other studies of adolescents use multi-level growth models with community samples of adolescents (Karriker-Jaffe, Foshee, & Ennett, 2011; Karriker-Jaffe, Foshee, Ennett, & Suchindran, 2009). With data from rural public school students (ages 11–18) and their parents in North Carolina, Karriker-Jaffe et al. (2009) found neighborhood socio-economic disadvantage

indicated by census block group data was associated with higher levels of girls' aggressive trajectories net of family control variables. Neighborhood disadvantage affected the intercepts, or initial levels of trajectories, rather than the slopes or rate of change in aggressive behavior. This finding of neighborhood influences on initial levels of antisocial behavioral trajectories is consistent with the work of Odgers et al. (2009) with children and Beyers et al. (2003) with early adolescents. However, neighborhood social process variables measured by parent reports were not associated with girls' aggressive behavior trajectories. A main effect was found for neighborhood disadvantage on aggressive trajectories among males, but in models with information on both neighborhood disadvantage and neighborhood processes, no significant influences of neighborhoods were found on boys' aggressive trajectories. The sample was ethnically diverse, including over a third African Americans but few Latino students. Together, these results suggest that girls growing up in economically disadvantaged neighborhood contexts have higher trajectories of aggression than girls growing up in more advantaged contexts. However, among boys, neighborhood factors do not consistently differentiate aggressive behavior trajectories.

Using the same measure of aggressive/violent behaviors as in the earlier study, Karriker-Jaffee et al. (2011) examined the influences of neighborhood disadvantage on these trajectories with an emphasis on examining time-varying mediating trajectory influences. They found neighborhood disadvantage increased initial levels of aggressive/violent behaviors among girls net of covariates, although influences were of marginal significance among boys. Through Sobel tests, they found evidence of mediation of the neighborhood disadvantage effect on girl's violence trajectories by conventional values, traditional goals, and psychological distress among girls. Among boys, conventional values mediated the neighborhood disadvantage effect on initial levels of violence aggression. These analyses reveal conventional values mediate neighborhood disadvantage influences on violence among both males and females in accordance with social bonding theories.

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## Neighborhood Dynamics

Sampson et al. (2002) point to the need for further longitudinal research on neighborhood temporal dynamics. There are several types of studies capturing neighborhood dynamics to date. One approach uses prospective longitudinal data with multiple assessments of neighborhood indicators to yield insight into trajectories of neighborhood risk for externalizing problems (e.g., Furr-Holden et al., 2011). Another prospective approach operationalizes neighborhood dynamics using a general community study with indicators of neighborhood poverty measured by the 1990 and 2000 census data (e.g., Leventhal & Brooks-Gunn, 2011). Other studies assign neighborhood measures to geocoded residences during a prospective longitudinal study or using cross-sectional data (Buu et al., 2009; Jackson & Mare, 2007; Schonberg & Shaw, 2007). Neighborhood change is also examined through residential mobility programs as well as recent research that disentangles the influences of residential mobility from neighborhood change (Sharkey & Sampson, 2010). Recent qualitative work from residential mobility studies further illuminate processes involved in neighborhood change that seem to influence males and females differently. We link these findings on neighborhood dynamics to GST and stress perspectives to guide future research.

Building on the behavioral trajectories research reviewed above, a further development in trajectories modeling involves "joint" semi-parametric mixture modeling models assessing both risk and behavioral trajectories and co-variation between them (Nagin, 2005). This approach was used by Schonberg and Shaw (2007) with data from the Women, Infants, and Children Nutritional Supplement program with working class boys from ages 5 to 12. They found four trajectory groups described antisocial behavior in the sample including abstainers, occasional rule breakers, desisters, and a chronic conduct problems group. They then operationalized neighborhood dynamics by using census-based measures of neighborhood socio-economic status in 2000

corresponding with the child's geocoded address at six chronological time points in their prospective sample from ages 5 to 12. The sample was a low SES sample but many lived in middle-class neighborhoods as they grew older. Neighborhood trajectories were also described by a four group model consisting of those in poverty-stable conditions, those in poverty with improving conditions, a lower class grouping, and a lower middle-class grouping or the most socio-economically advantaged group. Using the output of the joint trajectories model, probabilities of conduct disorder trajectory group membership conditional on neighborhood grouping showed those in the poverty-stricken stable trajectory were most likely to be in the chronic conduct problems group. Boys in the poverty-stricken/improve category were least likely to be assigned to the chronic conduct problems group. These results are consistent with stress and strain theories where stable impoverished neighborhood conditions may be considered a form of chronic strain associated with chronic conduct disorder trajectories (Agnew, 1997; Foster, Nagin, Hagan, Costello, & Angold, 2010; Hoffman, 2010; Hoffman & Cerbone, 1999; McLeod & Shanahan, 1996). Stress offset in neighborhood conditions should be associated with desistance in antisocial behavioral trajectories.

Neighborhood dynamics are measured in a second study using fine-grained observational measures. With growth mixture modeling (Muthen & Shedden, 1999), Furr-Holden et al. (2011) used longitudinal data from Baltimore to examine changes in neighborhood disorder trajectories on marijuana use 2 years after high school, taking into account previous marijuana use. They used an independent assessment of the neighborhood environment (The Neighborhood Inventory for Environmental Typology or NifETY instrument) which involved observations of block faces in neighborhoods. They examined the presence of abandoned buildings in the neighborhood at each observation point. They found four trajectory groups best fit the neighborhood observational data, with a radically improving trajectory, slightly improving trajectory, an always good trajectory, and a deteriorating trajectory. They found

living in a deteriorating neighborhood was a risk factor for marijuana use, with an odds ratio of 1.3 ( $p < 0.05$ ). Again, this finding on neighborhood risk is consistent with stress and strain theories, where prolonged exposure to chronic stress elevates the risk of antisocial behavior.

Duration of exposure to high-crime environments is also used to measure neighborhood dynamics. In a longitudinal study of boys and girls in Grades 1–3 at baseline in a low-income and ethnically diverse sample, the effect of living in a high-crime environment was examined net of family income-to-needs ratios and neighborhood structural disadvantage (Parente & Mahoney, 2009). This study classified spending over 70% of the time or 2 or more years in high-crime neighborhoods as long-term exposure to high-crime environments. High-crime environments were measured by geocoded calls to the police in the neighborhood (or census tract block group). They found evidence that a change for the worse in terms of crime exposure was more consequential for aggression. The results were also gendered. Boys, but not girls, who moved from average-crime to high-crime neighborhoods showed more teacher-reported aggression than boys living in average-crime neighborhoods, boys moving from high-crime to average-crime neighborhoods, and boys living stably in high-crime neighborhoods during the course of the study. This is a neighborhood dynamics effect evident among boys only. Boys who stably lived in high-crime environments had higher aggression than those in stable average-crime neighborhoods or those moving from high-to average-crime neighborhoods. But boys moving from average-to high-crime neighborhood had even higher aggression than those stably living in high-crime environments. These dynamic results suggests a change to worse circumstances, rather than stable exposure to a high-crime environment, or change from a high-crime to average-crime environment is a key feature of dynamic neighborhood strain in this age group.

Changes in neighborhood characteristics from ages 3–5 to ages 15–17 were used in a study by Buu et al. (2009) to incorporate a dimension of neighborhood dynamics into analyses of early

adult psychopathology. This longitudinal study began with a sample of fathers with drunk driving convictions with a biological son between the ages of 3 and 5 years old and a control group of families from the same neighborhoods as the focal fathers. Residential instability and neighborhood disadvantage were measured with census data at baseline (ages 3–5) and in late adolescence (age 15–17). They calculated change scores between the measures at the two time points and classified scores using the 25th and 75th percentiles into neighborhoods that stayed the same and became better or worse. Net of family psychopathology and family SES, neighborhoods that became more stable over time were associated with lower alcohol-use disorder symptoms. Furthermore, experiencing a more affluent neighborhood environment over time was protective against marijuana-use disorder symptoms. These findings suggest experiencing better neighborhoods, in terms of more stability or affluence, was protective on boys' mental health over the early life course.

In the PHDCN longitudinal community study, neighborhood dynamics were measured through changes in neighborhood poverty rates using census data in 1990 and 2000 resulting in conditions of stable, decreasing, and increasing poverty (Leventhal & Brooks-Gunn, 2011). For violent behavior, they found that in high-poverty neighborhoods, decreasing neighborhood poverty increased boys' violent behavior. In moderate poverty neighborhoods, increasing neighborhood poverty was not significantly associated with youth violent or property offenses. Finally, in low-poverty neighborhoods, an increase in poverty was associated with a greater probability of boys increasing their violent behavior. The latter finding is consistent with a stress dynamics perspective, where increasing poverty is associated with increasing violence, but this result was found for boys only. However, Leventhal and Brooks-Gunn's (2011) results are not fully supportive of stress perspectives. Since violent behavior increased in high-poverty neighborhoods alongside decreasing neighborhood poverty, it suggests countervailing social processes may also be at work. Illuminative research on

these processes comes from qualitative research with a residential mobility program as is discussed below.

Also with PHDCN, Sharkey and Sampson (2010) consider the influence of moving alongside neighborhood dynamics on trajectories of violent behavior among Cohorts 9 and 12 of the PHDCN data. They use cross-classified growth models and found moving within Chicago increased violent behavior over time while moving outside of Chicago decreased violent behavior. Therefore, the dynamic of moving outside the city was protective on violent behavior. Their results suggest moving outside of Chicago may be associated with some forms of stress offset including a change in problematic school environments.

Neighborhood dynamics are also measured through The Moving to Opportunity (MTO) study initiated in 1994. This is a quasi-experimental study that moved a group of residents across five sites in the USA from high-poverty neighborhoods to low-poverty neighborhoods compared to a group of controls, or individuals who did not move as a result of the study. Results showed among youth aged 15–25 in 2001, relocation led to reduced arrests for violent and property crime relative to a control group among females, but increased property crime among males compared to a control group (Kling, Ludwig, & Katz, 2005). Kling, Liebman, and Katz (2007) also found on average 5 years after random assignment using data from the five study sites that females were more likely to experience the absence of risky behaviors, while males were less likely to experience the absence of risky behaviors. More work is required on gender differences in neighborhood influences (Leventhal et al., 2009). Recent gendered influences also point to risks for boys in particular in community studies by Parente and Mahoney (2009) and Leventhal and Brooks-Gunn (2011). In explaining results of the MTO studies focusing on adults where mental health improvements were seen, Kling et al. (2007, p. 102) note: "...we believe that the leading hypothesis for the mechanism that produces the mental health improvements involves the reduction of stress that occurred when families moved away

from dangerous neighborhoods in which the fear of random violence influenced all aspects of their lives." We encourage further exploration of stress and GST explanations in explaining antisocial behavior increases and decreases among youth.

Recent qualitative research illuminates some of the mechanisms involved in neighborhood dynamics that may explain some of the gender dynamics. Among females in the MTO research, research finds moving from high to low-poverty neighborhoods is associated with a decrease in "the female fear" or "the fear of sexual victimization, verbal and sexual harassment, and sexual exploitation" (Briggs, Popkin, & Goering, 2010; Gordon & Riger, 1989; Popkin, Leventhal, & Weismann, 2010, p. 720). They found moving to safer neighborhoods decreased stress and increased perceptions of safety that affected girls' well-being. This finding is consistent with a dynamic extension of GST where offset of exposure to neighborhood stimuli is associated with improved outcomes among females.

Clampet-Lundquist, Edin, Kling, and Duncan (2011) engaged in further qualitative research on MTO teens aged 15–19 from the Baltimore and Chicago sites ( $n=86$ ). The study design permitted comparisons in gender differences among control group and experimental groups (those who moved to low-income neighborhoods). They found six processes were involved in teen's experiences. First, in terms of daily routines that capture teens' experiences of spending time hanging out, they found experimental girls were more likely than any other group to spend time in the neighborhoods of school or work friends. Clampet-Lundquist et al. (2011) hypothesize the differences in where teens hung out put the girls at less risk than the boys and had an influence on how they adapted in new environments. Second, on the theme of neighborhood norms and social control, they found that experimental boys were more likely than any other group to experience contact with the police or police harassment. Their results reveal that the ways boys and girls hung out meant that boys were more subject to public surveillance, including by the police. They found girls tended to fit better with norms and expectations in low-poverty neighborhoods, in

ways that drew less police surveillance. Third, in terms of neighborhood navigational strategies, the interview data showed that control boys had developed strategies for avoiding neighborhood trouble that experimental boys were less likely to use. This was consequential when experimental boys moved back to high-risk neighborhoods. They were at risk in new neighborhoods in not having same navigational skills control boys developed when experimental boys subsequently moved to more impoverished neighborhoods. Fourth, regarding interaction with neighborhood peers, they found girls in the control group were more likely to hang out with neighborhood peers, whereas girls in the experimental group were more likely to disengage from their neighborhoods and hang out with school or work peers. Experimental boys were less discriminating in friendship choices than were control boys, where control boys held a more cautious view of peers in their communities. Fifth, in terms of delinquency among friends, experimental boys were more likely to hang out with delinquent peers than any other program group. Finally, in terms of the involvement of social fathers, interview narratives revealed a salience of same-sex adult role models in teens' lives. There were no differences in teens in contact with biological fathers across the four groups. But there were differences in contact with father figures for experimental boys and control boys, where control boys were twice as likely as experimental boys to report a meaningful relationship with a close caring male. This result seems to be a function of proximity to kin among control boys in impoverished neighborhoods who did not experience moving through the study. The overall pattern of the results suggests girls were able to take advantage of move to a low-poverty neighborhood, while boys were less so, for the above reasons.

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## Timing

An emerging topic in neighborhood influences research relevant to life course criminology is the role of timing of exposure to neighborhood context (Leventhal et al., 2009). Attention to timing



of exposure to neighborhood contexts is underpinned by life course perspectives and life course stress models (Elder, 1998; Gotlib & Wheaton, 1997). Drawing on stress and life course perspectives, Wheaton and Clarke (2003) examine the effect of early childhood neighborhood disadvantage and current neighborhood disadvantage on young adult externalizing problems. They find a lagged effect of childhood neighborhood context on later mental health. They find ambient chronic stressors in the neighborhood and childhood stress mediate the lagged effect of early neighborhood context on subsequent mental health. These pathways support the role of social stress in transmission processes from early neighborhood context to behavioral problems. Also finding a long-term effect of early life context, Buu et al. (2009) with their study of alcoholic and non-alcoholic families found an influence among sons of census-based measures of neighborhood environments at ages 3–5 on symptoms of psychopathology at ages 18–20 net of family socio-economic status. Neighborhood residential instability in childhood increased the likelihood of young adult externalizing problems including symptoms of alcohol-use disorder, marijuana use disorder, nicotine dependence, and antisocial personality disorder symptoms. Therefore structural features of neighborhoods including disadvantage and residential instability show long-term influences on externalizing problems from early life exposure.

Research on the timing of neighborhood influences has also emerged within adolescence. Matjasko, Needham, Grunden, and Farb (2010) examined adolescent violence exposure in the National Longitudinal Study of Adolescent Health among those who did not experience violence at Wave I. They did not find an influence of neighborhood disadvantage among that group net of individual and family controls. However, subsequent analyses examined the associations of neighborhoods and other factors on Wave 2 violence exposure among youth involved in both violence perpetration and victimization at Wave I. Among this group, they found support for developmental stage-dependent ecological factors. That is, the effect of neighborhood disadvantage was evident in middle adolescence

(ages 14–16) but not among those in early adolescence (11–13) or late adolescence (17–19). The results indicated that middle-adolescents exposed to disadvantaged neighborhoods were more likely to become victims of violence than to report no exposure to violence at Wave 2. Their work suggests that among high-risk adolescents, certain stages within adolescence may be more susceptible to neighborhood contexts than others. In contrast, results from the MTO residential mobility program show no differences in program influences for youth who were in early vs. late adolescence at the time of random assignment to treatment and control conditions and no evidence of treatment interaction effects with age (Kling et al., 2005).

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## Future Research Directions

We conclude by summarizing research trends to date regarding neighborhood influences on externalizing problems on children and adolescents and suggest areas for future research in life course criminology.

- Moderational models with cross-sectional and longitudinal research support both stress-buffering (Beyers et al., 2003; Caughy et al., 2008; Kurlycheck et al., 2012; Maimon & Browning, 2010; Odgers et al., 2009; Silk et al., 2004; Supplee et al., 2007) and stress amplification perspectives (Beaver et al., 2012; Lima et al., 2010; Lord & Mahoney, 2007). Stress amplification models need further testing with a range of stressors as well as with adolescents in longitudinal research.
- Neighborhood processes identified as influential include collective efficacy (Maimon & Browning, 2010; Odgers et al., 2009; Sampson et al., 1997) as well as new work on neighborhood familism (Gonzales et al., 2011), moral/legal cynicism (Sampson et al., 2005), and neighborhood organizations and services (Molnar et al., 2008). Research should continue to build on the range of neighborhood factors affecting antisocial behavior across research designs.
- Evidence in support of stress mediating influences (Roosa et al., 2005; Wheaton &



Clarke, 2003) suggests stressors should be considered among social processes transmitting neighborhood influences. Theories of stress dynamics (Agnew, 2006; Foster et al., 2010; Hoffman, 2010; Hoffman & Cerbone, 1999; McLeod & Shanahan, 1996) would be furthered by considering neighborhood dynamics.

- More longitudinal neighborhood influences research on antisocial behavior is needed with diverse samples facilitating race and ethnic comparisons. Further cross-national research is also needed (Kohen et al., 2008, 2009; Odgers et al., 2009).
- Further research is needed with US samples and adolescents building on findings of neighborhood disadvantage in Britain and Wales in childhood leading to higher initial levels (intercept) and a slower rate of decline (slope) in antisocial behavior (Odgers et al., 2009).
- More research on neighborhood antisocial behavioral trajectories is needed with a variety of methodological approaches. Research with semi-parametric mixture models has found an influence of neighborhood problems on membership in riskier behavioral trajectory groups. More work is needed with semi-parametric mixture models with neighborhood structural factors (Ingoldsby et al., 2006; Piquero, 2008). Further work on neighborhood dynamics and antisocial behavioral trajectories models using joint semi-parametric mixture models is also needed with other age groups and girls building on the work of Schonberg and Shaw (2007) with young boys.
- Further research on neighborhood dynamics is needed. A promising approach includes fine-grained repeated measures of neighborhood features building on the work of Furr-Holden et al. (2011) examining levels of abandoned buildings over time on substance use. The findings of Sampson (2012) are also important for stress dynamics perspectives in that analyses of flows between neighborhoods suggest African Americans move between neighborhoods that are similar whereas whites and Latinos experience some change to better neighborhood environments. Future research should consider racial inequalities and exposure to stress persistence and stress offset in neighborhood conditions.
- Trajectories research is further needed in life course criminology with offender samples as well as community samples. Family socio-economic factors need to be incorporated in research on offender samples.
- Research with childhood antisocial behavioral trajectories has shown gender similarities (Odgers et al., 2009) while others show a male susceptibility (Leventhal & Brooks-Gunn, 2011). Furthermore, some adolescent studies have found gender differences (Karriker-Jaffe et al., 2009, 2011; Kling et al., 2005, 2007). Further clarifying research on gender is especially needed in behavioral trajectories and neighborhood dynamics research.
- More work is needed on processes involved in residential mobility studies. According to research with older adults, neighborhood problems are associated with anger in stress process research (Schieman, Pearlin, & Meersman, 2006). Drawing on the tenets of GST (Agnew, 2006) and the qualitative research with MTO (Clampet-Lundquist et al., 2011; Popkin et al., 2010), we hypothesize girls who move to a high income neighborhood from a low income neighborhood may experience a decrease in anger and negative emotionality due to the offset of sexual harassment and an increase in perceived safety. Boys, on the other hand, experience more public surveillance including increased police contact. Boys may therefore experience more anger and negative emotionality in the move to a higher income neighborhood. GST posits negative emotionality and anger are associated with externalizing behavior problems. Future research may investigate the role of anger in association with gendered influences of neighborhood stressors.
- Neighborhood victimization trajectories should be explored in more detail alongside work on antisocial behavioral trajectories and neighborhood dynamics trajectories.

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**Part II**

**Adolescence**



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# The Impact of Schools and Education on Antisocial Behavior over the Lifecourse

# 6

Allison Ann Payne and Kelly Welch

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## Abstract

Lifecourse/developmental (LCD) perspectives and theories have gained a prominent role in the examination of antisocial behavior over the last two decades. However, much of this work does not thoroughly investigate the influence of schools and education. Although there is a large body of work investigating school-related risk factors of antisocial behavior, an area of research that aligns well with the LCD perspective, education is not a primary focus in the majority of the established LCD theories. In addition, there is little work that examines the role of schools and education through a general LCD lens. This chapter will review the research that has been conducted in each of these areas and discuss possible directions for future theoretical and methodological analysis of antisocial behavior within the LCD perspective.

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## Keywords

Lifecourse/developmental • School delinquency • Antisocial behavior • Education and crime • School risk factors

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## Introduction

Theoretical and methodological approaches to analyzing antisocial behavior over the last two decades have demonstrated the prominent role of developmental stages throughout the lifecourse. Much of this work, however, fails to thoroughly

investigate the influence of schools and education on this behavior. Although many of the established lifecourse/developmental (LCD) theories of offending acknowledge the school domain with varying degrees of emphasis, schools and education are not a primary focus in the large majority of them. Beyond the established LCD theories' minimal discussion of education as a salient lifecourse event and schools as an important domain for human development, there is also little research that examines the role of schools and education through a general LCD lens. By contrast, there is a large body of work investigating school-related risk factors of antisocial

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behavior, an area of research that aligns well with the LCD perspective.

This chapter begins with a brief overview of the LCD perspective on human development, followed by a review of the strong research that links school-related risk factors with antisocial behavior and offending. The next two sections discuss how established LCD theories of offending address the role of schools and education and present the small body of research that uses a general LCD perspective to examine the relationship between education and deviance. This is followed by a discussion of directions for future research, including the need to more clearly link these bodies of research in future theoretical and research work.

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## **An LCD Perspective of Human Behavior**

The LCD framework of understanding human behavior examines development within the context of age-related life stages and the overall life span (Elder, 1985). Theories within this perspective focus on trajectories, or long-term patterns of behavior, and transitions, or short-term changes; these transitions may or may not be turning points, which alter an individual's trajectory (Elder, 1985; Hagan & Parker, 1999). An LCD perspective on human development also proposes an interaction between the genetic and biological characteristics and the environmental and social experiences of an individual. For example, as children grow, their biological systems mature at the same time that they develop behavioral skills, thus creating an interactive process. Children's biological characteristics influence how they react to certain environments or events. In turn, these environments and events shape children's reactions and influence the maturation of their biological makeup, thereby creating repertoires of certain behavioral skills (Biglan, Brennan, Foster, & Holder, 2004).

Importantly, an individual's development is embedded within social institutions such as the family (Elder, 1985), and these institutions also influence the interactive process. One influential

domain is the school, which is particularly important during the younger phases of development, from early childhood through adolescence (Biglan et al., 2004), as children react to and interact with teachers, peers, and other members of the school community. Focusing specifically on antisocial behavior, the LCD perspective suggests that certain school practices interact with an individual child's predisposition to increase the likelihood of deviance. For example, children with high impulsivity and low self-control will experience difficulty keeping quiet in their seats and listening to teachers; this may, in turn, lead these children to learn at a pace that is slower than their peers, thus increasing the likelihood that they will dislike school and act out behaviorally (Biglan et al.). By contrast, school environments may cultivate social and academic skills through certain practices, thereby *increasing* children's ability to learn and their enjoyment of school, ultimately leading to a greater likelihood of *prosocial* behavior.

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## **School-Related Risk Factors for Antisocial Behavior**

One area of research on offending that aligns well with the LCD perspective is that related to risk factors (Farrington, 1996a, 1996b; Welsh & Farrington, 2007). Despite the dearth of LCD discussion and specific research on the relationship between schools and offending, there is a sizeable body of work examining school-related risk factors of antisocial behavior.

Risk factors are characteristics of an individual or environment that, when present, increase the likelihood of antisocial behavior. These factors can influence any aspect of this behavior, including the onset, frequency, persistence, or duration of the deviance (Farrington, 1996a, 1996b). It is important to note that these factors do not operate in a vacuum; that is, new risk factors are added to ones that are already there, leading them to influence behavior in a cumulative and interactive manner (Howell, 2003). Because these factors often occur together, or "travel in packs" (Biglan et al., 2004), it is difficult to disentangle individual

effects. In addition, school-related risk factors for deviance can operate at either the individual student level or the school level. Thus, prevention strategies that target multiple risk factors, including those that may nest within each other, will likely be more effective at reducing problem behavior (Welsh & Farrington, 2007).

As described by Patterson and his colleagues (Patterson, DeBaryshe, & Ramsey, 1989; Patterson, Reid, & Dishion, 1992), children who are already displaying antisocial behavior at home enter schools with a limited behavioral repertoire for interacting with teachers and other students. These students are then more difficult to handle in the classroom, which increases the likelihood of poor academic performance, poor attachment to teachers, lower school commitment, and rejection by conventional peers. This process continues to cycle and, due to a process of cumulative continuity, poor academic performance, and poor school bonding, “the child who receives antisocial training from the family during the preschool and elementary years is likely to be denied access to positive socialization forces in the peer groups and schools” (Patterson & Yoeger, 1993, p. 331). Ultimately, this entire process greatly increases the likelihood of continual antisocial behavior. The following sections describe risk factors, both at the student and school levels, in more detail.

## Academic Performance

Academic performance, or school success/failure, is one student-level risk factor for various forms of antisocial behavior that is strongly supported by research (Biglan et al., 2004; Maguin & Loeber, 1996). In general, “consistent evidence supports an association between poor school performance and drug use and other adolescent problem behaviors” (Gottfredson, 2001, p. 32). Certainly, students with poor academic skills are more difficult to teach, which may enhance the deficits in these skills needed for future education. This may lead to student frustration as well as placement into remedial classes, in which students with problem behaviors tend to be clustered (Biglan et al., 2004). Much

longitudinal research supports the relationship between poor academic performance and deviance at many stages of the lifecourse, including delinquency (Ayers et al., 1999; Williams & Van Dorn, 1999), gang membership (Hill, Howell, Hawkins, & Battin-Pearson, 1999), violence (Hawkins et al., 1998; Herrenkohl, Maguin, Hill, Hawkins, & Abbott, 2000; Maguin et al., 1995), and incarceration (Arum & Beattie, 1999).

Work by Farrington and his colleagues using the Cambridge data also supports this relationship. Failure in school between the ages of 8 and 10 predicted truancy between the ages of 12 and 14 and unstable employment at age 18 (Farrington, 1986), as well as chronic offending throughout the lifecourse (Farrington & West, 1993; Nagin, Farrington, & Moffitt, 1995). In addition, poor academic performance at age 11 predicted violence between the ages of 16 and 18 and at 32; similar findings were seen for placement in lower academic tracks such as in remedial classes (Farrington, 1989). In fact, one of the best predictors of convictions up to age 32 is school failure (Farrington, 2003).

Similarly, research by Thornberry and his colleagues using the Rochester data illustrates the importance of academic performance in the prediction of antisocial behavior. Much of their work finds that poor academic achievement is a strong influence on later involvement in delinquency and drug use (Krohn, Thornberry, Collins-Hall, & Lizotte, 1995; Smith & Thornberry, 1995; Thornberry, Lizotte, Krohn, Farnsworth, & Jang, 1991; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Indeed, Smith and Thornberry (1995) find that school success can actually protect high-risk youth from these behaviors.

Perhaps the most thorough review of the relationship between academic performance and delinquency to date is a meta-analysis conducted by Maguin and Loeber (1996). Examining 42 cross-sectional studies, they first find a small negative relationship between academic performance and delinquency: lower academic performance is related to greater delinquency. A major problem with cross-sectional studies, particularly when examining behavior over the lifecourse, is that

conclusions about temporal orderings are impossible. Thus, Maguin and Loeber (1996) also examine 26 longitudinal studies and determine that, regardless of the length of time between the measurement of the two variables, poor academic performance is related to greater involvement in delinquency. Similarly, Lipsey and Derzon's (1998) meta-analysis of longitudinal studies also supports this relationship: school performance at age 6 through 14 predicted violent or serious delinquency between the ages of 15 and 25.

### School Bonding

Another risk factor for delinquency and crime is school bonding, as one of the main domains for prosocial bonding during childhood and adolescence is the school (Hawkins et al., 2003; Hirschi, 1969). School bonding is often conceptualized as two separate components of attachment and commitment to school. Attachment to school is indicated by the extent to which students care about their school and their teachers and the extent to which they care about the teachers' opinions. The more students feel as though they belong in their school, the less likely they are to engage in delinquent behavior. Commitment to school is generally defined as time and energy invested by students in the pursuit of educational goals; this concept is also often presented in terms of educational aspirations. Students who invest considerable effort in school are more likely to be concerned about losing their investments if they are deviant. Conversely, students who invest little in a school will have less to lose and are, therefore, more likely to be delinquent.

The negative relationship between school bonding and delinquency is well documented. Cross-sectional studies link weak school attachment with delinquency, cigarette-smoking, emotional distress, suicidal behavior, violence, substance use, and early sexual activity (Bonny, Britto, Klostermann, Homung, & Slap, 2000; Cernkovich & Giordano, 1992; Gottfredson, Wilson, & Najaka, 2002; Jenkins, 1997; Liska & Reed, 1985; Resnick et al., 1997; Resnick, Harris, & Blum, 1993; Welsh, Greene, & Jenkins,

1999). In fact, some scholars maintain that school attachment has a stronger association with absenteeism, delinquency, polydrug use, and pregnancy than other factors, including attachment to family (Resnick et al., 1993, 1997). As with attachment to school, cross-sectional research also supports the negative relationship between commitment to school and delinquency (Cernkovich & Giordano, 1992; Gottfredson et al., 2002; Jenkins, 1997; Welsh et al., 1999), as well as other deviant behavior such as early sexual debut and promiscuity (Coker et al., 1994; Luster & Small, 1997; Resnick et al., 1997).

More importantly, given the lifecourse focus of the LCD perspective, much longitudinal research supports the causal effect of school bonding on adolescent delinquency and later criminal behavior (Ayers et al., 1999; Chung, Hills, Hawkins, Gilchrist, & Nagin, 2002; Hawkins et al., 1998; Loeber & Farrington, 2001; O'Donnell, Hawkins, & Abbott, 1995; Williams, 1994). Essentially, "students who are...weakly attached to their schools...[and] have little commitment to achieving educational goals...are more likely to engage in crime than those who do not possess these characteristics" (Gottfredson et al., 2002, p. 149). Drawing from Patterson et al.'s (1989, 1992) description of the relationship between school bonding and antisocial behavior, it is easy to see how deviant students' antisocial behavior increases the likelihood of poor attachment to conventional members of the school community and leads to lower school commitment due to poor academic performance.

Separate examinations of the school attachment and commitment components show support for both. Sampson and Laub (1993) found that attachment to school is a strong predictor of subsequent delinquency and continues to predict delinquency even when earlier antisocial behavior is included in statistical models. Even more longitudinal research specifically supports the causal path from low commitment to school to later delinquency and criminal behavior. This includes problem behavior and persistent serious delinquency (Maguin et al., 1995; Stouthamer-Loeber, Wei, Farrington, & Wikstrom, 2002), teen pregnancy and substance abuse (Maguin et al., 1995),

violence (Herrenkohl et al., 2000; Maguin et al., 1995; Stouthamer-Loeber et al., 2002), and joining and remaining in a gang for several years (Battin-Pearson et al., 1997), even when taking childhood antisocial behavior into account (Simons, Johnson, Conger, & Elder, 1998).

Thornberry and his colleagues use the longitudinal Rochester Youth Delinquency Study to provide more detail on the relationship between school commitment and antisocial behavior (Krohn et al., 1995; Smith & Thornberry, 1995; Thornberry et al., 1991). Using the first three waves of study data, Thornberry et al. (1991) found significant lagged effects from school commitment to delinquency, showing that weak commitment to education leads to later involvement in delinquency. In addition, significant contemporaneous effects were found from delinquency to school commitment, illustrating that delinquency also reduces educational commitment. Smith and Thornberry (1995) examined the relationship from a different perspective by examining whether commitment to school protects high-risk youth from delinquency and drug use. Of the sample members identified as at-risk for these behaviors, over 60% were protected from delinquency and drug use by various factors, including school commitment and educational aspirations; thus, educational commitment reduces deviant behavior even for high-risk youth (Smith & Thornberry, 1995).

## Truancy and Dropping Out

Research on the influence of truancy and dropping out of school on delinquency is mixed. Studies of the Cambridge data show clear relationships. Students who were truant between the ages of 8 and 10 tended also to be truant between the ages of 12 and 14 and this behavior was linked with antisocial behavior at both stages (Farrington, 1980, 1996a, 1996b). In addition, both truancy between the ages of 12 and 14 and dropping out of school before age 15 predicted violence between the ages of 16 and 18 and at age 32 (Farrington, 1989). Similarly, those students who were identified as chronic offenders at age 18 tended to

be frequent truants between the ages of 12 and 14 and to not have stayed in school beyond the minimum school-leaving age of 15 (Farrington & West, 1993). Other research supports the relationship between truancy and dropping out and antisocial behavior both as a child and adult (Arum & Beattie, 1999; Drapela, 2006; Robins & Ratcliff, 1980; Thornberry, Moore, & Christenson, 1985).

By contrast, Jarjoura (1993, 1996) found that dropping out has no influence on future delinquency, likely because he examines the issue further by (1) controlling for factors that would likely predict both dropping out and delinquency and (2) differentiating among the reasons for dropping out. After controlling for prior factors, he finds that those who drop out of school are *not* more likely to engage in delinquency. However, the reason for dropping out also has an effect on this relationship, such that youth who drop out because they do not like school or for unspecified reasons are more likely to engage in delinquency than high school graduates, while those who drop out because of problems at home do not have higher levels of future delinquency (Jarjoura, 1993).

Some LCD research has looked at dropping out of school as an outcome of rather than a risk factor for antisocial behavior. Krohn et al. (1995) found that prior drug use is predictive of dropping out of high school, and remains constant even while holding demographic, family, and school performance constant. Similarly, Thornberry and Krohn (2003) found that involvement in both delinquency and drug use predicted the failure to graduate high school.

## Peer Rejection

Rejection by conventional peers is another risk factor for delinquency and later criminal behavior. Patterson and his colleagues show how antisocial children tend to have limited social skills, which may cause them to interact with their peers in a negative, often hostile manner (Patterson et al., 1989, 1992). This leads to children being rejected by prosocial youth which greatly reduces antisocial children's opportunities to learn and practice positive prosocial skills (Patterson &

Yoeger, 1993). In addition, rejection by conventional peers makes it more likely that these youth will befriend other rejected children and form deviant peer groups, thereby increasing their problematic behavior. Conversely, youth who are effectively socialized with no early history of antisocial behavior are successful in the school environment when forming conventional peer relationships, thus decreasing their chances of deviance (Moffitt, 1993; Smith & Thornberry, 1995).

## School Transitions

Another student-level risk factor for antisocial behavior suggested by the LCD perspective is school transitions, or changing schools either because of graduating into the next school level or moving residences. Although little research has examined this factor, what has been conducted is supportive of this influence: School changes at ages 14 and 16 predict later violence (Hawkins et al., 1998; Maguin et al., 1995). In addition, other research indicates a relationship between school transitions and risk factors for deviance, suggesting that transitions may be a remote influence on such behavior. For example, Alspaugh (1998b) finds that transitioning from elementary school to middle school decreases academic achievement and that transitioning from middle school to high school increases dropping out, both of which are risk factors for later deviance. Others find that transition from elementary to middle school decreases attachment to school (Eccles & Midgley, 1989; Simmons & Blyth, 1987), participation in extra-curricular activities, and perceptions of support from school personnel (Seidman, Allen, Aber, Mitchell, & Feinman, 1994).

## School-Level Factors

Beyond the student-level risk factors discussed in the previous sections, there are characteristics of the school itself that are related to student antisocial behavior. These can be grouped into two categories. The first contains school contextual or

structural factors, or pre-determined characteristics of a school, such as grade level, size of student enrollment, student-teacher ratio, racial and ethnic composition, and school location. The second category is school climate, or the “inner workings of the school” (Ma, Stewin, & Mah, 2001, p. 256), such as the social organization of the school, the system of social relations between and among teachers and students, the cultural system of norms and values in the school, and the management of school discipline, such as the clarity of rules and fairness of rule enforcement.

One of the earliest examinations of the effects of school structural characteristics on school disorder is Gottfredson and Gottfredson’s (1985) analysis of the Safe School Study data for a 1976 national sample of more than 600 U.S. secondary schools. Although this study focuses on victimization, it establishes that school characteristics, such as student-teacher ratio and resources, do predict problem behavior at the school level. Subsequent studies also find that school context influences delinquency. Studies based on the National Study of Delinquency Prevention in Schools (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Payne, 2011; Payne, Gottfredson, & Gottfredson, 2003) find that schools with a greater percentage of male students, black students, and black teachers have higher levels of delinquency (see also Felson, Liska, South, & McNulty, 1994); these findings remained regardless of the socio-economic status, size, and urbanicity of the schools. Wilcox and Clayton (2001) find that school-level socio-economic status significantly affects weapon carrying, such that students are more likely to carry weapons in schools that have a higher percentage of students receiving free or reduced-price lunches. Finally, using hierarchical linear modeling in order to study students nested within schools, Bryk and Driscoll (1989) and Payne (2008) demonstrate that individual-level problem behavior is more prevalent in larger and racially diverse schools.

Research also demonstrates a definite relationship between school climate and general school disorder. In one of the earliest school-level studies on school social organization, Gottfredson



and Gottfredson (1985) found that in schools in which teachers and administrators had low levels of cooperation, teachers had punitive attitudes, rules were perceived by students as neither fair nor firmly enforced, students were not compelled by conventional rules and laws governing behavior, and there was more teacher victimization. These results were found even as community and student demographic characteristics were taken into account. Furthermore, teacher satisfaction and commitment are associated with lower student drop out rates, fewer disciplinary problems, and higher student attendance rates (Ostroff, 1992). In addition, schools that have a system of shared values and expectations and that experience meaningful social interactions also have less disorder, as do schools in which the students have a high sense of belonging (Duke, 1989).

Studies examining a specific form of school social organization, communal school organization, also establish a negative relationship with school disorder (Bryk & Driscoll, 1989; Gottfredson, 2001; Payne, 2008, 2009; Payne et al., 2003). Teachers in communally organized schools experience better morale and satisfaction as well as fewer absences and less victimization (Battistich & Solomon, 1997; Bird & Little, 1986; Bryk & Driscoll, 1989; Little, 1985; Newman, Rutter, & Smith, 1989; Payne, 2008, 2009; Payne et al., 2003). In addition, all students in communally organized schools demonstrate less delinquency, misbehavior, fear, victimization, and dropping out, and have greater empathy, school bonding, and academic interest, motivation, and achievement (Battistich & Hom, 1997; Battistich, Solomon, Kim, Watson, & Schaps, 1995; Bryk & Driscoll, 1989; Payne, 2008; Payne et al., 2003; Phaneuf, 2006; Solomon, Watson, Battistich, Schaps, & Delucchi, 1992; Stewart, 2003), regardless of their race or ethnicity (Payne, Gottfredson, & Kruttschnitt, 2009).

The discipline management of a school also influences school disorder. Gottfredson et al. (2005) find that schools with clear and fair rules and rule enforcement experience less disorder. Schools that establish and maintain rules, effectively, communicate clear expectations for behavior, consistently enforce rules, and provide rewards

for rule compliance and punishments for rule infractions experience lower levels of crime and victimization. By contrast, overly punitive responses to misbehavior appear to increase delinquency: Skiba and Knesting (2001) discuss this possibility with zero tolerance policies which requires a response to even minor infractions with immediate, certain, and severe punishments.

Indeed, exclusionary discipline, such as suspensions and expulsions, has been used with increasing frequency for the past couple of decades (Cameron, 2006; Wallace, Goodkind, Wallace, & Bachman, 2008), the results of which have been particularly consequential for the students subjected to them. Research shows that these punishments are associated with various negative academic outcomes, including school failure, grade retention, negativity toward school, and a greater likelihood of dropping out (Nichols, 2004; Schiraldi & Zeidenberg, 2001; Skiba & Peterson, 1999), all of which are risk factors for offending. Further, the use of these forms of discipline seems to actually increase the probability that the students receiving these disciplinary measures will commit delinquent acts at school, such as participate in physical fights, carry weapons, smoke, and use alcohol and other drugs (Schiraldi & Zeidenberg, 2001), and engage in delinquency within the greater community (Foney & Cunningham, 2002; Nichols, 2004).

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## The Role of Schools and Education in LCD Theories

Although schools and education are not a main focus of established LCD theories, many do acknowledge the role of the school domain with varying degrees of emphasis. One of the best known LCD theories provides the most in-depth discussion about the role of schools and education in offending from a developmental perspective. Focusing first on the trajectory of lifecourse persisters, Moffitt (1993) discusses how antisocial behavior for this small group of individuals has its origins in neuropsychological deficits from birth, which interact with the social environment, first at home and then at school. Because

of these deficits, lifecourse persisters tend to display problems with cognitive and verbal skills, hyperactivity and impulsivity, and even aggression and hostility. These traits have been shown to lead to a stable trajectory of problem behavior in two ways: contemporary and cumulative continuity. According to the concept of contemporary continuity, these individuals display the same behavior in all situations, regardless of previous experiences, leading to contemporary continuity or cross-situational consistency (Moffitt, 1996). This occurs because, throughout their lives, these children carry the same “constellation of traits that got them into trouble as a child, such as high activity level, irritability, poor self-control, and low cognitive ability” (Moffitt, p. 21). Thus, in schools, these students have trouble sitting still and listening to teachers and have a greater likelihood of cheating on tests and stealing from or even attacking other students.

Furthermore, as the idea of cumulative continuity details, because of these antisocial behaviors, lifecourse persisters rarely develop positive relationships with their teachers or prosocial peers at school and are often rejected by these conventional members of the school community (Moffitt, 1993). Importantly, this significantly reduces lifecourse persisters’ opportunities to learn and practice prosocial skills, thus leaving them with a behavioral repertoire limited to aggression and hostility. Eventually, youth who have been consistently rejected by teachers and prosocial peers tend to be defensive and react either by withdrawing or preemptively attacking, thus continuing the cycle of lost conventional opportunities (Moffitt, 1996). This cumulative continuity also occurs through a loss of academic skills. Students who display antisocial behavior are often more difficult to teach, which may lead to a failure to obtain basic math and reading skills. This, in turn, could limit future educational and even occupational opportunities, which may then ensure offending in adulthood (Moffitt, 1993). Indeed, using the Dunedin data, Moffitt (1993) found that childhood antisocial behavior predicted lower educational attainment in adolescence, which then predicted lower occupational status as an adult.

Ultimately, if important social and academic skills are not learned as a student, it is much harder to succeed as an adult because these lifecourse persisters are “snared” by their behavior (Moffitt, 1996). Snares are the consequences of problem behavior that reduce the probability of a conventional life due to the loss of opportunities to escape from the cycle of their negative behavior. These include experiences such as dropping out of school, substance addiction, unplanned parenthood, and poor ties to family and school. Events such as these significantly decrease the likelihood of these individuals pursuing higher education, obtaining successful jobs, or even attracting a prosocial spouse; failure in these areas greatly increase the likelihood of continual offending (Moffitt).

In contrast to lifecourse persisters, Moffitt’s (1993) larger group of adolescent limited offenders only engage in antisocial behavior during their teenage years. As children, these individuals did not suffer from neuropsychological problems and were thus able to learn conventional social skills. This positive behavior accompanied them throughout early schooling experiences, where they were able to practice these prosocial skills and obtain necessary academic skills as well. Therefore, the cumulative continuity that may restrict lifecourse persisters to a life of offending does not apply to most adolescent limited youth. Instead, these students engage in deviance because of the “maturity gap” they experience as they reach puberty and are biologically ready to act as adults yet are denied access to adult status (Moffitt). At this point, adolescents become aware of the adult-like, though delinquent, behavior of the lifecourse persisters and mimic these actions to establish their independence from adult controls (Moffitt, 1996). In this process, schools are the prime location for such mimicry. Once these adolescents reach adulthood and have access to adult status and roles, however, the large majority desist in their offending and rely on the social and academic skills they obtained earlier in life.

Patterson and his colleagues (Patterson & Yoeger, 1993; Patterson, Capaldi, & Bank, 1991; Patterson et al., 1989, 1992; Simons, Chyi-In,

Conger, & Lorenz, 1994) also consider the role of schools and education to a limited extent in their LCD models. They describe a similar pattern comprised of two trajectories of deviants, categorized as early and late starters. Similar to Moffitt's adolescent limited offenders, late starters experiment with delinquency during their teenage years, mainly as a result of peer encouragement; these youth eventually tend to desist after a short period of time. In contrast to Moffitt, however, the early starters engage in antisocial behavior throughout the lifecourse primarily as a result of poor parenting. This leads early starters to experience serious deficits in social skills, which then lead to aggressive and hostile interactions with teachers and prosocial peers. This results in rejection by these conventional people and a loss of opportunities to learn and practice the social skills that they are lacking. As with lifecourse persisters, early starters suffer myriad consequences from their antisocial behavior and poor social skills, including poor academic performance and weak bonds to teachers, peers, and the school in general (Patterson et al., 1989, 1992). Ultimately, "the child who receives antisocial training from the family during the preschool and elementary years is likely to be denied access to positive socialization forces in the peer groups and schools" (Patterson & Yoeger, 1993, p. 331), thus ensuring that antisocial behavior will continue throughout the lifecourse.

Focusing specifically on the school environment, Patterson and his colleagues described the most likely narrative involving school-related risk factors and antisocial behavior (Patterson et al., 1989, 1992). Children who are already displaying antisocial behavior at home enter schools with a limited behavioral repertoire for interacting with teachers and other students; this repertoire tends to contain only aggressive and hostile behavior. These students are likely difficult to handle in the classroom, which increases the risk of poor academic performance, poor attachment to teachers, lower school commitment, and rejection by conventional peers. This cycle continues, feedbacking on itself and spiraling downward. Thus, due to a process of cumulative continuity, poor academic performance, and poor school

bonding, the likelihood of continual antisocial behavior is greatly increased.

The Social Development Model proposed by Catalano and Hawkins (Hawkins et al., 2003) offers a different yet related LCD perspective on the role of schools and education. A product of their work on a school-based prevention program (the Seattle Social Development Project), this theoretical model details how individuals progress through institutions such as elementary and high schools across developmental stages. At each stage, the impact of various risk factors is mediated by certain social processes and the development of certain skills. Specifically, the model proposes that an "interplay of specific factors during development influences the degree to which children develop strong social bonds to school and family" (Hawkins et al.). Along the prosocial path, youth who are given opportunities to be actively involved in the classroom are able to learn and practice social and academic skills. As these students improve their skills, they are recognized and rewarded for their involvement. This positive reinforcement leads to strong attachment to prosocial teachers and peers and commitment to education and other prosocial activities, resulting in normative beliefs that prevent antisocial behavior (Hawkins et al.).

By contrast, the antisocial path demonstrates how these same factors may work in the opposite directions (Hawkins et al., 2003). Interactions with antisocial others lead to stronger antisocial skills, which are then rewarded and reinforced by deviant peers. This strengthens the attachment to these peers, commitment to antisocial activities, and belief in antisocial norms. Similar to the concept of cumulative continuity, an individual's norms and behavior in one developmental stage influence future stages in the lifecourse by limiting that individual's skills and opportunities (Hawkins et al.). Thus, deviant youth are essentially stuck in the cycle of antisocial opportunities, peers, beliefs, and behavior.

Another well-known LCD theory, Sampson and Laub's (1993; Laub & Sampson, 2003) age-graded theory of social control, addresses how social bonds that are formed in a variety of institutions throughout the lifecourse influence an

individual's continuity and change in offending. One of the earliest sources of the social bonds that may intervene in a life of antisocial behavior is the school: While the family is the primary source of influence in early childhood, schools and education become just as or even more important in adolescence. Indeed, Sampson and Laub (1993) found that a higher grade point average and a more positive student attitude decreased delinquent behavior. Thus, school can serve as a turning point in the lifecourse, such that weak school attachment and poor school performance may increase the probability of an offending trajectory throughout the lifecourse while strong school attachment and success in school may decrease it (Sampson & Laub). Similar to Moffitt (1993), Sampson and Laub (1993) also consider the idea of cumulative continuity. The consistency seen in antisocial behavior is partly a result of this behavior undermining social bonds early in life, which then reduces these youths' opportunities to participate in conventional experiences such as those found in school. This loss can then continue the cycle of school failure and rejection by the school community, which can ultimately lead to a life of offending (Sampson & Laub).

Thornberry and his colleagues (Thornberry, 1987; Thornberry et al., 2003) also explore the role of education and schools through an LCD lens. Similar to Sampson and Laub (1993), Thornberry's interactional theory sees a weak bond to society as the basic cause of antisocial behavior (Thornberry et al., 2003). This bond is formed by strong attachments to family, commitment to school, and belief in conventional goals. If this bond weakens, an individual is more likely to become involved in antisocial groups, thus increasing the chances of deviance and delinquency. The causal influences on antisocial behavior vary depending on the developmental stage: Although family is an early influence on behavior, schools and peers become more influential during adolescence (Thornberry, 1987; Thornberry et al., 2003). Importantly, these developmental stages are interrelated; if an individual is able to form strong ties to the family in early childhood, he or she is more likely to succeed in forming strong ties with

peers and teachers in school. Thornberry and his colleagues also discuss the feedback loop that may occur, such that weak ties to family and school leads to delinquency involvement, which then is likely to further weaken these ties to family and school (Thornberry et al.). Research on interactional theory supports the importance of commitment to and success in school: Students who were committed to their education and performed well in school were less likely to engage in later delinquency and drug use (Thornberry et al.). This finding held true even for those individuals who were considered high-risk youth (Thornberry et al.), suggesting that schools may be able to provide resiliency or protection for those most in need.

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### **Other Research Using an LCD Perspective on Schools and Education**

Beyond the established LCD theories' limited discussion of education as a lifecourse event and schools as an important domain for human development, there is also little research that focuses on education through a general LCD lens. This is particularly surprisingly given the large body of research that has established a strong relationship between education and antisocial behavior (Ford & Schroeder, 2011). The research that links school-related factors and problem behavior has been useful. However, it is likely that the influence of schools and education on antisocial behavior is far more complicated than suggested by this work (Dishion & Patterson, 2006). This complexity can be seen in the small body of research that uses the lifecourse perspective to examine the relationship between education and deviance.

Some researchers have used an LCD perspective to examine the impact of higher education on antisocial behavior. Students who continue schooling after high school are less likely to offend because participation in post-secondary education decreases the risk of offending (Shover & Thompson, 1992), reduces the opportunities for offending (Stouthamer-Loeber, Wei, Loeber, & Masten, 2004), and even increases the likelihood of a positive marriage (Rutter, Quinton, & Hill,

1990). The influence of higher education can also be seen on recidivism, such that inmates who continue their education have a reduced likelihood of returning to prison (Adams et al., 1994; Batiuk, Moke, & Rountree, 1997; Chappell, 2004; Harer, 1995; Streurer, Smith, & Tracy, 2001), mainly because post-secondary education increases their chances of becoming employed following release.

Perhaps the best use of an LCD lens on higher education is Ford and Schroeder's (2011) analysis of the longitudinal data from the National Youth Survey. Proposing that higher education helps develop and maintain strong social bonds during early adulthood, they examine how attending college and investing in post-secondary education influence adult offending. Results show that individuals who attended college were less likely to engage in future crime. Similar findings were seen with investment in higher education, such that those with higher levels of investment had lower likelihoods of adult offending. Interestingly, both attendance and investment interacted with juvenile offending: the protective effect of higher education is stronger for those students who had higher levels of prior delinquency (Ford & Schroeder). Thus, college experience can be a turning point in a youth's life such that he or she desists from the trajectory of offending.

Others have examined the process by which youths' involvement in the juvenile justice system affects their education which, in turn, influences their subsequent offending. This work builds on the LCD concept of cumulative disadvantage (Sampson & Laub, 1993), which suggests that certain events or turning points may change an individual's lifecourse by reducing conventional opportunities. Thus, a delinquent who experiences official intervention may continue to be involved in crime as an adult because of a lack of positive educational experiences due to that original intervention (Bernburg & Krohn, 2003). Earlier research supports this idea: educational attainment partly mediates the relationship between police contact in adolescence and unemployment in adulthood (Hagan, 1991), even while controlling for earlier delinquency (Tanner, Davies, & O'Grady, 1999). More recently, Bernburg and Krohn (2003) analyzed the Rochester data to

examine this process. Both police and juvenile justice intervention decreased the likelihood that a student would graduate from high school. In turn, this increased the chances of that individual being unemployed and engaging in crime at later ages. Thus, educational attainment partly mediates the influence of official intervention during adolescence on unemployment and crime in adulthood (Bernburg & Krohn).

The LCD perspective has also guided the examination of education's effect on individual trajectories of crime and delinquency and eventual incarceration. It is clear that the risk of institutionalization is "highly stratified by education" (Pettit & Western, 2004, p. 151), with all levels of schooling having a significant impact, particularly at the high school level (Arum & Beattie, 1999; Lochner & Moretti, 2003), but also among those who attended college (Pettit & Western, 2004). Arum and Beattie (1999) found that school factors such as low grade point average, low test scores, placement in lower tracks, dropping out, and being suspended significantly increased students' chances of being incarcerated later in life. They propose that this occurs as these educational factors decrease an individual's attachment to school, which then increases their likelihood of deviance and offending, and ultimately, incarceration. Various other elements of schooling and education contribute to this outcome, including school resources such as student-teacher ratios (Arum & Beattie, 1999; Arum & LaFree, 2008) and student compositional traits (Arum & Beattie, 1999). These influences are highly pronounced according to racial characteristics, and may substantially contribute to the vast disparity between the incarceration of black and white men (Lochner & Moretti, 2003; Pettit & Western, 2004). Further, analyses of FBI data indicate that diminished educational experience is especially associated with incarceration for specific types of offenses, including murder, assault, and motor vehicle theft (Lochner & Moretti, 2003).

Another use of an LCD focus on education can be seen in the concept of interdependency (Wright, Caspi, Moffitt, & Silva, 2001), which pulls from Elder's (1985) description of interdependence as the "interlocking nature of trajectories and



transitions, within and across life stages” (32). This model describes both internal and external influences on antisocial behavior and proposes that external influences, such as social ties, have a greater effect on individuals who possess certain internal characteristics, such as impulsivity, that predispose them to deviance. Thus, social and environmental influences can produce turning points for certain children who are more prone to problem behavior (Wright et al., 2001). Wright et al. (2001) propose two specific effects: the social protection effect and the amplification effect. The social protection effect predicts that prosocial ties, such as those to school, will reduce antisocial behavior more strongly for individuals who are already predisposed to such behavior because of certain psychological characteristics, such as low self-control. Thus, individuals with a greater potential for deviance are more in need of these environmental deterrents, while those who are less prone to deviance, regardless of their environment, are less in need of this protection. Along the same lines, the social amplification effect predicts that antisocial ties, such as those to other delinquent students, will increase the likelihood of antisocial behavior most strongly for those same predisposed individuals. Those with a greater potential for deviance are more susceptible to peers who pull them into such behavior, while those who are less prone to deviance are less susceptible to such forces. Ultimately, individuals who are more able to control their own behavior due to their psychological makeup are less influenced by the social environment, whether prosocial or antisocial, while those who are more inclined to deviance due to certain psychological traits are more influenced (Wright et al.). Using the Dunedin data, Wright et al. (2001) found support for these predictions by examining the interaction between the external influence of education and the internal characteristic of self-control. School attachment displayed a negative relationship with offending. However, as predicted, the influence of education on crime decreased as self-control increased. Thus, the independency of external and internal predictors of offending is clear, as high school attachment deterred offending while low school attachment increased offending

most strongly among those students with low self-control (Wright et al.).

Finally, Hagan and Parker (1999) examined not just a delinquent adolescent’s lifecourse but focused on intergenerational causes of delinquency by examining the educational experiences of the adolescent’s parents. They focus on the concept of educational disinvestment, citing Hirschi’s (1969) discussion of an individual investing “time, energy...self, in a certain line of activity—say, getting an education” (20). Individuals who experience positive schooling, with high educational aspirations and achievement, tend to continue on to higher education and find stable employment. They also engage in effective parenting practices and are able to provide their children with skills and experiences that ensure the children’s success in school, thereby contributing to the children engaging in prosocial behavior throughout their lifecourse (Hagan & Parker, 1999).

By contrast, individuals who have negative experiences in school, in the form of low aspirations and school failure, are more likely to suffer negative life events, such as dropping out, teen pregnancy and parenthood, and unemployment. These individuals tend to engage in poor parenting practices, likely due to the deficit in prosocial skills they themselves possess, which makes it highly unlikely that their children are able to learn and practice these skills needed for school success. Thus, these children are far more likely to engage in antisocial behavior throughout their lifecourse (Hagan & Parker, 1999). Truly utilizing an LCD perspective, this intergenerational process provides a strong case that deviance and delinquency results from parental educational disinvestment. These parents are unable to prepare their children for school experiences, which creates multiple problems for the children, and ultimately culminates in continual antisocial behavior.

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## Future Research Directions

As the sizeable body of research on school-related risk factors illustrates, schools and education are important influences on human development. Youth spend a substantial part of their childhoods



and adolescence in school (Gottfredson, 2001; Thornberry and Krohn 2003)) and the skills they learn there, both academically and socially, can have an enormous impact on their lives. Poor academic achievement, low attachment and commitment to school, dropping out of school, and other school factors are consistent and strong predictors of antisocial behavior (Gottfredson, 2001). However, these relationships have generally been studied only during adolescence and these factors have not generally been considered to have an impact on other behavior over the lifecourse, such as unemployment and later adult offending (Thornberry and Krohn 2003)). Established LCD theories—and the LCD perspective overall—are helping fill this gap, although the body of research remains small.

Even with the strength and breadth of the research on school-related risk factors, more research is needed in a variety of areas. In many studies, it is not clear whether these risk factors are causes of the deviant outcomes or whether they are merely symptoms of an underlying syndrome causing both; it is even possible that they are both a cause and a symptom (Farrington, 2003). It would be worth investigating in future research whether and to what extent myriad risk factors impact specific elements of offending (Welsh & Farrington, 2007). For example, it would be useful to know if risk factors are differentially consequential at different levels of influence. Specifically, do risk factors operate in varying ways for the onset, escalation, and desistance of criminal careers?

Further, implications for policy could be significant if future research were to reveal differences depending on the deviant outcomes, such as juvenile delinquency, adult crime, violence, or drug use. It could also be beneficial for research to examine the potential role of mediating effects on the relationship between school-related risk factors and antisocial behavior (Welsh & Farrington, 2007). Any relevant mediators could contribute to refining policy with relation to diminishing negative consequences. Similarly, research about moderating influences on school-related risk factors could aid the expansion of policies to decrease social problems at various developmental phases.

Another important line of inquiry future research could pursue pertains to the tenets of the LCD approach; the multilevel relationships described in many LCD theories have yet to be investigated (Jennings & Piquero, 2009). Schools are naturally nested environments: Students are found in classrooms, classrooms are situated in schools, and schools are located within larger communities. Each of these domains has characteristics that may act as risk factors for antisocial behavior and should be examined at their proper analytical levels. These questions demonstrate the complexity of the relationship between schools and behavior and also illustrate the strong need for longitudinal data and analyses (Farrington, 1996a, 1996b, 2003; Welsh & Farrington, 2007).

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## Conclusion

An LCD perspective indicates several ways that education may reduce antisocial behavior and involvement in later criminal offending (Ford & Schroeder, 2011). Schools are social institutions that promote positive social bonds. They provide access to conventional role models and encourage students to form attachments to these prosocial others, who, in turn, may reinforce positive behavior demonstrated by the students. This should reduce antisocial behavior because of the value youth place on these relationships. Schooling also establishes commitment to conventional goals, such as students' current education as well as later educational and occupational attainment. Again, this is likely to reduce antisocial behavior because of the value youth place on these goals. In addition, schools encourage student involvement in conventional activities, which helps individuals form attachments to prosocial peers and reduces unsupervised free time that may be spent on deviant activities. Ultimately, the social bonds promoted by schools and education can have a strong protective impact on students' behavior (Ford & Schroeder).

Education may also increase access to social capital (Ford & Schroeder, 2011). Students who graduate high school may continue with post-secondary education, which will provide them with greater status and a more advantageous social

position. These individuals have opportunities to get better-paying jobs, have more successful marriages, and have greater influence in society. They also likely have larger and more supportive social networks, which can further increase their social capital. Cumulatively, this may increase an individual's sense of personal control and effectiveness, further improving several areas of individuals' lives (Ford & Schroeder).

Despite the need for more research, there are clear reasons for optimism. A small amount of LCD research demonstrates the influence that schools and education have on an individual's behavior over the lifecourse (Ford & Schroeder, 2011). Much research shows the school risk factors that impact antisocial behavior (Gottfredson, 2001) and that school-based prevention programs can alter these risk factors to reduce such behavior (Gottfredson et al., 2002). In addition, it is possible that these programs can be most effective for high-risk students who are most in need, as predicted by the LCD concept of interdependency (Wright et al., 2001). If these theoretical and research contributions can be better linked and expanded, we are sure to see a positive impact on antisocial behavior and offending over the lifecourse.

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# Adolescent Time Use, Companionship, and the Relationship with Development

# 7

Amy L. Anderson

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## Abstract

This chapter examines where and with whom adolescents are spending their time and the relationship between those activities and adolescent development. Specifically, developmental and life course outcomes related to activities engaged in while at home, school, and after-school are discussed. Time spent in unsupervised activities tends to be associated with poorer outcomes regardless of whether an adolescent is away from home with friends or home alone with nothing to do. Additionally, peers have great potential to shape developmental and life course outcomes of other peers with whom they interact, including providing positive reinforcement for engaging in risky behaviors like drinking. Areas where less is known about adolescents and risky behaviors but for which there is a great potential to learn more are discussed at the end of the chapter.

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## Introduction/Background

This chapter examines where and with whom adolescents are spending their time and the relationship between those activities and developmental outcomes. How adolescents use their time is important, given the amount of discretionary time available to them in modern society. The move away from an agrarian society has resulted in adolescents spending less time with the family and working and, consequently, more discretionary

time has become available for adolescents. Larson (2001) noted that in agrarian societies, eight or more hours a day are spent in some form of paid labor by the early teens, while contemporary adolescents spend <45 minutes a day on household chores, and, except for older teenagers, almost no time in income-generating activities. The school has largely displaced labor in contemporary society due to, in part, the enactment of child labor laws followed by an education mandate (Kleiber & Powell, 2005).

The school day, however, is not aligned with the average parental work day. It is often the case that the school day is much shorter than the adult work day, and the cumulative effect of the difference can amount to about 20–25 hours a week (Gottfredson, Gottfredson, & Weisman, 2001; U.S. Department of Labor, 2000). There are other

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factors that can increase available discretionary time even further. For example, researchers examining the length of the school day between a sample of suburban, white youth and an urban, African–American sample within the USA found an hour and 15 minute difference between the two (Larson & Richards, 1989; Larson, Richards, Sims, & Dworkin, 2001). Overall, Larson et al. (2001) found that the African–American sample reported spending about 10% less time at school than the sample of suburban youth (27.8% of time at school compared with 37.7%). The authors attributed this difference to the daily difference in length of school day compounded with the availability of more after-school activities in the suburban schools. Budget cuts can lead to further decreases, such as shortening the school week or the number of hours per day in school (e.g., *New York Times*, July 5, 2011). School-aged children do not attend school over the summer months and their parents often are still limited by work obligations, thereby increasing the amount of discretionary time. Finally, comparatively speaking, students in other countries spend more time attending school than U.S. children (Fuligni & Stevenson, 1995; Larson, 2001). As a result, U.S. adolescents spend 40–50% of time in discretionary activities, compared to about 25–35% for adolescents in East Asia and 35–45% for Europe (Larson, 2001).

The remainder of this chapter examines where adolescents are spending their time and with whom, and how these activities affect developmental outcomes such as adolescent delinquency. I begin with the home setting, where the most frequently engaged in nonsleeping activity, watching television, occurs. The following section discusses school, not only a place where adolescents spend a significant portion of non-discretionary time, but also a place where adolescents are focused on peer interactions. I then discuss structured and unstructured activities after school with a focus on unsupervised activities with friends. Finally, the chapter ends with some suggestions for researchers interested in examining the life course outcomes associated with activities and companionship during adolescence.

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## Home

The shift of an adolescent's time away from the family, and relatedly, a shift toward activities outside the home were the focus of a study by Felson and Gottfredson (1984). Interested in changes in daily life over many decades, they conducted a phone survey intended to capture changes in adolescent activities near parents and peers by breaking respondents into birth cohorts and examining changes across them. Respondents were placed in one of five birth cohorts, beginning with respondents born in the year 1940 or earlier, and ending with a cohort born between 1971 and 1979. Respondents were asked to recall activities from when they were 17 years old. Their findings showed a steady decline in activities near parents, such as whether adults were present some of the time or never when the respondent was home, and a steady increase in activities related to peers, such as riding around in a car with friends. For example, having a family dinner and riding around often after dark showed the largest probability changes across time for the males in their sample. Presumably, fewer family dinners have increased the possibility of peer interactions through the creation of available unsupervised time, and increased automobile use (e.g., riding around after dark with teens) has affected where adolescents are spending their time in addition to changing the company they keep (Felson & Gottfredson, 1984).

It is difficult to estimate how much time adolescents spend at home for three reasons. First, researchers may be interested in more refined categories of activities, such as homework, sleeping, and sibling care. Second, researchers may be interested in the relationship between a location and a risk-taking behavior, but time spent in a location is not reported. Finally, researchers of adolescent development may only be interested in whether the adolescent is home alone and for how long and not the amount of time spent in the home setting in total. Wikström, Ceccato, Hardie, and Treiber (2010) reported that over 45% of 11 year olds from a U.K. sample spent time in their home “output area,” although this refers to an administrative unit or spatial area of roughly

300 residents and not the adolescent's house. Overall, adolescents who spend less time at home are more at risk for delinquency than youth who spend more of their time at home. For example, Riley (1987) examined 14- and 15-year-old males in England and Wales and found that offenders spent 39% of Saturday leisure time at home, while non-offenders spent almost half (i.e., 49%) of their time at their own home. Both offenders and non-offenders reported spending about 6% of their time at a friend's home; however, offenders spent 55% of their time "elsewhere" compared to 45% for non-offenders. Riley found that 72% of offenders noted that they usually met friends away from their own home and away from the home of their friends (58% for non-offenders), suggesting that adolescents who spend more time away from the home setting, either theirs or their friends, are at higher risk for negative outcomes than youth who spend more time at home (Riley, 1987). Similarly, Wikström et al. (2010) found that low propensity youth spent 1.6% of their time in the setting of (up to three) best friends compared with 5.6% of their time for the high propensity group.

Adolescents spend between 8 and 9 hour sleeping (American Time Use Survey, 2010) and it is more than 9 hour when naps are included (Juster, Ono, & Stafford, 2004). This activity accounts for the largest percent of time spent at home. There is some cross-sectional evidence that youth who do not get more than 8 hour of sleep a night are more likely to engage in risky alcohol and sexual behaviors (O'Brien & Mindell, 2005) as well as property and violent crime (Clinkinbeard, Simi, Evans, & Anderson, 2011). Generally, a lack of sleep has been associated with an increased risk for depression, school problems, and automobile accidents (Carskadon, Acebo, & Jenni, 2004; Fredriksen, Rhodes, Reddy, & Way, 2004) as well as various mental and somatic health issues (Roberts, Roberts, & Chen, 2001; Roberts, Roberts, & Duong, 2009). A lack of sleep is related to poor decision making and, over the long-term, can affect proper brain development (see Clinkinbeard et al., 2011).

After sleeping, the activity most often engaged in while at home is watching television

(Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007; Junger & Wieggersma, 1995; Larson & Verma, 1999; Zill, Nord, & Loomis, 1995). Barnes et al. (2007), using a sample of 606 adolescents aged 15–18 years, found that adolescents watched an average of 20 hours per week, although African-American youth watched twice as much television as the white youth (31.8 and 15 h, respectively), a finding also reported by others (e.g., Larson et al., 2001; Larson & Verma, 1999). For adolescents, time spent at home this way may be used for relaxation, stress release, or for filling the time when other options are not available (Kleiber, Larson, & Csikszentmihalyi, 1986; Larson & Verma, 1999). There are questions about what youth would be doing with their time if they were not watching television. For example, it may be that television watching is displacing time that would otherwise be spent on homework or another positive developmental activity, although this does not seem to be the case (Mutz, Roberts, & van Vuuren, 1993).

Researchers have found little evidence of negative developmental outcomes resulting from the amount of time adolescents spend watching television. Generally speaking, there is a negative or null relationship between watching television and a variety of risky behaviors, such as crime, delinquency, drug and alcohol use, sexual activity, and automobile accidents (Agnew & Petersen, 1989; Barnes et al., 2007; Junger & Wieggersma, 1995; Kleiber et al., 1986; Larson & Verma, 1999; Osgood, Wilson, O'Malley, Bachman, & Johnston, 1996; Riley, 1987). For example, Barnes et al. (2007) found that watching television was not related to drinking, cigarette smoking, illicit drug use, delinquency, or sexual activity. Osgood et al. (1996) found that television watching was negatively related to criminal behavior, heavy alcohol use, marijuana use, other drug use, and dangerous driving, although only the relationship with marijuana use was significant. Fuligni and Stevenson (1995), however, did find a significant and negative effect on a high school student's math ability using samples from the USA, Taiwan, and Japan. Overall, however, detrimental issues may not arise unless

there is excessive watching in the early childhood years (Larson & Verma, 1999).

There is sometimes a distinction made between at-home activities that have some form of structure or purpose (e.g., reading a book and listening to music) compared with those that do not, and there is evidence that this distinction may be associated with differing developmental outcomes. Thus, although there may not be much action going on while an adolescent is watching television, there is an activity taking place. This is in contrast to something like relaxing alone, which does not involve any activity or structure for how the time is spent. At least two studies have reported interesting differences between this structured and unstructured at-home activity. First, Barnes et al. (2007) found a negative but nonsignificant relationship between watching television and five problem behaviors. On the other hand, they found that time spent relaxing alone was significantly related to illicit drug use and sexual activity. Second, while Osgood et al. (1996) found only one of five dependent variables significantly (and negatively) related to watching television, they found that relaxing alone was positively and significantly related to heavy alcohol use, marijuana use, and other drug use and was the only category of “at-home activities” that had a consistently positive relationship with the problem behaviors being examined. Using a similar concept, Junger and Wieggersma (1995) found that youth who reported “doing nothing” at least once a month were more likely to engage in deviant behavior than youth who reported never spending their time this way, while also finding a nonsignificant relationship between watching television and deviant behavior. Generally, these findings suggest that relaxing alone may be associated with substance use and other forms of deviance, while television watching seems to be merely unproductive (Zill et al., 1995).

There are a few other activities that youth engage in while at home, including housework, homework, and sibling care. These activities consume far fewer hours from adolescents and often are not related to or reduce problematic developmental outcomes. For example, the previously noted study by Barnes et al. (2007) examined the

relationship between housework, homework, and sibling care and five problem behaviors and found that homework was significantly and negatively related to cigarette smoking, illicit drug use, and delinquency; however, sibling care and housework were not significantly related to any of the problem behaviors. Another examination using the Monitoring the Future data found that working around the house was significantly and negatively related to heavy alcohol use, marijuana use, other drug use, and dangerous driving (Osgood et al., 1996). Agnew and Petersen (1989) used a wider measure of “housework activities,” however, and found a positive relationship between housework activities (e.g., baby-sitting, cleaning, mowing lawn, house work, and yard work) and total delinquency, serious delinquency, and minor delinquency.

In sum, while adolescents spend the most time at home, much of it is spent sleeping. Adolescents who spend less time at home are at higher risk for engaging in problem behaviors than adolescents who spend more time at home. Generally, many of the activities discussed in this section have no effect or are negatively related to adolescent development. The two activities that have been shown to be related to problematic outcomes are not getting enough sleep and spending time alone or not doing anything in particular. There are additional after-school activities that can take place at home (and other locations) that also have been shown to have a positive effect on an adolescent’s transition to adulthood, such as arts, crafts, and hobbies, as discussed later in this chapter. Next, I turn to the school setting and highlight some of the literature on schools and peers.

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## School

Not surprisingly, during the school year, the school is the setting where adolescents spend the most nonsleeping time. Adolescents report spending more than 6 h a day in school (American Time Use Survey, 2010; Juster et al., 2004), and researchers have found that almost 31% of adolescent time use in self-reported time diaries is spent in class time (Larson & Richards, 1991).

Wikström et al. (2010) examined differences between 11-year olds of low, medium, and high crime propensity in terms of where they spent their nonsleeping time and found that youth with a low propensity toward crime spent more time in the school output area than youth with a high propensity toward crime (31% compared with 22%, respectively). Considering the home and school output area together, they reported that the lowest propensity youth spent only 21% of their time outside of their home and school areas, compared with 33% of time spent outside the home and school area for the high propensity youth (Wikström et al., 2010). These are spatial areas and it is therefore unclear whether these youth were actually at either location, but clearly the high propensity youth spent more time away from the two areas where most adolescents spend their time, home and school.

Not all adolescents attend school, as some drop out due to employment opportunities, disciplinary problems, or academic failure (Battin-Pearson et al., 2000; McNeal, 1997; Rumberger, 1987; Stearns & Glennie, 2006). There are definitional and collection issues that preclude determining how many adolescents drop out (see Rumberger, 1987), however, The National Center for Education Statistics reported a dropout rate of 8.1% for 16–24-year olds in 2009. Race disaggregated numbers showed a dropout rate of 5.2% for whites, 9.3% for blacks, and 17.6% for Hispanics. Research indicates that youth who drop out of school are at higher risk for problem behaviors including substance use and teen pregnancy (e.g., Biddle, Bank, Anderson, Keats, & Keats, 1981; Manlove, 1998; Townsend, Flisher, & King, 2007). Aside from risky behaviors, there are considerable public and private costs associated with dropping out of school (Oreopoulos, 2007; Rumberger, 1987; Stearns & Glennie, 2006; Sum & McLaughlin, 2008; Vernez, Krop, & Rydell, 1999). Overall, adolescents who spend little or no time at school are at risk for a range of short- and long-term negative developmental outcomes.

While at school, adolescents interact with two domains of individuals. First, adolescents interact with a variety of adult school administrators. This supervised interaction can take place both

during and after school hours, such as playing sports or being a member of a club (after-school activities are discussed later). Second, and more meaningful from the perspective of adolescents, they interact with peers. These interactions can set the stage for future interactions that do not happen on school grounds (Payne & Cornwell, 2007). This is important because research has demonstrated the potential for problematic outcomes associated with peer interactions that take place away from adult supervision, as will be discussed later in this chapter. On the other hand, schools provide a path for positive peer interactions through engaging in extracurricular activities where, for example, more visibility has the potential to translate to higher status among peers (Corsaro & Eder, 1990). The remainder of this section highlights some of the types of studies and findings from researchers who have examined the relationship between schools, peers, and developmental outcomes.

## Peers

Schools are obviously educational institutions that serve an important function in our society. For adolescents, however, they serve as a dominant setting for the development of peer cultures and friendships (Corsaro & Eder, 1990; Haynie, 2001) because adolescents spend time engaging with friends and maintaining friendship networks while at school (e.g., Larson, 1983). Additional support can be found within data where school students were asked to name friends followed by a check of the school roster to identify those adolescents who attended the same school as the respondent. Network studies with these school-based samples have found that the majority of friends named attended the same school as the respondent (Ennett & Bauman, 1993; Haynie, 2001). From the school rosters and friendship nominations, researchers are sometimes able to determine the number of nonschool friends a respondent named. The number of nonschool friends has been shown to be related to gang initiation (Kreager, 2004), violence, property crime, and substance use (Anderson & Falci, 2011), and

the networks of youth with many out-of-school ties may be less cohesive and more transitive (Kreager, Rulison, & Moody, 2011).

Below, I discuss a few of the common ways in which researchers have examined the effects of schools and peers, which are not intended to be mutually exclusive or exhaustive. Additionally, this peer literature is somewhat distinct from the gang literature. It has been well-documented that gang membership can be a critical developmental turning point for adolescents, leading to problems at school, risky sexual behavior, and delinquency (see Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Space precludes a comprehensive summary of the literature on peer effects on adolescent behavior, although I will return to the topic of adolescents spending time with their friends while not at school later in the chapter.

First, researchers have found that student characteristics within a school setting play an important role in influencing adolescent behavior among peers (Alexander, Piazza, Mekos, & Valente, 2001; Anderson, 2002; Felson, Liska, & South, 1994; Haynie & Osgood, 2005; Osgood & Anderson, 2004). Schools broadly, and classmates in particular, provide a ready-made pool of same-aged adolescents from which friendships can be formed and maintained (Cairns & Cairns, 1994; Weerman, 2011). Researchers have found that group-level and emergent characteristics of students within schools and the networks in which students are embedded have an effect on an adolescent's behavior. For example, Anderson (2002) found that the proportion of youth within a school that lived with only one parent affected the amount of delinquency of each youth within the school, regardless of family structure of the respondent. Alexander et al. (2001) examined cigarette smoking, peers, and schools and found that if at least half of the members of the peer network smoked, then it increased the odds that the respondent smoked. Additionally, they found support for an interaction between the smoking prevalence within a school and popularity, where popular youth were at greater risk for smoking when there was a high prevalence of smoking within the school compared with popular youth who attended a school with a low prevalence of

smoking. Studies such as these two examples move beyond micro-level examinations of peer effects by examining group- and school-level student characteristics in order to examine the ways they affect an individual's behavior.

Researchers also have examined the structural properties of social networks (Falci & McNeely, 2009; Haynie, 2001, 2002; Krohn, Massey, & Zielinski, 1988; Schreck, Fisher, & Miller, 2004). These network properties are derived from respondent friendship nominations and describe the connections between an adolescent and the other respondents' nominations, such as how many nominations a respondent receives (popularity), the density of the network, the degree to which members interact with each other in different contexts (multiplexity), or the degree to which a respondent is embedded in the network (centrality). For example, Haynie (2001) examined popularity similar to that of Alexander et al. (2001) discussed above using a network analysis and found an interaction effect between popularity and peer delinquency. This indicated that whether an adolescent's friends were delinquent mattered more for popular than less popular youth when predicting whether an adolescent was likely to engage in delinquency. Other network research examples include support for the relationship between increased multiplexity and decreased adolescent smoking (Krohn et al., 1988), a decreased risk of violent victimization for youth in dense, conventional networks (Schreck et al., 2004), and higher levels of depressive symptoms in very large or very small networks (Falci & McNeely, 2009). Kreager et al. (2011) recently expanded previous research by examining how group-level characteristics affect network properties. One of the interesting findings was that group-level drinking had a positive and significant effect on network cohesion, status, and stability, which suggests that engaging in certain forms of risky behavior may be viewed as a positive activity within some adolescent peer networks.

A final way of examining the role of peers with regard to risk-taking behavior is to simply consider whether the respondent is a member of a clique, a liaison (someone who has friendships in



different cliques), or an isolate (a respondent with little to no interaction with peers). Being an isolate tends to be associated with a variety of negative developmental outcomes. For example, Ennett and Bauman (1994) examined the role of peer networks on adolescent smoking and found that youth who smoked were more likely to be isolates than youth who were members of peer groups. Kreager (2004), however, found that isolates were more likely to have been initiated into a gang or have committed a property crime when they reported negative peer encounters, but these results did not extend to isolates who simply were ignored by their peers. It is important to point out that a researcher who is interested in the structural properties of peer networks and has a school-based sample cannot examine isolates because they either do not have a network or their network consists primarily of out-of-school friends.

Interactions between peers at school often do not rise to the attention of school administrators unless something unpleasant occurs, such as a fight or a report of bullying. These interactions, however, allow for information to flow between network members, such as passing along some gossip or who will host the next party (Haynie, 2002; Payne & Cornwell, 2007). This is important because delinquency is often a group event (Zimring, 1981), and schools pull together same-aged youth every day and then release them at a time when many parents are still at work. The time between the end of the school day and the end of the parents' work day (about 2–6 p.m.) shows a peak in juvenile arrests, and youth are at an increased risk for delinquency, victimization, and sexual activity (Cohen, Farley, Taylor, & Schuster, 2002; Gottfredson et al., 2001; Osgood, Anderson, & Shaffer, 2005; Snyder & Sickmund, 1999). I return to the topic of socializing after school in the next section.

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## After School

Adolescents in the USA have considerable discretionary time compared to adolescents in previous generations and in other countries. This free

time tends to occur right after school when adults still have work obligations. Youth have a variety of extracurricular activities to choose from, such as sports, clubs, community volunteer work, or participating in after-school programs. Whatever the adolescent ends up doing, the activity generally can be considered as either a structured or an unstructured activity, and this section is divided accordingly. I begin with a brief discussion of the relationship between structured, extracurricular activities, whether or not it is a school-sponsored activity, and developmental outcomes. These organized activities tend to be supervised in some manner, and the goal is to promote positive adolescent development and the basic competencies needed for a healthy transition to adulthood (see Larson, 2000; Mahoney, Larson, Eccles, & Lord, 2005). This sizable literature goes beyond the scope of this chapter, especially when placed in the context of what adolescents could be doing. In particular, unstructured activities, mainly those that are unsupervised with friends and in excess, have been shown to be related to a variety of negative developmental outcomes. As such, the remainder of this section covers the relationship between unstructured socializing and adolescent development, an important issue considering socializing with friends is the first choice of free time activities for adolescents (Larson & Kleiber, 1993).

## Structured Activities: Extracurricular Activities

Adolescents who participate in extracurricular activities tend to report lower levels of risky behaviors than youth who do not spend their after-school time in structured or supervised activities. For example, participation in extracurricular activities has been shown to be related to a reduced likelihood of offending and substance use (Darling, 2005; Elliott & Voss, 1974; Mahoney, 2000; Zill et al., 1995), and a reduced likelihood of dropping out of school and other related measures of academic achievement (Darling, 2005; Eccles & Barber, 1999; Mahoney, 2000; Mahoney & Cairns, 1997; McNeal, 1995;



Zill et al., 1995). Additionally, these youth are more likely to show evidence of prosocial development (Eccles & Barber, 1999; Kleiber et al., 1986; Simmons & Blyth, 1987). These findings also extend to activities that could occur at home, school, or some other location but that provide adolescents with some loose structure about how the time is spent, such as hobbies, arts, and crafts (Kleiber et al., 1986). There is some evidence of positive psychosocial adjustment (e.g., mood, self-efficacy, and self-esteem) among youth who participate in organized activities (see Mahoney et al., 2005), although Darling (2005) did not find an association between participating in school-based extracurricular activities and depressive symptoms.

One question that researchers have is whether youth who are inclined to be more prosocial are more likely to engage in extracurricular activities compared with the high-risk youth. Zill and colleagues found that youth “who would seem to be most in need of organized skill-building and character-nurturing activities” were least likely to engage in extracurricular activities across three nationally representative datasets (1995, p. 51). When high-risk youth do participate in extracurricular activities and programs, there is some evidence that effects are stronger than for the lower-risk youth (e.g., Spoth et al., 2007). Here too, however, the peer network may play a role. Mahoney (2000) examined high-risk youth using longitudinal data and found that youth who participated in extracurricular school activities had reduced rates of dropping out of school early and criminal arrest, but that this effect was dependent on whether the adolescent’s peer network also participated in school activities. The participation of high-risk adolescents notwithstanding, many studies report either a positive or a neutral effect of participating in an organized activity on adolescent development compared to youth who do not participate in an organized activity (see Feldman & Matjasko, 2005 for review).

The one area where the findings of less risky behavior for youth who participate in an after-school activity are mixed is for school sports. Some researchers have reported finding that participation in sports is associated with higher levels

of drinking than participation in other kinds of extracurricular activities (Borden, Donnermeyer, & Scheer, 2001; Burton & Marshall, 2005; Darling, 2005; Eccles & Barber, 1999; Zill et al., 1995), and for males, more risky sexual behavior (Miller, Sabo, Farrell, Barnes, & Melnick, 1998, 1999; Zill et al., 1995). The argument is not that sports participation is the issue, but rather the effects are related to masculine identity and peer cultures (e.g., Gardner, Roth, & Brooks-Gunn, 2009; Kreager, 2007), such as identifying as a “jock” (Miller et al., 2003), because these findings do not typically extend to girls when examined separately (Gardner et al., 2009; Zill et al., 1995). For males at least, and dovetailing with the earlier peer discussion, the peer culture seems to play a role in facilitating (or reducing) risky behaviors. Longitudinal examinations do not find long-term negative developmental effects from this “partying” behavior, and participation in school sports seems to translate to positive educational outcomes, such as creating a school bond and raising educational aspirations (Marsh & Kleitman, 2003) as well as being less likely to drop out of school (Mahoney & Cairns, 1997; McNeal, 1995; Zill et al., 1995).

### **Unstructured Activities: Leisure Time with Peers**

Whom adolescents are spending their time with is clear in the school setting. Youth spend time maintaining friendships and the school administrators are available to fill the role of potential handlers by providing adult supervision. When youth are home, they are primarily either with other family members or they are home alone. Research has demonstrated that time with family can protect against the development of problem behaviors in adolescence, while youth who spend more of this time with friends are more likely to develop problem behaviors (Barnes et al., 2007). This is significant given the importance of socializing with friends to adolescents (Larson & Kleiber, 1993). The American Time Use Survey (2010) found that adolescents enrolled in high school spend about 3½ hours a weekday engaged

in “socializing, relaxing, and leisure” (recall relaxing alone was related to deviance), which was the most amount of time spent on any activity, excluding educational activities and sleeping. Zill et al. (1995) found that 88% of 12th graders reported getting together with friends at least once a week, and 48% said almost every day.

There is considerable support in the literature for the idea that adolescents who spend more of their leisure time with friends and without adults around than other adolescents are at an increased risk for a range of deviant behaviors, such as delinquency, sexual activity, and dropping out of school (Agnew & Petersen, 1989; Biddle et al., 1981; Flannery, Williams, & Vazsonyi, 1999; Junger & Wiegiersma, 1995; Riley, 1987; see Osgood et al., 2005). For example, Agnew and Petersen (1989) found that delinquency was positively related to both unsupervised social activities and leisure activities with peers and was negatively related to time spent in organized leisure activities. Riley (1987) found that boys who spent much time outside of their home and boys who would go out frequently with friends had high delinquency rates. Finally, Flannery et al. (1999) found that 6th and 7th graders who spent after-school time with peers without adult supervision reported higher levels of aggression, substance use, delinquent behavior, and susceptibility to peer pressure than those youth who spent this time at home with an adult present. Hence, the research suggests that youth who spend their leisure time with peers and unsupervised are more likely to engage in a variety of risky and negative behaviors.

The role of unstructured socializing with peers in the absence of adults is the centerpiece of Osgood et al. (1996) routine activity theory of general deviance. They proposed that variations in individual offending could be linked to variations in exposure to situations conducive toward delinquency. In particular, the motivation for a deviant act was inherent in the situation (Briar & Piliavin, 1965), arising through spontaneous processes like a pick-up game of basketball (Gold, 1970). The main concept was unstructured socializing with peers in the absence of adults, whereby youth who spent more time engaged in this leisure

activity were more likely to engage in delinquency. In formulating their theory, they pointed to the substantial literature showing problem behavior was associated with informal socializing with friends (see also Osgood et al., 2005).

Osgood et al. (1996) found strong support for their theory through fixed-effects models using five waves of the Monitoring the Future data. Additional research using the routine activity theory of general deviance also has found support for the relationship between unstructured socializing with peers and problematic outcomes. For example, Barnes et al. (2007) found that time spent with peers was strongly and positively associated with heavy drinking, cigarette smoking, illicit drug use, and sexual activity. Similarly, Maimon and Browning (2010) found a positive effect of unstructured socializing on violent behavior using the PHDCN Longitudinal Cohort Study. Clearly, there is ample evidence pointing to a relationship between unstructured socializing with peers in the absence of adults and a variety of negative behaviors. An important aspect of this opportunity theory worth highlighting is that the effect of unstructured socializing with peers on delinquency does not depend on the delinquency of the peers one is “hanging out” with (Haynie & Osgood, 2005; Osgood et al., 1996). This finding highlights the importance of unstructured time use with friends without adult supervision rather than having friends who are delinquent.

What is interesting about unstructured socializing with peers in the absence of adults is that the processes that facilitate an increased risk for delinquency and other problem behaviors seem to have an emergent effect at other units of aggregation. Contextual level studies suggest that an adolescent is at an increased risk for delinquency when he or she is in an environment where many adolescents spend time engaged in unstructured socializing, regardless of their own time use. Osgood and Anderson (2004) proposed that it would be easier to find co-offenders when many adolescents are spending an abundance of time hanging out together. They found that the average school-level amount of time spent engaged in unstructured socializing was related to delinquency

with data collected from eighth-graders. On the other hand, mixed support was provided by Anderson and Hughes (2009) using the National Longitudinal Study of Adolescent Health (Add Health) data. These authors found a school-level emergent effect of unstructured socializing on adolescent violence and marijuana, but not for property crime and alcohol use.

The after-school time for adolescents is a critical place where developmental trajectories can be affected. Youth who spend time in extracurricular activities report healthier outcomes than youth who do not spend time in organized activities, with caveats around the quality of the extracurricular activity (Mahoney et al., 2005). On the whole, however, these activities promote basic skills and competencies in adolescents that will be used in adulthood. The same cannot be said of unstructured leisure time by adolescents when they spend that time in the presence of other adolescents.

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## Future Research

There is little research that takes a comprehensive view of how adolescents spend their time, including where and with whom, and how this time use translates to development and transitions to adulthood. There are many interesting questions still to be explored, particularly in the area of peers, activities, and risky behaviors, although researchers often are limited by the lack of available data. As a result, I discuss below some enhancements to adolescent surveys that would allow for a fuller examination of the effects of activities and companionship on the life course. But first, the issue of informed consent with juveniles warrants some discussion because research that uses self-reported data from adolescents is affected by the consent process. It is against this backdrop that opportunities for future research are presented.

Briefly, there are two ways that informed consent is obtained from juveniles, active and passive. Active consent requires a form to be signed by the parent if they agree to their child being included in the research study, while passive

consent requires a form to be signed if a parent does not wish for their child to participate. Esbensen and his colleagues (1999) examined response rates between the two and found that passive consent procedures produce response rates of 80–100% compared with 40–60% for active consent. Further, they noted that obtaining active consent rates in the 40–60% range requires substantial effort and is likely cost prohibitive for most researchers (see Esbensen, Miller, Taylor, He, & Freng, 1999). This is problematic because active consent samples may produce data that are not representative of the population. Esbensen and his colleagues (1999) were able to examine youth whose parents did not opt them out of a passive-consent pilot study but who also did not return an active consent form for the main evaluation. They found statistically significant effects of both race and family status, where white adolescents and those from intact families were more likely to be in the active consent group. Additionally, these youth were less impulsive and more prosocial than the youth who were included in the passive consent sample but not the active consent sample. They concluded that “The informed consent process has a deleterious effect on response rates and, to some extent, on sample representativeness” (Esbensen et al., 1999, p. 327).

These findings raise the question of whether the exclusion of some high-risk youth from studies of activities and peers when active consent is needed alters relationships between key developmental variables of interest. For example, is the effect of extracurricular activities on risky behaviors overstated in active consent samples compared with passive consent samples due to selection bias? Further, this effect would be attenuated in studies using longitudinal data because the attrition of the higher-risk youth on the front-end would combine with the attrition that occurs across waves of data collection. While the issue of consent is largely out of the hands of researchers, more research is needed to determine how and the degree to which consent affects the representativeness of the sample, and by extension, what we know about the relationship between adolescent activities, risky behavior, and

life course outcomes. This is important given the majority of studies discussed in this chapter used self-reported data collected through active consent procedures.

## Schools and Networks

There is some interesting work to be done in the area of schools, peers, and risky behaviors. The availability of data that can tie respondents to their network and the inclusion of self-reported data from each member, combined with advances in network analysis, have allowed for the examination of the ways in which a peer group or school affects adolescent development. The aforementioned findings concerning active consent raised the question of whether the exclusion of some high-risk youth from studies of peers and activities alters relationships between key developmental variables of interest. Additionally, to the degree that the youth included in the passive consent sample but missing from the active consent sample know each other, it would suggest that previous examinations of peer network effects are limited. Stated differently, we may know little about the effects of the networks of high-risk youth if our network data disproportionately contain information from networks of youth who, on average, are more prosocial and are less impulsive.

Relatedly, I noted earlier that youth with more out-of-school friends showed more problematic outcomes than youth with fewer to no out-of-school friends. While most school-based surveys include a majority of nominations that are to other youth attending the same school, there can still be a sizeable number of out-of-school nominations. For example, an examination of the Add Health data found that 68% of friendship nominations were made to same-school adolescents (Falci & McNeely, 2009). Given the problematic outcomes associated with out-of-school friends and the demonstrated importance of peers, an obvious benefit to research would be able to study these nonschool youth who may be instrumental in negatively affecting developmental trajectories of in-school adolescents, such as

influencing a decision to drop out of school or join a gang. A complete examination of the ways that peers and network structure affect an adolescent's behavior would require collecting these data, although the informed consent process is complicated unless the individuals named are of a legal age to provide consent, and the extraneous data collection would add cost to already expensive projects. Overall, however, there is much to learn about the relationship between in-school and out-of-school youth and how these mixed networks interplay with important life course outcomes like gang participation, college enrollment and completion, employment, and marriage.

Finally, there is a clear need for data collected at short intervals on peers and activities across childhood, adolescence, and early adulthood. First, this would allow researchers to establish whether changes with important life course consequences are happening faster than our data collection efforts currently capture, or whether change that has been measured at yearly (or more) intervals is sufficient. Additionally, the introduction of statistical techniques that can measure both changes in network ties and changes in individual behavior across waves of data (SIENA, for example, see Snijders & Baerveldt, 2003; Weerman, 2011) offers new opportunities for examining the relationship between companionship, activities, and life course outcomes. In particular, the adolescent years are a time when friendships are regularly forged, maintained, and broken, and, as children move through adolescence and toward adulthood, they are given more choices and freedom for how they use their time. As a result, companionship and activities are changing throughout adolescence, but the frequency and life course consequences of these changes are unclear, and more research is needed. For example, researchers can examine the short- and long-term consequences of friending and unfriending by examining how the breaking and/or forming of friendships across a school year relates to the breaking and/or forming of old and new friendship ties and changes in activities. Changes in companionship and activities may also be preceded by transitions such as marriage,

employment, and joining the military, transitions that have been shown to stunt criminal behaviors (Sampson & Laub, 1993). For example, Warr (1998) found that marriage reduced time spent with friends as well as exposure to delinquent friends, and this translated to less delinquency. Thus, it may be that a male adolescent who is spending his free time in public places with friends but then starts dating would change not only how much time he is spending with his friends, but also the location of where he is spending that time. Rather than being in public or in other places that are conducive toward deviance, that adolescent now spends his time at his home or the home of his romantic partner. It is even possible that time spent with friends shifts from public places to private spaces, for example, because romantic partners may not tolerate “hanging out” in public or because the adolescent fears gossip or other information traveling back to their partner. Future researchers should examine how time spent (and where) changes across the life course, what events tend to change the way an adolescent spends time, and how those changes in time use affect behavior and life course outcomes.

### **Time Use and Activity Data Collection**

Zill et al. (1995) conducted an extensive examination of time use, risky behaviors, and outcomes using three sources of national data and found that adolescents had considerable discretionary time available. Additionally, rather than engaging in constructive and skill-building endeavors, adolescents spent this time watching television, talking on the phone, and hanging out with friends in public places. After finding that few adolescents engaged in organized, productive activities, they recommended the institutionalization of recurring time use surveys in order to further study the relationship between adolescent activities and risky behavior. Indeed, there would be great benefit in national longitudinal time use surveys of adolescents (and especially if network information could also be collected for at least some adolescents). This would allow researchers to

track participation in various types of programs and activities over time. Researchers also could continually develop instruments of activities based on current reports of what adolescents are actually doing. For example, time spent on computers and other various devices could slowly displace time spent watching television. These items are mobile unlike the television, and could lead to an increased risk of victimization (Felson, 2002), or they can be used for deviance, such as viewing Internet pornography and cyber-bullying. Large-scale, recurring time use surveys of adolescents could alert researchers to points where participation in an activity starts to decline across all adolescents, likely signaling a shift to new or different activities. Research could then begin to determine the relationship between the new way that adolescents are spending their time and developmental outcomes.

To collect time use information, adolescents must recall their activities over some designated period of time. This was typically done by adolescents keeping a paper diary or by being asked by researchers to recount their activities over the previous days. Time diaries were improved with “experience method sampling,” or ESM, where researchers collect information by having the respondent carry a beeper (or similar device) and, when contacted, recording their activity along with other information deemed important by the investigators, such as who is in their company and their location. Researchers found that this method detected behaviors that respondents often did not think to record, such as idling, doing nothing, or thinking, but that the youth did not carry these devices everywhere (see Larson, 1989). The “smart” technology embedded in many devices today, however, may make ESM less of a burden than carrying beepers, while also providing an avenue for collecting detailed, real-time data from adolescents about activities and companionship. Researchers should explore the feasibility of distributing “smart” devices like cell phones to adolescents (including parental controls and paying for the associated data plan) with an app that includes a survey or time diary that has been designed by the researchers (see Eagle & Pentland, 2006 for review of using



Bluetooth-enabled mobile phones for data collection). While traditional survey data collection can be slow, the ability of the Internet to transmit data quickly and efficiently can be of great benefit. A program with an alarm and/or text message to alert respondents to fill out their time budgets would reduce the cost that is associated with a research team collecting this information. Methodologically, it would be interesting to know whether there are benefits in terms of time, cost, and response rates. For example, if researchers are able to link survey participation with the adolescent keeping the phone, this may prove to be an incentive and reduce attrition. Importantly, youth who drop out of school could still be eligible to participate in the surveys, thereby providing valuable additional information not captured in school-based data. Additionally, many adolescents already carry appropriate devices and it is possible that some of them would opt to download the research survey app to their own phone, which would help reduce the cost of the project. Some considerations include the protection of respondents, the transmitting of sensitive information, the cost of both the data plans and creating the project-specific app, and the collection and management of the data. On the other hand, this method might prove to be a cost-efficient way to collect information on activities, peers, and risky behaviors that affect life course outcomes at both shorter intervals and over longer periods of time.

Finally, researchers need to consider where youth spend their time in more detail. For instance, an adolescent may report being at the house of a best friend, but is this house in proximity to the home and school of the adolescent? What kind of areas do they pass through when they travel back and forth from school or the house of a friend and how long does it take? Wikström et al. (2010) were interested in the role of environment in crime causation and used a relatively new method called space-time budgets to determine the physical location of where adolescents were spending their time across all the hours of a 4-day period. With this method, they were not only able to determine the amount of time spent in the spatial areas around home and

school, but also the distance between settings frequented, how much time adolescents spent in spatial areas with low collective efficacy, and the like. Future researchers should employ space-time budgets, perhaps in conjunction with a survey app designed to collect the spatial information. It is worth exploring, for example, whether the amount of time spent engaging in unstructured socializing with peers in the absence of adults matters as much as the environment in which that time is spent. Traveling a short distance across a bad environment with friends on a regular basis but not spending considerable time with them otherwise might prove worse than spending a lot of time with friends at home without adult supervision. It is also worth exploring whether some kinds of environments interact with the amount of unstructured socializing engaged in by adolescents, thereby increasing the deviance of only the youth who have encountered a particular environment and who also spend a certain amount of time not doing anything in particular in that environment. Space-time budget data could allow a researcher to determine where youth go, including the average distance and terrain traveled, in addition to collecting information on the activities and the length of time spent in the different settings an adolescent encounters. This is important information given that adolescents who spend more time in public places and with friends show more problematic developmental trajectories. More research is needed to examine the ways in which peers, environment, and time use interact to increase the likelihood of short-term risky behaviors that can have negative effects on life course outcomes.

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## Conclusion

In this chapter, I briefly summarized research that has examined where and with whom adolescents spend their time and highlighted the areas associated with problematic behavior. I followed this with a discussion of some areas where future research is needed and ways this might be accomplished. Aside from the points discussed above, at the macro-level, researchers should examine



how an increase or decrease in the length of the school day corresponds to problem behaviors that tend to occur in the hours after school. The amount of discretionary time available to youth is, in part, the result of a mismatch between how things were in an agrarian society and the contemporary role of adults and adolescents in society. In a perfect world, school districts would sign on to a project where the school day was lengthened such that the day of adults and children are more in sync and comparable control schools would be chosen. Researchers then could compare outcomes that are associated with problematic development and life course outcomes, such as juvenile arrests and teen pregnancies, both before and after implementation of the longer school day as well as between schools that did and did not adjust the length of the day. A change in the length of time at school could prove especially beneficial if positive educational outcomes increased, while at the same time problem behaviors after school decreased.

The research presented in this chapter demonstrated that where adolescents are and who they are with can affect adolescent behavior in positive or negative ways. The healthiest outcomes are associated with adolescents who spend reasonable amounts of time with both their family and friends and do not dislike or have problems with school or school peers. These youth also tend to spend less time alone or with friends in public settings. Problematic development is associated with too little (or low quality) time spent with family and especially when the time is spent in the presence of peers in the absence of adults. Too much of this type of time use exposes adolescents to situations that are conducive toward delinquency. Additionally, extracurricular activities after school reduces risky behaviors for those who participate compared with those who do not participate, although there are differential results based on the quality and type of extracurricular activity. Future research should continue to explore the ways that schools generally, and peer networks specifically, work to facilitate or inhibit behaviors that affect adolescent development and, consequently, the life course.

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### Abstract

One of the strongest correlates of crime is age, with a common empirical finding of an adolescent rise and peak of offending. One theory in particular, Moffitt's developmental taxonomy, advances a specific hypothesis for the age-crime relationship, with a focus on a specific typology of offenders, adolescence-limited, who offend for specific reasons during adolescence. This chapter reviews the adolescence-limited hypothesis, relevant empirical research, and concludes with summary statements, challenges to Moffitt's adolescence-limited hypothesis, and directions for future research.

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### Keywords

Age-crime curve • Moffitt • Developmental taxonomy • Adolescence-limited

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## Introduction

The best thing about getting old is that all those things you couldn't have when you were young you no longer want.

L.S. McCandless

Adolescence is a time of rapid biological, psychological, and especially social change. It is affected by an interplay of genetic, familial, and non-familial influences that permeate several life domains, but primarily parent-child relationships, puberty, peer relations, the development of the self, and adolescent-problem behavior (Steinberg & Morris, 2001). During this transitory stage from childhood to adulthood, adolescents begin to prepare for adult roles (Carnegie Council on Adolescent Development, 1985; Simmons & Blyth, 1987) and are given some but not all privileges and responsibilities that are afforded adults. As a result, adolescents' desire and drive for autonomy are quite strong and expressed in various respects, including regular challenges to authority. Not surprisingly, compared to children and adults, adolescents show key differences in their susceptibility to peer influence, their future orientation, reward sensitivity, as well as their capacity for self-regulation.

Therefore, adolescence is a period in the life-course where problem behavior—especially delinquency and crime—emerges and ultimately peaks. Yet, a precise understanding of why delinquency begins and peaks in adolescence is not well developed. A variety of sociological, psychological, criminological, and recently biosocial explanations have been developed and/or applied to understand the strong relationship between age and crime. This chapter focuses on one such explanation: Moffitt's (1993) theory of adolescence-limited offending. In so doing, we review the theoretical framework as well as ensuing empirical research in order to comment on the viability of the theory to explain the adolescent rise and peak of offending. The chapter closes with summary statements and an outline of promising research directions.

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## Moffitt's Developmental Taxonomy

Perhaps the strongest correlate of crime is that of age. Virtually everywhere and at all times it has been observed that there is a strong relationship between age and crime, such that crime rises in early adolescence, peaks in late adolescence, and precipitously declines in the very late teens and early 20s (Hirschi & Gottfredson, 1983; Quetelet, 1831). This fact of crime is so strong that virtually any serious theory of crime must come to terms with it (Braithwaite, 1989). Beginning with this finding, Moffitt (1993) developed a taxonomy that was designed to explain the age-crime relationship.

Moffitt's developmental taxonomy argues that the aggregate age-crime curve depicted over the last century and a half is characterized by two distinct offender profiles. The first type, life-course-persistent, is comprised of a small group of individuals (~5–8%) who exhibit early, chronic, persistent, and serious forms of antisocial, delinquent, and criminal behavior that emerges very early in the life-course (i.e., childhood) and continues via different manifestations and across various life domains throughout adolescence and into adulthood. The origins of life-course-persistent offending may be found in compromised neuropsychological development and disadvantaged familial and economic environments. In this case, life-course-persistent path children are born with cognitive deficiencies that exert negative effects on caretakers and do not improve due to deficient environments. Left uncorrected, a series of behaviors and negative outcomes detrimentally influence the life-course of these individuals, and they begin to encounter early failures in school and interpersonal relationships. Their use of antisocial behaviors to obtain the outcomes they desire becomes a part of their overall schema, which then results in adverse reactions by prosocial agents and produces barriers to, or knives-off, conventional opportunities and success. As could be inferred, the unaddressed injurious childhoods, poor cognitive ability, and resultant



antisocial lifestyles limit any prospects for salient change. Therefore, the majority of life-course-persistent offenders evince numerous life failures.

The second group of offenders in Moffitt's taxonomy, which remain the focus of this chapter, is referred to as adolescence-limited, mainly because their participation in offending is restricted to the adolescent phase of the life-course. Among these individuals, delinquency is a function of two features of adolescence: the "maturity gap" and the peer social context. The notion underlying the maturity gap is that adolescents biologically resemble adults but are not treated socially or legally as adults and are thus denied most adult privileges and responsibilities (i.e., alcohol use, driving privileges, and full-time employment). Recognition of this social- and biological-maturity mismatch produces a sense of strain that is then met with other similarly situated individuals, i.e., their peers. During adolescence, peers become an influential socializing agent and peer relationships begin to be prioritized over those of the adolescent's family. As all individuals are negotiating the adolescent period and are thus experiencing the same sets of strain, they encounter potential role models in other, older-aged peers who have partaken in delinquent activities in order to alleviate their perceived strain. Thus, adolescence-limited offenders engage in delinquent activities that resemble adult status such as smoking, drinking, sexual activity, and theft (so as to obtain economic resources and goods) in order to alleviate their strain and acquire a sense of being the kind of person they think they are—an adult. As they leave their teenage years and enter their 20s, most but not all adolescence-limited offenders curtail their delinquent experimentation because they are now legally permitted all of the things that they once coveted. And because these individuals do not have the same damaging risk factors that their life-course-persistent counterparts have (especially cognitive problems and knifed-off opportunities), their transition to adulthood and adult roles of education, employment, and interpersonal relationships is virtually smoothed.

Of course, it is possible that some life-course-persistent offenders "recover" from their early life difficulties and that some adolescence-limited offenders become ensnared by reactions to their delinquent involvement such that they continue their offending and adverse behaviors into adulthood. These snares could include a criminal arrest (and hence formal label), a pregnancy which may alter particular life paths, and a drug or alcohol addiction.

### Summary of Moffitt's Taxonomy

Moffitt's adolescence-limited hypothesis attributes import to two central risk factors, the maturity gap and the peer social context which provides criminal models, teaches values conducive to delinquency, and otherwise fosters delinquent behavior (Akers, 1998). The importance of peers cannot be over-emphasized. Adolescence is a stage of the life-course when time spent in unstructured activities with peers in the absence of authority figures is common, which has been found to be a strong correlate of crime and helps account for the age-crime relationship (Osgood et al., 1996, p. 635). Moreover, the decision-making patterns of adolescents are quite different from the decision-making processes observed among children and adults. For example, Gardner and Steinberg (2005) found that while adolescents, college students, and adults performed similarly on a risk-taking task when performing the task alone, the presence of same-aged friends doubled the risk-taking among adolescents and increased it to 50% among college students—but had no effect on adults. Nevertheless, most adolescence-limiteds age out of crime because they do not suffer the injurious childhoods or compromised neuropsychological functioning of life-course-persisters. As they leave adolescence and enter adulthood, they become more future oriented, which increases their consideration of future consequences and the costs of offending, de-emphasizes the rewards that risk-taking provides, and improves self-regulation (i.e., decline in impulsivity). In turn, they enter into traditional adult roles of employment and relationships and

become law-abiding citizens (Steinberg & Morris, 2001).<sup>1</sup>

### Prior Research Testing Moffitt's Adolescence-Limited Hypothesis

It is well known that involvement in delinquency, drugs, and alcohol is especially common during adolescence, but that most adolescents who experiment with delinquency and/or drugs and alcohol desist and grow up to be law-abiding adults. In this section, we review studies that have specifically examined Moffitt's adolescence-limited hypothesis in order to better understand these adolescent offending patterns. For ease of presentation, we group these studies with respect to their relationship to adolescence-limited offending: (a) genetic and biological susceptibility, (b) mental health disorders, (c) individual-level behavioral risks, (d) family and peer effects, (e) gender and race, (f) the maturity gap and peer social context, (g) in comparison to life-course-persistent offenders/offending, and (h) desistance and snares. As will be seen below, most research testing Moffitt's developmental taxonomy has focused on the patterning and etiology of life-course-persistent offenders, with much less empirical scrutiny afforded to adolescence-limited offenders.<sup>2</sup>

<sup>1</sup>To be sure, there are other theories that have been developed to explain the rise and peak of adolescent offending. Patterson and Yoerger (1997) set out a learning model in which decreases in parents' monitoring and supervision during adolescence lead adolescents to offend. Another explanation is Agnew's (2003) integrated theory of the adolescent peak in offending. Recalling that adolescents are given only some adult privileges and responsibilities, Agnew believes that this has important effects on increasing delinquency among adolescents, including (a) a decline in supervision, (b) increased social and academic demands, (c) participation in a larger, more diverse peer-oriented social world, (d) an increase in the desire for adult privileges, and (e) a reduced ability to cope in a legitimate manner and an increase in the disposition to cope in an illegitimate (delinquency/crime) manner to attain the adult privileges and goods they want (p. 273).

<sup>2</sup>There have been several critiques of Moffitt's taxonomy. Given space constraints, we do not review them here (see Laub & Sampson, 2003; Skardhamar, 2009).

### Genetic and Biological Susceptibility to Adolescence-Limited Offending

Several studies have examined the genetic composition of those who are non-delinquent, those who are chronic offenders, and those who desist from delinquency in early adulthood. For example, Barnes, Beaver, and Boutwell (2011) found a genetic component associated with adolescence-limited offending. In this study, sibling pairs were selected using a nationally representative sampling design and their delinquency was measured between the ages of 11 and 27 years. The results suggested that 35% of the variance in being classified as an adolescence-limited offender may be attributed to genetic influences, but they were unable to identify any specific genetic traits.

Aside from genetic susceptibility to adolescence-limited offending, neurobiological evidence also suggests that differences exist between non-delinquents and adolescence-limited offenders (Fairchild et al., 2011; Raine et al., 2005). For instance, Raine et al.'s (2005) study of 325 boys identified four distinct groups: (1) non-delinquent, (2) childhood-limited, (3) adolescent-limited, and (4) life-course-persistent. Clear neurocognitive differences emerged between these groups. Specifically, the adolescence-limited group had a reduced capacity for immediate memory compared with the non-delinquents. Similarly, a study by Fairchild et al. (2011) examined the differences in the brain structure of adolescents who were identified as adolescence-limited offenders and those without any history of conduct disorder. They found differences in the volume of brain regions that process emotional stimuli between adolescents with adolescence-onset conduct disorder compared to those without any history of conduct disorder.

### The Influence of Mental Health Disorders on Adolescence-Limited Offending

Although mental health disorders may be related to neurological abnormalities, a number of studies have examined behavioral evidence of undi-

agnosed mental health disorders as a risk factor for adolescence-limited offending. For example, a handful of studies have found a relationship between psychosocial abnormalities and adolescence-limited offending (Breslau et al., 2011; Fontaine, McCrory, Boivin, Moffitt, & Viding, 2011). Moffitt, Caspi, Harrington, and Milne (2002) reported adolescent-onset delinquents to be high on impulsivity and to have mental health problems, substance dependence, financial problems, and a history of property offenses. In addition, Odgers et al. (2008) reported that adolescent-onset offenders were not characterized by social, familial, or neurological risk factors, but they did exhibit mental health issues primarily restricted to substance dependency. Other studies have found significantly higher levels of neuroticism, lower levels of cognitive function in childhood and adolescence, and poorer temperament among adolescence-limited offenders compared to non-offenders (Pulkkinen, Lyra, & Kokko, 2009; Roisman, 2010). Overall, these studies suggest that a variety of behavioral and psychosocial factors may play a role in adolescence-limited offending.

### **Individual-Level Behavioral Risks for Adolescence-Limited Offending**

A variety of individual-level risk behaviors have been associated with adolescence-limited offending such as aggression and personality traits. For example, Bergman and Andershed (2009) found a higher level of aggression among adolescence-limited offenders compared to non-offenders. Further, Pulkkinen et al. (2009) found that adolescence-limited offenders were more likely than non-offenders to be verbally aggressive, as well as to display aggressive behavior.

Personality characteristics have also been identified in order to differentiate profiles of adolescence-limited offenders from non-offenders. Hyperactivity, daring and troublesome behavior, lying, aggression, fighting after drinking, hostility, neuroticism, and non-agreeableness are consistently more prevalent among adolescence-limited offenders than non-offenders (Bergman

& Andershed, 2009; Farrington, Tfofi, & Coid, 2009; Pulkkinen et al., 2009). Temperament in childhood, however, was not related to adolescence-limited offending (Roisman et al., 2010).

### **The Importance of Family and Peers in Adolescence-Limited Offending**

Family and parenting relationships have consistently predicted offending, specifically life-course-persistent offending (Moffitt et al., 2002). However, there is evidence that family level variables play a role in adolescence-limited offending as well. According to Bergman and Andershed (2009), harsh parenting and conflicts with parents were elevated among adolescence-limited offenders when compared to non-offenders. Family conflict, maltreatment, and inconsistent discipline in the home were also identified as risk factors for membership in the adolescence-limited offender group (Odgers et al., 2008). In addition, Roisman et al. (2010) found that adolescent-onset offenders could be characterized by contextual and individual risk. Namely, these youths evidence moderate psychological and behavioral issues coupled with many stressful life circumstances and delinquent associations.

According to Farrington et al. (2009), adolescence-limited offenders were more likely than non-offenders to have had a large family size, a convicted parent, parental conflict, or a disrupted family situation at ages 8 through 10 years. At ages 12–14 years, large family size remained predictive of adolescence-limited delinquency, but the other family risk influences were no longer significant. These family risk factors reemerged as correlates of adolescence-limited delinquency when adolescents were between the ages of 16 and 18 years, as adolescence-limited offenders were more likely to have poor relationships with their parents than non-offenders.

Peers also play a substantial role in modeling and providing pathways to deviant behavior, especially delinquent behavior that originates in adolescence (Jeglum-Bartusch, Lynam, Moffitt, & Silva, 1997; Simons, Wu, Conger, & Lorenz, 1994). According to Farrington et al. (2009),

adolescence-limited offenders were significantly more likely than non-offenders to have delinquent friends. In fact, this proportion was more than twice as great as the proportion that was observed in the non-offender group (37% of adolescence-limited offenders had delinquent friends at ages 12–14 years, while 15% of non-offenders had delinquent associates). This study also found that adolescence-limited offenders were three times more likely to be in a group of antisocial youth at ages 16–18 years than non-offenders (Farrington et al., 2009). Similarly, Odgers et al. (2008) found that peer delinquency was related to adolescence-limited offending, although this effect was only significant among males. Finally, Bergman and Andershed (2009) reported that adolescents who have friends who engage in norm-breaking behavior are more likely to become adolescence-limited offenders than those who do not have friends who break the normative codes.

### **Gender, Race, and Adolescence-Limited Offending**

Moffitt also considered how gender and race would manifest with respect to adolescence-limited offending. With respect to the role of gender in the adolescence-limited portion of the taxonomy, Moffitt (1994, pp. 39–40) notes:

The crime rate for females is lower than for males. In this developmental taxonomy, much of the gender difference in crime is attributed to sex differences in the risk factors for life-course-persistent antisocial behavior. Little girls are less likely than little boys to encounter all of the putative initial links in the causal chain for life-course-persistent antisocial development. Research has shown that girls have lower rates than boys of symptoms of nervous system dysfunction, difficult temperament, late verbal and motor milestones, hyperactivity, learning disabilities, reading failure, and childhood conduct problems...Most girls lack the personal diathesis elements of the evocative, reactive, and proactive person/environment interactions that initiate and maintain life-course-persistent antisocial behavior.

Adolescence-limited delinquency, on the other hand, is open to girls as well as to boys. According to the theory advanced here, girls, like boys, should

begin delinquency soon after puberty, to the extent that they (1) have access to antisocial models, and (2) perceive the consequences of delinquency as reinforcing...However, exclusion from gender-segregated male antisocial groups may cut off opportunities for girls to learn delinquent behaviors...Girls are physically more vulnerable than boys to risk of personal victimization (e.g., pregnancy, or injury from dating violence) if they affiliate with life-course-persistent antisocial males. Thus, lack of access to antisocial models and perceptions of serious personal risk may dampen the vigor of girls' delinquent involvement somewhat. Nonetheless, girls should engage in adolescence-limited delinquency in significant numbers..."

Thus, for Moffitt (2006), the majority of delinquent females will be of the adolescence-limited type, and their delinquency will have the same causes as adolescence-limited males' delinquency.

Reviewing the research on gender, much empirical research shows that males are overrepresented in most forms of (especially serious) criminal activity (Broidy et al., 2003; D'Unger, Land, & McCall, 2002; Piquero, Gover, MacDonald, & Piquero, 2005). Similarly, the literature also suggests that males are overrepresented compared with females in adolescence-limited offending. In these studies, samples are often disaggregated by gender to avoid biased estimates of prevalence rates. For example, studies of adolescence-limited offenders suggest that the prevalence rate ranges from 11.9 to 15.8% for males and 4.9 to 10.1% for females (Bergman & Andershed, 2009; Bor, McGee, Hayatbakhsh, Dean, & Najman, 2010). Therefore, including males and females when evaluating crime over the life-course may result in biased prevalence estimates.

There is some evidence that risk factors for adolescence-limited offending differ by gender, providing further support for the need to disaggregate studies. According to Bergman and Andershed (2009), males were more likely to become adolescence-limited offenders if they were hyperactive, had conflicts with their parents, used alcohol and marijuana, and had an unstable upbringing. In contrast, females were more likely to become adolescence-limited offenders if they

displayed aggression in childhood, had harsh parents, were hyperactive, had friends who broke conventional norms, deviated from norms themselves, used alcohol and marijuana, and had a troublesome upbringing. Similarly, Bor et al. (2010) found substantial gender differences in the characteristics of adolescence-limited offenders, as females were more likely to smoke cigarettes and have more health problems. Both genders used marijuana frequently.

In one of the most comprehensive investigations of adolescence-limited offending (across gender), Moffitt, Caspi, Rutter, and Silva (2001) and Moffitt et al. (2002) used data from the Dunedin Birth Cohort to age 21 years to examine involvement in adolescence-limited delinquency as well as the risk factors associated with such delinquency. A number of key findings emerged from their study. First, male:female differences were negligible with respect to adolescence-limited offending (1.5:1). Second, females and males on the same trajectories share the same risk factors. And, among female adolescence-limited offenders in particular, their delinquency was characterized by the timing of puberty, association with delinquent peers, and having an intimate relationship with an offender.

To be sure, there are other developmental theories that make different predictions about the patterning of antisocial behavior across gender. Most notable is Silverthorn and Frick's (1999) delayed-onset pathway for girls, which assumes an adolescent-onset pathway in girls that is not analogous to the adolescence-limited pathway in boys. Instead, all delinquent girls have the same high-risk causal backgrounds as life-course-persistent males and their offending is delayed until adolescence. In contrast to Moffitt's taxonomy, then, Silverthorn and Frick's delayed-onset pathway for girls is similar to a childhood-onset pathway for boys (except girls' offending commences in adolescence), and there is no comparable pathway in girls to the adolescent-onset pathway in boys. In one empirical test of the delayed-onset pathway theory, White and Piquero (2004) used data from the Philadelphia portion of the National Collaborative Perinatal Project and found that females and males were equally likely

to experience early onset offending but that female late-onset offenders appeared similar to male early onset offenders on many risk factors. Not surprisingly, male early onset offenders exhibited more severe criminal outcomes compared with both male and female late-onset offenders, but they did not differ from female early onset offenders. Finally, female late-onset offenders exhibited many of the same risk factors as did male late-onset offenders. Thus, White and Piquero's analysis suggested that Silverthorn and Frick may have overestimated the similarities between late-onset female and early onset male offenders while also underestimating the presence of early onset female offenders.

On the issue of race within the adolescence-limited trajectory, Moffitt (1994) observed that:

In the United States, the crime rate for black Americans is higher than the crime rate for whites. The race difference may be accounted for by a relatively higher prevalence of both life-course persistent and adolescence-limited subtypes among contemporary African Americans. Life-course persistent antisocials might be anticipated at elevated rates among black Americans because the putative root causes of this type are elevated by institutionalized prejudice and by poverty. Among poor black families, prenatal care is less available, infant nutrition is poorer, and the incidence of exposure to toxic and infectious agents is greater, placing infants at risk for the nervous system problems that research has shown to interfere with prosocial child development. To the extent that family bonds have been loosened and poor black parents are under stress,...and to the extent that poor black children attend disadvantaged schools..., for poor black children the snowball of cumulative continuity may begin rolling earlier, and it may roll faster downhill. In addition, adolescence-limited crime is probably elevated among black youths as compared to white youths in contemporary America. If racially-segregated communities provide greater exposure to life-course persistent role models, then circumstances are ripe for black teens with no prior behavior problems to mimic delinquent ways in a search for status and respect. Moreover, black young people spend more years in the maturity gap, on average, than whites because ascendancy to valued adult roles and privileges comes later, if at all. Legitimate desirable jobs are closed to many young black men; they do not often shift from having "little to lose" to having a "stake in conformity" overnight by leaving schooling and entering a good job. Indeed, the biological maturity gap is perhaps best seen as an instigator of adolescent-onset delinquency for black



youths, with an economic maturity gap maintaining offending into adulthood. (Moffitt, 1994, p. 39)

Thus, for Moffitt (2006), both life-course-persistent and adolescence-limited causal processes should work the same way within African-American and white American groups, but any excess of offending among poor African-American youth could be attributed to an excess of the risk factors for both delinquent subtypes. Unfortunately, there exist virtually no race-based comparisons of Moffitt's adolescence-limited hypothesis and its expectation of race-based differences. One study that considers this issue to some degree is an analysis undertaken by Haynie, Weiss, and Piquero (2008), who used longitudinal data from the Adolescent Health Survey to examine the ancillary adolescence-limited hypothesis that an economic maturity gap partially explains continued offending in young adulthood among Blacks. Consistent with Moffitt's hypothesis, Haynie et al. found that employment and economic well-being in young adulthood were associated with greater criminal (and violent) involvement among Blacks in young adulthood.

### **Adolescence-Limited Offending Due to the Maturity Gap and Peer Social Context**

Recall that a central hypothesis for adolescence-limited offending lies in the interaction of the maturity gap and the peer social context. In an interesting study, Aguilar et al. (2000) found that adolescent-onset offenders reported higher internalizing symptoms and perceptions of stress at age 16 years, consistent with Moffitt's expectation that adolescents experience some sort of perceived maturity gap stress. Piquero and Brezina (2001) used data from the Youth In Transition Survey to examine the adolescence-limited hypothesis more directly and found that adolescence-limited delinquency was centered on participation in rebellious but not aggressive acts, and that such delinquency was predicted by an interaction between early maturity and the autonomy aspects of peer activities. With data from the Victoria Adolescence Project, Galambos, Barker,

and Tilton-Weaver (2003) identified a group of 25% of adolescents who had high scores on a set of "pseudo-maturity" characteristics (i.e., they had more advanced biological pubertal status, older subjective age, elevated perceptions of self-reliance, more wishes to emulate older brothers, more older friends, a greater desire to be older, more involvement in pop culture, and less involvement in school but more involvement with peers). Also, data from the adolescents as well as their parents showed that this group also had elevated rates of problem behavior.

Using an innovative measure of the maturity gap, another group of researchers found support for the role of the biological/social disjuncture in adolescence-limited offending. Barnes and colleagues (Barnes & Beaver, 2010; Barnes, Beaver, & Piquero, 2011) subtracted a social maturity scale capturing the autonomy afforded to them by their parents from a biological maturity scale composed of self-reported physical characteristics (such as amount of body hair for males and breast development and menarche for females) to create their measure of the maturity gap. Consistent with the theory, adolescents not experiencing the maturity gap were significantly more likely to refrain from delinquent involvement (Barnes, Beaver, & Piquero, 2011). Alternatively, Barnes and Beaver (2010) showed that males characterized by greater biological maturity than social maturity were more likely to commit minor forms of delinquency and drug use (consistent with the prediction of adolescence-limited offenders). The results, however, were less affirmative among females—possibly indicative of differences in the effects of puberty between genders. To the best of our knowledge, no studies have examined how the maturity gap, peer social context hypotheses relate to adolescence-limited offending differentially across race/ethnicity.

### **Comparing Risk Factors for Adolescence-Limited Versus Life-Course-Persistent Offending**

According to Moffitt, the etiology of life-course-persistent offending is substantively distinct from adolescence-limited offending. As discussed above, this differential etiology (with life-course-persistent



offenders having the greatest number of risk factors) may explain the differences in prevalence rates across groups. Specifically, life-course-persistent offenders represent a small portion of the population, while adolescence-limited offenders comprise a much larger group—especially in adolescence. Life-course-persistent offenders have lower socioeconomic status, larger family size, lower verbal ability, higher levels of aggression, hyperactivity, convicted parents and siblings, younger parents, peers who deviate, and they deviate themselves. Furthermore, life-course-persistent offenders demonstrate negative emotionality, neuroticism, antisocial personality disorder, depression, lower restraint, have problems in school, use and abuse alcohol, tobacco, marijuana, and have an unstable and troublesome upbringing compared to adolescence-limited offenders (Bergman & Andershed, 2009; Farrington et al., 2009; Moffitt et al., 2002; Odgers et al., 2008). The most potent risk factors for life-course-persistent offending, compared to all other forms of offending, were norm-breaking behavior in school and an unstable upbringing (Bergman & Andershed, 2009; Farrington et al., 2009). When compared specifically to adolescence-limited offenders (Farrington et al., 2009; Pulkkinen et al., 2009), life-course-persistent offenders were more likely to have fewer friends, have been disciplined harshly in the home, exhibit disobedience at home, bully, demonstrate hyperactivity, promiscuity, and drink alcohol heavily.

Overall, life-course-persistent offenders generally exhibit a larger number of (more severe) risk factors when compared to adolescence-limited offenders, while adolescence-limited offenders appear to be more susceptible to some risk factors, such as associations with delinquent peers, which tends to predict their involvement in delinquency more so than for life-course-persisters (Jeglum-Bartusch et al., 1997; Moffitt & Caspi, 2001).

### **Desistance and Snares Among Adolescence-Limited Offenders**

Moffitt also expects that most adolescence-limited offenders should desist from their delinquent participation by the time they enter adulthood. Empirical research on their potential desistance

tends to confirm expectations. For example, there is a high peak in middle to late adolescence among many individuals who constrain their offending to the adolescent time period (Piquero, Farrington, & Blumstein, 2007). The two exceptions to this general pattern of findings involve undetected delinquency as well as becoming ensnared from the outcomes of adolescent offending. With respect to the former, Nagin, Farrington, and Moffitt (1995) had access to both self-report and official records of offending for males participating in the Cambridge Study in Delinquent Development and studied their offending to age 32 years. These authors found that while official conviction records showed that adolescence-limited offenders registered very few convictions in adulthood, they continued to report involvement in offenses that escaped formal detection (e.g., illicit drug use, heavy drinking, and fighting). With respect to becoming ensnared, Hussong, Curran, Moffitt, Caspi, and Carrig (2004) found that alcohol and cannabis dependence could trap individuals into an antisocial lifestyle by temporarily elevating what had been a downward-trending substance trajectory. Finally, in an analysis tracing previously identified offender trajectory groups to age 26 years, Moffitt et al. (2002) discovered that while adolescence-limited offenders exhibited less extreme values on most comparisons of risk factors and outcomes than more serious offenders at age 26 years, and they had more or higher levels of protective factors and outcomes (i.e., better work histories and better education qualifications) at this time period as well, they still reported some elevated impulsive personality traits, mental health problems, substance dependence, financial problems, and involvement in property offenses.

The desistance and snare hypotheses for adolescence-limited offenders have been under-researched and many open questions and alternative interpretations remain. For example, it may be that adolescence-limited offenders—at least to age 26 years—are perhaps in a stage of “emerging adulthood” (Arnett, 2000), which prolongs the adolescent phase of the life-course and provides for a subset of continued antisocial experimentation and behavior. It may also be that ensnared adolescence-limited offenders have

similar deficits as life-course-persistent offenders, but the average scores on key risk factors are not as severe to produce chronic, persistent styles of offending. An interesting study would differentiate an adolescence-limited offender who is ensnared from a life-course-persistent offender who is just continuing offending—with the former continuing offending but not doing so quite as seriously as the life-course-persistent offender.

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## Directions for Future Research

This chapter was set out to provide an overview of adolescence-limited offending, especially within the purview of Moffitt's developmental taxonomy. Although the empirical knowledge base with respect to this type of offending style has not been subject to an extended set of studies and several hypotheses have been severely under-researched, some tentative conclusions can be reached. First, there is consistent evidence to support a group of individuals whose participation in offending follows the aggregate age-crime curve of a rise in early adolescence, peak in mid to late adolescence, and an eventual decline as adulthood approaches and ensues. Second, the risk factors associated with adolescence-limited offending appear to be centered on associations with (delinquent) peers, the strain and stress surrounding the peer social context, and the distancing from parents that is experienced during adolescence. Third, many adolescence-limited offenders desist by the time adulthood approaches because they enter into more traditional adult roles and their cognitive skills and acquired educational experiences permit access to employment, interpersonal relationships, and other prosocial activities.

Despite these empirical consistencies reviewed above, there are also some challenges to this general pattern of results. For example, some evidence exists linking other risk factors to adolescence-limited offending, such as the presence of individual differences, to include genetic and psychosocial factors. Also, researchers have found that some set of adolescence-limited offenders become ensnared by outcomes of their

antisocial involvement such that they persist in offending. Other studies show that some adolescence-limited offenders have yet to “grow up” and grow out of their antisocial ways, such that they continue to be involved in some antisocial behaviors such as alcohol and drug use. Further, the maturity gap that is presumed to be a main cause of adolescence-limited offending appears to have differential impacts across gender. Finally, while prior research suggests that (female) adolescence-limited offenders have normative backgrounds and these backgrounds are at times better than those of the “average” child (Odgers et al., 2008), two caveats should be noted. First, some of the available research seems to suggest that some adolescence-limited offenders do not have normative backgrounds at least as compared to non-offenders. Second, Odgers et al. (2008) caution that to the degree to which adolescence-limited offending is brief and transient, an adolescence-limited offender's behavior may not necessarily be captured within available measurement intervals. Thus, estimates of the true prevalence of adolescence-limited offenders or the frequency of their adolescence-limited offending behavior may be somewhat underestimated.

In short, some of the existing research offers challenges to Moffitt's original adolescence-limited hypothesis. One of these challenges includes the finding of genetic, neurological, mental health, or other trait differences between adolescence-limited offenders and non-offenders. It may be that adolescence-limited offenders lie somewhere in the middle between non-offenders and life-course-persisters. Such a realization would be more consistent with arguments raised by both Walters (2011) and Thornberry and Krohn (2001). Walters argues that adolescence-limited offenders may simply represent a lesser form of conduct disorder than life-course-persisters, and thus believes that Moffitt's taxonomy is not a taxonomy per se but should be represented more as a continuum of conduct disorder. Thornberry and Krohn (2001) suggest that the differences between early and later-onset offenders are more a matter of the degree and severity of deficits rather than whether they exist or not. Perhaps Moffitt's adolescence-limited hypothesis

should be revised to account for the accumulated research findings.

With these summary statements in hand, next we identify an important set of research questions and studies that require undertaking before a full account of Moffitt's adolescence-limited offending hypothesis can be procured.

First, it is important to continue exploring any potentially genetic links and components associated with adolescent problem behavior. Although Moffitt's adolescence-limited hypothesis does not predict or invoke any strict genetic effect, this does not mean that biosocial factors do not play any role, be it direct or potentially indirect as it operates through other more social, environmental factors. In sum, studying adolescence-limited offending with consideration for what happens before puberty such that it encompasses the full life-course to consider other potential factors would seem quite fruitful. New research showing that brain maturation continues to occur through the end of adolescence provides support for the uniqueness of adolescence as a stage of the life-course that is distinct from adulthood with respect to several aspects of brain and psychosocial development (Steinberg, 2009, p. 53). Not unexpectedly, this knowledge base has begun to inform perspectives on antisocial risk-taking during adolescence, which considers adolescent risky behavior as a product of the interaction between changes in two distinct neurobiological systems: a socioemotional system and a cognitive control system (Steinberg, 2008). Much more work is needed on adolescent brain development in general, and how this development influences decision making in the context of peers as adolescents enter and exit their teenage years.

Second, there is a need to more rigorously unpack aspects of adolescence-limited offenders' decision-making processes. Unfortunately, this portion of Moffitt's taxonomy has not been well researched (Piquero & Moffitt, 2005), but it is imperative to understand how adolescents make decisions, how they weigh risk and rewards associated with antisocial behavior both in isolation and within the peer social context. Relatedly, it would be important to further develop how the influence of peers operates for predicting adolescence-lim-

ited delinquency. For example, do adolescence-limited offenders seek out similarly situated peers or is the peer social context simply a happenstance of the adolescent time period and the routine activities that most adolescents participate in during the teenage years (i.e., school, sports, and social activities)? This aspect of the adolescence-limited hypothesis has not been studied in great detail, but given the centrality of peers—and the social mimicry expectation relevant to adolescence-limited offenders solely—this part of the taxonomy is critical to assess in future research.

Third, another key but understudied adolescence-limited hypothesis concerns the maturity gap. Although some studies have constructed measures associated with the maturity gap, much more is needed here. For example, what biological markers are best apt to gauge this aspect of her theory, and further, how is the adult-perceptual component best measured? Perhaps questions gauging adolescents about their roles vis-à-vis adult status and privileges would be useful, especially as they mature biologically throughout adolescence.

Fourth, recall that Moffitt's adolescence-limited hypothesis also sketched out some thoughts with respect to how race/ethnicity would be implicated in that part of the taxonomy. Unfortunately, while there have been some studies that have investigated race and ethnicity with respect to offending patterns more generally (Maldonado-Molina, Piquero, Jennings, Bird, & Canino, 2009; Nevares, Wolfgang, & Tracy, 1990; Tracy & Kempf-Leonard, 1996; Tracy, Wolfgang, & Figlio, 1990), virtually no studies have directly examined Moffitt's adolescence-limited hypothesis across race/ethnicity (though see Haynie et al., 2008). Given offending differences—especially with respect to persistence into adulthood—observed across race/ethnicity, it will be important to further examine Moffitt's adolescence-limited hypothesis and its particular snare-oriented expectation across groups in greater detail. There exists virtually no research on the snare hypothesis, but it strikes as an important aspect of her theory, and offers an interesting take on why some offenders persist into early adulthood.

Fifth, one of the most important but untested hypotheses from Moffitt's taxonomy involves the juxtaposition of offending during adolescence among both life-course-persisters and adolescence-limiteds. Specifically, Moffitt has indicated that given the commonality of offending during adolescence, it would be difficult to isolate the two groups in great detail, unless they are followed past age 18 years or so when adolescence-limited offenders are expected to begin to desist. Identification of the groups prior to adolescence based on early childhood risk factors, tracking their offending styles throughout adolescence and into adulthood (as well as various risk factors during adolescence) would present an important test of this aspect of the taxonomy.

Sixth, mention was made earlier about some adolescence-limited offenders continuing their antisocial behavior into early adulthood, which contradicts the expectation that such individuals should desist by this time period (except for a select few who become ensnared from the outcomes of their offending). Moffitt attributed persistence in offending among adolescence-limiteds as a function of their being ensnared by the outcomes of the antisocial experiences. Another potential reason for persistence could be the social or nonsocial reinforcements provided adolescence-limited offenders as a result of their successful offending episodes. This rationale should be given some consideration as well. Finally, given recent notions associated with "emerging-adulthood" (Jennings, Khey, Mahoney, & Reingle, 2011), adolescence-limited offending may actually continue into the mid-20s as such individuals delay entrance into the adult roles that were commonly implicated in the early 20s in earlier generations. To the extent that this is true, then the adolescence-limited hypothesis will need some revision.

Finally, there has been much focus on the problematic aspects of adolescent development, but there is also a need to focus on the normative, albeit sometimes experimental, development that occurs throughout adolescence. Most youth, even delinquent experimenters, exit out of problematic behavior and become law-abiding, functioning adults who make important contributions to society.

What is it about these individuals that help them transition into adult roles successfully? Clearly identifying these qualities is important for subsequent work and can also help to identify protective and prosocial factors that can form the basis of some intervention strategies.

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# Social Capital, the Life-Course, and Gangs

# 9

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## Abstract

The recent development of two paradigms in the social sciences, social capital and the life-course perspective, has proven influential. Though these paradigms overlap, limited research has examined the accumulation of capital over the life-course. In this chapter, we consider the confluence of these paradigms in the context of gang membership; specifically how the onset, continuity, and desistance from gang membership influence the loss and formation of social capital. In addition, the emerging role of technology on the maintenance and creation of social capital for gang members is examined. Lastly, directions for future research explicitly examining social capital in the context of antisocial groups are presented.

Beginning in the 1970s, scholars began considering how social capital—the sum of one’s relationships and social spheres—may impact behavior (see Bourdieu, 1985; Coleman, 1988a, 1988b; Granovetter, 1973, 1983; Loury, 1977). This was not a new development in the social sciences, as both historical (Durkheim, 1984; Marx & Engels, 1947; Shaw & McKay, 1942; Weber, 1965) and contemporary (Anderson, 1999; Sampson, Raudenbush, & Earls, 1997) sociology are grounded in understanding the impact of environment on behavior. The modern conception of

social capital has become more than just the flavor of the week. For some, it appears to be the remedy for numerous social ills (see Portes, 1998), although as more attention has been paid to the topic, it has become apparent that social capital is not necessarily exclusively positive (Browning, 2009; McCarthy & Hagan, 1995; Rubio, 1997). Those in possession of social capital may “cash it in,” calling in favors for debts, which may lean toward more deviant or nefarious contexts.

The rise of interest in social capital echoes the rise of an equally influential paradigm in the social sciences: the life-course perspective. The life-course perspective concerns the interweaving of age-graded trajectories that are influenced by historical and geographical contexts, social embeddedness, human agency, and the timing of life events (Elder, 1994, 1998; Elder & Giele, 2009). For example, population changes tied to the Baby Boom and (de)industrialization led Elder (1974)

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and others to focus on aging in post-World War II America. They found that subtle differences in one's birth cohort—in terms of month and year of birth—during the Great Depression could significantly change earnings over one's life span. The life-course perspective and social capital are intimately tied, as people exist within overlapping social spheres of family, friends, and coworkers and such relationships grow, evolve, and decline over the life course (Cochran, Lerner, Riley, Gunnarsson, & Henderson, 1993; Fischer, 1982; Mueller & Elder, 2003). Understanding the reciprocal relationship between social capital and the life course—and factors that influence such evolving relationships—is a central task for social scientists, as this line of study garners knowledge on the nature of human lives.

Gangs exert powerful influences on communities and the lives of individuals, especially those who join gangs (e.g., Decker & Van Winkle, 1996; Melde & Esbensen, 2011; Miller, 2011; Short & Strodbeck, 1965; Thrasher, 1927). As street-oriented groups that exhibit durability across time and engage in illegal activity, the youth and young adults who comprise gangs maintain a collective identity through varying degrees of relational ties.<sup>1</sup> As such, gangs serve as an optimal context to understand how they function as both a source and a suppressor of social capital for their members. At the same time, movement into and out of gangs makes the applicability of a life-course framework—onset, continuity, and change—to the context of gang membership appropriate. Missing from the current inventory of research, however, is the inte-

gration of social capital, the life-course perspective, and gang membership.

This article examines social capital over the life-course in the context of gang membership. Specifically, we focus on how social capital evolves over time in the lives of gang members, especially in relation to joining and leaving a gang. We begin by discussing social capital, differentiating it from other forms of capital. Next, we detail the life-course perspective in criminology and apply it to the context of gang membership. In the key section of this article, we examine how social capital evolves in relation to key parameters—onset, continuity, and desistance—of gang membership. In particular, we highlight (1) the nature of gangs and how they impact social capital and (2) the increasingly important role of technology, particularly the Internet and social media, in the lives of gang members. Finally, we conclude by detailing directions for future research and offer research questions for future empirical studies.

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## Social and Human Capital

Social capital refers to the sum of relational ties among persons and consists of a pooled set of social investments or resources at one's disposal (Bourdieu, 1985; Coleman, 1988a, 1988b; Portes, 1998). Such relationships involve an interdependent system that entails various norms and obligations within which actors operate. Coleman (1988a, 1988b) described social capital in the context of social structures and the facilitating effect of structure on individual action. Portes (1998) outlined three distinct elements at play in Coleman's work: (1) individuals who possess social capital, making their own resources and connections available to others with the expectation that the behavior will be reciprocated; (2) the common fate of individuals in a situation will motivate individuals and lead them to action; and (3) the social structure of the group or community may act as a driver of social capital through enforceable trusts (Portes, 1998).

Note that social capital differs from other forms of capital—physical and human capital—

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<sup>1</sup>While we do not discuss what may constitute a gang in any depth, many definitions have appeared during this time period (see Ball & Curry, 1995). Of particular salience, with respect to this chapter, is the division in academia over whether gangs must be delinquent or criminal. Given our interest in the development of social and criminal capital through group embeddedness, we rely here on the conceptualization of gangs by Curry and Decker (1998)—that gangs are social groups who use symbols, engage in verbal and nonverbal communications to declare their “gang-ness,” exhibit a degree of permanence, possess a territory or turf, and engage in criminal behavior.

in significant ways. Physical capital refers to tangible or observable materials and is often realized in terms of possessions, including property and income. Human capital refers to skills and knowledge acquired over time, through means such as education and experience. Social capital, perhaps, is less tangible than the previously mentioned forms of capital in that it is realized in terms of collective relationships and thus access to ideas and information. Such relations are often latent until one has to seek information or favors. All forms of capital have been typically viewed positively. Indeed, friends, favors, materials, objects, skills, and knowledge are usually good things to possess. More than other forms of capital, however, social capital can just as easily be used for antisocial purposes (Putnam, 2000) and viewed in terms of deviant social structures.

Granovetter's (1983) propositions about the strength of weak ties and embeddedness of action are instructive in this regard. The social spheres in which individuals exist provide a distribution of both resources and restrictions that vary along socioeconomic lines, the nature of the social ties, and values within those spheres. In turn, these spheres influence behavior. "Weak" ties allow for individuals to receive information from outside of their close social networks, through friends of friends or acquaintances, for things such as available job openings. Hagan's (1993) extension of Granovetter's work to criminal embeddedness expands this line of theory to the negative uses of social capital. McCarthy and Hagan (1995) referred to this as "criminal capital" which is achieved more readily when one is more deeply embedded—by way of delinquency, delinquent peers and parents, and criminal justice system involvement—within criminal contexts. In this sense, criminal embeddedness, and the street-oriented capital associated with it, serves to restrict more useful forms of social capital as prosocial ties become attenuated the longer one is involved in criminal activities. Put differently, embeddedness in criminal enterprises slowly chokes off weak, noncriminal ties. The resulting isolation from these prosocial ties makes it more difficult to achieve legitimate work or schooling opportunities. As these opportunities are reduced,

the necessity of remaining in the criminal network is reinforced.

Linked with social capital is human capital. As previously noted, human capital consists of not only skills and knowledge, but also collaborative processes. An individual's intangible assets make them attractive insofar as social capital allows others to potentially harness one's human capital. In social networks, it may pay to know individuals, but the talents that those individuals offer are just as valuable. In criminal networks, particular skills might include such things as the ability to manufacture drugs, procure weapons, or simply be aware of police or gang activity in a neighborhood. Each bit of knowledge becomes more useful when it can be shared with, and used by, others. As with the impact of criminal embeddedness on social capital, similar effects should be expected on human capital. Growing exposure to other criminals or delinquents requires that individuals adopt certain street skills and attitudes (Anderson, 1999), lest they be victimized. More broadly, the acquisition of antisocial human capital might also make it more difficult to maintain employment or stay in school precisely because of "street" posturing. Attitudes and knowledge on the street are unlikely to translate well in positive social endeavors such as work.

There is perhaps no better context to explore Hagan's notion of criminal embeddedness and the larger concepts of social and human capital than that of gangs. Yet, gangs are constantly evolving over time—through age-graded development, replenishing their ranks, falling apart—thus it is necessary to adopt a framework that can account for the similarly evolving nature of social capital. For this reason, we turn to the life-course perspective in criminology to better understand social capital in relation to movement into and out of gangs.

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### **Gang Membership and Capital in the Life-Course Perspective**

The life-course perspective concerns the interweaving of age-graded trajectories that are influenced by historical and geographical contexts, social embeddedness, human agency, and

the timing of life events (Elder, 1994, 1998; Elder & Giele, 2009). The latter component, timing, is especially important to the life-course perspective due to the influence placed on age-appropriate behaviors and divergences from such lines of development. Central to this component are the concepts of trajectories and turning points (Elder, 1985). Trajectories refer to stable lines of development over the life-course. Education, family, and employment are social institutions that qualify as trajectories because they exhibit persistence across time. Other less durable states, such as athletics or social club participation, qualify as trajectories as well in terms of their prominence in the life-course. Events that alter life-course trajectories in significant ways are referred to as turning points. Child birth, violent victimization, or the loss of a parent qualifies as turning points because such events may redirect life trajectories in a manner that could not have been predicted prior to their occurrence.

Gang membership is consistent with the life-course concepts of trajectories and transitions. Because gang membership involves at least some degree of persistence across time, it qualifies as a trajectory (Krohn & Thornberry, 2008; Pyrooz, Sweeten, & Piquero, 2012). In addition, because gang membership impacts life circumstances in significant ways, the event of gang joining qualifies as a turning point (Melde & Esbensen, 2011; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Given that there are approximately 30,000 active gangs and over 700,000 gang members in the USA (Egley & Howell, 2011), including approximately 150,000 incarcerated gang members (National Gang Intelligence Center, 2009), understanding the movement into and out contains considerable relevance for researchers. This movement, however, is also likely to correspond with changes in social capital as one of the most prominent features of the adolescent life-course—the peer network—will change in significant ways.

## Gangs, Social and Human Capital

Gangs tend to cluster in region, cities, communities, neighborhoods, and street blocks that can be

characterized by greater levels of social and economic deprivation, racial and ethnic heterogeneity, and areas that are urbanized and densely populated (Katz & Schnebly, 2011; Pyrooz, Fox, & Decker, 2010; Tita, Cohen, & Engberg, 2005). At the same time, gang members tend to display a degree of shared characteristics across a range of demographic, economic, and social factors (Klein & Maxson, 2006; Krohn & Thornberry, 2008). Because gangs are, by definition, comprised of multiple individuals and such individuals are situated similarly in many respects, the group-based environment is a natural source of social capital. That is, due to overlapping relationships and ties among gang members, information and ideas found within these connections and linkages are components of social capital.

Themes such as fraternity, family, companionship, and camaraderie are echoed in the gang literature, consistent with conceptions of social capital (Coleman, 1988a, 1988b; Putnam, 2000). Indeed, classic works in the gang literature (Miller, 2011; Short & Strodbeck, 1965; Thrasher, 1927; Whyte, 1947) have described gang and corner boys having local hangouts, often on street corners or social clubs, in their neighborhood. Many of these youth and young adults came from intergenerational families, composed of uncles and older brothers, fathers, and sons, all of whom spent time hanging out, joking, smoking, and gambling. These groups often have female auxiliary groups serving as counterparts to the male gang members (Miller, 2011). The contemporary literature describes gangs in the context of the neighborhood, school, and even in correctional facilities (Brunson & Miller, 2009; Decker & Van Winkle, 1996; Fleisher, 1998; Griffin, 2007; Miller, 2001; Moore, 1991). In other words, gangs emerge and meet the various needs of individuals in a number of environments.

There is a darker side to social capital in the gang context, however. While gangs function as a form of social capital because they are social circles comprised of relational ties, the nature of the gang context acts as a “social suction.” That is to say, gangs do not promote connections to non-familial peer networks; neither do they encourage

strengthening relationships to conventional socializing institutions such as education, employment, or family. Indeed, such connections would pull gang members away from the control of the group, thereby eliminating the prominent role of (and need for) the gang in the lives of their members. Gangs would be obsolete if gang members were strongly tied to such institutions. On the one hand, gangs are a source of social capital, allowing one entrance into an extended network of peers and to tap an extended network of acquaintances. On the other hand, given what is known about gangs, on balance, do such networks mediate (i.e., cut off) or moderate (i.e., double) the ego-centric or individual-level networks?

The problem is that the social capital that can be found in the context of gangs would not be considered as a “pure” source of capital that is described in the larger literature. As described above, not only do gangs avoid conventional connections, but the overall orientations of the gangs also clash with such conventional ties. By virtue of the gangs’ involvement in criminal and delinquent activities, there is a natural distrust in authorities due to aggressive suppression policies. Such distrust culminates in anti-snitching practices that are at odds with the criminal justice system, resulting in a vicious cycle between gangs and the police with the community caught in the middle. In addition, status is enhanced among peers in the gang context, not by receiving straight A’s in the classroom or by volunteering at community clean-up events, but instead by physical prowess, risk-taking, nihilism, and aggressive banter (Anderson, 1999; Decker & Van Winkle, 1996; Klein, 1971; Miller, 1958; Short & Strodtbeck, 1965).

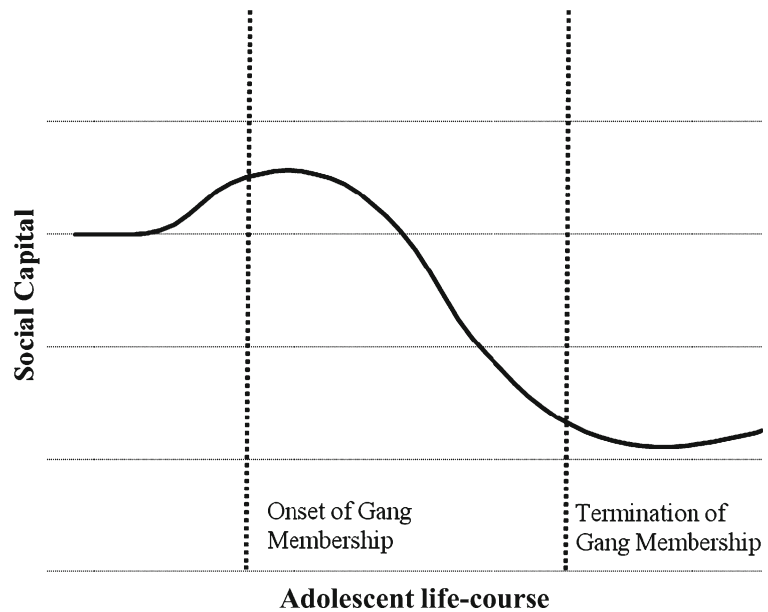
Further, the overlap between drugs, guns, violence, and gangs complicates matters. Gang members are more likely than non-gang members to want, need, own, use, or be victimized by firearms (Bjerregaard & Lizotte, 1995; Decker, Pennell, & Caldwell, 1996; Decker & Pyrooz, 2010; Lizotte, Tesoriero, Thornberry, & Krohn, 1994). Guns represent symbols of power and dominance and are highly valued in areas where the codes of the street prevail (Anderson, 1999)—areas where gangs are likely to be found. Drugs

provide opportunities to make money when other legitimate opportunities are either not present or unwanted. Drug markets themselves are ripe with violence (Howell & Decker, 1999) and many gang members sell drugs (Hagedorn, 1988; Klein, Maxson, & Cunningham, 1991; Venkatesh, 1997). Selling drugs can bring members into contact with unstable addicts, aggravating the potential for violence, as well as leading the individual to be labeled by the community and isolated from prosocial individuals (see Anderson, 1999). Even though gang members tend to act as individual entrepreneurs, rather than collective forces, in the drug market (Decker et al., 1998; Hagedorn, 1994), this places gang members at elevated risks for criminal justice involvement. In this sense, gangs value what McCarthy and Hagan (1995) referred to as “criminal capital,” or the multiple forms of capital that are oriented around street code status enhancement. Street capital in the gang context is likely to have serious consequences, especially in terms of traditional conceptions of social capital.

We detail a hypothetical relationship between social capital and gang membership in Fig. 9.1. We make no between-individual assumptions about the evolving nature of social capital prior to gang membership, but we speculate that the net sum of relationships among future gang joiners is less than that of gang avoiders. In other words, we expect that an absence of social capital—and its absence of restraining influences—may lead to gang joining.

Upon gang joining, we would expect to find an initial bump or benefit in social capital, ramping up during the periods immediately before and after gang joining due to the evolving nature of peers networks. This bump, however, is only temporary because the pernicious effects of the gang and attendant group-based processes take over, resulting in an accelerated decline in social capital. Peer networks of gang joiners shrink as previous, gang avoiding friends pursue in their life-course trajectories attempting to avoid the risk-taking and aggressive behaviors of the gang context. Declines in social capital are expected to decelerate as individuals begin to desist from gang membership. After one has left the gang,

**Fig. 9.1** Social capital in relation to the onset and termination of gang membership



residual social and emotional ties are likely to be in place (Pyrooz, Decker, & Webb, 2010) allowing for continued reductions in social capital, but as the ties lessen, levels of social capital should increase to the extent that ex-gang members navigate into more prosocial and conventional environment. The consequences of gang membership for social capital are unlikely to be experienced uniformly across gang members.

### Gang Member Embeddedness

While similarly situated in a number of respects, gang members are not a homogenous group; neither can the gang experience be described by homogeneity. There is variability in involvement, identification, behaviors, roles, and the overall prominence of the gang experience between individuals that join gangs and within gang members across time (Esbensen, Winfree, He, & Taylor, 2001; Klein, 1971; McGloin, 2005, 2007; Pyrooz et al., 2012; Vigil, 1988). Pyrooz et al. (2012, p. 2) drew from social network theory to describe gang member variability as a concept they termed gang embeddedness, which captures “individual immersion within an enduring deviant social network.” Using item-response methodology, gang

embeddedness tapped (1) contact with the gang, (2) position within the gang, (3) importance of the gang, (4) non-gang peers, and (5) participation in serious gang activities. Taken together, this concept captures the degree to which some gang members operate at the fringe of the gang, while others operate at the core. Identifying these differences not only has important implications for criminological outcomes—such as leaving gangs, as Pyrooz et al. (2012) demonstrated—but also for the relationship between social and human capital and gang membership.

Because gangs are “social networks that embed their members in deviant routines and isolate them from prosocial arenas” (Thornberry et al., 2003, p. 7), we anticipate that Fig. 9.1 captures within-individual differences in social capital according to whether someone is or is not in a gang. However, there is more to this story when considering variability around this hypothetical curve. We expect a good deal of this story to be told in terms of gang member embeddedness. Specifically, we would expect not only between-gang member variability or differences at the outset of gang membership, but also (1) continued consequences of gang embeddedness and (2) multiplicative differences according to the duration of gang membership. Factors that push and



pull individuals deeper into gangs—drugs, violence, deviant peers, and psychological and social factors—will likely contribute to greater embeddedness and negatively impact social capital, regardless of how long someone remains in a gang. At the same time, those more deeply embedded will persist along the gang trajectory for longer time periods, which in turn will correspond with continued negative effects on social capital. Thus, gang embeddedness in combination with long lengths of gang membership will work at odds with social capital, as they doubly contribute to knifing off connections and relationships to conventional social institutions. Most importantly, the capital that gang members are accumulating in the street is unlikely to help in obtaining gainful employment.

### Leaving the Gang

Exiting the gang is an area in gang research that has been poorly understood. However, recent research on this issue, drawing from the larger social science literature examining exiting from groups, indicates the substantial impact of desistance on social capital (Bjorgo, 2002, 2009; Cronin, 2009; Decker & Lauritsen, 2002; Decker & Pyrooz, 2011; Ebaugh, 1988; Pyrooz & Decker, 2011; Pyrooz et al., 2012). First, gang membership is negatively correlated with age. As gang members transition into adulthood, very few retain involvement and identify as gang members. Even as gang members renounce these ties, emerging adulthood is not a “kind” place for gang members, as deficits in various forms of capital such a transition difficult and those most likely to be involved with gangs cannot avail themselves to many types of prosocial support such as work or marriage.

Second, a series of pushes and pulls characterize the desistance process, resulting in a decision to de-identify as a gang member. As with extremist groups, cults, and terrorist groups, there are diverse reasons for leaving gangs. Pyrooz and Decker (2011) described such pushes and pulls relative to the gang, in that pushes are factors internal to the group and pulls are factors external to the group that drive individuals away from the

gang. Decker and Lauritsen (2002) found the experience of violence and the fear of future violence, especially crippling or lethal violence, motivate gang leaving. The victimization of friends and loved ones, including fellow gang members, can penetrate the veil of invincibility that many gang members believe they possess as group members. As individuals age, they tire of constantly looking over their shoulders for rival gangs or of persistent police harassment. In this sense, street capital cannot compensate or protect an individual in a manner comparable to what truly desistance can bring to their lives.

Concerns about family and familial obligations also pervade in the exit process. Thrasher (1927) noted that many corner boys simply stopped coming around when they married. Fleisher and Kreinert (2004) pointed to pregnancy among females as a driver for becoming inactive from the gang, for three reasons. First, pregnant girls are uncomfortable putting the fetus in a position to be harmed. Second, girls are unlikely to attack a pregnant gang member. Most importantly, With respect to social capital, what is most important for these pregnant women is access to social services. While pregnancy may not be considered normal, it avails young women to assistance from agencies, or “weak ties.” These ties, coupled with the pregnancy itself, reduce gang involvement and increase exposure to prosocial individuals, which in turn can promote reentry into legitimate social spheres.

Third, there is variability in the rate at which people leave gangs. For some, the route one follows to leave the gang follows a “knifing-off” pattern. For others, the route is more gradual, reflecting a slow attenuation of social and emotional ties that corresponds with replenishing social capital in conventional environments. There are two sides to this process in relation to social capital, however. Those with more social capital are better equipped for abrupt departures as they can easily integrate into environments external to the gang. For these individuals, eruptions of serious gang violence could easily push them out of the gang and into prosocial spheres. Alternatively, those who rely overwhelmingly on the gang will have more difficulty in exiting. The same sequence

of gang violence may actually push these individuals deeper into the gang because there are few alternative routes. Consistent with such hypotheses, Pyrooz et al. (2012) demonstrated that those more deeply embedded in gangs remained for much longer periods, while those more weakly embedded desisted quickly. Regardless of how this process manifests, there are specific circumstances that mark the deidentification process. Thus far, we have detailed most of the cognitive processes, but there are also behavioral steps that must be in place.

Fourth, there are methods to leaving the gang that may involve some degree of hostility. That is, leaving the gang may present the potential for conflict with group members who may not appreciate fellow gang members trying to leave. Hence, terms such as “blood in, blood out”—shedding blood to enter and exit the gang—are associated with gangs. It is often believed that the only way to leave the gang is by getting murdered or murdering one’s mother (Decker & Van Winkle, 1996). It is not uncommon, however, to hear that it is necessary to get “jumped out” of the gang or having to “go on a mission” against rival gangs before one is “cleared” to leave. Indeed, it has been shown that anywhere from 10 to 20% of gang members experience such hostile departures (Decker & Pyrooz, 2011; Pyrooz & Decker, 2011). Yet, these processes could be moderated by social capital in the gang context, or street capital. Decker and Pyrooz (2011) found that the myth of getting jumped out of a gang has some basis in reality; those who “put in work” did not have to endure such departures. “Putting in work” reflected the accumulation of social capital among gang members. Specifically, individuals who dedicated a substantial portion of time and effort to the gang—spending time in prison, making the gang money—meant not having to endure a violent departure. In other words, social capital on the street serves at least to some degree as a protective mechanism for some individuals leaving the gang.

Finally, the removal from social settings is also a technique that can help with group desistance, but can also reduce social ties and capital. Moving may help facilitate exiting the gang, since different neighborhoods or cities may help

remove gang ties (Decker & Lauritsen, 2002). In addition, because school is a key social setting and a primary driver of childhood and adolescent friendships (Bidart & Lavenu, 2005; Haynie, 2002), leaving school serves as a catalyst for the severing of social and gang ties (Brunson & Miller, 2009; Pyrooz, Decker, & Webb, 2010; Pyrooz, Fox, & Decker, 2010). Thus, changing schools and neighborhoods likely means the elimination of weak social ties and the fraying of more intimate ties. In doing so, accumulations of social capital are negatively impacted.

Moving to any of these new locations can still prove problematic. If moving to a new school or neighborhood in the same city, rival gangs may be aware of an individual’s former gang ties (Harding, 2010). Alternatively, being in a new school or neighborhood may prove uneventful, and the desisting or ex-gang member may return to their old stomping grounds to see other friends and family (see Miller, 2008). Or, they may seek out comparable peer groups or clash with the existing social structure, both of which could be problematic. Either way, social structures and networks are intricately involved in this process, as replacing social capital can be difficult. Thus, leaving the gang is a difficult process, wrought with shifting identities and friendships. The push and pull of membership illustrate these difficulties, and the inconsistent ways in which social capital works in the context of deviant groups may play an instrumental role in the desistance process. Further, the human capital acquired during gang membership is unlikely to be applicable in the above-ground economy. Indeed, the attitudes and skills learned by former members may hinder attempts to “go straight” absent cognitive shifts that acknowledge and address them. In each instance, one mechanism that has recently become available may contribute to the growth of human and social capital and may be affecting gang membership: the Internet.

## **Gang Membership and Technology**

One of the broad concerns about the proliferation of gangs and gang membership relates to new

technologies and media. Research on the lyrical content of rap music finds that many references are made to both code of the street ideals like toughness, aggression, and violence (Kubrin, 2005), and also gangs. A prominent concern has arisen with respect to the growth of the Internet and the spread of gangs (Papachristos, 2005). Much like for right-wing extremist groups and terrorist organizations, the Internet offers gangs a medium through which to spread their message and have easy access to multiple individuals. As Maxson (1998) noted, the spread of gangs is due to the spread of gang culture rather than the migration of gangs or gang members—such processes can be easily facilitated by the Internet. While criminologists have been slow to embrace the online world as a research arena, we can draw from other social sciences to try and understand if and how gang members are using the Internet. Further, the Internet is agnostic to ideology as it is a medium of communication; thus, the Internet can be used for both prosocial and antisocial purposes in the lives of gang members (Decker & Pyrooz, 2011).

Social lives continue to move into online forums, as most Americans currently use the Internet (Zhang, Callegaro, & Thomas, 2008). The migration of substantial portions of social life to online formats has implications for the nature and impact of social capital. Scholars differ on how much impact the Internet has on people's individual lives, with some suggesting that new technologies only reinforce one's attitudes and beliefs (Tyler, 2002), while others contend that the Internet can revolutionize how individuals receive, use, and benefit from information (see Anderson, Bikson, Law, & Mitchell, 1995; Mehra, Merkel, & Bishop, 2004). With respect to social and human capital, it appears that Internet use and the presence of new technologies can supplement them. Indeed, with the continued growth of social networking sites, blogs, and online dating sites, it may be easier than ever to meet people with similar interests or to locate new information online. What individuals do and how they act in-person are similar to how they act online (Hargittai, 2007), which raises larger questions about how gangs may exploit the

Internet and how the Internet may threaten the existence of gangs.

Anecdotal evidence would suggest that the former is taking place. For example, a search of the Internet video site Youtube for "gang fight" videos yields over 54,000 hits. However, we generally know very little about gang members or other offenders using the Internet (Decker & Pyrooz, 2011). Digital resources are not distributed equally among people or places (Stern, 2010) and differential patterns of Internet access suggest that many of those at risk for gang membership would be less likely to access and use the Internet, based on their limited education, wealth, and race/ethnicity (Hoffman, Novak, & Schlosser, 2000; National Telecommunications and Information Administration, 2000). Decker and Pyrooz (2011), however, find that many gang members can access the Internet, and that most use social networking sites, though with less frequency compared to the general population. The lower prevalence of Internet use among gang members is not surprising, and may reflect the unequal distribution of digital resources (Hargittai, 2007). Such patterns of differential access and use follow the relationship between economic disadvantage and the presence of gangs in urban areas (Pyrooz, Fox, & Decker, 2010). While not all members embrace this technology, many gang members report using the Internet for illicit means (Pyrooz & Decker, 2011). Whether such behavior translates into criminal capital on the street remains to be seen. More broadly though, member involvement in crime often leads to imprisonment, historically due to street crimes. Those spending significant amounts of time incarcerated will have less exposure to computers and the Internet as correctional facilities, by design, do not have Internet access and maintain many restrictions on the technologies available to inmates.

In spite of these hindrances, technological advances in the past two decades have made computer technology cheaper and more easily accessible for those who, 10 years ago, may only have had access at a public library or school. Perhaps cell phones and laptops represent the same status symbols and access to capital as the pagers of the

early 1990s (see Anderson, 1999; Decker & Van Winkle, 1996). Indeed, the Internet likely provides numerous opportunities for gang and nongang members alike to increase or decrease their accumulation of human and social capital. In light of the findings by Decker and Pyrooz (2011), it is important to consider how technology may then affect gang members before, during, and after their membership.

For nonmembers, the Internet may be an easy way to gain information about gangs—Youtube videos, *Facebook*, and *MySpace* pages, and access to local, national, and international news. In doing so, it enables making contact with current gang members, and potentially avails individuals to membership opportunities. Such information serves as a catalyst of emerging gangs in diverse, nontraditional locations (Maxson, 1998). Further, because information on illicit activities is available online, this may serve to accelerate the level of criminality of new members. In conjunction, new members may still be able to draw out their embeddedness curve via social networking sites. The friends who they may see least frequently, those who are the most prosocial, are still available and able to be contacted. Thus, the early relationship between technology and capital acquisition among gang members is mixed. The Internet provides opportunities to gather gang information and potentially contact members, while simultaneously allowing for the maintenance of friendships once gang joining has taken place. As these new members become more embedded, they enter the persistence period of membership. Here, the role of the Internet changes from facilitating membership to increasing criminal embeddedness.

For current gang members then, the Internet likely offers opportunities to expand beyond their original social spheres, building “criminal capital” through the sale of drugs and stolen goods, planning fights, and harassing rivals online (Decker & Pyrooz, 2011). These actions may carry more weight in the gang context, but are perhaps as visible or valuable when compared to selling drugs or getting into fights in the local park or on the corner. Alternatively, for

others members, it may simply seem implausible or dangerous to use the Internet for gang activities, as law enforcement may be monitoring them. In either case, it is at this stage that the attenuation of social ties has taken place. Presumably, fewer prosocial peers are maintaining contact with the gang members and the “suction” effect is in full force. Because of this isolation and the decreasing levels of human and social capital, individuals will begin desisting. Further, their accumulation of prosocial human capital will likely have stalled, thus preventing easy reentry into licit enterprises. Unable to cope with the loss of capital as well as other events during membership, such as violence, the Internet offers opportunities to begin reconnecting with lost friends.

For desisting and former gang members, the Internet offers a means for developing weak ties to nongang members. The discreet, potentially anonymous nature of the Internet then offers an easier opportunity to find help leaving the gang. These resources may range from local nonprofits to contact information for other former members. Likewise, the Internet offers opportunities for occupational and educational attainment unavailable to gang leavers of generations past. These opportunities are particularly salient, given the limited understanding of gang desistance and the mechanisms that assist in the desistance process. In this instance, the role of technology is then echoing the role it played for gang joiners: supplementing levels of capital and providing opportunities for new information and new friends through the formation of weak ties. The degree to which this technology assists gang leaving, however, is still unknown. Rather, the Internet acts as a means of reacquiring lost social and human capital, as well as redeveloping social ties with nongang members. In each of these scenarios, the Internet plays a variety of roles, each changing depending on where individuals are in terms of their gang embeddedness. Because of this, the role of the Internet on the relationship between gang membership and capital warrants further investigation. We consider this as well as other directions for future research next.

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## Directions for Future Research

While much progress has been made in the last quarter century with respect to the study of gangs, there remain areas of research that are underdeveloped. Chief among these is a more rigorous incorporation of social and human capital into understanding the onset, persistence, and desistance processes of gang membership. The life-course perspective offers an opportunity to do just this, given its emphasis on life events and social embeddedness. In considering this relationship, we present five directions for future research and specific research questions for empirical inquiry.

First, understanding the longitudinal relationship between joining and leaving a gang and human and social capital is critical. As shown in Fig. 9.1, we posit that the onset of gang membership will see a “bump” in social capital, as an individual has solidified new social ties. However, given the “social suctioning” effect of gangs, individuals are expected to begin losing prosocial friends over time. This is attributable to spending less time hanging out or participating in prosocial endeavors, perhaps also dropping out of school or leaving their job. The longer one stays in the gang, the more isolated one becomes. The duration of gang membership should then correspond negatively to the acquisition of social capital. In conjunction with this decline in social capital comes an increase in criminal capital (Hagan, 1993). An individual will make different friends, many of whom will be fellow gang members, as well as retain some friends from before joining. Gang joining will also entail substantial changes to human capital. Leaving school or work because of gang membership inhibits the acquisition of both technical and healthy interpersonal skills. Like the new friends a new gang member is making, the knowledge they are acquiring inside the gang is likely to have limited value in licit enterprises. Further, the limited applicability of capital acquired inside the gang will be reinforced if the gang member becomes incarcerated (Rose & Clear, 1998). Future research should then concentrate on obtaining more precise estimates

of the embeddedness–capital relationship, as well as how desisting and former gang members begin to rebuild their social and human capital.

Second, the impact of technology on gang member’s social and human capital requires further investigation. With many gang members reporting Internet access (Decker & Pyrooz, 2011), the Internet provides opportunities to supplement and expand on their reserves of social and human capital. The Internet may be acting to fill structural holes in social networks, expanding capital through diversified ties, exposing members to new potential friends, customers, and victims. Technology may simply allow for reinforcing in-person social ties, giving members the opportunity to stay in constant contact, planning assaults on rivals and parties. Specifically, the rise of social networking sites like *Facebook* and *MySpace* allows gang members to monitor and harass rivals, as well as sell drugs and stolen goods. While these members are gaining criminal capital online, we do not know if such behaviors translate into street credibility. Alternatively, membership on social networking sites like *Facebook* may allow for recent gang joiners to continue discreet relationships with their nongang friends online, thereby slowing the loss of social capital early in their membership. The human capital element of technology also offers opportunities for research. The Internet offers gang members a discreet way to continue gaining knowledge (both prosocial and otherwise) away from the gang. Because work on gangs and technology is still in its infancy, the acquisition of knowledge by gang members should continue to be of interest to both academics and practitioners.

Third, researchers must recognize that gangs act as sources of social and human capital. While we posit that gang joining has deleterious effects on social capital over time, comparisons must be made between those who do and do not join gangs. Given the social roots of gang joining, it may be that joining is the result of limited social capital (Rubio, 1997), or is intended to positively supplement already existing levels (Pih, De La Rosa, Rugh, & Mao, 2008). We would expect then that those who do not join gangs enjoy



higher levels of social and human capital in the long term, and slightly lower levels in the short term. Concurrently, researchers should consider how gangs and nongang groups directly impact levels of capital. We expect that gangs and other antisocial groups (cults, hate groups) act in similar ways, slowly drawing members away from prosocial arenas. In drawing from research on these groups, the notion of embeddedness is important. Comparisons between such groups in their effects on capital, however, have yet to be made.

Fourth, future research should consider the age-based timing of the effects of gang membership on capital acquisition. While gang membership typically only lasts 1 year (Thornberry, Huizinga, & Loeber, 2004), and that age is inversely related to gang membership, we should then expect that younger gang members might accumulate capital differently. This is illustrated among historical gangs, where age-graded divisions yielded increasing levels of delinquency among members (Miller, 2011). Further, individuals who are “born into” gangs may exhibit the lowest levels of social capital; experiencing isolation from nongang members at an early age and achieving sufficient levels of gang embeddedness (and thus criminal capital) by the time other peers are only starting to join. These individuals represent perhaps the lowest percentage of all joiners, especially in areas where gangs have only recently come into fruition. Broadly though, as the probability of gang membership peaks at age 15 years (Decker & Pyrooz, 2011), then early joiners should experience more severe negative consequences on social and human capital. We posit those individuals to be the most likely to drop out of school, have trouble acquiring or maintaining jobs, and have frequent run-ins with the law. Those who join later will be closer to completing high school and will have formed a number of prosocial relations prior to joining.

Fifth, and last, the generational effects of gang membership on capital warrant greater attention. If gang members engaged in less lethal violence and drug use prior to the 1960s (e.g., Miller, 2011; Thrasher, 1927; Whyte, 1947), then these same individuals may have accrued criminal cap-

ital in fundamentally different ways than contemporary members. Does this mean that current gang members attain criminal capital in the same manner uniformly, or are there distinct variations based on certain behaviors and beliefs that research has yet to explore in depth? This question must be considered in light of gender, location, race, and time period. Each may have independent, as well as additive and multiplicative, effects on social and human capital, though such comparisons have yet to be explored in much depth (for exceptions, see Peterson, Miller & Esbensen, 2001; Pih et al., 2008).

These considerations are all questions of the relationship between gang membership and social capital over the life-course. In conjunction, we briefly consider one manner in which this relationship may be quantified. Social networking methods of data collection and analysis offer one way to measure how social capital is affected by gang membership. Research examining reciprocity is becoming more prevalent (e.g., Schaefer, Light, Fabes, Hanish, & Martin, 2010), and social network analyses of gangs and gang members occurring more frequently. Prior research has used data from police records (McGloin, 2005; Morselli, 2008; Sarnecki, 2001; see also Papachristos, 2009) or specific gang data (Fleisher, 2006; Papachristos, 2006). Future research would be wise to begin harnessing the social network methodology with greater frequency. This is by no means an easy task, but would provide a greater understanding of how gang embeddedness changes relative to individuals moving in and out of the gang (Pyrooz et al., 2012). By focusing on egocentric networks, it becomes possible to explore empirically how gang membership attenuates ties to nongang members over time.

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## Conclusions

The study of gangs in the social sciences is an old tradition, dating back to the early twentieth century, and still continues to draw the attention of researchers. This is due, in part, to the continued growth in the size and scope of gang membership



**Table 9.1** Directions for future research

Future research directions	Research questions
Longitudinal relationship between gang membership and social and human capital	Do those who join and stay in gangs for long periods of time experience lower levels of social and human capital? How do desisting and former gang members begin to address depleted levels of social and human capital?
Offenders and technology	Do offenders participate in social networking sites? If so, do offenders use these technologies and websites to promote criminal activity? How do offenders use the Internet, more generally, to supplement their social networks and possibly maintain prosocial relations?
Groups as sources of capital	How do gangs differ from other antisocial groups in the short- and long-term processes of capital acquisition?
Age-based effects of gang membership	How does the age of gang joining affect the acquisition of social and human capital? Are there significant differences between those who join gangs earlier or later in terms of social and human capital?
Moderation effects on human and social capital	Do race, gender, place, and time period independently and jointly influence the accumulation of social and criminal capital? If so, how do these effects vary over time?

both in America and abroad (Decker, Van Gemert, & Pyrooz, 2009; Egley & Howell, 2011). Much of this research has considered the role of the physical and social environments in facilitating the emergence of gangs, as well as the persistence of individual's gang membership. More recent scholarship has instead focused on how an individual's social networks influence behavior. In the case of gangs, membership slowly draws members away from prosocial institutions.

In this chapter, we have explored the role of gang membership on the acquisition of human and social capital. The role of capital is not exclusively a positive one, however, and we refer to Hagan's (1993) development of criminal capital in juxtaposition to more prosocial ties among gang members. The onset of gang membership likely yields a slight increase in capital, as it corresponds with an increased number of social ties. Over time, as an individual becomes more embedded in the gang, ties to prosocial peers and institutions are disrupted and show signs of decay. Concurrent with concerns about this "suction" effect are the role that technology plays in enhancing or decreasing capital. The relationship between gangs and technologies like the Internet is a complex one that researchers are only beginning to unravel. In some instances, the Internet may assist in gang joining and membership, allowing members to plan out crimes. In others,

members may harness the Internet to begin trying to rebuild their prosocial networks. These complexities lend themselves to future research opportunities and considerations, which we have discussed as well as display above (Table 9.1).

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# Social Networks and Delinquency in Adolescence: Implications for Life-Course Criminology

# 10

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## Abstract

Over the last decade, social networks have become a focal concern for research seeking to understand the etiology of delinquent behavior. The study of the role of peers in the perpetuation of delinquency during adolescence has been reinvigorated by the theoretical and empirical rigor relational data and social network analysis brings to the study of human relationships. The development and availability of statistical models designed to account for the inherent dependencies in relational data, such as stochastic actor-oriented models (e.g., SIENA), exponential random graph models (ERGM), and actor-partner interdependence models (APIM), have led to a greater understanding of the role of selection, homophily, and socialization in the study of crime and delinquency. Furthermore, longitudinal data sets, such as the National Longitudinal Study of Adolescent Health (Add Health), have yielded invaluable insights into the dynamic nature of the adolescent social landscape over time and the mapping of behavioral pathways to this context. However, the focus on the adolescent time frame provides insights into relationships for only a portion of the human life cycle. Therefore, in this chapter, we provide a broad overview of the changing nature of adolescent peer networks and their importance for delinquency and crime. We place particular emphasis on the implications for understanding trajectories of crime and turning points in the life course. Our goal is to provide the reader with a greater understanding of dyadic, egocentric, and global network structures in which people are embedded and how each of these relationship levels can be set in motion to capture the continuity and change common to the

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human social experience. We develop an ambitious research agenda that involves a unifying discussion of social networks and social capital in criminological theory. We put forth topics for an innovative research agenda grounded in the relevant literature with the goal of articulating a research plan that will help spark empirical and theoretical advancements in life-course criminology.

Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passion, they cannot alter the state of facts and evidence

John Adams

Two of the most stubborn social facts in criminology are (1) the correlation between the delinquency of an individual and his/her friends' behavior and (2) the fractal relationship between age and crime. Explanations of both these observations have generated substantial debate in the field. Interestingly, these facts seem mutually explanatory: exposure to delinquent peers increases during adolescence and then declines as youth enter adulthood, leading to desistance. However, an etiological understanding of the relationship between peers, age, and crime is less than straightforward. Gottfredson and Hirschi (1990, p. 131) provide a lucid description of the fundamental problem: "just at the point where the criminal group has been created, it begins to decline in size." In other words, the rapid onset and rapid desistance from crime that generates the age-crime relationship must be explained by a mechanism that can adapt to this property of the distribution. As Sampson (2000, p. 712) has suggested "within-individual changes in criminality are not called forth from the distant past but are mediated by proximate and time-varying social processes grounded in life transitions, situational interactions, routine activities, and turning points. Theories limited to time-stable factors are thus incapable of unpacking the zigzagging and temporally variable patterns of offending."

Interest in this problem has created a voluminous literature on the role of peers in the causation of delinquency. In addition, the dynamics of peer relations and their connection to age-graded

features of social institutions have led researchers to focus on social networks. Over the last decade, relationships have become a focal concern for research seeking to understand the etiology of delinquent behavior, particularly among life-course researchers. A key insight of life-course or developmental criminology is examining how the probability of crime and deviance is linked to social context. Matsueda and Heimer (1997, p. 165) illustrate this point when they state that: "if the likelihood of crime declines as individuals age, or increases the longer one is a member of a delinquent gang, then crime is developmental. Conversely, if the likelihood of crime is the same regardless of age, length of time in a delinquent gang, or any other duration-dependent mechanism, then crime is not developmental." Social networks play a crucial role in this process because they provide an avenue for identifying "duration-dependent" causal mechanisms in social contexts.

Despite the plethora of "social network" studies in delinquency research, this literature has largely stagnated in criminology, particularly at the theoretical level. Nearly 25 years ago, Matsueda and Anderson (1998, p. 301) stipulated an agenda for the discipline: "...what is needed is a theory of crime that is combined with a theory of peer group formation...such a theory would embed friendship patterns within a larger social organization and explain how the structure of friendship networks operates" (see also Haynie, 2001 for a similar critique). For the most part, this agenda has not been thoroughly explored. Unfortunately, the lack of theoretical innovation stems from the overemphasis on the so-called selection-influence debate. Perhaps through the realization that the debate produces a caricature of criminological theories, or perhaps from



exhaustion, proponents of each side of this debate largely agree that both processes are at play and that the dichotomy is unhelpful as it fails to capture the complexity of adolescent relationships. In a recent article on this issue, McGloin and Shermer (2009, p. 24) echo the same sentiment emphasized by Matsueda and Anderson (1998): “it is clear that it is no longer productive to debate which theoretical perspective (propensity or social process) is ‘correct’ but rather to continue the earnest consideration of how these two views may be reconciled into a cohesive and empirically consistent theory.”

The tasks presented to criminology by Matsueda and Anderson (1998) and McGloin and Shermer (2009) can begin to be addressed by reorienting criminological theory in a manner that provides a richer discussion of the theoretical implications of network structure and delinquency. Or, as Smângs (2010, p. 610) suggests, “recasting the theoretical problem at hand in social analytical network terms” by focusing the research question on the relational processes between individuals, allowing for hypothesis testing at the proper level of analysis. Peer friendship networks are a core area for understanding the dynamics that occur during adolescence and the changes to social processes that are observed.

In this chapter, we examine the changing nature of peer networks on delinquency and crime, with a particular emphasis on adolescence and implications for life-course criminology. Our review is divided into two sections. In the first section, we discuss the contributions of social network data to disagreements regarding the measurement of peer delinquency. We then describe the causal mechanisms postulated to influence behavior that have been identified in social network research and link these to existing empirical and theoretical work in criminology. Lastly, we end this section with a unifying discussion of social networks and social capital in criminological theory. In the second section, we put forth topics for an innovative research agenda grounded in the literature reviewed in the first section. The goal of this section is to articulate a research plan that will help spark empirical and theoretical advancements in life-course criminology.

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## Review of Social Network Research

The multidisciplinary area of *network analysis*, generally, is the conceptualization and analysis of a network with the objective of understanding the system of relations tying distinct entities to one another (i.e., structure). This structural approach, or the study of relationships between entities, is not confined to relationships between individuals but cuts across disciplines ranging from astrophysics and gravitational pull, to biologists and symbiotic ecosystems, and to the neural architecture of the human brain (Freeman 2004). For our purposes here, a *social network* is a set of individuals and a set of relations between them. The primary interest in the nature of relationships in social network analysis involves how the behavior of individuals depends on their location in the social network and how the qualities of the individuals influence social structure. Criminological theories continually use language similar to that of social network methods and theory. However, it is only recently that social network analysis has begun to emerge as a tool for criminologists to explore the connection between various levels of social contexts, social structure, and crime.

We begin this section by providing an overview of the social network method of data collection and how these data address the frequently discussed topics of projection and homophily in the study of crime and delinquency. We then provide an empirical overview of how network variables (e.g., density, popularity, and centrality) have been used as predictors of crime and delinquency and the level at which the social context has been defined by criminologists. Namely, our focus is on the use of dyadic relationships and egocentric network data. Our goal is not to provide an exhaustive review of criminological studies using network variables as predictors of crime but to provide readers with clear examples of how network variables have been shown to impact crime and delinquency. Lastly, we provide a lengthy discussion on the stability and quality of relationships across the life span, paying particular attention to the role of early attachment to primary caregivers in infancy and childhood and

how these levels affect future relationships. This overview is prefaced with a brief comment on the theoretical implications of network variables, informal social control, and social capital.

### **Contributions of Social Network Research: Addressing Issues of Projection**

A basic but powerful component of social network analysis is the type of data collected. Archival sources, diaries, electronic traces, observations, informants, and experiments are among the many ways in which relational ties between actors can be collected (see Marsden, 1990). The availability of social network data has added clarity to a long and often tedious debate within the field of criminology. The debate encompasses the strength of the association between an adolescent's delinquency and that of his/her friends. At issue has been whether asking a respondent to estimate the delinquency of his/her friends artificially inflates the personal/peer delinquency association, a phenomenon referred to as projection (Jussim & Osgood, 1989; Ross, Greene, & House, 1977), assumed similarity bias (Byrne & Blaylock, 1963) or same-source bias (Haynie & Osgood, 2005). The idea being that when asked a question such as "Think of your three best friends, in the past month now many times have they smoked cigarettes," survey respondents would tend to project their own smoking habits onto that of their friends. "Thus, rather than capturing true peer influence, perceptual measures of peer behavior might reflect individual biases that lead to inaccurate reports of peer delinquency" (Young, Barnes, Meldrum, & Weerman, 2011).

Kandel (1996) concludes that correlations between personal and perceived peer delinquency are two to three times higher than studies using the social network method of data collection (see also Iannotti & Bush, 1992; Kandel, 1996; Weerman & Smeenk, 2005). Kandel (1996) noted that Bauman and Fisher (1986) collected data from the respondent using a name generator and then collected data directly from named friends (but see Berndt & Keefe, 1995). Other studies

were criticized for using respondent perceptions, which "pertained to an ill-defined group of friends" (Kandel, 1996, p. 290). Bauman and Fisher (1986) used longitudinal data and network data to study the alcohol and smoking habits of seventh and ninth graders and found that projection did appear to artificially inflate the correlation between an adolescent's delinquency and that of his/her friends.

More recent research using relational data confirm past findings. Using a nationally representative sample, Haynie & Osgood (2005, p. 1125) findings led them to make a very strong statement that echoes sentiments of other scholars, "it is inappropriate to investigate normative influence by using respondents' reports as indicators of the attitudes, values, or behaviors of others." The evidence for bias in respondents' reports is not limited to the USA. For example, Weerman and Smeenk (2005) use network data from Netherlands Institute for the Study of Crime and Law Enforcement (NSCR) School Project and found that adolescents tended to under report friend delinquency indicating that they may be unaware of the amount of delinquency committed by people they consider friends. Further work by Prinstein and Wang (2005), using a US sample, also found variation in the ability of survey respondents to accurately report the delinquent behavior of best friends.

Network data has not only added clarity to the issue of projection in criminological research, but it has also led to novel research about the over and under reporting of friends' delinquency. In addition to the role of actor attributes (i.e., delinquency or self-control), structural features of relationships may influence perceptions of delinquency. For example, using data from the NSCR School Project, Young et al. (2011) found that individuals in dense networks were more likely to misperceive the delinquency of their peers. Furthermore, several authors have found that estimates of theoretical constructs were underestimated when indirect measures of peer delinquency were used (Boman & Gibson, 2011; Meldrum, Young, & Weerman, 2009). An interesting parallel is the research on cognitive networks (Krackhardt, 1987, 1990; Newcomb, 1961) in which survey

respondents report on the presence or absence of a relational tie. Kumbasar, Romney and Batchelder (1994) found subjects in their sample to be “fairly reliable” judges about adjacent alters but that they tended to see themselves as more central in the network than they really are. Igarashi and Kashima (2011) show that the perceived entitativity of a group is based upon interaction patterns of group members and group size. That is, smaller groups of individuals identify network boundaries based on close dyadic interactions with other group members, whereas individuals in larger networks first form subgroups based on dyadic ties and these loosely tied subgroups ultimately identify with a larger aggregated entity. Perceptions may also be important for changes that occur in behavior. For example, McGloin (2009) draws on tenets from balance theory (Heider, 1958) to develop the notion of *delinquency balance* in which adolescents try to find behavioral balance, after having observed differences in their behavior and their peers, by adjusting their behavior to match others. However, such a process may be complicated if peer delinquency and perceptions of peer delinquency are separate constructs, as some evidence suggests (see Boman, Stogner, Miller, Griffin, & Krohn, 2011).

### Contributions of Social Network Research: Addressing Explanations of Homophily

As discussed, a primary focus of social network research in criminology has been the examination of how structural features of friendship networks influence individual behavior. A limitation of this exclusive focus is that problems can emerge with the attribution of causal significance to social relationships. As Mouw (2006, p. 80) notes: “a fundamental challenge in the estimation of the effect...is posed by the central fact that individuals choose who they want to be friends with and what groups they want to join...[It] is quit possible that much of the estimated effect...simply reflects selection effects based on the myriad of nonrandom ways in which people become friends.” Such caution echoes the concerns raised

by critics of research claiming that the behavior of network members becomes correlated through a social influence process. At the center of this debate is the issue of the causal mechanism generating *homophily* among adolescents with respect to delinquency. Homophily refers to the observation of similarity, rather than dissimilarity, on attributes among one’s associations (see Byrne, 1971; Lazarsfeld & Merton, 1954; McPherson, Smith-Lovin, & Cook, 2001). In this section, we focus on how social network research has contributed to our understanding of how attributes become correlated. We begin by defining the various types of homophily and discuss evidence for a specific generative mechanism: *selective-mixing*.

### Types of Homophily and Generative Mechanisms

Since the term “homophily” is often used with little precision in regard to the outcome and the mechanism generating the outcome, some clarification is necessary. McPherson et al. (2001) distinguish between *baseline* and *inbreeding* homophily. The former refers to the level of homophily that would be observed if relationships formed by chance as a function of the population distribution. For example, if the values for some attribute are uniformly distributed in the population, then we would expect that the homogeneity of any randomly selected individual’s network to reflect this distribution. Baseline homophily is important to recognize when there is nonuniformity in the distribution of attributes in a population. In contrast, *inbreeding* homophily refers to similarity in relationships that occurs beyond baseline homophily. That is, the prevalence of a correlation for an attribute that is greater than what we would expect under random mixing in a population.

*Salient* attributes are those that exceed baseline homophily (Schaefer, 2010). Given that delinquent behavior has been postulated as salient, it follows to ask why we have observed nonrandom sorting in a population? In the delinquency literature, perhaps the most prevalent, and contentious, mechanism postulated to generate homophily is *selective mixing*: the tendency for relationships to form among individuals based

on perceived similarity on attributes. Commonly referred to as the “selection hypothesis,” the correlation of actor’s attributes is proposed to be the product of individuals who engage in delinquency selecting other individuals who engage in delinquency as their friends.

The majority of research examining this question lack social network data and therefore have used panel models to examine whether individual delinquency in a prior wave predicts their report of peer delinquency in a subsequent wave. In these models, selective mixing is presumed to occur when there is a positive coefficient for the effect of delinquency at  $t-1$  on peer delinquency at  $t$ . In other words, a positive effect indicates that individuals are selecting into relationships with others who engage in the same behaviors as the individual did in the preceding wave. In a rigorous analysis using this approach, Matsueda and Anderson (1998) used three waves of data from the National Youth Survey to estimate cross-lagged effects among latent variables. They found that delinquency in a prior wave was a stronger predictor of peer delinquency than prior peer delinquency was a predictor of current delinquency. Similar results have been reported in the literature using panel models (e.g., Jang, 1999, 2002; Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994).

Only recently, with the availability of network data, have researchers been able to confidently examine the selection hypothesis. The weakness of prior research is that without information on relationships, the models were unable to account for network dynamics that may also generate the correlation. For example, Weerman (2011) showed that one’s delinquency did not predict affiliation with friends when network dynamics were taken into account. Similarly, using exponential random graph models, Young (2011) found that, although individuals’ levels of self-control were correlated, this correlation was a consequence of *triadic closure*, or the tendency for relationships to form between individuals with similar friends. These studies indicate that the inability to account for dependencies among observations may have produced misleading support for the selection hypothesis. Moreover, the selection hypothesis appears to oversimplify the complex web of relationships experienced during adolescence.

Overall, there is growing evidence, which conflicts with the claim that correlated attributes among individuals who engage in delinquency is a consequence of selective mixing on delinquent behavior. But, the singular conception of homophily in delinquency research limits the ability to make rich inferences about how relationships unfold during adolescence. For example, Schaefer (2010, p. 22) has recently argued that *configurations of homophily*, defined as “a combination of similarity and dissimilarity across several dimensions,” may be important for understanding how multiple attributes may be correlated or not. Future work should expand upon this concept to examine how homophily is configured in adolescent relationships. It is important that future works recognize that adolescents face constraints regarding the extent of diversity in their relationships on multiple attributes. These constraints may be relaxed in later adulthood. We revisit this concept in greater detail below.

### **Contributions of Social Network Research: Theoretical Integration and Empirical Support**

Krohn (1986) is one of the first criminologists to formally integrate the network perspective into the study of crime and delinquency. Krohn integrates Sutherland’s (1947) theory of differential association and Hirschi’s (1969) control theory by developing a theoretical framework that recognizes the importance of how interactions with peers influences delinquency, while accounting for social control’s emphasis on the behavioral constraints imposed by social integration. According to Krohn, network density and multiplexity should constrain behavior in a manner that will perpetuate the current state of the network. Multiplexity is defined “in terms of the number of foci in which the same people interact jointly” (Krohn, 1986, p. 83). Density is measured as the ratio of ties actual ties in a network to the number of possible ties and reaches a saturation point. Network density reaches a maximum when everyone in the network shares a relationship. Higher levels of these network structural characteristics are hypothesized to constrain

delinquent behavior. Krohn states, “by stressing joint participation in focused contexts, we simultaneously recognize the importance of what individuals’ associates do (differential association) and the kind of activities in which they are mutually involved ([social control] commitment and/or involvement).” A formal test by Krohn, Massey and Zielinski (1988) tested and found support for the multiplexity hypothesis of constraining behavior in that participation with friends in formal activities such as going to church, athletics, and other school clubs lead to a decrease in delinquency. In addition, strong attachments to friends who smoked lead to increased smoking behavior, leading Krohn et al. (1988, p. 353) to conclude that “Mere involvement in an activity is not what constrains people from behavior deemed inappropriate by others; it is the inclusion of significant others in these activities that has the constraining effect.” In other words, the foci which bring adolescents together is simply a mechanism of organization, it is the relationships amongst them which produces the effect on behavior.

The work of Haynie (2001, 2002) and Haynie and Osgood (2005) has been integral in merging the social network perspective into the field of criminology, particularly at the empirical level. For example, following Krohn (1986) and Haynie (2001) links important propositions from differential association and social control theory to illustrate how popular, centralized actors in dense networks may face behavioral constraints that are not experienced by actors in different structural positions. Haynie (2001) hypothesizes that density, popularity, and centrality will moderate the personal/peer delinquency association. This sociological contribution is derived from the network perspective as stated by Klovdahl (1985, p. 1204) “the structure of a network has consequences for its individual members and for the network as a whole, over and above effects of characteristics and behaviors of the individuals involved” (as cited by Haynie, 2001). Importantly, a network moderation hypothesis is developed within a criminological framework. The robust relationship between personal and peer delinquency is assumed to exist as hypothesized by both social learning and social control theories. However, the strength of this relationship is heightened by a more dense

(cohesive) network structure, increased levels of social status amongst peers (popularity), and through the occupation of a position high in exposure to network information (centrality). Each of these egocentric network properties was found to moderate the association between individual delinquency and peer delinquency. Greater levels of each increased the impact of peer delinquency on personal delinquency.

Haynie (2001) studied the social network at the egocentric level where peer delinquency is measured as the central tendency of behavior in the send-and-receive network. Haynie (2002) took a different approach to the measurement of peer delinquency by proposing a more direct test of an adolescent’s exposure to differential associations. The ratio of ties to delinquent and nondelinquent friends was found to have a greater impact on personal delinquency as compared to averaging the delinquency of the network, the number of delinquent friends, and the total number of delinquent acts committed by network members. Haynie (2002) suggests that the proportion of delinquent friends measures the embeddedness of an actor in a social context (see Coleman, 1988, 1990; Granovetter, 1985). Specifically, the greater the proportion of delinquent ties results in a greater ability for those ties to constrain individual behavior to parallel that of the group (Haynie, 2002).

Network studies of crime and delinquency have also explored the impact of different relationship levels on a variety of anti-social outcomes. Wasserman and Faust (1994) identify five different levels at which relationships exist: individual actor level (i.e., the nodes in the network), dyads, triads, subgroups, and the global level. A common theme has been to compare and contrast the influence of these different levels within a single empirical model. For example, Urberg (1992) found that best friends had a greater impact on cigarette smoking as compared to the more broadly defined “social crowd.” Best friends have also been shown to have an impact on delinquent outcomes beyond that of the remaining friendship group. Urberg, Değirmencioğlu and Pilgrim (1997) found that best friend smoking lead to initiation in smoking, but the remaining friendship group predicted moving into current alcohol use. Weerman and Smeenk (2005) found no difference



in the magnitude of the effect of a best friend and the remaining egocentric network on an adolescent's omnibus delinquency measure. Rees and Pogarsky (2011) further explored the best friend–remaining friend dichotomy and found that the influence of the best friend was relatively smaller than that of the rest of the egocentric network as that group's size increased. They also found that the influence of the best friend depended on how similar that behavior was to the remaining egocentric network. Best friendships, peer cliques, and social crowds have also been shown to each have a unique effect on adolescent substance use (Hussong, 2002). Alexander, Piazza, Mekos and Valente (2001) not only found best friend and egocentric network smoking predicted increases in smoking behavior among adolescents but also that a global network level of smoking did as well. Furthermore, this study also found an interaction between the individual level measure of popularity and school level smoking suggesting that popular students in school with high smoking rates were at greater risk for current smoking behaviors.

Kreager (2004) focuses on isolation during adolescence, finding that low peer attachment does not lead to increased levels of delinquency, but it is the combination of isolation from school peers and a troubled home life. Both relationships are unsupportive, lacking the necessary social support for normal emotional and social development (see also Demuth, 2004). In contrast, research has shown that distal peers beyond the adjacent egocentric network can influence delinquency, but the influence of distal peer dissipates as it diverges from the more proximal friendship group (Payne & Cornwell, 2007).

### **Social Networks and Mechanisms of Informal Control**

One of the overarching goals of criminology is to accurately model and make predictions about human behavior. The intent is to develop theories that make specific predictions about what affects the phenomena of crime and delinquency at both the group and individual levels. Mainly a consequence of the availability self-report surveys in

the 1970s, the empirical realm of criminology has predominately taken an individual-level focus (Kreager, Rulison, & Moody, 2011). The explosion of life-course research in the last several decades has contributed to the concentration on individual-level forces by emphasizing the importance of understanding within-individual stability and change in delinquency and crime. This focus on the individual as the unit of analysis also encompasses the burgeoning network literature within the field of criminology. Ironically, while the central theme of social network analysis is not to focus on individuals but on the structured patterns of relationships between individuals (Wasserman & Faust, 1994; see also Tindall & Wellman, 2001), the inclusion of network measures as independent variables in recent criminological work has produced important findings regarding the sensitivity of individual behavior to the patterns of social relationships.

Although rarely stated directly, the inclusion of network measures in criminological research is an attempt to draw on *informal social control* as a cause of delinquency (or conformity). In other words, delinquency is in part caused by effective social control in adolescent peer networks. This theoretical point is yet to be fully explicated but is an essential insight that bridges the findings of past research. How groups influence individual behavior is foundational for the study of social control (Gibbs, 1994) and attempts to understand this process has led to a burgeoning literature in sociological rational-choice theory. Perhaps the most influential work on this topic that draws on social network properties is Coleman's (1987, 1990) notion of *social capital*. Specifically, informal social control (e.g., social norms) is realized under specific conditions (i.e., social capital). As Hechter (1987) has shown, the conditions for effective social control are *monitoring capacity* and *dependence* of group members. In other words, individual behavior is sensitive to social influence when groups can observe the behavior of other members and individuals have vested interests in maintaining their relationships. The structural trace of social organization is a key area of focus in social networks



that examines social cohesion. Friedkin (2004, p. 421) notes that “groups are cohesive when they possess group-level structural conditions that produce positive membership attitudes and behaviors and when group members’ interpersonal interactions maintain these group-level structural conditions.”

The implication for life-course criminology is that if individuals have a history of problematic relationships beginning with low-level attachments to parents (particularly the mother) during infancy and childhood, then they may be unable to enter and sustain relationships that exert social control. In essence, social influence depends on whether individuals care about their relationships and have the ability to maintain valued relationships. The social inability to maintain stable lasting relationships can be detrimental to the building of social capital thought to be vital to networks of informal social control (Sampson & Laub, 1990). The importance of network features that produce social capital has not escaped attention in criminological research examining adolescent peer networks. This attention largely results from the fact that understanding the dynamics of relationships embedded within informal institutions (e.g., peer networks in primary and secondary education) lies at the heart of a “sociogenic” (Sampson & Laub, 1993, p. 7) explanation of delinquency that defines life-course criminology. Poorly connected individuals will have difficulty accessing social resources that are part of their social network (Lin, 1982). These consequences underscore the role of cumulative disadvantage in the life course. In other words, an actor’s interaction with informal and formal institutions may exhibit a path dependence that is not easily “knifed-off.” This section examines the question of whether such structural properties can emerge given the propensities of individuals.

### **Stability and Quality of Relationships**

The effectiveness of informal social control is partly a function of how dependent members are on the group. Network structure has a salient impact on behavioral outcomes by providing reinforcement for some behaviors while not

permitting others. Network structure can also act as a demarcation line by forming social boundaries among in-group and out-group members. While research on the constricting and enabling aspect of networks has enhanced the understanding of crime and delinquency, it is important to also understand how particular network structures come to fruition and then how these structures evolve over time. What are the underlying personal processes involved in describing a person as an acquaintance at one time point but a friend at another? Who or what accounts for the relational tie increasing in value? In other words, what are the processes that “create, sustain, and dissolve structures” (Doreian and Stokman 1997, p. 7)? We begin with an examination of this literature and extend it to research on adolescent relationships.

### **Parental Attachment and Peer Relationships**

Much of the research on *attachment levels* in the dyadic parent–child relationship is based upon the work of Bowlby (1969[1999], 1973, 1980). According to his theory, attachment is an emotional bond to another person described as a “lasting psychological connectedness between human beings” (Bowlby, 1969[1999], p. 194). Physical proximity is also a necessary component of attachment and “ranges from close physical contact under some circumstances to inter-action or communication across some distance under other circumstances” (Ainsworth & Bell, 1970, p. 50). Of particular importance is the level of attachment to the primary caregiver early in infancy. Attachment levels are developed over time as the caregiver responds in a sensitive and caring way to the emotional cues given by the infant or child. These patterns of response lead the child to develop “internal working models,” which are foundational to future emotional and ultimately social expectations of relationships outside of the caregiver–child dyad. Ainsworth (1967) clearly defines these internal working models: *secure* (develop when the caregiver is prompt, appropriate, and consistent in responding to the needs of a child in distress), *avoidant-insecure* (caregiver is relatively unresponsive to

child distress and overly encourages independence and self-reliance), and *avoidant-resistant* (caregiver fluctuates between appropriate and neglectful responses to child distress). A failure to develop a quality attachment consisting of a balance between independence to explore the surrounding environment but also a refuge for reassurance can impede normal social and emotional development.

The basic tenets of attachment theory have been strongly supported by subsequent research (see Bretherton, 1992). Notably, Freitag, Belsky, Grossmann, Grossmann and Scheurer-Englisch (1996, p. 1439) report that children with secure attachment histories are “in general more affectively positive and less affectively negative in their interactions with peers; they participate more actively in the peer group, are rated as more popular, and form deeper friendships (as characterized by greater mutuality, responsiveness, and affective involvement)” when compared to children with histories of insecure attachment (see also LaFreniere & Sroufe, 1985; Sroufe & Fleeson, 1986). These findings extend across the life course into adulthood as well. Main and Goldwyn (1991) found that adult attachment types correlated with infant attachment counterparts. Adults will then seek to have “their internal working models confirmed” (Belsky & Cassidy, 1994, p. 28) such that the rejected person will seek relationships in which rejection will result.

Based on past research, it is then reasonable to postulate a connection between early caregiver-child attachments and strength, structure and stability of relationships in adolescence and adulthood. Poor levels of early attachment can lead to avoiding friendship ties to the point of isolation, while others may simply have unhealthy and unrealistic expectations of friends leading to relationship instability (Bagwell & Schmidt, 2011). However, this is not to say that poor parent-child attachment cannot be overcome in adolescence and adulthood. Although the research is mixed, there is evidence that suggests a close friendship during adolescence is not only possible but may also buffer against the negative effects of poor parental attachment in childhood (see Bagwell & Schmidt, 2011 for a review). Greater

attention to within-individual change or stability in the tendency to either sustain healthy relationships or the inability to maintain these relationships will shed more light on this process. This is a person-level hypothesis but one which views social structure as the dependent variable. A person's social ability or inability to maintain relationship ties is analogous to the concept of “sociality” (Goodreau, Kitts, & Morris, 2009). Sociality refers to an individual's propensity to form relationships. Similarly, Belsky and Cassidy (1994) discuss *sociability* in adolescence as having its roots in the level of attachment an infant/child develops with a primary caregiver, most often the mother.

### Relationships in Adolescence and Delinquency

The connection between parental attachment and consequences for later relationships is central to the *social ability* and *social disability* models of delinquency (Hansell & Wiatrowski, 1985). These models are built upon the tenets of social learning and social control theory, which conceptualize different relationship structures among adolescents based on the social capabilities of a focal adolescent. The social disability model is derived from social control's (Hirschi, 1969) suggestion that the friendships of delinquents are cold and brittle as compared to their nondelinquent counterparts. Social skills are said to be immature leading to poor relations with others. This results in network structures that are unstable and high in relationship turnover, lacking in mutuality in liking by nominated friends (unreciprocated friendship nominations) and small network size. Furthermore, strong ties to others would be fairly rare and this lack of a social bond would lead to isolation via low reachability. In contrast, the social ability model views delinquents as having all of the same normative social skills as their nondelinquent compeers. Differential association theory (Sutherland, 1947) posits that delinquent definitions are learned in intimate peer groups. The social ability model posits that delinquents are capable of forming high quality and lasting relationships. As such, delinquents can be popular with their peers, have

a normal number of friends, be mutually liked by nominated friends, and belong to distinguishable cliques or small groups of friends. In sum, delinquents are able to maintain relationships in the same manner as nondelinquents and participate in friendship groups “which support strong group norms in support of delinquency” (Hansell & Wiatrowski, 1985, p. 105).

### “Cold and Brittle” or “Warm and Fuzzy”? Empirical Support

Overall, mixed support has been found for regarding the friendships of individuals who engage in delinquency. Hirschi (1969) found a negative relationship between attachment to friends and delinquency. However, most studies (e.g., Elliott & Voss, 1974; Hindelang, 1974; Massey & Krohn, 1986) find a positive relationship between attachment to friends and delinquency. Giordano, Cernkovich and Pugh (1986) found that delinquent youth have relationships that are as stable as youth who do not engage in delinquency. However, some have argued that attachment to peer measures often include co-offending or involvement in delinquency with peers, and that when time spent with peers is taken into account, the relationship between attachment to peers and delinquency erodes (e.g., Brownfield & Thompson, 1991). A review by Marcus (1996) noted that compared to those who do not engage in delinquency, delinquent youth have greater conflict and less cohesion with parents, greater conflict in friendship relationships, more impulsivity, lower social competency, and poorer social skills. Studying social relationships among adolescents at 23 Dutch schools, Snijders and Baerveldt (2003) investigated the extent to which the level of delinquency affects the formation and termination of friendships. They found that: “friendship relations between actors with a similar level of delinquent activity are *dissolved* more quickly...and friendship relations between actors with a similar level of delinquent activity are also *formed* more quickly (emphasis in original)” (p. 146). Compared to relationships between nondelinquent youth, relationships among those who engage in delinquency are made and broken faster. Similarity with respect to delinquency

increases the chances that a tie will form but these ties, once formed, dissolve faster (cf. Kandel, 1978). Importantly, Snijders and Baerveldt (2003) also found that delinquents do not make and break ties at a faster rate compared to nondelinquents. The authors reasoned that friendships formed based on similarity of delinquency tend not to be long-standing relationships but are instead short lived (see also Warr, 1993). Building on the work by Snijders and Baerveldt (2003) and Baerveldt, Van Rossem, Vermande and Weerman (2004) found that, though delinquents and nondelinquents tend to be nominated as friends the same number of times by delinquents as nondelinquents (i.e., they have similar in-degree distributions), they are less likely to nominate nondelinquents than delinquents (i.e., different out-degree distributions). Furthermore, Baerveldt et al. (2004) found that homophily varied substantially across schools suggesting that there are important processes at work beyond network configurations.

### Are There Delinquent Groups?

Other research indicates that the notion of “delinquent groups” may be slightly misleading. Delinquent groups convey the image of strongly demarcated relationships. However, much of the social network literature indicates that individuals who engage in delinquency are not confined to relationally or structurally separated groups. In the networks literature, the notion of “components” is one where graphs can be separated into multiple components. The findings in the literature suggest that, at least in school settings, there are not strictly delinquent and nondelinquent groups. For example, Haynie (2002) found that individuals who engaged in delinquency were dispersed throughout the social network (see also Weerman & Smeenk, 2005). Overall, it is more appropriate to compare the central tendency and the extent of variation within a group with respect to delinquency.

Drawing on the work of Yablonsky (1959, p. 109), delinquent groups may be more properly referred to as “near-groups,” or collectivities characterized by features such as diffuse role definitions, limited cohesion, and shifting

membership. For example, Kreager et al. (2011) examined behavioral and structural variation in friendship groups identified through a network-based clustering algorithm. They found that groups with higher average levels of delinquency among their members had less reciprocity, transitivity, cohesion, and stability and were smaller. However, they also report that groups with higher levels of alcohol consumption reported *more* cohesion. This finding is consistent with Hagan's (1991) notion of a "party subculture" in adolescence where risky behaviors (e.g., smoking and drinking) are normative and reinforced. Importantly, membership in the subculture may yield future labor market advantages for high socioeconomic status youth by developing social networking skills: "partying, drinking, and related pursuits...may ultimately yield tangible payoffs through adult work-related network-building activities involving these and other mildly disreputable pleasures" (Hagan, 1991, p. 571).

Recall the findings of Haynie (2001) that suggest network structure serves as an important moderator of the influence of delinquent friends in an adolescent's social network. For example, if the adolescent is in a position of low centrality (i.e., is not a popular person and neither are his/her friends), the impact of those delinquent friends is diminished. Similarly, a loosely tied network in which few of the possible friendship ties between ego's nominated friends exist will not be conducive to modeling of behavior, transference of attitudes, or reinforcement of delinquency. Finally, adolescents who themselves are on the periphery of the social stage are less likely to be influenced by the delinquent friends they have. Viewing the results in this manner accentuates the importance of closely knit friendship groups for in-group identity formation (Haynie, 2001).

This also suggests that adolescents who themselves are not central, popular, and belong to a minimally cohesive friendship networks have less constraints on their behavior. Friends who are low in popularity may not bring the requisite social skills to the group which could help foster group solidarity. A lack of personal popularity

amongst peers could further atrophy an already weakened set of group norms. This also comes at a cost of not being able to access others outside of their already weakened peer network. If the institution of friendship is an important developmental context in which a number of social skills are learned in preparation for adulthood, those cut off from these social goods are at a disadvantage in making that transition. We concur with Portes (1998, p. 22) that this twofold view of the constraining and permissive aspects of networks is preferable because it recognizes "social ties can bring about greater control over wayward behavior and provide privileged access to resources; they can also restrict individual freedoms and bar outsiders from gaining access to the same resources through particularistic preferences."

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## Innovative Research Agenda

In the prior section, we examined existing studies of delinquency utilizing relational data with the goal of reorienting "the theoretical problem at hand in social analytical network terms" (Smångs, 2010, p. 610). In this section, we put forth topics for an innovative research agenda grounded in the literature reviewed in the prior section. Our goal is to articulate a research agenda that will help spark empirical and theoretical advancements in life-course criminology. Although there are an abundance of topics that could be discussed in this section, we believe three are of particular importance to discuss. We first discuss the role of *agency* in an understanding of peer networks and crime in the life course. We then describe the importance of developing age-graded understandings of social networks. We finish with a discussion of data collection advances.

### Agency

To gain a richer understanding of the importance of social networks in the etiology of delinquency and crime over the life course, it is important to integrate key concepts from the life-course paradigm into social network language. Agency is

perhaps one of the most crucial topics to develop since a principle of life-course theory is the role of individual choices and the associated consequences in shaping one's life. Elder et al. (2004, p. 11) note that: "The planning and choice-making of individuals, within the particular limitations of their world, can have important consequences for future trajectories." As Gecas (2004, p. 369) notes, "for good and bad, we are to a large extent architects of our life course... While we are indeed products of social and physical forces, we are also causal agents in the construction of our environments and ourselves."

A difficulty with incorporating agency into a theoretical model is clear specification of the microfoundation of action. That is, the cognitive model, which describes the content of thought and links such content to action. For example, in classical economic models of behavior, the microfoundation of action is utility maximization: "all human behavior can be viewed as involving participants who maximize their utility from a stable set of preferences and accumulate an optimal amount of information and other inputs" (Becker, 1976, p. 8). Under this specification, actors collect information from their environment and exercise agency by choosing the behavior that maximizes some utility function. However, as Sampson and Laub (2005), among others, have called attention to, utility maximization treats preferences as exogenous and does not supply a model of how actors form preferences (see also Hechter & Kanazawa, 1997). In other words, the goals of action (preferences, ends, etc.) must be specified a priori, otherwise the model is tautological. Drawing on insights from their interviews with men from the Glueck data, Sampson and Laub (2005, p. 37) argue that "persistent crime is more than a weakening of social bonds, and desistance is more than the presence of a social bond...[A] focus purely on institutional, or structural, turning points and opportunities is incomplete, for such opportunities are mediated by perceptions and human decision making." Put differently, stability in and desistance from crime are not simply consequences of calculative, instrumental action. As Weber (1922) argued nearly a century ago,

instrumental action is but one type of action. In reality, behavior is often the composite of calculation, values, emotions, and habits, to varying degrees. To gain a more robust understanding of the role of agency in the causation of crime requires emphasizing the overlap among Weber's (1922) ideal types of social action, while avoiding the tendency to "oversocialize" (Wrong, 1961) actors. Accomplishing such a task may be facilitated by understanding the form, function, and content of social relationships, in addition to the plasticity or rigidity of these properties throughout the life course.

As a first step, greater attention should be paid to existing theories in criminology and their ability to incorporate such notions. A promising area of research concerns the development of identity and how actors seek to reconfigure their identity. The role of identity is consistent with Weber's (1922, p. 24) notion of "value-rational action" in that behavior is the consequences of "a conscious belief in the value for its own sake of...some form of behavior, independently of its prospects of success." Matsueda's and Heimer (1994) *differential social control theory* provides a means for incorporating individuals' perceptions of their social environment, how social networks influence one's beliefs about the self, and how these change over time. As Matsueda and Heimer (1994, p. 170) note: "organization of the self results from participation in organized groups, which implies that those individuals who participate in similar organized groups will display similarities in behavior relevant to the particular group." A key element in differential social control theory is the notion of role commitment, which captures the costs of severing relationships with others as well as emotional attachment to those persons. Individual behavior can be understood through the individual's commitment to a particular role. Moreover, understanding how actors recognize the need for changing their identity and actions they take to restructure their social relationships is of fundamental importance. In all, differential social control theory provides a microfoundation that is consistent with guidelines specified above for understanding the role of agency in the desistance process.



Furthermore, differential social control theory is consistent with various arguments in social network analysis. For example, the focus on structural equivalence among actors in and across social networks points to the extent to which consistency in one's identity can be understood through social structure. Specifically, the analysis of graph modalities from graph theory provides an interesting avenue for understanding the construction of identity. Using information on affiliation of individuals with various groups, persons, and organizations, it is possible to create networks of co-affiliation, which allow researchers to compare similarities and differences in the structure of social organization in which actors are embedded. Also, differential social control theory places considerable importance on network multiplexity (Krohn, 1986) in that roles derived from specific groups may be juxtaposed leading to conflict and dynamics or they may be consistent resulting in greater social control. The role of identity and social relationships is also linkable to a large literature on identity based *social crowds*: "adolescents identified by the interests, attitudes, norms, behaviors, abilities, and/or personal characteristics they have in common" (Delsing, ter Bogt, Engels, & Meeus, 2007; see also Brown, Mory, & Kinney, 1994). This literature has linked a variety of outcomes to self-categorization with a particular crowd (e.g., "burnout," "punks," "brains," and "jocks") and the role of identification on development (Tarrant et al., 2001).

### **Age-Graded Networks: Trajectories, Turning Points, and Behavior**

Recall the two stubborn facts mentioned above (1) the correlation between individual delinquency and delinquent peers and (2) the age-crime curve. A potentially fruitful area for understanding these observations concerns the relationships between structural changes in networks that occur over the life course and how these may act as turning points. Continuity and discontinuity in the prevalence of delinquent behavior can be more fully explored by drawing

greater attention to the fact that "personal networks have a history" and the "form and structure they show today result from a construction elaborated over time" (Bidart & Lavenu, 2005, p. 360). Theoretical mechanisms must be dynamic so as to account for the potential fluidity of the peer social environment and ultimately the influence of the peer social environment on antisocial behavior and delinquency. An important avenue of work should direct attention to this important property of the transition from adolescence to young adulthood as it may have implications for the effect of causal mechanisms on behavior.

Nearly a century ago, Coleman (1961) recognized that age segregation of youth is an unending feature of industrialized society. Since advanced economies require economic specialization, families are unable to provide such human capital. As a result, families increasingly rely on the placement of youth in formal institutions. Coleman (1961, p. 3) notes that this will only increase as economic complexity increases having an important implication: youth are "cut-off" from the rest of society, forced inward toward [their] own age group, made to carry out [their] whole social life with others [their] own age." As a result, it has become especially important to understand the transition of youth to adulthood in an age of globalization, technological sophistication, etc., which serve to increase the importance of involvement in formal institutions. In other words, understanding the implications of institutional transitions on social network dissolution, formation, and stability. Accounting for sensitivity to changing demographics is important, as the transition from adolescence to adulthood is tantamount. As Arnett (2000, p. 469) argues: "Sweeping demographic shifts have taken place over the past half century that have made the late teens and early twenties not simply a brief period of transition into adult roles but a distinct period of the life course...*emerging adulthood*, is neither adolescence nor young adulthood but is theoretically and empirically distinct from them both."

An additional area of concern is the context in which data are collected since the majority of research on adolescent social networks takes



place in an institutionalized setting: compulsory education. As Simmel (1922[1955]) observed, youth occupy a peculiar position in that their groups are only partially chosen (e.g., grade based on chronological age) but also partially chosen through affiliation with similar others. Cairns and Cairns (1994, p. 93) echo this feature of adolescence: “Peer groups provide a mechanism for the translation of the values of parents and society to the next generation. As such, they are not the sole invention of youth...Complete freedom in the selection of companions is an illusion for most children and adolescence.” Findings from studies conducted in within school settings may be limited in their generalizability if the characteristics of networks vary across contexts. For example, young adults experience rapid transitions in the ability to shape their social networks as they enter other institutionalized settings (e.g., secondary education) or settings that are less organized by age groups (e.g., the labor market).

In this section, we draw attention to changes to social networks that may be age graded. First, we examine several lines of reasoning regarding the dynamic nature of peer relationships in adolescence and link this to current findings regarding the effects of peer delinquency on behavior. Second, we examine the role of disruption to networks that act as turning points in the life course. We argue that disruptions in the network may act as exogenous shocks that pull individuals away from certain trajectories.

### **Trajectories of Social Position and Peer Delinquency**

If social capital in peer networks is a mechanism leading to delinquency and criminal involvement declines with age, then it would appear that the significance of peer relationships decline as adolescents age. A key question facing life-course criminology is the extent to which changes to peer networks contribute to our understanding of “maturational reform”: “why and by what process is the easy continuity from juvenile delinquency to adult crime implicit in almost all theories of delinquency not apparent in the world of real events?” (Matza, 1964, pp. 21–22). Here, we describe several arguments that have been

proposed to explain the changing nature of peer relationships through adolescence and link this with findings on the age-conditioned effects of peer delinquency on behavior.

Dunphy (1963) argued that groups undergo a developmental sequence throughout adolescence. Early in adolescence there are, small, homogeneous groups (cliques) segregated by sex. As interaction between the groups increases, a crowd is formed at which point a key structural transition occurs: the males and females of high status form their own cliques. At a final sequence, these cliques begin to decrease in size as relationships among males and females increase in strength forming a collection of couples. Similarly, Shrum and Cheek (1987) have posited that there is a *degrouching process* that occurs during adolescence. According to this argument, membership in dense friendship networks (i.e., cliques) is most acute during early and mid-adolescence, but subsequently declines into early adulthood. At the same time that membership in cliques declines, emerging adults are more likely to occupy positions that bridge different social groups (i.e., liaisons).

An important area of emphasis in the delinquency literature is the precarious position of adolescents in modern society. Matza (1964, pp. 28–29) argued that youth may drift into delinquency because they “have been granted the potentiality for freedom through the loosening of social controls,” however, they “lack the position, capacity, or inclination to become agents in their behalf.” Dual-taxonomy theory (Moffitt, 1993, 1997) draws on this observation to develop one of the few explanations that incorporates age-graded features of networks are their relation to delinquency. Specifically, Moffitt (1993) argues that the maturity-gap experience by adolescents provides the conditions by which deviant behavior may, temporarily, be rewarded. During adolescence, adolescent-limited individuals notice that life-course persistent youth engage in delinquency, appearing “adult-like,” and mimic their behavior in adolescence by observation. Thus, the causal mechanism generating the age-crime curve is *social mimicry*. Adolescence-limited youth mimic the behavior of life-course persistent

youth until a certain age at which adolescence-limited youth can gain access to adult behaviors and roles as they plan for college, prepare for a career, or plan a family. Moffitt (1997) provides several testable hypotheses about social mimicry as a causal mechanism. First, Moffitt (1997, p. 28) states that “life-course persistent individuals should manifest central positions, or be moving toward central positions, during early adolescence.” As more individuals become aware of the resource that life-course persistent youth receive, they should maintain more central positions in social networks. Moffitt (1997, p. 30) also argues “life-course persistent youth should encounter more contacts with peers during adolescence when other adolescents draw near so as to imitate their lifestyle.” Several findings provide initial support for these claims. Kreager (2007) found that males with poor academic achievement were more likely to receive more nominations in a subsequent wave if they engaged in violence. Dijkstra et al. (2010) found that carrying a weapon to school lead to more prestige among peers. Weerman and Bijleveld (2007) found that although there was a weak association between delinquency and popularity within same-sex networks, males who engaged in violence were more popular among females.

Age-graded network effects may help to explain the age-conditioned effects of peer delinquency. A body of research indicates that the effect of peer delinquency on one’s behavior is conditioned by the age of the respondent. For example, Haviland, Nagin, Rosenbaum and Tremblay (2008) used propensity score matching and group-based trajectory modeling to estimate the effect of gang membership on violence. They found that gang membership increased violence, but the effect was predominately concentrated among younger age groups. Similarly, Gardner and Steinberg (2005) show that individuals were more risky in the company of peers. Importantly, they found that this effect was age graded in that young adults and adults were less influenced by the presence of peers. Warr (1993) examined the relationship between self-reported delinquency and number of delinquent peers reported by the respondent and how this relationship varies with age. Warr (1993)

found that the marginal effect of age on delinquency is significant, but when peer delinquency is added to the model, the effects of age are inconsequential. Warr (1993) also found that the correlation between self-reported delinquency and peer delinquency increases from 13 to 17. Similarly, Mears and Field (2002) found a significant interaction between peer delinquency and age on self-reported delinquency. Specifically, they find that the effect of delinquent peers on delinquency increases from age 14 to 18 and then begins to decline (see also Thornberry et al., 1994). Using multilevel modeling to examine within-individual changes across adolescence with respect to the effect of peers, Jang (1999) found that the effect of peers on delinquency increased throughout adolescence, peaking at age 15, and declining thereafter. In addition, Jang (2002) found that the effect of peers on drug-use peaked at age 16. However, similar studies using multilevel models (e.g., Pires & Jenkins, 2007) report opposite findings, leading to mixed results regarding the variable effects of peers on delinquency by age.

### Turning Points and Network Disruption

The role of transitions, or abrupt changes in state (Elder, 1985), is important for understanding the role of social relationships throughout the life course. While networks may follow an age-graded trajectory, such as those described above, age-related events may act to disrupt social relationships. This disruption may act as an exogenous shock to existing behavioral trajectories. As we discuss, there is evidence of positive and negative consequences to such disruptions.

Substantial attention has been directed toward understanding changes in individuals’ network composition as they age. In criminology, life-course arguments have focused on turning points that occur in the life course. Specifically, several studies have examined how marriage or cohabitation may act as an exogenous shock which “knives-off” connections between individuals. In the social network literature, the *dyadic withdrawal hypothesis* states that “after marriage or cohabitation, people have fewer contacts with others, and in particular with the more intimate segments of their network,” and as a consequence, “marriage

and cohabitation [will] lead to smaller and more overlapping social networks” (Kalmijn, 2003, p. 232). Such a process is similar to the network multiplexity described by Krohn (1986). In this case, the individual’s social network contains more of the spouse’s friends. As a result, there is greater social capital in the network due to greater monitoring and sanctioning (Coleman, 1990). Moreover, there is greater marital capital in that there are exit-costs for divorce: more friends are lost by each spouse if there are overlapping networks (Kalmijn & Bernasco, 2001).

Sampson and Laub (2005, p. 34) argued that marriage may act as a mechanism of desistance because it offers “opportunities for investment in new relationships that offer social support, growth, and new social networks...forms of direct and indirect supervision and monitoring of behavior” and “structured routines that center more on family life and less on unstructured time with peers.” Using data from the National Youth Survey, Warr (1998) found support for the notion of “knifing-off” relationships in that time use patterns with peers differed substantially for married and unmarried persons. Laub, Nagin and Sampson (1998) support for the notion of dependence on relationships by finding that the development of marital bonds led to a gradual decrease in offending. Criticism of these studies was based on the problem of nonrandom assignment to the treatment condition (i.e., marriage). Using a counterfactual approach to examine the Glueck’s data, Sampson, Laub and Wimer (2006) report that marriage reduces the probability of offending. In a longitudinal study of disadvantaged women in Denver, Kreager, Matsueda and Erosheva (2010) found that the transition to motherhood decreased delinquency, alcohol use, and marijuana use. Interestingly, they found that the effect of motherhood was stronger than the effect of marriage. They concluded that “motherhood, and not marriage, represents the primary ‘turning point’ in the delinquent trajectories of women in disadvantaged settings” (Kreager et al., 2010, p. 248). Warr (1998) found that individual’s who get married spend less time socializing with their peers. Such disruption of interaction patterns with peers is consistent with the focus on opportunities for criminal

offending that is emphasized by the routine activities perspective and how these opportunities change over the life course (Osgood, Wilson, Malley, Bachman, & Johnston, 1996).

Several studies have also pointed to the negative effects of disrupted networks. A striking example is the detrimental effect of residential mobility (see Haynie, South, & Bose, 2006 for a review). South and Haynie (2004) found that residential or school “movers” are more likely to occupy peripheral positions in their network and be imbedded in small, dense networks. Haynie et al. (2005) show the movers are more likely to form relationships with friends who are deviant, academically underachieving, and not attached to school. Taking a network approach to this issue, South and Haynie (2004) find that residential or school movers tend to have relatively small and dense school-based friendship networks, and that compared to stayers, movers occupy less central positions within their networks. South and Haynie (2004) also find that parents of mobile children are less knowledgeable than parents of nonmobile children about the key actors in the children’s friendship networks, including both the children’s friends and the parents of those friends. In a separate vein, several studies have shown how institutional involvement may slow age-graded transitions in the life course. For example, a history of incarceration has notable consequences for labor market entry (Pager, 2003; Uggen, 2000; Western 2006; Western & Beckett, 1999) and forming a family (Hagan & Dinovitzer, 1999; Lopoo & Western, 2005; Western, Lopoo, & McLanahan, 2004).

### **Innovative Data Collection and Novel Research Questions**

A final limitation of existing research lies in the data that are available to researchers. As discussed above, the availability of relational data advanced our understanding of the etiology of delinquency considerably. To continue this trend requires incorporation of advances in social network data collection that have been advanced. We discuss two major innovations that would be valuable for advancing our understanding of social relationships and delinquency.

Social network analysis requires boundaries to make valid inference. The majority of work has used friendship networks in school and data are collected using a roster method. In such cases, network is all relationships within the school. A limitation of such data is that it does not tell us about relationships outside the school, by design. As a consequence, potentially important data may be missing from the sample and analyses, which use measures of friends' delinquency, will implicitly assume that friends outside of the school network engage in delinquency at the same rate as the friends nominated in school. This may be an unreasonable assumption as multiple studies show that delinquency is risk factor for dropping-out of school. As Hagan and McCarthy (1997) have shown, using the school as the unit of sampling may fail to capture important relationships among individuals, especially for individuals at risk for a variety of delinquent conduct. Research is needed that includes the network of friends outside of school, although this is difficult to achieve.

Data limitations with hard to reach populations is not a problem specific to criminological research. A number of populations in social network research are difficult to reach due to stigmatization, lack of involvement in an institutionalized setting, or a variety of other reasons. In other words, the sampling frame for the target population is not available in many contexts (Gile & Handcock, 2010). Respondent-driven sampling (RDS) (see Heckathorn, 1997) has emerged as a data collection mechanism for hard to reach populations. RDS is a type of snowball or link-tracing sampling in which "network links from sampled members of the target population are followed (traced) to select subsequent members to add to the sample" (Gile & Handcock, 2010, p. 287). Although the ability to make valid, statistical inference is difficult to achieve under such a design, the ability to reach populations and make initial estimates may prove valuable.

In addition to the role of identifying boundaries, the types of social network data collected in most research are limited to identification of friends. The review above indicates that such inferences will be severely limited with existing network data. One area that is important to recognize is individuals'

perceptions of networks. From a measurement standpoint, there is concern about the validity of individuals' ability to accurately report on social structural relations. From a theoretical standpoint, the ability to compare individuals' beliefs about social structure with their actual social position and the structure of the network in which they are embedded may prove valuable for advancing our understanding of the role of networks. Krackhardt (1987) notes that there is an important difference between the set of relationships in a network and an individual's perception of these relationships. Jointly, relations and perceptions of relations form the *cognitive social structure* of a particular context. Separation of these components will be useful for studies that examine how actors navigate social structure (i.e., beliefs about the network influencing choices) and the constraints imposed by such structure (i.e., the social structure in which such choices occur and beliefs form).

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**Part III**  
**Adulthood**

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# Under the Protective Bud the Bloom Awaits: A Review of Theory and Research on Adult-Onset and Late-Blooming Offenders

11

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## Abstract

It is now well known to criminologists that the age-crime curve is a summary representation that is actually comprised of several qualitatively distinct offending trajectories. Drawing increasing empirical attention has been a recently identified trajectory coined as the late bloomer offender (Thornberry & Krohn, 2005). The late bloomer is unique in that that he or she resembles non-offenders until late adolescence and then exhibits an upsurge in offending frequency that continues into emerging adulthood. This chapter is designed to explore this fascinating phenomenon known as late blooming. First, we discuss transitions over the life course and how such transitions can have differential consequences for the onset of criminal behavior. Second, we make conceptual and operational distinctions between adult onset and late bloomer offending. Third, we summarize the research and theory behind these types of offending. Finally, we conclude with a research agenda on late bloomer offending that will guide future empirical investigations on the identification of the late bloomer trajectory, the societal implications for studying this group, and the mechanisms driving changes in the offending behavior over time.

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## Keywords

Late bloomer • Adult-onset trajectory • Life course

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The life course perspective focuses on the importance of assessing trajectories in different domains of one's life (Elder, 1975). It also suggests that transitions into those trajectories can be important events in the life course, setting a person on a path that leads to success or one that might impede one's progress to a desired outcome or goal. In some cases, a transition may lead to a turning point, deflecting one's trajectory toward a different outcome (Sampson & Laub, 1993).

There has been much discussion concerning the timing of transitions. The stage of the life course when transitions occur may be an important factor in determining the extent and nature of the impact of that transition on a particular trajectory, and ultimately on one's life course. For many transitions there are normative expectations as to when they should and should not take place. For example, the transition out of the educational arena should not occur prior to at least high school graduation. Becoming a parent should take place only after one's education is completed and a somewhat stable relationship with the other parent has been formed. When the timing of such transitions is nonnormative, they can affect trajectories in other domains (e.g., leaving school early can impact career decisions) and, in turn, impact one's life chances. Although early transitions have been central to understanding turning points and life chances, transitions later in life can also be important. For instance, a later marriage or acquiring a meaningful career-oriented job may alter one's life course.

Participation in delinquent and criminal behavior can be conceptualized as a trajectory. People may transition into a trajectory of crime (onset) and out of it (desistance). A crime trajectory may vary in terms of both the level of crime (high frequency) and the shape of the curve (accelerating–decelerating), and the characteristics of a criminal trajectory can impact trajectories in other domains of one's life and ultimately life chances.

Life course criminologists have largely focused on early transitions into criminal behavior, suggesting that such nonnormative transitions lead to participation in more serious crimes, committed more often, and over a longer period of time (Krohn, Thornberry, Rivera, & LeBlanc, 2001;

Moffitt, 1993). For example, Moffitt's (1993) distinction between life course persistent and adolescence-limited offenders represents one of the more influential statements of this argument. Adolescence-limited offenders are those youth who transition into criminal behavior at the "normative time" in the life course. That is, prevalence rates of delinquency typically accelerate after the age of 14 rising to their peak at about 16 or 17, and then declining thereafter. Life course persistent offenders are nonnormative early starters on the trajectory of crime, beginning their transition into problematic behavior well before the normative age of adolescence-limited offenders.

Early transitions to criminal behavior clearly have important consequences (Krohn et al., 2001) for the criminal behavior trajectory and life chances. But they represent only one form of nonnormative transitions into crime. Research has found that there is also a group of offenders who start offending later than both groups which Moffitt discusses. These offenders begin accelerating on the criminal behavior trajectory after the normative peak years for delinquency. These adult-onset or late-blooming offenders, as they have been alternatively labeled, represent a unique challenge to life course criminologists. Most theories of crime and delinquency do not account for later onset. Moreover, there have been very few studies on how late onset of crime affects other life course trajectories and life chances. In this chapter, we first distinguish between the terms adult-onset offenders and late bloomers. We then review the literature on both and conclude with suggestions for the types of research necessary to understand the offending patterns of late bloomers, predictors of their offending compared to other groups, and the consequences of their offending that starts to emerge during their transition to late adolescence to early adulthood.

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## Late Transitions to Crime

In this section we endeavor to distinguish between two terms, adult-onset offenders and late bloomers, both of which have been used to describe nonnormative transitions into criminal behavior.

Before doing so, it is necessary to briefly identify another term, late-onset offender, which is sometimes confused with the other labels. The term late-onset offender was coined to distinguish those offenders who transition into delinquent behavior during the middle adolescent years (at about the age of 14) from early offenders (prior to age of 14) (Krohn et al., 2001; also see Chap. 8). Essentially, late-onset offenders are actually “on-time” offenders at least from a statistically normative perspective. Both Patterson, Capaldi, and Bank (1991) and Moffitt (1993) present typologies distinguishing between a group of early- and late-onset offenders. In both typologies, early-onset offenders are those who are more likely to be chronic offenders while late-onset offenders are what Moffitt refers to as adolescence-limited offenders, starting their delinquent careers well into adolescence and maturing out of them in their late teens. For the purposes of this chapter, we are not interested in the group that Patterson and Moffitt call late-onset offenders. Our focus is on those offenders who begin their criminal involvement after the normative peak age for delinquent behavior (ages 16–17) (Thornberry & Krohn, 2005). The two terms most often used to label this group are adult-onset offender and late bloomer. Thornberry and Matsuda (2011) have pointed out that these labels are not equivalents. Rather, they refer to a different way of conceptualizing and operationalizing criminal behavior for those people who start offending in late adolescence or early adulthood.

The term adult-onset offender is typically used to identify individuals whose first offense occurs after the age of 18 (Eggleston & Laub, 2002; Farrington, 1983; Sampson & Laub, 1993). The age at which adult onset is distinguished from non-adult-onset has varied depending on both the data source (operationalizations using official data are often at later ages than those using self-reports) and the specific research questions being addressed. As such the cutoff point is rather arbitrary (Thornberry & Matsuda, 2011). In addition, being placed in one category as opposed to the other might well be because of participation in one or two offenses. Most importantly, identifying an adult-onset group by

emphasizing the change from one state to the other is inconsistent with life course theory’s emphasis on the continuity of human development (Thornberry & Matsuda, 2011). To emphasize the importance of life course development in assessing offenders whose criminal careers begin later than the norm, scholars have focused on the pathway or trajectory of criminal behavior. This approach examines within-person changes in criminal involvement and is most often examined through the use of longitudinal, time, or age-based data coupled with semi-parametric group-based trajectory modeling which will be described below (Bushway, Thornberry, & Krohn, 2003; Nagin, 2005). In addition to being able to examine criminal behavior over the life course, this approach also distinguishes between varying levels of crime.

Thornberry and Matsuda (2011) have identified three characteristics of these late bloomers:

1. During adolescence the rate of offending should be substantively indistinguishable from that of non-offenders.
2. Their criminal careers should only emerge after adolescence.
3. During the adult years, careers should reflect persistent, nontrivial involvement in criminal behavior.

The above description does not only identify a point in time when offending begins but also describes criminal offending as a process that unfolds over time. Some offending may actually have begun during adolescence but the key is whether the pattern of offending is actually distinguishable from a group which we would characterize as non-offenders or at least as very low-level offenders who are only very sporadically involved in delinquent behavior. This approach also considers the level of crime participation once offending begins, distinguishing trivial involvement in crime from more persistent criminal involvement.

In the next section we examine research that has identified both adult-onset offenders and late bloomers. In doing so, we identify some of the controversies that have arisen over whether there are truly a meaningful and distinguishable number of offenders who onset after the normative age.



## Research on Adult-Onset and Late-Blooming Offenders

The study of the onset of, acceleration of, and desistance from delinquent and criminal behavior has been overwhelmingly influenced by the well-known age–crime curve which depicts the prevalence of delinquent behavior and crime beginning slowly during early adolescence, proceeding to its peak at ages 15 through 17, and then decreasing through late adolescence and early adulthood. Onset of delinquent behavior was assumed to take place primarily within adolescence, with a small percentage of earlier onset offenders who were likely to become persistent offenders (Krohn et al., 2001; Moffitt, 1993). By focusing on the modal onset age and, eventually, early-onset offenders, those who delay their offending onset until their adult or nearly adult years were virtually ignored (Eggleston & Laub, 2002; Gomez-Smith & Piquero, 2005). The failure to focus on these nonnormative, late-onset offenders was evident even though some research had identified adult-onset offenders.

We first review the research that has tried to establish the prevalence of adult-onset offenders using primarily official data. We then turn our attention to studies that have identified late bloomers by using longitudinal methods, namely semi-parametric group-based trajectory modeling.

### Adult-Onset Offenders

Much of the research that has identified adult-onset offenders has used official arrest or conviction records to do so. If someone had no official record prior to a certain age (ages 18 or 21 are used most often) and then experiences an arrest or conviction, they were considered an adult-onset offender. In two systematic reviews of earlier research on age of onset, both Gomez-Smith and Piquero (2005) and Eggleston and Laub (2002) found that a substantial percentage of adolescent non-offenders became adult offenders. Eggleston and Laub (2002) reviewed 15 longitudinal studies using official data and found that the

average percentage of adolescent nondelinquents who began offending in adulthood was 17.9%. Blumstein, Cohen, Roth, and Visher (1986) point out that because nondelinquents (as measured by official data) represent a much higher percentage of the juvenile population than do juvenile delinquents, those who do become adult offenders constitute a relatively high percentage of all adult offenders. For example, Eggleston and Laub (2002) estimate that across those 15 studies they reviewed, adult-onset offenders represented 50.2% of the adult offender population.

To illustrate the above findings, results from two well-known data sets are summarized. The Philadelphia birth cohort study and its replication examined birth cohorts from 1945 to 1958. A follow-up of 975 males from the 1945 birth cohort revealed that 18.1% of juvenile nondelinquents experienced an adult arrest 1945 (Wolfgang, Thornberry, & Figlio, 1987). Unlike the 1945 cohort, the 1958 birth cohort included females and males ( $N=27,160$ ). Only 7.6% of juvenile nondelinquents experienced police contact as an adult. However, for males, 14.4% of juvenile nondelinquents became adult offenders, a figure comparable to the 1945 cohort of males (Tracy & Kempf-Leonard, 1996).

David Farrington has explored adult-onset offending in a series of studies using data from the Cambridge Study in Delinquent Development. In this study, a cohort of 411 males were followed from approximately the age of 8 to the age of 32. He found that 16.4% of nondelinquents had an adult conviction and comprised 48.4% of all adult offenders (Farrington, 1983). He also focused on more serious convictions, finding that 9.9% of those who did not commit burglary or a violent offense were convicted for one as an adult (Langan & Farrington, 1983).

Eggleston and Laub (2002) revisited the Racine data, originally collected by Lyle Shannon, to determine the percentage of adult-onset offenders. Using age 18 as the cutoff for adult offenders, they found that of the 889 men and women, 11.3% of the total sample were adult-onset offenders while for males, the figure was 17.9%. Gomez-Smith and Piquero (2005) used data from the National Collaborative Perinatal Project

(CPP) (Niswander & Gordon, 1972) to explore the issue of adult-onset offending. For a total of 987 participants in the Philadelphia cohort of the CPP, a criminal history follow-up was completed. They found that 7.9% were adult-onset offenders, while 25.9% of males were adult-onset offenders. Similar levels of adult-onset offending have been found in studies that used data from Canada (Carrington, Matarazzo, & De Souza, 2005; LeBlanc & Frechette, 1989), Finland (Pukkinen, Lyyra, & Kokko, 2009) and Sweden (Janson, 1983; Kratzer & Hodgins, 1999; Magnusson, 1988; Strattin, Magnusson, & Reichel, 1989).

Moffitt (2006) has argued that a large proportion of adult-onset offending is due to the failure of the criminal justice system to detect and react to the offenses they committed as adolescents. Most of the above studies are subject to such criticism because they rely on official data and cannot determine if adult-onset offenders committed crime that went undetected during adolescence.

The longitudinal CSDD study collected both official and self-report data on the 411 males, enabling McGee and Farrington (2010) to examine Moffitt's claim. They used age 21 as the cut-off point for adult-onset offending and found 38 out of the 404 remaining members in their sample to be adult-onset offenders. They then examined the self-report data for those same individuals when they were adolescents. They concluded that about one-third of the adult-onset offenders had offended at a rate more comparable to the youthful onset group, while two-thirds of the adult-onset group should be considered adult onset. They also suggest that the reason why the one-third group of adult onsets who were more similar to the youth onset group were not detected during the teenage years was due to the type of offenses they committed. This group was likely to be involved in assaults, vandalism and drug use, which all had low detection rates.

Sohoni, T., Paternoster, R., McGloin, J., & Bachman, R. (unpublished manuscript, "Hen's teeth and horse's toes: the adult onsetter in criminology") have also examined the identification of adult-onset offenders. They use both the CSDD and the Rochester Youth Development Study. They make the argument that prior studies have

used too young of an age cutoff to define adult onset. They suggest that adulthood in our society does not begin at age 18 or 21 but rather at age 25. The period of time from age 18 to 25 is an "unsettled time" when people have yet to establish themselves in the adult world. Therefore they use age 25 as the cutoff for adult onset. They also do not consider relatively minor offenses such as public drunkenness or DUI to be the type that distinguishes adult onset from stability of non-offending. Using these different criteria, they examined self-report data from both studies. They conclude that there is not a "meaningful adult onset group" in either data set.

Both studies questioning the size of, or even the existence of, an adult-onset group use somewhat different criteria to identify them. These criteria have been and certainly will continue to be debated. Three issues that are of particular concern are the use of only official data to classify offenders as adult onset; the arbitrariness of identifying a particular age at which to distinguish adult from non-adult offending; and the question of how much and what type of crime one has to commit to be considered to belong to the adolescent or adult-onset category. The use of trajectory modeling allows for an examination of the pattern of intra-individual change in crime through the adolescent to adulthood years circumventing the need to arbitrarily select an age that distinguishes adult onset and allowing for an examination of the changes in criminal trajectories rather than using a misleading dichotomy which distinguishes between a criminal event or no criminal event. Additionally, many of the studies using the trajectory method have used self-report data.

## Late Bloomers

The development of the semi-parametric group-based trajectory approach (Nagin, 2005) provided a technique to examine changes in criminal behavior over time. This technique is quite valuable for studying developmental trajectories of crime, and specifically the late bloomer phenomenon as it pertains to this chapter. Unlike some longitudinal methods for investigating

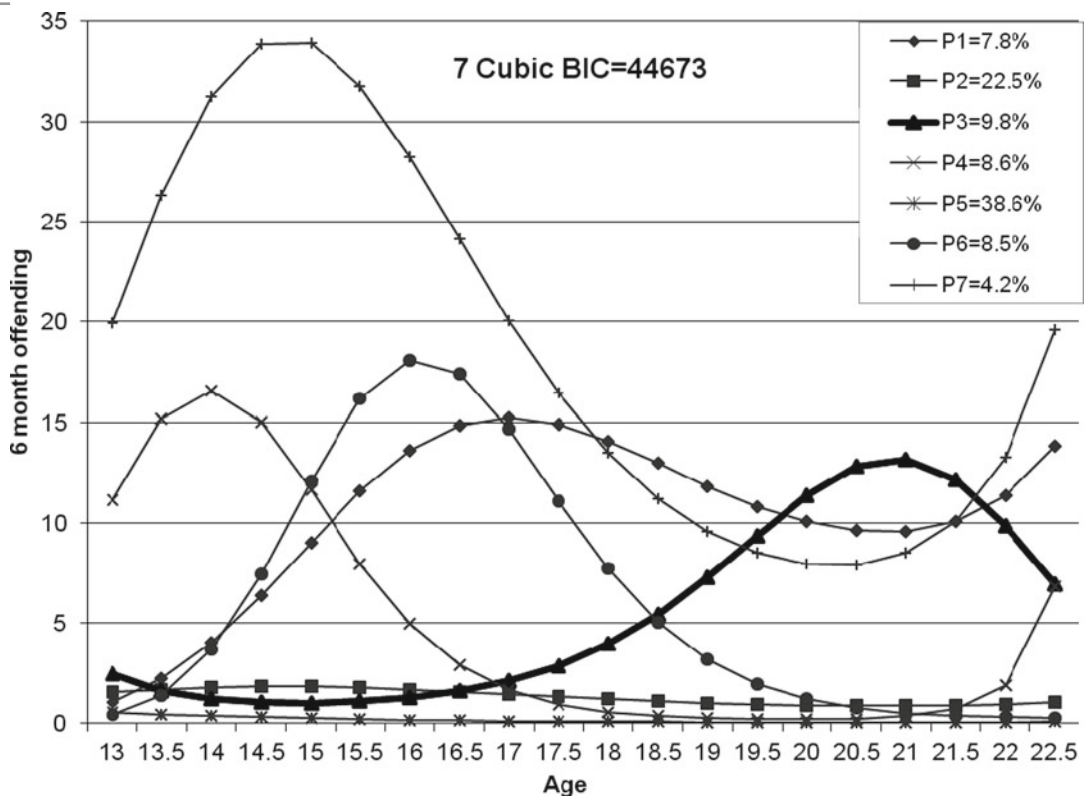
individual trajectories of crime, the group-based modeling approach does not assume that trajectories in the population follow a continuous normal distribution where slope estimates vary around a population average trajectory (Nagin, 2005). Rather, the group-based trajectory model is qualitatively distinct in that it allows for individuals to follow different pathways of offending in the population. This is appropriate in the current example because the late bloomer trajectory departs from other offending trajectories that have been identified.

As noted earlier, some individuals exhibit high rates of involvement in crime early in the life course, others do not start until adolescence and then quickly desist, and still others wait until emerging adulthood to start their upward slope in offending. The group-based trajectory method allows for these differences in trajectory groups to be identified and statistically modeled and does not make the assumption that everyone in the population is following the same trajectory at different rates. Once trajectories are identified, risk factors can be identified that place individuals more or less at risk for following a particular trajectory group compared to another. For example, late bloomers can be predicted using variables theorized to distinguish between them and non-offenders. These trajectory groups can also be used as independent variables. For instance, they can be used to explore whether belonging to a late bloomer trajectory has different developmental consequences in adulthood compared to being in a non-offender trajectory. Finally, the group-based trajectory model can be integrated with other techniques such as propensity score methods to understand casual influences. Researchers may want to know why one trajectory group departs from its pattern of offending during a specific developmental period compared to another, or we may want to understand how a trajectory is deflected from its developmental progression by experiencing a particular event during the life course such as graduating from high school, getting a job, joining a gang, or marriage. Below we discuss applications of the groups-based trajectory method to late bloomer offending.

To illustrate the pattern of offending that has been labeled “late bloomers,” we refer to Fig. 11.1. Bushway et al. (2003) used data from the Rochester Youth Developed Study to estimate group-based trajectories for respondents aged 13–22. They observed a trajectory group that was relatively low in their offending during the early to mid-teens but in their late teens began to escalate their offending, eventually attaining a rate of crime similar to persistent offenders. This group is illustrated in bold in Fig. 11.1. Note that the late bloomers are similar in their offending to the low-level offenders until about the age of 17, when the slope of the curve rapidly accelerates until the age of 21. At this point they have a higher rate of offending than does the group labeled the high-level chronic offenders.

The pattern of escalation after the statistically normative age of offending has been identified in a number of other studies based on trajectory modeling using both official and self-report data (Chung, Hill, David Hawkins, Gilchrist, & Nagin, 2002; D’Unger, Land, McCall, & Nagin, 1998; Massoglia, 2006; Mata & van Dulmen, 2012; van der Geest, Blokland, & Bijleveld, 2009). There has also been research that has focused on specific crime types that are likely to onset later in life. For example, Van Koppen, De Poot, Kleemans, and Nieuwbeerta (2010) used the Dutch Organized Crime Monitor dataset to estimate trajectories of judicial records of organized crime. They found that 40% of the offenders fell in the adult-onset group. Lussier, Tzoumakis, and Amirault (2012) used retrospective data on sex offenders and found that 10% of them were late bloomers. Piquero (2008, p. 49), in an extensive review of studies focusing on developmental trajectories, concludes, “This late-onset chronic group, which begins offending in the middle to late portion of adolescence and continues offending at a steady rate into adulthood shows up in a number of different studies, regardless if offending is measured according to self-report or official records.”

It should be noted that a few studies have not found a late blooming trajectory (Blokland & Nieuwbeerta, 2005; Laub, Nagin, & Sampson, 1998; McDermott & Nagin, 2001; Moffitt, Caspi, Rutter, & Silva, 2001; White, Bates, & Buyske, 2001; Wiesner & Capaldi, 2003).



**Fig. 11.1** Rochester Youth Development Study: semi-parametric group-based trajectory analysis (Bushway et al., 2003)

The number of trajectory groups found often varies with the number of data points available and the size of the sample and may partially explain the differences in the findings. Mata and van Dulmen (2012) also suggest that data collected more recently may be more likely to evidence a late-blooming group because those entering young adulthood post-1990 are more likely to delay establishing adult social bonds (e.g., marriage, permanent employment) than earlier cohorts.

Although not without controversy, the weight of evidence regarding the existence of both adult-onset offenders and late bloomers suggests that there is a non-negligible group of offenders who do not engage in a meaningful level of criminal behavior until the age of 17 or later. The question that arises is why, after a period of relative conformity, do these individuals escalate in their criminal behavior?

## Theoretical Explanations of Late Bloomers

The “discovery” of adult-onset offenders and late bloomers is a relatively recent one. Moreover, the observation of these groups of offenders was based on examinations of data and not predicted a priori by any developmental or life course theory. Therefore, theory has had to catch up with data-driven findings to provide explanations for why, after an extended period of relative conformity, some individuals begin to commit crime in their late teens and early adulthood.

Theories that emphasize stability in crime and the importance of early factors in predicting both onset and continuity do not provide explanations for adult-onset offenders or late bloomers. Perspectives like Moffitt’s taxonomic approach or Gottfredson and Hirschi’s general theory of

crime suggest that if involvement in crime begins early in life because of neurological deficits or low self-control (and the difficulties in parenting that are associated with these problems) criminal behavior is likely to continue into the adult years in part due to those deficits still being influential in affecting adult behavior (contemporary continuity) and in part due to the accumulation of problems over the life course that such early deficits engender (cumulative continuity). These approaches make no provision for the onset of crime occurring after the developmentally normative time for it to do so. Indeed, advocates of these approaches have questioned whether there truly is a later onset group and if they constitute a sufficient part of the offending population to require an explanation (see below).

Although, in general, theories emphasizing the importance of early deficits for the stability of criminal behavior do not provide explanations for developmentally late-onset offenders, this does not suggest that the early deficits on which they focus are not important for such explanations. As we will note below, some explanations of late bloomers rely heavily on the existence of such early deficits.

It is not surprising that the theories focusing on time-varying factors have responded to the challenge of accounting for adult-onset or late-blooming offenders. These perspectives assume that, although there is continuity in offending patterns, there is also the possibility for change (Sampson & Laub, 1993; Thornberry & Krohn, 2005). While early factors contribute to continuity in offending in terms of both cumulative and contemporary continuity, time-varying factors can alter or deflect a predicted trajectory of crime. These time-varying factors can be discreet transitions often referred to as “turning points,” (Sampson & Laub, 1993) such as getting married or entering the military, or they can be more gradual alterations in life such as the formation of new friendship patterns or breaking away from old friendships (Warr, 2002) or the strengthening of a relationship with a significant other (reattachment with parents).

Most research on the impact of time-varying factors on adult crime focuses on how these factors lead to desistance as people age. Thornberry’s interactional theory (1987) suggested that movement to adult roles—especially in the areas of family formation and employment—afforded

opportunities for desisting from adolescent involvement in delinquency. In particular, as individuals became attached to partners and children (and perhaps reattached to parents) and also became committed to career and work, the basic processes of social control would reduce their involvement in criminal behavior. Sampson and Laub (1993) have also addressed this in their age-graded theory of crime to the life course. Their theory is essentially a social control perspective emphasizing the constraining effect of establishing a bond with conventional society. Weak informal social control primarily within the family and school contexts is related to a higher probability of delinquency. The probability that such delinquent behavior will lead to continuity in antisocial behavior from childhood to adulthood is high. However, they also recognize that informal social control in adulthood can account for decreases in criminal involvement.

In two very influential books (Laub & Sampson, 2003; Sampson & Laub, 1993) and a series of articles, they have demonstrated that turning points like joining the military, being employed or being in a quality marital relationship can deflect offenders from adult criminality. Sohoni, T., Paternoster, R., McGloin, J., & Bachman, R. (unpublished paper, “Hen’s teeth and horse’s toes: the adult onsetter in criminology”) point out that Sampson and Laub’s age-graded theory is “at its heart a symmetrical theory.” By this they mean that just as strengthening of social bonds in adulthood is related to desistance among offenders, the weakening of social bonds can lead to adult onset of criminal behavior. The explanation for adult-onset offenders or late bloomers would be that something that occurs in late teenage years or early adult years weakens the strength of their social bond and leads to the onset of criminal behavior among individuals who did not have a previous history of problematic behavior. There may be several reasons why the social bond might weaken in early adulthood including a failed relationship, getting fired from a job and subsequent unemployment, failing to get a college degree, or a traumatic event (death of someone close).

Thornberry and Krohn (2005) take a different approach to explain late bloomers. They begin by emphasizing that late bloomers are those who



begin serious offending at ages that are later than the modal years during adolescence. As such, they, like early-onset offenders, represent off-time offenders. They argue that late bloomers share some of the early deficits that persistent offenders exhibit. Deficits like lower intelligence, emotional problems, and lower academic competence reduce their human capital. Thornberry and Krohn hypothesize that this group does not begin offending early or exhibit high rates of offending during adolescence like early starters do because they are buffered by strong social bonds such as a supportive family. This is largely because they are less likely to share with early starters the problems associated with coming from a disadvantaged structural background.

It is not until they begin to experience independence from family and the lack of structure provided by high school that the effects of their deficits become manifest. During the period of “emerging adulthood” (Arnett, 2000) individuals are expected to gain independence from parents as they leave school to seek employment. Deficits in human capital become a serious disadvantage in obtaining employment and, consequently, establishing a quality relationship with a partner. Thus, they are faced with both the loss of buffering factors and an increase in life stressors due to problems encountered in both employment and relationship trajectories.

There has been very limited research investigating the hypotheses about adult-onset or late-blooming offenders derived from either of these theories. In part, this is because serious examination of those offenders who begin their offense history after the age-normative period of mid-adolescence is a relatively recent phenomenon. In the next section, we examine the limited research that has focused on the causes and correlates of these offenders.

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### **Research on Causes and Correlates of Adult-Onset and Late-Blooming Offenders**

Both of the theories reviewed above suggest that the failure to make a successful transition from adolescence to adulthood through the establishment of

social bonds in domains such as the family and the workplace, contribute to adult-onset or late blooming offending. Thornberry and Krohn (2005) add the notion that these nonnormative aged offenders have human capital deficits that are not manifested in terms of delinquent behavior in adolescence because of the protective effect of a supportive family and/or school environment. Once the family and school have less influence in the lives of these individuals as a natural consequence of moving out of adolescence, human capital deficits will affect their capacity to make the successful transition to the adult world and they are less able to form adult social bonds. Although there has been no systematic examination of these theories, there has been some research that is relevant.

Sampson and Laub (1990) reanalyzed data from the Glueck sample of 500 delinquent boys and 500 nondelinquent boys. They identified 100 late (adult)-onset offenders among the 500 nondelinquent. Comparing these late-onset offenders with persistent offenders from the sample of delinquents, they found that low marital attachment and job instability predicted both late-onset offending and persistent offending. They concluded that the mechanisms of offending were similar for all adult offenders. This finding leaves the question of whether other factors, especially those related to the adolescent years, contribute to the later onset of adult-onset offenders. They did, however, find that poor job stability and low marital attachment were significant predictors of adult crime among ever-married men, suggesting that adult social bonds may play a role. Polk et al. (1981) used the Marion County Youth Study of 284 offending males to examine adult-onset offenders. They found that the only significant difference between persistent offenders and late-onset offenders was the level of negative peer involvement among the former. Other adolescent variables such as school success and family support did not differentiate the two groups of adult offenders. Similar to Sampson and Laub (1990), they conclude that the study could not determine what differentiated the two groups. Eggleston and Laub (2002) using the Racine data also found that the predictors of adult offending were similar for adult-onset and adolescent-onset offenders. Consistent with the argument on human deficits



and late bloomers, Gomez-Smith and Piquero (2005) found that adult-onset offenders were more likely than non-offenders to be male, have mothers who smoked cigarettes, and to have lower California Achievement Test scores than non-offenders. However, they did not find any significant differences between adult-onset offenders and persistent offenders.

Other studies have been successful at identifying predictors that differentiate adult onsets and late bloomers from other groups. Many of the findings are consistent with the theoretical hypotheses suggested by Thornberry and Krohn (2005). Using data from the Jyvaskyla Longitudinal Study of Personality and Social Development, Pukkinen et al. (2009) found that adult-onset offenders did as well at school as non-offenders and were more attentive than adolescent-limited offenders. However, adult-onset offenders were more neurotic and were more likely to be higher risk takers than non-offenders. When compared with persistent offenders, the adult-onset offenders were more likely to have a greater amount of social capital in their family backgrounds. The overall picture this presents is very consistent with Thornberry and Krohn (2005). The adult-onset offender has certain deficits (neuroticism and risk taking) but counterbalances those by being especially attentive and careful in their schoolwork. The extra effort they put in to perform while attending school insulates them from crime during this period. However, once out of the school setting, their deficiencies make it difficult to succeed and their antisocial behavior escalates. In addition, they are buffered from these deficits by coming from family backgrounds that are more advantaged than the persistent group of offenders.

In an examination of 270 male offenders from a Dutch residential treatment facility, van der Geest et al. (2009) compared a late blooming group of offenders to high frequency chronics and high frequency desisters. They found that the late-blooming group was more likely to have a constellation of psychopathological characteristics than the high chronic group. On the other hand, the parents of late bloomers were less likely to have a delinquent record and were more likely

to be employed, again suggesting that the late blooming group are buffered from their deficits by families that are relatively non-criminogenic.

Chung et al. (2002) used the Seattle self-report data to distinguish escalators (late onset) from non-offenders and desisters. They found that escalators were more aggressive, anxious, and depressed than non-offenders. However, there were no differences in school and peer factors. When compared with desisters, escalators were more likely to have delinquent friends, be less bonded to the school, and have easier access to drugs in the neighborhood.

Zara and Farrington (2009) used the Cambridge data to focus on the differences between adult-onset offenders, early starters, and non-offenders. They examine differences among these groups for several different variables and at four different age periods (ranging from ages 8–10 through ages 32). Overall they conclude that late starters are distinguished from early onsets at younger ages by being more nervous and are distinguished from non-offenders by being more neurotic and anxious. In an interesting twist on the interpretation of these findings, Zara and Farrington see these psychological factors as protecting late starters from delinquent behavior in childhood and adolescence rather than being risk factors that eventually result in delinquency once they are no longer in the “cocoon” of parents and school, as Thornberry and Krohn (2005) would argue. As late starters move into the adult years they exhibit characteristics more like early starters in terms of psychological, socioeconomic, and behavioral predictors.

Mata and van Dulmen (2012) also report findings relevant to the Thornberry and Krohn (2005) argument but provide a different interpretation. Using three waves of data from the Adolescent Health Study (Grotevant et al., 2006), they first estimate trajectories for both aggressive antisocial behaviors and nonaggressive antisocial behaviors. They then compare the adult-onset (late blooming offenders) group with abstainers, adolescent-limited offenders, and chronic offenders. They hypothesized that adult-onset offenders were those who did not have the opportunity for establishing independence from their parents

during adolescence because of their very close ties with their parents. Once moving into emerging adulthood, freedom in the form of behavioral autonomy produced an escalating amount of anti-social behavior.

Mata and van Dulmen did find for aggressive behaviors that adult-onset offenders were closer to their fathers during adolescence than chronic offenders were. However, they observed no differences in levels of reported behavioral autonomy, suggesting that their theoretical position or their measurement of this construct may be problematic. They also did not find significant differences for the nonaggressive group in either closeness to parents or autonomy.

Thornberry and Matsuda (2011), in a preliminary analysis, have examined the implications of Thornberry and Krohn's theoretical predictions using the first 12 waves of the RYDS data. They found that during adolescence late bloomers were more likely than non-offenders to have delinquent beliefs and experience negative life events. On the other hand, they were more likely to have close ties to school and education and to be more attached to their parents and come from families who were financially more secure. Many of these same variables distinguished late bloomers from high-level offenders. Importantly, late bloomers were also more likely to be closely supervised by their parent than were high-level offenders. Overall, these preliminary findings paint a picture that is quite consistent with the theoretical argument posited by Thornberry and Krohn.

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### **Directions for Future Research on Late Bloomers**

The "late bloomer" offending trajectory has received a sparse amount of empirical attention compared to other trajectory groups such as life-course persistent offenders. Although longitudinal studies have identified a group of offenders that change from low to accelerating rates of offending in emerging adulthood, much is still left to learn about the "late bloomer." While a number of studies reporting results on late bloomers at least suggest some support for hypotheses derived

from Thornberry and Krohn's (2005) explanation of late bloomers, we go a step further here to articulate what we think will be important for future studies to address regarding their explanation of the late bloomers. Specifically, this section will provide several new research questions and ideas that should help shape a research agenda on this potentially important group of offenders.

### **Describing Trajectories of Late Bloomers**

Research has not confirmed whether the late bloomer offender trajectory consists of a group of offenders that continue to accelerate in their offending pattern beyond the emerging adulthood years or whether this group returns to their same abstaining to low rates of offending they once exhibited during periods of childhood and adolescence. If the late bloomer is a distinct trajectory, we hypothesize that this group will not only begin to mimic the offending rates of chronic offenders when moving into later adulthood, but they will also follow a trajectory that is very different from the non-offenders they resembled during earlier developmental periods.

To date, we are unaware of any longitudinal study that has found a late bloomer offending trajectory into later adulthood between the ages of 30 and 40. Using data from the Rochester Youth Development Study, Krohn, Gibson, and Thornberry, and Lizotte (2011) presented preliminary evidence to show that the offending rates of late bloomers, on average, resemble chronic offenders, and are also different from the non-offender group, at the ages of 31 and 32. However, Krohn et al. (2011) only investigated mean differences between chronic, late bloomer, and non-offender-groups. Such an analysis provides little insight into the within-person changes in offending that are important and anticipated for establishing the late bloomer trajectory.

For developmental criminologists to take seriously the late bloomer phenomenon, it will be critical for researchers who study late blooming to establish a distinct trajectory of offending using prospective longitudinal data of official

records and self-report data starting in childhood into mid-adulthood (ages 30–40) that preferably provide yearly, or at least frequent, assessments of offending behavior to capture the waxing and waning of offending patterns as they unfold. This is because the limited numbers of studies published to date are mostly truncated by age so we do not truly know if the rising trajectory of late bloomers continues. Data used to explore this descriptive question should also possess a sufficient number of individuals identified as chronic and non-offenders so that statistical comparisons between groups can be made.

Additional descriptive and conceptual issues regarding late bloomers should be a priority too. One concern is how offending is measured for the late blooming offenders. First, not only should researchers think about the consequences of using self-report versus official records for plotting their trajectories, they should also think critically about the types of offenses that are or should be included when measuring trajectories of late bloomers. While adult-onset research has largely relied on official records of age at first offense to identify adult onsetters (as a discreet variable), researchers have used trajectories of self-reported offending frequency to capture offending acceleration among late bloomers. Although late bloomer research is a methodological and conceptual advancement over earlier research on adult onset, mysteries remain about the offending patterns of late bloomers. For example, researchers need to explore if the acceleration in self-reported offending exhibited by late bloomers reflects more versatility or more specialized types of offending and whether offending seriousness is increasing, remaining stable, or decreasing over time. Answers to these questions should then be compared to the well-documented facts about chronic or persistent offenders' criminal careers. Second, those conducting research on late bloomers should be sensitive to period and cohort effects. Emerging adulthood, in some instances, will have different meanings depending on the time period in which a cohort is coming of age. Applying a standard interval of age to represent emerging adulthood for one cohort may not have the same meaning for a cohort during a different period of time in history.

Finally, the discovery of late bloomer offenders was originally found using sophisticated statistical analytic tools and was not guided by life course criminological theory (Thornberry and Krohn 2005)). It was not until after this discovery that criminologists began to theorize as to what causes late bloomers to start offending at a statistically nonnormative time in the life course. Most theorizing about late bloomers has been inductive. Similar to Sampson and Laub's (1993) follow-up work with the Glueck's cohort, in-depth qualitative interviews should be conducted on late bloomers to encourage more theoretical growth and development for why they remain dormant until late adolescence and then begin an upsurge in offending. Such work should ignite more theoretical insights as to why they bloom late or if their offending pattern is an artifact of a sophisticated statistical methodology.

### **Late Bloomers and Their Cost to Society**

Assuming a late bloomer trajectory does exist and late bloomers continue to offend into mid-adulthood, it will be important to invest in rigorous cost-benefit analyses to estimate the social costs that stem from their harmful activities in comparison with other offender groups. Such analyses, in combination with descriptive trajectory analyses noted above, may help reduce skepticism among some criminologists about studying this group and will be valuable for policy makers in understanding and preventing the social and financial costs that late bloomers pose to society, their victims, and the criminal justice system.

In a seminal study, Cohen (1998) estimated the costs of the criminal and delinquent acts that a young career criminal may inflict on his victims and the criminal justice system over his criminal career. He estimated this number to be in the millions and that 25% of the cost could be attributed to tangible victims costs, 50% to reductions in quality of life, and 20% to criminal justice system costs. In a more recent study, Cohen and Piquero (2009) estimated the monetary damages caused by the criminal activities during criminal

careers. Analyzing data from 27,186 subjects in the 1958 Philadelphia birth cohort study, they concluded that curbing the offending of high-risk youth could save approximately 3.6 and 5.8 million at age 18. Cohen, Piquero, and Jennings (2010) also used the 1958 Philadelphia birth cohort data to derive the economic costs of criminal careers, but focused their attention on offending trajectory groups. They concluded that the chronic offender group imposed much greater economic costs to society than those whose frequency of offending was lower. These findings suggest that preventing the development of early offending patterns from stabilizing or rising can substantially reduce the cost persistent offending can have on society as a whole.

What we do not know is whether studying late bloomer offending patterns in this same vein will yield similar costs to society. If late bloomers do indeed catch up to persistent or chronic offenders in their frequency and seriousness of offending in mid-adulthood, will we observe similar taxing costs to society? If so, this means that from a policy and research standpoint, we must take this group seriously. However, the point or developmental stage of intervention that would be most successful for curbing the onset and acceleration in offending among late bloomers may be quite different compared to chronic offenders. Thus, the causes and correlates of late bloomer offending trajectories must be taken into consideration when attempting to reduce the potential harmful monetary effects that their behavior may have.

### **Late Bloomers, Deficits in Human Capital, and Social Control**

Thornberry and Krohn (2005) have theorized that deficiencies in human capital, manifested in the forms of academic achievement, learning, emotionality, and self-regulation, are important for understanding differences between late bloomers and non-offenders as they experience a divergence in their offending trajectories over time. Several traits and deficits that may limit children's human capital and hinder learning potential are worthy of consideration by researchers

studying late bloomers. These include low self-control, negative emotionality, temperament, learning disabilities, and subtle neuropsychological deficiencies in traits such as IQ, all of which have been partially accounted for by human genetic variation. Thus, genetic factors may also be candidates for explaining differences in offending patterns between these groups as they encounter changing environments, which we will return to later in this section.

First, we argue that deficiencies in human capital alone will not explain late bloomer offending patterns. However, the deficiencies noted above, coupled with the different environmental circumstances experienced at particular stages of the life course, will help understand why their delinquency and offending is comparable to that of non-offenders during early stages of the life course and then why they become more similar to chronic offenders at later stages in the life course. Below we provide a couple of examples as they relate to late bloomers and offer some novel research questions.

For instance, similar to chronic or persistent offenders, we anticipate that late bloomers will possess inherited propensities and subtle neurological deficiencies that affect their learning potential, ability to regulate behavior, and verbal aptitude, but due to the protective effects of the "cocoon" their primary caregivers and schools provide for them they will not offend at similar rates as chronic offenders during childhood and adolescence. The differences we are hypothesizing are inconsistent with what Moffitt (1993) might predict. That is, if late bloomers and persistent offenders both possess traits that compromise their ability to regulate their behavior and to consider the consequences of their own actions then why would these two groups exhibit large differences in their antisocial and delinquent behavior in earlier stages of life (e.g., childhood and adolescence)? Moffitt (1993) argues that life course persistent offenders often get cursed with a "double whammy"; in addition to possessing inherited traits and neurological deficiencies that will affect their self-control, verbal skills, and ability to learn, they also grow up in criminogenic family environments (see Moffitt, 1993).

She argues that these two things are highly correlated and tend to run in families. While we agree and the research evidence supports her position (for a review, see Moffitt, 2006), this does not address the possibility that some children may possess inherited traits and neurological deficiencies at birth, but are born into families that are opposite of criminogenic.

Second, we hypothesize that what makes late bloomers most different from chronic or persistent offenders during childhood and adolescence is that they are raised in supportive and nurturing family environments that buffer the effects of traits and propensities. Primary caregivers of late bloomers are likely to be very supportive, have increased social capital, access to a range of social and financial resources, practice positive parenting techniques, and supervise their children's behaviors closely and consistently. In turn, persistent offenders are often raised in families that are fractured, with primary caregivers tending to be antisocial themselves, possessing limited social and financial capital, and using parenting practices that are inconsistent and neglectful, and disciplining styles that are erratic. In such a family environment, children have limited opportunities to learn prosocial methods for forming relationships and achieving goals. We expect to find a dynamic statistical interaction between parenting and traits that predict the low rate offending or non-offending of late bloomers during childhood and adolescence. For late bloomers, as the supportive environmental characteristics noted above increase, the effects of traits and deficits linked to human capital on delinquency will be marginal during childhood and adolescence. Further, we anticipate that the stable, non to low offending trajectory of late bloomers should map closely with their stable trajectories of supportive parenting in the domains discussed above during childhood and adolescence. Taken together, these hypothesized differences should help explain delinquency rates between these three groups during childhood and the early adolescent years.

Finally, studying human genetic variation may provide insights into the trajectory of offending for late bloomers, as well as persistent offenders. The past decade of research generated by biosocial

criminologists and biological psychologists has linked human genetic differences to externalizing behaviors, violence, and other forms of serious offending behaviors during different life-course stages (Arseneault et al., 2003; Beaver, 2009; Moffitt, 2005). More recent studies have incorporated genetic explanations into the development of offending trajectories over the life course, specifically life-course persistent offenders (see Barnes, Beaver, & Boutwell, 2012). In sum, a bio-social framework and recent advances in genetics will likely be beneficial for understanding how stability and change in offending over time is conditioned by the changing environmental factors that children, adolescents, and adults experience. Below we provide an argument for why gene X environment research may have implications for late bloomer offending.

As already noted, the traits and subtle neurological deficiencies that we hypothesize lead to reductions in human capital for late bloomers are, to a degree, caused by genetic information inherited from parents. However, genetics alone are not completely responsible for such deficits in human capital and are also not completely responsible for why individuals engage in violence and other forms of offending behaviors. Social environments experienced or encountered by children, adolescents, and adults are critical factors that can buffer or amplify the expressions of genes (Caspi et al., 2002, 2003; Beaver, Gibson, Jennings, and Ward, (2009) 2009).<sup>1</sup>

Shanahan and Hofer (2005) discuss two typologies that are relevant to understanding how interactions between genes and social contexts may account for late bloomers changing offending patterns over time. They refer to these as social control and contextual triggering. As discussed earlier, we argue that social control provided by primary caregivers is a critical com-

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<sup>1</sup> Due to page restrictions, it was not our intention here to provide a thorough review of the behavior genetics or molecular genetics research as it relates to crime. Nor was it our intention to provide a discussion of the methodological approaches used to investigate hypotheses stemming from it. For those interested in these issues we refer you to Beaver (2009).



ponent during the childhood and adolescent stages for understanding why late bloomers maintain patterns of no or very low offending, despite having inherited propensities and neurological deficits. Social control—a structure or process that assists in the continuation of cohesion through relationships with persons and institutions—may buffer or prevent the effect of one or several genetic polymorphisms from being expressed as phenotypes. Several behavior genetic studies have garnered support for the social control perspective (Boomsma, de Geus, van Baal, & Koopmans, 1999; Koopmans, Slutske, van Baal, & Boomsma, 1999). Other behavior genetics studies find that genetic influences become more pronounced as subjects move from childhood into adulthood, attributing the smaller genetic influences in childhood to children's limited decision making due to parental control and influence. Few studies have shown support for the social control typology through investigating gene X environment effects on offending using molecular genetic data (see Beaver et al., 2009).

Contextual triggering, also referred to as the diathesis-stress model (see Chap. 3), suggests that individuals who experience stressful environments are more vulnerable to antisocial behaviors when they possess genetic risk factors and therefore are more at risk for engaging in violence, substance use, and experiencing emotional problems in comparison with those who are not carriers of such genetic risk. Studies have confirmed the utility of this typology for understanding gene X environment influences by assessing the association between several genetic polymorphisms (e.g., MAOA and 5HTTLPR) and violence, other antisocial behaviors, and emotional problems (Caspi et al., 2002, 2003).

Several research ideas emerge from a gene X environment perspective on late bloomers that are worth exploring. Late bloomers should be more likely than non-offenders to possess genetic propensities for delinquency and violence because their deficits in human capital discussed earlier are partially due to genetic influences that have also been linked to criminal behavior. However, drawing on a social control typology (Shanahan

& Hofer, 2005), we suspect that these propensities will not manifest during childhood and adolescence because of the strong social control and support provided by the late bloomers' primary caregivers. Where we anticipate nontrivial gene X environment interactions for late bloomers is during their transition from late adolescents into emerging adulthood. In line with contextual triggering (Shanahan & Hofer, 2005), the stressful experiences that begin to accumulate due to their failures in finding and maintaining employment, enrollment in college, and interpersonal relationships will act as triggers for gene expression. Consistent with Shanahan and Hofer (2005), the support and control once provided by their primary caregivers will become more distant and less affective as late bloomers emerge into adulthood. Once free from the "cocoons" afforded by their parents, late bloomers will experience transitions into adult roles that are often accompanied by residential relocation, employment and college, and entering into adult intimate relationships. This transition is not unique to late bloomers, as non-offenders and those on other developmental pathways will also experience them, albeit more successfully in some instances and in others not as successfully. Compared to non-offenders, what is unique for late bloomers is that they are likely to experience many failed attempts at establishing quality employment, relationships, and consistent enrollment in college, as well as maintain focus and good grades in college when the support and direct control provided by primary caregivers becomes weakened during adulthood. Such failures will not only reduce the consistent social control they once experienced in childhood and adolescence, but most importantly from a contextual triggering perspective these failures are likely to cause late bloomers to experience heightened levels of stress. The resulting stress from failed attempts at forming quality social bonds during emerging adulthood will place late bloomers at a heightened vulnerability to offending and violence because of the genetic risk they likely possess. Non-offenders may not exhibit such a gene X environment interaction. However, chronic or persistent offenders should, but the interaction



process is likely to begin in early childhood given that they experience criminogenic and stressful environments earlier in the life course.

### **Late Bloomers and the Transition to Adulthood**

As discussed, the transition period between late adolescence and emerging adulthood is a critical period in the life-course for understanding why late bloomers begin to diverge from their low to non-offending trajectory and begin to resemble offending behaviors of chronic offenders in adulthood. In fact, the reason for why late bloomers depart dramatically from their non-offending counterparts is one of the most intriguing and important questions that should be answered, regardless of whether their offending continues long into adulthood. What events occur during this transition to emerging adulthood that lead to the upswing in late bloomers offending frequency?

It is unlikely one or even several discreet events which late bloomers experience will directly lead to their upsurge in offending. As noted earlier, a dynamic process begins to unfold during this transition where late bloomers are forced, but not ready, to take on increasingly more adult roles and the strong parental support and direct controls once provided by families and schools begin to weaken or dissipate. We hypothesize that one reason for this weakening of support and direct control is because later bloomers begin to relocate residence or “leave the roost.” The “cocoons” that once protected them will no longer be as intense as they once were, but will likely remain present to some degree. As they relocate, they prepare to seek employment, form new peer groups, go to college, and enter adult interpersonal relationships.

Because of the new-found autonomy that comes with less parental controls and support, coupled with their traits, genetic propensities, and subtle neurological deficits, we hypothesize that late bloomers will have relatively high failure rates in relationships, employment, and college—which are social domains that typically help solidify one’s societal bond in adulthood

and help to maintain informal social control in one’s life (Sampson & Laub, 1993). Their failures in finding stable employment, doing “good” in college, and entering quality interpersonal relationships begin to accumulate, thus closing prosocial pathways. As mentioned, these failures will also bring stress that they are ill-equipped to cope with using conventional methods.

Several testable research questions emerge from the explanations offered above. First, we hypothesize that late bloomers will perceive and actually have less direct support and control from primary caregivers in emerging adulthood relative to what they experienced during childhood and adolescence. We anticipate that as the late bloomers offending trajectory begins to increase, their trajectories of support and control provided by primary caregivers will decrease. Second, we hypothesize that late bloomers’ new-found autonomy, residential relocation, and decreased direct social support, and control from primary caregivers will predict initial spikes in offending compared to non-offenders and these influences will be conditioned by their traits, genetics, and subtle neurological deficits. As for their continuance of offending into adulthood, we hypothesize that the failures noted above would set in motion an accumulative process that restricts their prosocial opportunities, which in turn leads to continued offending. This process will also be conditioned by deficits in human capital. In testing these hypotheses, we encourage researchers to use prospective longitudinal data in combination with appropriate statistically method for understanding the dynamic process being proposed. For example, dual trajectory analyses may be appropriate for some hypotheses while the integration of quasi-experimental statistical methods coupled with group-based trajectory models may be useful. Further, to model the dynamic process proposed for exploring our explanations for continuity in offending among late bloomers researchers may want to consider cross-lagged structural equation modeling methods. Finally, the baggage that late bloomers incur from this cumulative process should lead to lower educational achievement and less financial success in mid-adulthood compared to non-offenders.

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# How Work Affects Crime—And Crime Affects Work—Over The Life Course

# 12

Sarah Lageson and Christopher Uggen

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## Abstract

The meaning and social significance of both work and crime change dramatically over the life course. This chapter considers the connection between employment and criminal behavior at different life-course stages. We briefly discuss theories suggesting a general link between work and crime, and then take up the question of how work affects crime in adolescence, emerging adulthood, and older ages. We next report on classic and contemporary research showing how crime and punishment affect employment and earnings. The chapter concludes by taking stock of what has been learned and suggesting lines of further inquiry into when and how work matters for crime and delinquency.

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## Keywords

Employment • Crime • Punishment • Life course

There is a deep and enduring faith among both the general public and policymakers that employment is critically important in addressing crime. This engrained cultural belief has been the backbone of support for programming in this area, such as job-training programs for former prisoners. Yet, the meaning and social significance of both work and crime change dramatically over the life course, such that work may have one effect in adolescence and quite another in adulthood. We will first unpack the theoretical foundation

undergirding these cultural beliefs and then examine the empirical research that tests them.

The new and emerging research described here suggests that the basic relationship between work and desistance from crime may be more complex than once thought. At the societal level, several counterintuitive trends reveal complexities in how humans choose their paths toward crime and employment. If work is so closely related to crime, why have crime rates continued to fall during the great recession era of the late 2000s (Uggen 2012)? What is more, new research is beginning to trace and specify the effects of involvement in the criminal justice system on future employment prospects, suggesting a self-reinforcing relationship between the lack of quality employment opportunities and future criminal activity.

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This chapter reviews research concerning employment and crime over the life course with a particular focus on three areas: first, how work affects crime; second, how criminal punishment affects work opportunities; and third, how these two processes operate in tandem in a contemporary context of widespread electronic criminal records and background checks.

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## How Work Affects Crime

Classic criminological theory provides ample reason to think that employment might deter crime. *Rational choice and economic* theories suggest that the income associated with work should reduce the motivation to commit crime for economic gain (Becker, 1968; Cornish & Clarke, 1986; Ehrlich, 1973; Freeman, 1992). After all, most crime is economic behavior—almost 90% of the serious offenses reported in the USA each year concern remunerative crimes (see, e.g., United States Department of Justice, 2001, p. 278). Income is therefore a key consideration, with jobs functioning as an effective “money delivery system” that reduces the incentive to commit economic crime. Along similar lines, *anomie* (Merton, 1938) and *differential opportunity theories* (Cloward & Ohlin, 1960) argue that crime becomes the most attractive option when legitimate pathways to economic and social ascent are blocked. One’s relative access to legitimate and illegitimate work opportunities operate to strongly influence the decision to commit crime.

Other perspectives focus on how investment in work and commitment to conventional lines of action function to prevent criminal acts. *Social control theory* (Hirschi, 1969) suggests that workers will have a greater “stake in conformity” (Toby, 1957) than nonworkers, inhibiting criminal acts that might put such an investment at risk. Working increases informal social controls and expands professional social networks, tying individuals to others in networks of reciprocal obligation (Sampson & Laub, 1993). *Routine activities theory* extends this idea to the structural impact of employment on day-to-day routines (Cohen & Felson, 1979), where the opportunities to commit crime are guided by the “routine activities of

everyday life” (Osgood, Wilson, O’Malley, Bachman, & Johnston, 1996, p. 635).

These theories also lend support to life-course specific theories, or *age-graded theories of informal control* (Moffitt, 1993; Sampson & Laub, 1991; Uggen, 2000). While adolescents and youth engage in routine activities that allow for criminal opportunities (i.e., unsupervised time with peers), adults are more likely to be engaged in legitimate employment in a formal, supervised environment.

*Self-control theory* argues that people self-select into both employment and criminal activity (Gottfredson & Hirschi, 1990). From this perspective, criminals and noncriminals are differentiated by their varying levels of self-control and ability to delay gratification. It is not the work, per se, that inhibits crime, but rather individual differences in factors that lead people to seek legal employment in the first place. In this view, unmeasured levels of self-control likely drive statistical relationships between work and desistance from crime.

Each of these theories posits a particular relationship between employment and crime at different stages of the life course. In the next section, we appraise the evidence bearing on these varied perspectives.

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## Empirical Research

When examining the effect of work on crime across the life course, it is clear that both the intensity—in particular, the hours worked per week—and the qualities of work are keys to understanding the relationship. For youth, both a complete lack of work and total commitment to work are linked to criminal activity (e.g., Bachman, Staff, O’Malley, Schulenberg, & Freedman-Doan, 2011). For adults, the quality of work and the bonds created through legal employment (Uggen, 1999, 2000) facilitate desistance from crime as individuals transition into adult roles.

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## Effects for Youth

In the earlier stages of the life course, much empirical research suggests that although involvement in work during adolescence is in many ways beneficial,



over-involvement in work at a young age appears to be detrimental. In particular, adolescents over-invested in this adult-like role are more likely to engage in delinquency, although debates continue over whether intensive work plays a *causal* role or is simply a risk factor (Bachman et al., 2011; Bachman & Schulenberg, 1993; D'Amico, 1984; Hirschi, 1969; Marsh, 1991; Mortimer & Finch, 1986; Shanahan, Finch, Mortimer, & Ryu, 1991; Steinberg & Dornbusch, 1991; Steinberg, Fegley, & Dornbusch, 1993; but see Paternoster, Bushway, Apel, & Brame, 2003).

Further research has supported this notion by identifying other negative effects of work experience, particularly for adolescents who work more than 20 h per week (Bachman & Schulenberg, 1993; Staff & Uggen, 2003; Wright & Cullen, 2000; Wright, Cullen, & Williams, 1997; but see Johnson, 2004 for evidence of race differences in the effect of intensive work). As adolescents value these intensive work roles, other age-appropriate roles appear to become less salient or important to them. To the extent that young people invest less time and attention in their school roles and responsibilities, for example, they are likely to experience decreased educational performance and lower aspirations for further schooling (Bachman & Schulenberg, 1993; Mortimer & Finch, 1986; Steinberg & Cauffman, 1995; Steinberg & Dornbusch, 1991). Conversely, Staff and Uggen (2003) find the lowest rates of 12th-grade school deviance, alcohol use, and arrest among adolescents whose jobs supported rather than displaced academic roles and provided opportunities for them to learn new things.

On the other end of the spectrum, a lack of employment opportunities may also be linked to increased delinquency in the adolescent stage of the life course (Allen & Steffensmeier, 1989; Sullivan, 1989). Crutchfield (1989) shows that an abundance of secondary labor market jobs is associated with higher crime rates, and in an analysis of 14- to 24-year-old males, Freeman and Rodgers (1999) find that crime rates drop in areas with the steepest declines in unemployment.

Arnett (2000) identifies a distinctive “emerging adulthood” life-course stage for those 18–25 in societies requiring prolonged periods of education. Furstenberg and colleagues (2004) similarly attribute

lengthening adolescence to the increased time needed to obtain jobs that support families. Much recent life-course research has thus directed special attention to crime in the emerging adult period (e.g., Loeber & Farrington, 2012; Osgood, Wayne, Foster, & Ruth, 2005; Thornberry et al., 2012).

In terms of the overall life course, however, most empirical research suggests that work is more effective in reducing criminal behavior for adults over the age of 25 than for adolescents or even emerging adults ages 18–25 (Sampson & Laub, 1993; Uggen, 2000; Wright, Cullen, & Williams, 2002). For example, in a study of people leaving prison and drug treatment, Uggen (2000) finds significant effects of work only for former prisoners age 27 or over.

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## Effects for Adults

Moving to the post-emerging adult stage of the life course, research has linked crime and work for adults in three major areas, showing: first, how job quality matters in desistance from crime; second, how prosocial bonds created through legal employment act as a deterrent to crime; and third, how aggregate unemployment levels relate to crime rates.

The quality of a job appears to matter more than the mere presence of legal employment in its effect on reducing crime (Allan & Steffensmeier, 1989; Sampson & Laub, 1993; Uggen, 1999). A long line of studies shows a relationship between high-quality work opportunities and diminished criminal behavior. Allan and Steffensmeier (1989) find that inadequate employment and unemployment increases arrest rates among young adults. Shover (1996) identifies jobs with “a decent income” and the opportunity to exercise creativity and intelligence as facilitating desistance from crime (127). Uggen (1999) finds that former prisoners who obtain high-quality jobs are less likely to reoffend than those who obtain lower-rated jobs, even when controlling for self-selection into employment.

Consequently, labor markets characterized by high unemployment rates and low-quality jobs are associated with increased crime, even after statistically controlling for various sources of selection



and background characteristics. For instance, Crutchfield and Pitchford (1997) demonstrate that youths working in the secondary labor market are more likely to commit crime as compared to those in higher quality, stable jobs. Using a fixed effects model that adjusts for some sources of selectivity, Uggen and Thompson (2003) find a positive effect of local unemployment rates on illegal earnings, though this effect is reduced to nonsignificance when individual employment characteristics are taken into account.

Professional networks developed through legal employment also change the informal social controls to which a potential offender is subject. Adopting prosocial work and family roles, as well as developing an identity as a law-abiding citizen all facilitate desistance from crime (Matsueda & Heimer, 1997; Uggen, Manza, & Behrens, 2004). Quality employment is often in short supply for those with extensive criminal histories, though it remains critical to establishing a prosocial identity in the process of desisting from crime (Maruna, 2001). Crime, in turn, can subvert claims to adult status. Massoglia and Uggen (2010) find that continued involvement in the delinquent activities of adolescence is largely inconsistent with adult roles and incompatible with a global perception of oneself as a working adult.v

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## Aggregate Effects

Aggregate-level examinations of crime and unemployment rates offer important correlational evidence, though the direction of this relationship remains subject to debate (see Uggen & Wakefield, 2007). Several theoretical perspectives underpin these conflicting predictions. Economic choice and opportunity theories predict a positive relationship between unemployment and crime, as those without legal income are forced into illegal means (Cantor & Land, 1985; Cloward & Ohlin, 1960; Ehrlich, 1973; Greenberg, 1985). On the other hand, routine activities theory posits that unemployed persons will spend more time at home, acting as guardians against crimes such as

burglary while simultaneously reducing their risk of victimization outside the home (Cohen & Felson, 1979). Cantor and Land (1985) argue that both the processes operate in tandem, resulting in a complex and difficult-to-observe link between unemployment rates and crime rates. Empirical research has, however, found some effect of unemployment on property crimes in particular (Raphael & Winter-Ember, 2001), even when controlling for other demographic and economic factors. This relationship has been less apparent for other types of crime.

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## Improved Designs

Though previous research has been useful in understanding larger trends in how work and crime operate in tandem, most existing studies remain poorly suited to test the complex mechanisms that underlie these processes (Thornberry & Krohn, 2003; Thornberry et al., 2012). To remedy these limitations, experiments, statistical adjustments to estimate less biased effects, and longitudinal designs have been implemented to more closely examine how employment acts to reduce crime (Glueck & Glueck, 1930, 1937, 1943; Sampson & Laub, 1993; Laub & Sampson 2003; Uggen, 2000; Zweig, Yahner, & Redcross, 2011).

## Experiments

Though difficult to implement, experimental designs that compare a randomized treatment group to a control group remain the gold standard in determining the effects of an employment intervention on criminal behavior. The National Supported Work Program found significant effects of transitional employment in preventing reoffending for older adults (Uggen, 2000), while a recent evaluation of the New York Center for Employment Opportunities found the strongest effects of transitional employment for high-risk offenders who were most recently released from prison (Bloom, Redcross, Zweig, & Azurdia, 2007; Zweig et al., 2011).

## Cohort and Longitudinal Studies

Longitudinal studies have been key in following work and crime across the life course, while also controlling for self-selection into employment, as well as prior deviance. A classic cohort study by Glueck and Glueck (1930, 1937, 1943) followed 500 delinquent boys, matched to a control group, and studied the impact of family, work, and attachment on delinquency. Laub & Sampson (1993, 2003) reanalyzed these data, focusing heavily on the effects of job stability and commitment to work. Wolfgang, Figlio, and Sellin (1972) followed a cohort of men born in Philadelphia in 1945, finding a positive relationship between unemployment and arrest. Farrington and West's Cambridge Study in Delinquent Development (Farrington, 1986; West & Farrington, 1973, 1977) followed 411 boys from London from the age of 8, similarly finding increased criminal involvement among young adults during times of unemployment (Farrington, Gallagher, Morley, St. Ledger, and West, 1986).

Though yielding powerful insight into trajectories of work and crime over the life course, these classic studies often relied upon a single birth cohort—a design that has been criticized for its inability to distinguish between cohort, period, and age effects. For example, a low rate of employment among young workers in 2009 may be a function of their youth (an age effect), or it may reflect the significant recession occurring at that time (a cohort effect). Such studies may also suffer from issues of selective attrition, if for example, those at greater risk of joblessness and incarceration are less likely to participate in later survey waves (Farrington, Ohlin, & Wilson, 1986; Tonry, Ohlin, & Farrington, 1991). In response, this classic design has been updated and modified more recently into larger-scale projects (e.g., Thornberry & Krohn, 2003), as well as smaller community studies (e.g., Mortimer, 2003). Researchers have also adopted accelerated designs that follow several cohorts of a period of years (Earls, Brooks-Gunn, Raudenbush, & Sampson, 2002; Tonry et al., 1991), saving time and cost while still allowing for sophisticated analysis.

One particular data source, The National Longitudinal Study of Youth, has been especially important in identifying work and crime patterns for younger populations. Using these data, Crutchfield and Pitchford (1997) show that youths employed in the secondary labor market are more likely to commit crime relative to those in more high quality, stable jobs. Crime among secondary labor market workers was especially high in areas of high secondary labor market concentration (Crutchfield & Pitchford, 1997). Using these same data, Ploeger (1997) shows that work was associated with a number of delinquent or problem behaviors for adolescents (substance use, alcohol use, and aggression), even after controlling for prior levels of delinquency. A number of other studies using longitudinal data have further clarified the relationship between work intensity and delinquency while controlling for experience and selection (McMorris & Uggen, 2000; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Staff & Uggen, 2003; Steinberg & Dornbusch, 1991).

More recently, a series of NLSY97 papers by Robert Apel, Gary Sweeten, Shawn Bushway, Robert Brame, and Raymond Paternoster have advanced understanding about the complex dynamics between employment and crime (Apel & Sweeten, 2010; Apel, Bushway, Paternoster, Brame, & Sweeten, 2006, 2008). This research has challenged the orthodoxy in this area—particularly the oft-reported finding that “intensive” work of more than 20 h per week is criminogenic for teenagers (Paternoster, Bushway, Apel, & Brame, 2003). Although the matter is far from resolved, this important policy question continues to occasion much discussion in reports by the National Research Council (1998) and other key policy actors.

## Statistical Techniques

The latter line of research speaks to the rapid development and application of advanced statistical techniques to the question of employment and crime. The literature has now advanced past cross-sectional studies that employ covariate adjustment, to include longitudinal studies employing lagged

dependent variables, Heckman-style Selectivity Models, Propensity-Score Matching, Endogenous Switching Regressions, and Within-person Change Models and Hierarchical Linear Modeling (Uggen & Wakefield, 2008). For instance, Osgood and colleagues (1996, 1999) use fixed effect within-person change models to show that young adults who spend relatively large amounts of unstructured time with peers are more likely to engage in crime. Uggen and Thompson (2003) apply similar techniques to show that employment in regular jobs and in subsidized program jobs both reduce the illegal earnings of study participants in the following month.

While these new adjustments have advanced research on work and crime, they have also cast some doubt on previous findings. For instance, when Paternoster et al. (2003) compared covariate adjustment, lagged dependent variable, and pooled cross-sectional models, their results challenged the oft-cited finding that high work intensity increases crime among adolescents. Johnson (2004) also finds that the positive effect of intensive work on delinquency is more applicable to white youth than youth of other races (see also Newman, 1999). Using lagged and contemporaneous measures of unemployment, Britt (1994, 1997) and Cantor and Land (1985) find a negative effect of unemployment rates on crime but a positive lagged unemployment effect. Today, new methods and perspectives are seeking to better contextualize work and crime in relation to contemporary problems of mass imprisonment, the Great Recession of 2007–2010, and punishment.

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## New Context, New Methods

As incarceration rates ascended from the mid-1970s to 2010, research followed that began to describe a new concentration of disadvantage and crime in particular communities (Kasarda, 1989; Massey & Denton, 1993; Morenoff & Sampson, 1997; Wilson, 1996). The diminishing quality of employment in the secondary sector of the labor market and rising income inequality are likely to have had especially strong effects on

the criminal involvement and incarceration rates of African-American males (Uggen, Wakefield, & Western, 2005; Western, 2006; see also Blau & Blau, 1982; Crutchfield & Pitchford, 1997; Harer & Steffensmeier, 1992; Pettit & Western, 2004; Western, Kleykamp, & Rosenfeld, 2004).

The expansion of the criminal justice system in the USA since the 1970s also means that more and more US workers have a criminal history (Uggen, Manza, & Thompson, 2006; Western, 2006). In 2010, there were ~1.6 million people (mostly men) incarcerated in state and federal prisons (United States Department of Justice, 2011). It is now estimated that 12.8% of adult males have a felony conviction (Uggen et al., 2006), with rates among African-American men much higher (Western, 2006).

Painstaking qualitative research has also been employed to help explain the processes and context linking crime and employment. Mercer Sullivan's influential (1989) ethnographic fieldwork shows how labor market and neighborhood conditions affect young men's entry into crime, the development of criminal activities, and (often) their transition into legal employment as they entered adulthood. Six years of fieldwork by Alice Goffman (2010) shows how in the context of mass imprisonment, young black men in disadvantaged neighborhoods spend much of their time "dipping and dodging" to avoid arrest and potential reincarceration, thereby compromising their careers and family relationships. The juvenile gang members in MacLeod's (1987[2010]) fieldwork were also followed into middle-age, where many have struggled to obtain legal employment. There have also been efforts to combine qualitative and quantitative research. Harris, Evans and Beckett (2010) adopt a multimethod approach to examine the origins and effects of monetary sanctions on convicted criminals. Sampson and Laub (2003) combine divergent sources of life history data, including narratives, interviews, and advanced statistical models, to understand and explain men's transitions into and out of crime from boyhood until age 70. They find that unemployment, like marriage and military service, is systematically related to changes in crime throughout this long period.

What is clear from these studies is that the relationship between work and crime is not only complex but also is shaped by the contemporary context of incarceration and punishment. The next section describes research that seeks to understand how punishment, in turn, affects work.

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## How Punishment Affects Work

Research designs similar to the ones described above have also been employed to examine the reverse relationship between punishment and future employment, including cross-sectional, experimental, longitudinal, and qualitative designs. Findings show that punishment affects work in terms of future employability, earnings, and skills for those with a criminal record. After a review of research in these three areas, we will discuss the life-course implications of these effects.

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## Employability

Surveys and experimental audits of employers have been conducted in recent years to understand how a criminal record affects future work possibilities. In Pager's (2003, 2007) Milwaukee audit study, she sent pairs of "testers" to apply for entry-level jobs—one applicant with a criminal record and one (otherwise identical) applicant without such a record. Pager found that for white testers, there was a large and significant effect of criminal record on employment: 34% of whites without records received callbacks, while 17% with records received callbacks. For black testers, 14% without criminal records received callbacks, compared to 5% with a record. Thus, the effect of a criminal record is "40% larger for blacks than for whites" (Pager, 2003, p. 959).

Because this design could not control for employer effects or address cross-racial discrimination, the study was modified and replicated in New York (Pager, Western, & Bonikowski, 2009) with Black, Latino, and White testers applying for the same jobs. The White tester received a job

offer or callback 31.0% of the time, compared to 25.2% for Latinos and 15.2% for Blacks (though only the black–white comparison was statistically significant). When comparing the stigma of record to the stigma of race, Whites with criminal records obtained positive responses in 17.1% of job applications, compared to 15.9 for Latinos, and 12.9% for Blacks. The authors conclude that New York employers view minority applicants as essentially equivalent to Whites just out of prison.

Large-scale surveys have yielded important information on the rate at which employers conduct background checks (Holzer, Raphael, & Stoll, 2004, 2007). They have also been administered to employers to assess a company's likelihood of hiring ex-offenders and to assess what company characteristics are related to their responses. In a study of 619 Los Angeles employers, Stoll and Bushway (2007) found that employer-initiated criminal background checks were negatively related to hiring ex-offenders. Another survey of California establishments reconfirmed that employers who routinely check backgrounds are significantly less likely to hire people with criminal records (Raphael, 2010).

The ease and low cost of performing criminal background checks has likely exacerbated the effect of punishment on work. While in the past, criminal background checks involved a material process of obtaining a paper record from the state or county, many employers are now turning to the computerized and unregulated private industry to obtain criminal histories: current surveys show nearly 80% of employers outsource such checks to a security establishment (Raphael, 2010). Yet, even those who choose to use official state repositories of criminal records run into barriers; overall, accuracy and completeness of criminal records continues to be the most serious problem affecting criminal history databases (Harris & Keller, 2005).

These practices and barriers suggest that those with criminal backgrounds are typically limited to finding work in the low-wage labor market, as Cook observed in 1975 and Raphael, 2010

observes today. The scope of which job-types are being checked has also widened because of the ease and flexibility of obtaining records (combined with the risk of not), even applicants for these “menial” jobs are being screened (Solove & Hoofnagle, 2006).

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## Earnings and Skills

Labor market research also shows that male ex-inmates earn less and experience more unemployment than comparable men who have not been to prison or jail (Western, Kling & Weiman, 2001). Using the National Longitudinal Survey of Youth, a fixed effects model, and a comparison of subgroups, Western (2002) shows that incarceration reduces later earnings and employment opportunities by disrupting connections with potential employers (e.g., Granovetter, 1973; Hagan, 1993), although the duration of incarceration does not appear to be closely related to employment prospects (Kling, 2006).

Criminal punishment, particularly incarceration, can also disrupt the acquisition of new job skills, entry into high-quality employment, and the development of social networks that aid in obtaining legal employment (Western et al., 2001). In addition, behaviors learned through the process of punishment and incarceration (what Clemmer 1940 and Sykes 1958 termed “prisonization”) are likely to be incongruent with workplace behavioral expectations (Irwin & Austin, 1997). This erosion of job skills likely continues throughout the life course. In the careful reexamination of National Longitudinal Survey of Youth data noted earlier, Apel and Sweeten (2010) find the well-documented employment gap between those with and without criminal records is almost entirely accounted for by labor market nonparticipation—an effect especially strong for those who were incarcerated, as opposed to convicted without incapacitation. Incarceration thus appears to lead to job detachment by interrupting work history and education, deepening rates of unemployment for those who have been incarcerated. This line of research, taken together, demonstrates how

individuals with criminal records are both shut out of, and select away from, future employment.

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## Directions for Future Research

The research described here shows the cyclical nature of the employment–crime relationship. For example, either too much or too little work in adolescence can increase the likelihood of delinquency. The resulting punishment, in turn, can “knife-off” the educational and employment opportunities typically available in emerging adulthood (Maruna & Roy, 2007; Sampson and Laub, 2003). These, in turn, can engender greater criminal activity—and hence greater punishment—in adulthood. The resulting cycle of criminal activity, punishment, and employment difficulties can continue throughout the life course. Yet, over time, there is much evidence that desistance from crime and the assumption of adult work roles act as mutually reinforcing processes. Further specification of these life-course processes is the task of current and ongoing research on employment and crime.

In particular, there is urgent need to develop interventions for youth that will both improve employment outcomes and reduce criminal activity. We thus call for deeper inquiry into age-graded differences in approaches that have been successful with older clients, particularly subsidized and transitional employment schemes. While we are beginning to understand the differential impact of work across the life course, we must now turn toward the difficult work that will help translate these findings into policy. For instance, should youth crime prevention programs put greater emphasis on building human capital in these earlier stages of the life course, or focus more narrowly on building work maturity skills? If youth work fewer hours as a crime prevention strategy, will they be adequately prepared for the job market in adulthood?

We also recommend an expansion of the emerging qualitative literature on the cycle of crime and punishment as it relates to employment (Braman, 2004; Goffman, 2010). This could take the form of case studies, interview projects, or



longer-term ethnographic fieldwork. These studies have the ability to carefully describe and contextualize in the lived experience of employment and crime, including the expanding segment of the population whose criminal history information is now routinely screened by employers.

In a related field of inquiry, it is essential to study work and crime through the perspectives of employers and hiring managers. With a significant proportion of Americans now having electronically accessible criminal records, research should examine what qualities of criminal histories matter the most for obtaining employment (Lageson, Vuolo and Uggen, 2010). Does the timing and severity of the offense matter in employer decisions to hire applicants with a criminal background? How does personal contact with applicants, workplace composition, and labor market characteristics influence these decisions? How are criminal histories interpreted for older and younger applicants? What are the structural and interpersonal nuances to this process?

Experimental research, including randomized evaluations of ongoing programs (Bloom et al., 2007; Zweig et al. 2011) and audit studies (Pager, 2003, 2007), should continue to receive emphasis. Yet, these can also be expanded to understand how other stratification dimensions—such as age and gender—modify the relationship between criminal stigma and employment. Such work is especially important in the context of the recent economic recession, as policymakers contemplate a new wave of publicly subsidized job programs and transitional assistance for the long-term unemployed. There is evidence of some success for such programs in the 1970s, but it is unclear whether or how such programs would operate in the current policy environment.

Finally, research should carefully examine the effects of recent initiatives to lessen the effect of stigma of criminal record on future employment, particularly those developed from federal “Second Chance Act” funding, criminal record expungement efforts, and “Ban the Box” campaigns. With regard to the latter, some laws are prohibiting public employers from asking an applicant to report their criminal history until a job interview has been offered (thus allowing all applicants an

equal opportunity to be evaluated without regard to criminal history). With regard to expungement, we still know relatively little about whether removing old, dismissed, or low-level offenses from an individual’s criminal record actually improves their employment prospects. There is today a healthy public debate around the openness, availability, and accuracy of criminal records in the electronic age, as well as a rising awareness of employment discrimination on the basis of criminal history. Yet, these debates are not fully informed by social scientific evidence—a gap in knowledge and its dissemination that should animate sociological and criminological researchers concerned with employment and crime.

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# Desistance from Crime: A Review and Ideas for Moving Forward

# 13

Shawn D. Bushway and Raymond Paternoster

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## Abstract

The study of desistance, the process by which individuals stop offending, is a dynamic field of interest to both academics and policymakers. This chapter reviews the existing theoretical thinking about desistance, and presents a new perspective on the role of identity change in desistance. We begin by verifying empirically that there are in fact people who offend throughout their life-course, and that desistance is not “normative.” In a departure from usual practice, we discuss these models within the framework of formal time series processes. We then present an argument for why identity change is the most promising theoretical direction for criminologists interested in desistance. Finally, we present long-term hazard models as a “new” approach for studying desistance. We close with a challenge to the field to think not just about ways to cause desistance, but also about ways to identify offenders who are in fact at low risk of reoffending (i.e., people who have desisted).

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## Keywords

Desistance • Identity • Hazard • Life-course persistent • Life course

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## Introduction

Once people start offending, society is very interested in finding ways to encourage them to stop or desist. The study of change is potentially both methodologically and theoretically interesting from an academic perspective. However, the problem becomes simplistic if desistance is an inevitable, predetermined part of life for every person who engages in crime (Sampson & Laub, 2003). Therefore, we start by verifying that there are in fact people who offend throughout their

life-course, and that desistance is not “normative.” We then describe the different theoretical frameworks for describe desistance. In a departure from usual practice, we discuss these models within the framework of formal time series processes. We also present some ideas regarding identity theory, and explain why we believe it is the most promising theoretical direction for criminologists interested in desistance. Finally, we present hazard models as a “new” approach for studying desistance. We close with a challenge to the field to think not just about ways to cause desistance, but also about ways to identify offenders who are in fact at low risk of reoffending (i.e., people who have desisted).

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### Are There Life-Course-Persistent Offenders?

Moffitt (1993) suggested that there were groups of people with fundamentally different paths and causal processes over the life course which put them on that path. She identified three groups of individuals: nonoffenders, life-course-persistent offenders, and adolescence-limited offender. The two key groups, life-course-persistent and adolescence-limited offenders, were differentiated by the age of onset, the time age at which they exited from crime, and the responsible causal factors at work. Prior to the work of Moffitt, many prominent theorists in the field suggested that all individuals experienced the same basic causal process over the life course, although with different innate levels or propensities (Blumstein & Cohen, 1987; Gottfredson & Hirschi, 1990). In the case of criminal career scholars, who allowed for differential rates of desistance, these life paths were not necessarily parallel, but all criminal careers had the same basic shape. Moffitt’s work was novel because it argued that different offenders might be experiencing different causal processes, and therefore experiencing career paths that looked fundamentally different and had different etiologies. Although her simple typology (only two offending groups) has not found unanimous or even strong support, particularly with respect to the etiological explanations

of the different “types” (e.g., Skardhamar, 2009), her description of the entrenched “life course-persistent type” has had a tremendous staying power.

This description came under attack in 2003 when Sampson and Laub (2003) decided to identify life-course persisters in the Glueck data (a group of delinquent youths from Boston who were born between 1924 and 1932) employing the group trajectory method (GTM) made popular by Nagin and Land (Nagin & Land, 1993; Nagin, 2005). Bushway, Piquero, Broidy, Cauffman, and Mazerolle (2001) proposed a slightly different approach using growth curve models (GCM) that describe the change in latent propensity over time to identify desisters. These methods, particularly the group-based trajectory models, can identify long-term changes in offending propensity over time. The group-based trajectory method is now a standard statistical tool in criminology to describe offending over the life-course (Piquero, 2008). While each set of analyses identifies people with relatively flat long-term patterns of offending, the most common pattern is a period of increasing propensity of offending followed by a long-term decline in offending which usually reaches very low or nonexistent levels of offending propensity by the end of the period. Offenders who follow this pattern are typically referred to as desisters.

Sampson and Laub found six groups in the Glueck delinquent boys data that, while heterogeneous in their offending patterns, all decline to a point that looks like zero offending by age 70. On the basis of this analysis, Sampson and Laub claim that crime declines with age for even the most active offenders (i.e., desistance from crime is “normative”), and thus they suggest that an emphasis on the life-course “desister” rather than the persister should be the next step forward for the field.

In a response to this seeming call to dampen interest in the persistent offender, Moffitt (2006) noted that the average length of a criminal career (time from first to last conviction) in the Glueck’s sample was 25 years, well beyond the normal length of a criminal career. And a review by Piquero (2008) of the more than 30 studies that



have now used the GTM method to examine offending into adulthood (although most do not go past age 40) provides support for Moffitt's position that the life-course-persistent offender is a meaningful phenomenon. Piquero reports that "trajectory-based empirical research does show an adolescent-peaked pattern and a chronic offender pattern, the latter which evidences declines in most studies" (p. 46). Nonetheless, the possibility exists that the question about desistance is not if it occurs, but rather when.

Bushway (forthcoming), however, has observed that it is not easy to identify people who follow a path that is different from that of the main population using GCM. Bushway, Sweeten, and Nieuwebeerta (2009) estimated individual offending trajectories for every individual using the same data as Blokland, Nagin, and Nieuwebeerta (2005) and compared the results with what could be found using either the GTM or the GCM using random effects (HLM). In other words, they estimated a single time series regression for every individual offender using the approximately 40 years of data available for every individual. This approach is guaranteed to provide unbiased estimates of every individual trajectory, but it is incredibly inefficient. GTM and GCM use the same information much more efficiently, and both methods can generate estimates of the individual trajectories using Bayesian techniques, trajectories that will be biased but will have smaller standard errors. Consistent with the concept of a persistent offender, Bushway et al. (2009) found that nearly 7% of the sample had stable periods of offending (relatively flat) near the end of their life course that were significantly different from zero. And an examination of the individual trajectories clearly revealed that there was a subset of people with elevated trajectories well into their 60s, fitting even the Sampson and Laub definition of life-course persisters.

But an even more instructive comparison of the trajectories derived from the three different methods reveals that both the GCM and GTM do much better at describing the behavior of individuals who follow the overall pattern of offending (the aggregate age-crime curve) rather than

anomalous trajectory paths such as those of the life-course persisters. The decline in offending over time using these two group-based trajectory strategies (GCM and GTM) is being driven almost entirely by information from the overall population and NOT from the individuals—these methods simply do not provide good estimates of the number of people who do not follow the overall age-crime curve. We know that the overall population experiences a decline in offending with age. The question posed by life-course-persistence research is whether there is evidence that a small group of offenders remains relatively active over the life course. The GTM and GCM methods are inherently biased against identifying individuals who follow this type of trajectory because of their (over) reliance on the aggregate population trajectory to describe individual change over time when the models are asked to predict actual trajectories for members of the sample.

Another empirical issue with the approach used by Sampson and Laub (2003) lies in the very definition of the life course, as a pattern of offending to age 70. Over half of the Glueck's sample is dead by age 70, so the offending behavior until age 70 is observed only for those who live to 70. Therefore, finding that people desist to age 70 is conditional on the person's living that long, begging the counterfactual question: "What would the offending pattern look like for those offenders who died had they survived until age 70?" At the very least, a more reasonable definition of the life course would involve some recognition of the distribution of "life lengths" in the population.

Fortunately, demographers have pretty good estimates of the range of life expectancy for cohorts of people born in the United States. According to Wilmoth and Horiuchi (1999), the life expectancy of someone born between 1931 and 1932 in the United States was 61 years of age, with an Inter Quartile Range of the distribution of 26.9 years, indicating that the life expectancy of 50% of the population born at that time was roughly between the ages of 48 and 75. A reasonable definition of "the life course" for the Glueck's sample, therefore, would include lives that end at



age 50. If we look at Fig. 11 in Sampson and Laub (2003), the answer to the question of life-course persistence changes dramatically if we look only to age 50. The offending rate is 1 at age 50, down from a peak of 2.5, but still high and nowhere near zero. And if the life-course trajectory was estimated only to 50, rather than to 70, the curve captured in their Fig. 11 should be much less pronounced.

This claim is supported by Eggleston, Laub, and Sampson (2004). They use the Glueck's data to show the high-level chronic group still near its peak when the trajectories are mapped only to age 45. This trajectory is based on the behavior of all those who live to age 45, a more comprehensive sample than the group of people who live to age 70, and, therefore, a more accurate estimate of the life course to that point for the entire population. In other words, for a reasonable definition of a life course, there is much less ambiguity about the existence of "life-course" persistence among those who live to age 50, or age 55 or even age 60. The declines in offending for those who live past 50 may be real, but the lived experience of those who died before age 70 is also real, and must be acknowledged by researchers examining "life-course" persistence.

A recent paper by Rhodes (2011) suggests a final problem. Individuals who qualify as life-course persisters will experience, over their life course, many deliberate interventions and attempts to change their behavior. The available evidence suggests that the American criminal justice system is heavily involved in the lives of individuals under their supervision, and it is at least possible that this affects their behavior. The fact that social institutions like the criminal justice system can affect behavior is not inconsistent with Moffitt's theory, but it does suggest that it might be hard to identify those individuals who are most criminal given that they are being subjected to the most severe social control—particularly for drug users/dealers and those "struck" three times. Even with perfect controls for death and incarceration, we will be biased against finding life-course persisters, given the level of coercion and social resources that are being directed at changing their behavior (Rhodes, 2011).

In a nutshell, the conceptual and empirical problems that conspire to prevent identification of "life-course persisters" are serious and systematic. Nonetheless, we believe the evidence is clear—some people do indeed offend persistently throughout their life-course, and desistance is not normative or inevitable.<sup>1</sup>

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## The Theoretical Nature of Desistance

Early understandings of the cessation from crime considered desistance to be the event of moving from a state of committing crime to a state of not committing crime, but gradually, scholars have begun to understand desistance not as an event but as a process. Fagan (1989) first recognized desistance as a process, differentiating the process of desistance, defined as the reduction in the frequency and severity of offending, from the event of quitting crime. Le Blanc and Fréchette (1989) also referred to desistance as a set of processes that lead to the cessation of crime. They use the term deceleration to refer to a reduction in frequency of offending prior to cessation. Laub and Sampson (2001) explicitly separate the process of desistance from the termination of offending, which they view as the outcome of desistance. There are several excellent reviews of possible theoretical explanations for desistance—most notably see Laub and Sampson (2003). In what follows, we present a somewhat unconventional description (see also Bushway & Paternoster, 2012) that explicitly maps the different processes of desistance to different stochastic time series models. Although we are skeptical that such models can be estimated with available data, we find the framework useful for making clear and easily understood distinctions between the different desistance theories.

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<sup>1</sup>Sampson and Laub (2005) have backed away from their strong claim that everyone desists. They stated (2005: 907): "nowhere have we said that chronic criminal offenders do not exist. The latter have been around since time immemorial—these individuals are more than words or apparitions."

In its most basic form, any time series can be described (not explained) by the following autoregressive time series<sup>2</sup>:

$$Y_t = \alpha + \rho Y_{t-1} + e_t, \quad (13.1)$$

where  $e_t$  is a time series of uncorrelated shocks. A key assumption of time series analysis is that the process is *stationary*, which simply means that the parameters of the model are stable throughout the time period. A stationary process cannot create a long-term path of desistance as described by Sampson and Laub (2003), Blokland and Nieuwbeerta (2005), or Blokland et al. (2005). The kind of path described by (13.1) will move to its equilibrium level and then stay flat with short-term variation around the equilibrium line. Laub and Sampson (2003) are right—state dependence and individual heterogeneity as captured in the lagged  $Y$  term in (13.1) *cannot* explain desistance. We restate this important observation in time series language—desistance is inherently a nonstationary process.

In the time series literature, there are four broad classes of nonstationary time series. The first is a series with a trend. This trend is based on time (in this case age). The trend predetermines the path. With a trend, (13.1) becomes (13.2):

$$Y_t = \alpha_t + \rho Y_{t-1} + e_t. \quad (13.2)$$

This basic model does not try to explain the existence of the trend, except in the most basic or general terms. The best example in criminology for a desistance theory that appeals to a basic trend is Gottfredson and Hirschi's theory of self-control. Any change in an individual's time series trend in offending over time is attributed to the "inexorable aging of the organism (1990: 141)." Since age is the time marker in this time series, saying age explains desistance is the same thing as saying that there is an undefined trend that mimics the trend in age (Bushway et al., 2001). Glueck and Glueck's (1974)

maturational theory is but one small step removed from Gottfredson and Hirschi's assertion about age (1990). They are careful to explicitly distinguish age from maturation—which means that the maturational process need not occur at the same age for everyone. However, this extends (13.2) to say that there is a distribution of time trends in the population—everyone does not have the same uniform trend over time. What distinguishes Gottfredson and Hirschi from the Gluecks is that their claim leaves open the possibility that this maturational process is deterministic. Laub and Sampson (2003), for example, characterize these kinds of developmental theories as being preprogrammed—essentially fixed trends.

The second type of time series, a cointegrated time series, captures the counterargument to Sampson and Laub's characterization of the developmental path. Here, (13.3) is developed by adding a time varying covariate  $X_t$ . The coefficient on  $X_t$  is time constant. This variable trends in the same way as criminal propensity:

$$Y_t = \alpha + \rho Y_{t-1} + \delta X_t + e_t. \quad (13.3)$$

This basic model in which time-varying covariates can explain the long-term pattern of desistance fits with the class of theoretical models in which theorists simply extended existing theories to account for desistance. For example, Agnew (2005) argued that the bulk of offenders desist from crime simply because the strains that they experienced as adolescents that launched them into crime in the first place (school, relationship, and job strains) diminished over time, and the ability to adapt in a conventional way to existing strains increased as they entered adulthood. The movement into adulthood, then, comes with both fewer and/or less intense strains and/or an increased capability to adapt to strain in a nondeviant way. Similarly, Akers (1998: 164) argued that the most important predictor of all dimensions of offending, including desistance, is involvement with delinquent peers: "... the single best predictor of the onset, continuation, or desistance of delinquency is differential association with law-violating or norm-violating peers." Existing theories of crime responded to the new

<sup>2</sup>The following is the simplest possible dynamic model. It can be generalized by including more lags. However, the basic concepts apply.

conceptual terrain brought about by the criminal career perspective, and then, by simply insisting that they could as easily explain desistance as they could onset or other dimensions of offending.

Developmental or maturational theories of crime can also be thought of as describing a cointegrated time series rather than a deterministic trend to the extent to which the theorist describes a variable or a process that explains the change in propensity over the life course. For example, Gove (1985) posits that there are biological and psychological factors over time that peak and decline in the same manner as offending propensity. These factors are plausibly cointegrated with offending propensity.

Although they are skeptical about whether this can be done, Gottfredson and Hirschi (1990) acknowledge the possibility that time-varying covariates can explain long-term change. On the empirical side, Osgood (2005) advocates inserting time-varying covariates with time-constant parameters into GCM in an attempt to explain the age-crime curve. Within the growth curve framework, Osgood (2005) suggests testing to see if the time-varying covariates can detrend the data. This basic approach has been applied by Blokland and Nieuwebeerta (2005) where they look to see how much marriage and employment can explain the age-crime curve. It is also seen in Thornberry, Bushway, Lizotte, and Krohn (2008) in which they look to see how much a set of time-varying covariates can explain the divergence between those who desist from and those who persist in crime. In each case, the researchers are looking to see if the time-varying covariates can make a nonstationary time series stationary—with time-constant parameters, the only way this is possible is if the covariates themselves trend or track in the same manner over time as the offending propensity.

The third type of time series that can explain or accommodate non-stationarity is a time series with a structural break. A structural break implies that there are two or more sets of parameters, meaning that the causal process is different across periods:

$$Y_t = \begin{cases} \alpha_a + \rho_a Y_{t-1} + e_{at} & \text{if } t < T \\ \alpha_b + \rho_b Y_{t-1} + e_{bt} & \text{if } t \geq T \end{cases} \quad (13.4)$$

There can be more than one structural break. Again, theorists have not formally discussed structural breaks, but we see elements of structural breaks in some desistance theories. For example, the notion of age-graded causal factors is entirely consistent with the idea that the value of coefficients on some time-varying variable changes over time.

A more general way of thinking about structural breaks is that some relatively time-stable component of an individual, such as self-control, changes over time. This is only relevant if life events and social context interact with self-control to affect behavior. In Thornberry's interactional model, for example, the exact nature of state dependence depends in meaningful ways on the individual's relatively stable characteristics (Thornberry, 1987; see also Moffitt, 1993). Those individuals who are heavily embedded in crime are less "dynamic," in that they are less responsive to changes in their environment, and, therefore, are also less state dependent. Nagin and Paternoster built on this idea in their own version of an interactional theory when they posited that the impact of sanctions depended in meaningful ways on the person's level of self-control (Nagin & Paternoster, 1994). Although not developed further by Nagin and Paternoster, subsequent empirical work by Wright and colleagues (Wright, Caspi, Moffitt, & Silva, 2001; Wright, Caspi, Moffitt, & Paternoster, 2004), as well as by Hay and Forrest (2008) and Ousey and Wilcox (2007), have all found evidence for an interaction between life events and stable individual characteristics such as self-control.<sup>3</sup> If this basic preference function shifts over time in purposeful ways, as suggested by Hay and Forrest (2008) and Giordano, Cernkovich, and Schroeder (2007), we can have a situation where the same inputs and opportunities lead to different behaviors—and

<sup>3</sup>Wright et al. (2004) finds, in contrast to Nagin and Paternoster's prediction, that those with the most self-control are the least responsive to structural events. Doherty (2006) finds no evidence of an interaction between social bonds and social control. This latter result could be explained by Doherty's use of a sample of serious juvenile delinquents rather than a more heterogeneous general population sample.

state-dependent processes can start to head people in a different direction. This situation, where a person experiences different causal processes depending on changes in the underlying personal preferences, extends interactional theories to accommodate a structural break, and strengthens the ability of these types of theories to explain long-term changes in offending propensity.

The importance of identity theories from this perspective is that they provide an explanation for how fundamental individual characteristics such as self-control can change from one time period to another. Changes in identity can trigger fundamental shifts in how people value the future (time discounting), or their social contacts. Simply saying that preferences change is easy—explaining the mechanism by which they change is both important and difficult (see Akerlof & Kranton, 2010). Identity theorists like Giordano and her colleagues (Giordano, Cernkovich, & Rudolph, 2002; Giordano et al., 2007) and Maruna and Farrall (Maruna, 2001, 2004; Farrall & Maruna, 2004; Farrall, 2005; Maruna & Roy, 2007) offer social psychological theories of desistance which revolve around structural breaks in the process that generates crime. Basing their views on a symbolic interactionist foundation, Giordano et al. (2002) argue that desistance requires substantial cognitive transformations or “upfront” cognitive work such as the development of a general openness to change, receptivity to “hooks for change,” and consistent support from social others. In a later revisiting of this view, Giordano et al. (2007) developed a desistance theory that relies much more heavily on the regulation of emotions and the emotional identity (an “anger identity”) of ex-offenders as they struggle with getting out of crime. Maruna also adopts a theory of desistance that relies on notions of the actor’s identity, though not one premised on a change in identity. For Maruna (2001), “making good” does not so much involve an intentional change in the desister’s identity from bad to good as it does a reinterpretation of one’s criminal past to make it consistent with his or her current pro-social identity.

The fourth major type of nonstationary time series is a random walk, a well-known form that

has been found to occur in many contexts, including the stock market price of a company and the financial status of a gambler. Random walks have a unit root:

$$Y_t = \alpha + Y_{t-1} + e_t, \quad 13.5$$

According to (13.5), behavior this period is simply where you were last period, plus a constant and a shock. The series has an infinite memory, since any shock is permanently incorporated into the time series. Random walks do not, therefore, return to any mean. The same formula can generate flat, increasing, decreasing, or U-shaped curves, depending entirely on the time series of uncorrelated shocks  $e_t$ .

This description of a random walk is consistent with Laub and Sampson’s (2003: 34) characterization of life-course theories of desistance as the result of a series of random events or “macro-level shocks largely beyond the pale of individual choice (for example, war, depression, natural disasters, revolutions, plant closings, industrial restructuring).” Random walks are inherently unpredictable, and as described by Laub and Sampson (2003: 33–34), this lack of predictability is the key factor which distinguishes life-course trajectories from predetermined developmental trajectories:

Developmental accounts ... focus on regular or lawlike individual development over the lifespan. Implicit in developmental approaches are the notions of stages, progressions, growth and evolution ... with the imagery being one of the execution of a program written at an earlier point in time ... In contrast, life-course approaches ... emphasize variability and *exogenous* influences on the course of development over time that cannot be predicted by focusing solely on enduring individual traits.

Another way to discuss the time series properties of life course theories is to consider the key life course assertion that the impact of life events depends on when they occur in a person’s life. This is the notion that “timing matters” (Elder, 1998; Abbott, 2001). To the extent to which this timing dependence is predictable, it is consistent with time series models with structural breaks because the implication of timing

dependence is that there are simply different models for different time periods. If there are a small number of changes, and these changes are tied to observable changes in identity, then this age-gradedness should be both predictable and identifiable. But if there are many structural breaks, and these breaks are tied to malleable social contexts, the age-gradedness becomes much more unpredictable. Indeed, a random walk can be characterized as a time series with  $N$  structural breaks, where  $N$  converges to the total number of periods in the time series (Hansen, 2001).

The main difference between life course theories (random walks) and identity theories (structural breaks) is the number of breaks. In a world with many breaks, we can no longer predict long-term change, and therefore need to focus attention on explaining change in any given period, which is driven by these relatively exogenous life events. This conclusion is consistent with empirical practice—if a time series is a true random walk, with no trend and no cointegrated time series, the only feasible strategy is to explain period-to-period change. It is simply not possible to explain any long-term pattern because that long-term pattern is driven by random shocks. Ironically, this interpretation of life-course theory implies that it is neither possible nor even interesting to study a life-course “trajectory” since only period-to-period change contains interesting information.

In summary, we believe that all theories of desistance fit into one of the four basic categories of nonstationary time series models—trends, cointegrated series, series with a structural break, and random walks. Given the distinct empirical character of each of these four basic types of time series, a serious examination of individual time series characteristics should be a fruitful avenue for future empirical research. Further explication of theories within the framework provided by the extensive literature on time series processes should also help to clarify and delineate theories of desistance. Readers interested in seeing empirical examples of this approach should peruse Paternoster and Bushway (2009), where some basic illustrations are provided using data from the Cambridge Study

in Delinquency Development (CSDD) data (Farrington et al., 2006).

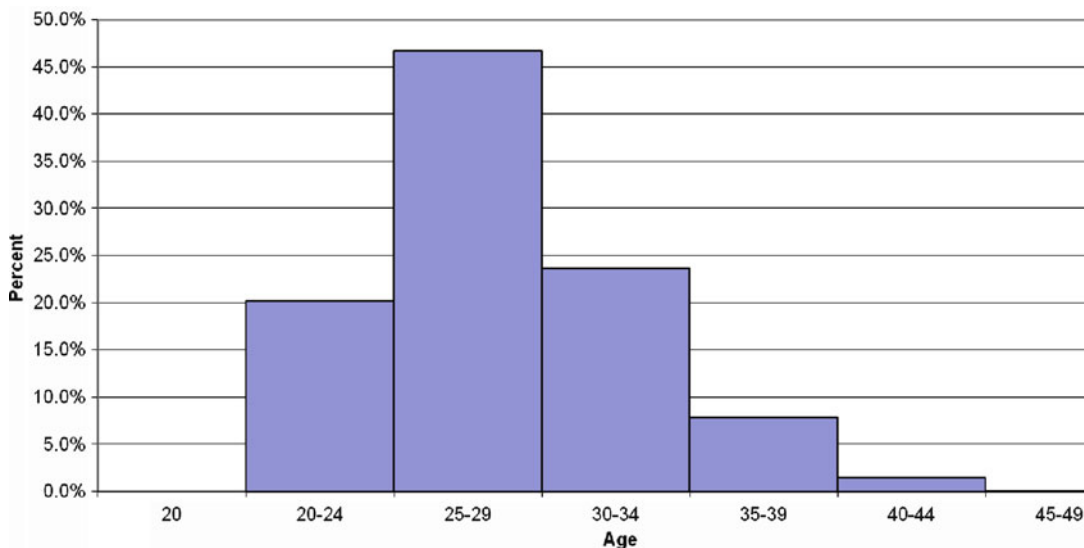
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### More Detail on an Identity Theory of Desistance from Crime

While we do not deny that crime declines with age for the population (Bushway & Paternoster, 2012), our discussion of life course persists convinces us that desistance is not an inevitable part of the biological aging process (i.e. not a deterministic trend). We illustrate our skepticism about the aging of the organism argument in Fig. 13.1, which contains the age distribution of current rosters of Major League Baseball teams in the United States. These data show quite clearly that virtually all players “desist” from major league baseball by age 40. Anecdotal evidence suggests that few players voluntarily retire in their prime—instead, most retire due to degraded physical skills, what we might refer to as the “inexorable aging of the organism.” Within the context of major league baseball, we find the aging argument convincing. Baseball is a highly skilled sport that requires a great deal of physical stamina, speed, strength, and dexterity. The biological consequences of aging affect everyone who plays, and involuntarily leads to a short career length, and a relatively homogenous age of desistance. The image of the major league ballplayer “burning out,” then, is consistent with the biological process of aging and the deterioration of physical skills.

We believe the evidence suggests that individuals stop committing crime, however, not because they cannot physically commit crime anymore, but because they *choose* not to. Some choose to exit before others who wait until much later in their lives to quit crime and as a result we have a long right-hand tail in the age distribution of offending. This long right-hand tail also casts doubt on a strictly structural version of desistance which attributes the initial thrust into conformity to “turning points” (i.e. random walks) or pro-social roles like jobs and marriages (i.e. cointegrated processes). While there is a convincing body of research that documents the ability of marriage and work to decrease crime, this work frequently does not speak very directly or clearly to the *causal mechanism*





**Fig. 13.1** Age distribution of major league baseball, active rosters 2007

by which this effect occurs (Sampson, Laub, & Wimer, 2006). If the explanation is entirely or immediately structural, we would expect that desistance would be highly correlated with the arrival rates of first marriages and stable employment during the twenties and into the thirties as people move into adulthood. And, indeed, a large portion of desistance clearly does occur between age 20 and 40. But, employment and marriage have been available states for 20 years by age 40. A simple matching or sorting story in which people desist when matched to jobs and spouses should not require more than 20 years before it reveals itself.

Of course, it is possible that work (and potentially marriage) has a differential impact depending on age (Uggen, 2000) such that work is involved in the desistance process but only when offenders reach a certain age. But this explanation would imply that something about the individual or his or her set of circumstances has changed with his or her age, and this change in turn leads to different choices by the individual. The typical interpretation of this is that the effect of these variables is age-graded. However, another interpretation is that these factors have a different impact on different kinds of people, and different kinds of people select into marriage and employment at different ages. Research on employment and crime is now increasingly showing that the

established “fact” that employment is bad for youth (but good for adults) is entirely an artifact of selection. Strong controls for selection show that employment has the same modest *negative* impact on crime for youth as it does for adults (Apel, Bushway, Paternoster, Brame, & Sweeten, 2008). Entering into pro-social roles may have a role to play in desistance, but perhaps the acquisition of such roles is only part of the picture and comes later in the desistance process when other obstacles have first been overcome.

In sum, we think that the facts state clearly that desistance is the result of a structural break caused by a change in persons’ identity and the corresponding changes this brings in how they weigh the inputs of their decision making, their preferences, and how they make choices (Akerlof & Kranton, 2010).<sup>4</sup> In the pages that follow we outline the framework of a theory of desistance (described in more detail in Paternoster &

<sup>4</sup>This is not to say that biological processes play no role in explaining desistance from crime. For example, behavioral economists have suggested that one’s orientation to the future or discount rate can improve over time so that with age people become more patient and less tempted by immediate things (Mischel, Ayduk, & Mendoza-Denton, 2003). Since some of this improvement in resisting immediate temptation can be attributed to a maturing of the prefrontal cortex of the adolescent brain, a biological process is implicated (Albert & Steinberg, 2011).



Bushway, 2009 and Bushway & Paternoster, 2012) that relies on the change in identity a person must undergo *before* entering into pro-social roles that over time will solidify his or her leaving crime.

There is a long intellectual tradition in sociology and social psychology which emphasizes the importance of one's identity (James, 1890; Mead, 1934; Cooley, 1902; Stryker, 1968, 1980). In recent years economists have also argued that the preferences people have and ultimately the decisions that they make are influenced by who they think they are or who they want to become (Akerlof & Kranton, 2010). Identity is important for numerous reasons; the most important for our concerns is that it motivates and provides a direction for behavior (Foote, 1950; Stryker, 1968; Burke, 1980; Burke & Reitzes, 1981, 1991; Stryker & Burke, 2000). A person's actions are seen as expressions of their self-identity—we intentionally behave in ways that are consistent with whom we think we are. In interaction with others, therefore, people project an identity of who they are, and a primary vehicle for communicating to others what “one is” is through one's behavior.

Identities or selves vary in terms of their temporal orientation. Some selves are oriented toward the present as the *working self* (Markus, 1977, 1983; Markus & Wurf, 1987). The working self is that component of the self that can be accessed at the moment and is based upon the individual's here-and-now experience (Markus & Kunda, 1986; Markus & Wurf, 1987). In addition to a sense of who and what one is at the moment, or a self that is fixed on the present, we also have a sense of self that is directed toward the future. This future-oriented self is defined positively as the self we would like to become and negatively defined as the self we would not want to become or fear that we might become. Markus and Nurius (1986, 1987) have defined this future orientation of the self as a *possible self*.<sup>5</sup> The possible selves “are conceptions of

the self in future states” (Markus & Nurius, 1987: 157) and consist of goals, aspirations, anxieties, and fears that the individual has as to what he or she could become. While the working self is aware of what skills we have and do not have and what we can and cannot do in the present, the possible self is directed toward the future and what it is possible for us to be and what we would not like to be. I may, for example, see myself currently (my working self) as a thief, drug user, poor father, and unskilled worker, but may see myself in the future as working in a job (though perhaps for minimum wage), legitimately buying things for my family, owning a used car, and ceasing my life of drug use and crime. I may, however, also fear that I may turn out to be a burned-out addict, riddled with disease, homeless, childless, jobless, and destined to die alone.

An important consequence of a possible self is that it provides directed motivation for one's behavior (Markus & Nurius, 1986, 1987). Possible selves, both positive and negative, therefore, not only contain satisfying images of what the person would like to be or desperately fears becoming, but they can also provide a specific and realistic set of instructions or a “roadmap” directing what one can do to achieve the positive future self and avoid the negative possible self (Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Hoyle, Kernis, Leary, & Baldwin, 1999; Hoyle & Sherrill, 2006). This is referred to as the self-regulating component of the possible self. The self is self-regulating because, among other things, it compares the past and current working self with the possible self and provides specific directions, strategies, or plans for narrowing any discrepancy between the two, thereby connecting the present with the future. Motivation is generated and is more likely to be successful, then, when we have not only a goal of self-improvement but also specific and realistic means to reach that goal. In fact, at least initially, movement out of a deviant or a “spoiled identity” is more likely to be based on a motivation to avoid a feared self than on a desire to achieve a positive self (Goffman, 1963).

Though stable, identities clearly can and do change, both relatively and in an absolute sense.

<sup>5</sup>Along similar lines, Schlenker (1985:74) speaks of a “desired self.” A desired self is “what the person would like to be and thinks he or she can really be.” A desired self then emphasizes a positive identity that a person would like to have and is realistic to have.

We argue that a working identity as a criminal offender can change to a more conventional identity when the person thinks of a conventional identity as a positive possible self and an identity of a burned-out ex-con with no friends or possessions as a negative possible self or feared self.<sup>6</sup> Contemplation of a possible self that does not include criminal offending in turn occurs when the working identity of criminal is perceived to be unsatisfying or disappointing. Just as a criminal identity emerges only slowly and tentatively in response to perceived successes so does a break from that identity. As one begins to find less success and satisfaction with the criminal identity, it is likely to conjure up negative possible selves—long terms in prison with young hoodlums, the possibility of a violent death, and small payoffs from criminal enterprises. These negative possible selves and the activation of positive selves—a working person, a person with a good spouse, a giving father, and a law abider—can provide both the motivation and direction for change. Before one is willing to give up his or her working identity as a law breaker, then, he or she must begin to perceive it as unsatisfying, thus weakening his or her commitment to it. This weakening of one's commitment to a criminal identity does not come about quickly, nor does it come about in response to one or two failures, but only gradually and to the linking of many failures and the attribution of those linked failures to one's identity and life as a criminal.

The process of desisting from crime first requires offenders to recognize that their working identity of offender is no longer satisfactory and their attachment to this identity must be weakened. We believe that the weakening of a criminal identity comes about gradually and comes about as a result of a growing sense of dissatisfaction with crime and a criminal lifestyle. The dissatis-

faction with crime is more likely to lead to a conventional possible self when failures or dissatisfactions with many aspects of one's life are linked together and attributed to the criminal identity itself. It is not just that one has experienced failures but that diverse kinds of failures in one's life become interconnected as part of a coherent whole which leads the person to feel a more general kind of life dissatisfaction, the kind of life dissatisfaction that can lead to identity change, or what Kiecolt (1994) has termed intentional self-change.

It is such a new understanding of one's life that leads to the effort to intentionally change it, or as Shover (1996: 132) puts it: "[t]his new perspective symbolizes a watershed in their lives ... [t]hey decide that their earlier identity and behavior are of limited value for constructing the future." The importance of this for our concerns is that one consequence of the crystallization of discontent is that after this occurs, the dissatisfactions that one has experienced now have implications for the future. Events that seemed atypical and isolated that have been linked are now seen as interrelated and therefore both less easily dismissed and likely to continue to occur in the future. The projection into the future of continued life dissatisfaction leads the person to begin to seek changes.

Kiecolt (1994: 56) has argued that intentional self-change is unlikely to be successful without what she calls "structural supports" for change.<sup>7</sup> These supports "provide individuals with means and opportunities for effecting self change" and include self-help groups, and professional changers such as psychiatrists and social workers. As a separate condition for successful self-change, Kiecolt includes the assistance of social supports such as friends, family members, and spouses and partners. To this list of structural supports for positive self-change, particularly for criminal

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<sup>6</sup>Implicated by this change in identity is a change in the quality of one's decision making. Even with the same biological equipment a change in identity can lead one to make better use of his or her endowments to make better decisions.

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<sup>7</sup>Giordano et al. (2002: 992) call these supports "hooks for change."

offenders, we would add legitimate means of support—a conventional job. Obviously if successful self-change is going to occur, the benefits of a new identity must outweigh the costs of leaving the old one. However economically marginal a life of crime is, criminal offenders, particularly those with official records of arrest, conviction, and incarceration, find legitimate employment opportunities, even in the secondary labor market, very restricted (Bushway & Reuter, 2002). Some opportunity to secure a conventional job must be available for criminal offenders to desist, no matter how strong the motivation to change their identities and selves. Generally, anyone exiting one role or identity needs access to alternative sources of employment—nuns leaving religious orders (Ebaugh, 1988) no less than prostitutes leaving “the trade” must find outside employment, as do physicians wanting to leave their profession. Without these kinds of structural supports, identity change becomes difficult. Social supports, whether in the form of friends, spouses/partners, jobs, or professional help, are important in self-change because they provide the one in the throes of a crystallization of discontent with an alternative existence or identity.

In an identity theory of desistance, changes in friendship networks and the securing of alternative jobs and vocations are important because they help maintain or bolster a fledging changed identity. To be clear, securing jobs, attracting new partners, and involvement with new friends come about *after* a change in identity has occurred. The change in identity has already occurred in the mind of the person; he or she has weighed the costs and benefits of the exiting identity and alternatives, and is behaving in ways that conform to the new possible self.

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## An Analytical Framework for Studying Desistance Using Hazard Models

We start from the belief that there is substantially more change in individual-level offending trajectories than we would expect if we look only at

GCM (semi-parametric trajectory or HLM-like models). Bushway et al. (2009) show convincingly that the major GCM largely discard as noise information about change from the individual trajectories. This finding should be particularly troubling for desistance scholars, who are fundamentally interested in studying change. But how can we study change if individual trajectories are too imprecise and long-term trajectory models essentially ignore the very change we are interested in studying? Another possibility to examine desistance processes would be to turn to a study of recidivism. Thirty years ago, recidivism and desistance were complementary measures. Those who failed after a certain period were recidivists, and those who did not were desisters.

As we reviewed above, however, this static approach to thinking about recidivism and desistance has been effectively rejected. Now, cutting-edge recidivism studies focus on hazard rates of offending over time and cutting-edge desistance studies focus on measuring trajectories of offending rates over time. But these two models (hazards and trajectory-type models) are actually measuring the same concept, with hazard rate models focusing on *short-term* change in the propensity to offend and the trajectory models focusing on *long-term* change in the propensity to offend. For example, having noted that the hazard rate focuses on the hazard of involvement in a given criminal event,<sup>8</sup> Hagan and Palloni (1988) observe that:

“(T)he expected number of criminal events during the age interval being examined is a unique function of these hazards. This expected number of criminal events is what Blumstein et al. are estimating when they calculate lambda (offending rate). So, lambda is a summary of the combined hazards of criminal events of various orders over a period time (Hagan & Palloni, 1988: 97).”

In their article, Hagan and Palloni (1988) present arguments for focusing on the causal nature of the events, rather than on the rate of offending. At the time they made their argument,

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<sup>8</sup>People who have no offenses are at hazard for a first criminal event, those who offend once are at a hazard for a second criminal event, etc.

however, empirical methods only allowed for the estimation of time-stable rates for individuals. The ability to capture time variation in offending rates while controlling for individual heterogeneity, combined with the new emphasis on the *process* of desistance, provides a persuasive counterargument for a focus on the more long-term perspective. But once we focus on the long term, we can still learn much from returning to a discussion of the short-term change captured by hazard models.

The potential productivity of this approach was highlighted by Barnett et al. (1989), who applied their insight about desistance and trajectories of offending to an analysis of recidivism using a hazard model. Barnett et al. (1989) examined the risk of recidivism until the 30th birthday among a small group of 88 offenders who had at least two convictions before their 25th birthday. Each offender was given a probability of a new offense as well as a desistance parameter that indicated the probability of instantaneous desisting after each event. Thus after each criminal event, the offender had the choice of continuing to offend at the given rate ( $\lambda$ ), or desisting. By dividing the offenders into two groups, “frequenters” (annual  $\mu = 1.14$  or a 1 in 320 daily chance of offending) and “occasionals” (annual  $\mu = 0.4$  or a one in 913 daily chance of offending), they were able to quite reliably predict future patterns of recidivism. The only complication in their models was a small group of “frequent” offenders who had appeared to desist from crime according to their predictions, but actually resumed a criminal career later in life. It was this small group of offenders they deemed “intermittent” for which their basic models were not adequate. They therefore called for “more elaborate models to incorporate the concept of intermittency, whereby offenders go into remission for several years and then resume their criminal careers” (p. 384).

Their analysis was based on a very small sample, and has never been replicated or extended in the last 20 years. Recently, Kurlychek, Bushway, and Brame (2012) have attempted to learn about desistance by using survival models which can be tied to different models of desistance. Research on survival starts with a group of active offend-

ers, and then follows them for a period of time to model the risk of recidivism as well as the time ( $t$ ) to recidivism. A hazard ratio is then estimated for each time period ( $t$ ) as follows:

$$H(tg) = \frac{\# \text{ arrested time } t}{\# \text{ survived through time } t - 1}.$$

Those who have not failed by the end of the follow-up period may be assumed to have desisted from crime. However, it is also possible that they would have recidivated if they had been followed for a longer period of time, meaning that the observation was merely right censored. While much current recidivism research utilizes the semi-parametric Cox regression strategy which does not force a functional form on the data over time (e.g., the models are more interested in explaining the effect of covariates over time), Kurlychek et al. (2012) suggest that the use of parametric methods might be more informative if one is attempting, as we are, to explain the actual form or time pattern of offending.

This approach was first introduced to criminology by Maltz (1984) and extended by Schmidt and Witte (1988). For example, Schmidt and Witte (1988) applied a variety of functional forms to two cohorts of releases from the North Carolina prison system and were unsatisfied with the fit of any of the basic models. They identified the problem to be the basic assumption that everybody will fail if only followed up for a sufficiently long period of time. To address this issue, the authors then turn to what is known as a “split-population” or mixture model (Maltz & McCleary, 1977) which allows for the fact that everyone does not fail. That is, some people do desist.

Split-population models therefore include an extra parameter, often referred to by biostatisticians as the “cure” factor, which estimates the portion of the risk set that will never experience a failure (will be “cured”). We interpret the cure factor as evidence of instantaneous desistance, or a structural break, particularly for individuals who have substantial rates of offending before the current offense. In this instance individuals simply decide (we argue because they have changed their identity) to quit crime immediately.

When applying split-population models to their data, Schmidt and Witte found that all split-population models outperformed their non-split-population model counterparts. However, Schmidt and Witte (1988) only follow their subjects for 5–7 years, not long enough to fully conclude that there has been desistance.

Kurlychek et al. (2012) estimated similar models using data with 18 years of follow-up data from Essex County NJ. They find that the 2-parameter split-population exponential model fits the data almost as well as the more complex 3-parameter lognormal counterpart and, in fact, outperforms this model in the later years of the data. It is striking how well this simple model can explain the observed behavior. Like the split-population lognormal model, the split-population exponential model assumes that there are two groups of offenders—those who have desisted at the beginning of the follow-up period and those who remain active. They find support for instantaneous desistance with the split-population lognormal and exponential model actually reaching quite similar conclusions about the size of the permanent desisting population at the outset of the follow-up period (the lognormal model is in the 20–23% range while the exponential is 25–27% range). This estimate is smaller than the estimates from Brame et al. (2003) looking at desistance after an arrest. However, it is still substantial. While the focus of most recidivism studies is on the high recidivism rates, the flip side here is that a full quarter of the sample of felony offenders desists after this conviction. Clearly, then, not all individuals are equally risky after a conviction. Indeed, because the exponential model assumes that the active offenders experience a constant risk of recidivism throughout the follow-up period, there is no evidence of declining hazard rates among the active offenders.

The length of the follow-up period in the Essex County dataset has a lot to do with the performance of the split-population exponential model. If the Essex County study had only followed offenders for 3, 4, or 5 years—typical follow-up periods for recidivism studies—their conclusions about the split-population lognormal and expo-

nenial models would have been different. Over this shorter window of time, the split-population lognormal model clearly performs better, but viewed over the entire 18-year follow-up period, the simpler, 2-parameter split-population exponential model emerges as a formidable competitor. As more datasets with long follow-up periods are studied, it will be interesting to see how well the split-population exponential model performs, especially after the first few years of follow-up.

A final insight revolves around the concept of intermittency or reactivation of criminal careers after a period of dormancy or “temporary desistance” (Barnett et al., 1989; Horney et al., 1995; Nagin & Land, 1993). The concept of intermittency has been gaining ground in criminology in recent years and leads to certain theoretical and policy implications (for example, the idea that desistance is always provisional). The Kurlychek et al. (2012) analysis is certainly consistent with the idea that a low-rate offender can go for many years before committing a new offense. But intermittency is a particularly dynamic model of offending in which the offender goes from an active rate of offending to a zero rate of offending back to a fully active criminal career (what Laub & Sampson, 2003 refer to as a “zigzag” criminal career). Barnett et al. (1989) moved to an intermittency explanation after they found evidence of a “fat” tail—higher rates of offending more than 5 years after the last offence than could be explained by the exponential model. While Kurlychek et al. (2012) found support for their simple split-population exponential model, there was no fat tail even though they observed a more serious population over a longer follow-up period. As a result, they concluded that there is no evidence for intermittency, at least as described by Barnett et al. (1989). As datasets with longer follow-up periods become more widely available, we suggest that others also investigate the value of intermittency as a concept.

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## Conclusion

It is a criminological fact that while some people persist in offending for long periods of time, a sizeable subset—between 20% and 30%—of



recently convicted offenders will never be arrested again (Brame et al., 2003; Kurlychek et al., 2012; Schmidt & Witte, 1988). Comparisons of hazard models have repeatedly shown that split-population models, which allow for “instantaneous desistance,” substantially outperform models that assume that individuals with a criminal history will continue to offend at a constant rate (Kurlychek et al., 2012; Schmidt & Witte, 1988). Although it is possible that these non-arrested individuals simply manage to offend without being arrested, ethnographic work shows that even some serious, serial offenders choose to exit offending (Baskin & Sommers, 1998; Maruna, 1999).

Although there is no doubt in our minds about the existence of desisters, there is a considerable debate about the ability to distinguish prospectively between desisters and persisters. For example, John Laub stated in his Sutherland address to the American Society of Criminology that “human agency induces an apparent instability or random component into life-course turning points making neat prediction—even from adult factors—inherently a difficult if not impossible endeavor” (Laub, 2006: 244). Recent empirical research on long-term recidivism hazards has begun to test the limits of this claim (Blumstein & Nakamura, 2009; Bushway, Nieuwbeerta, & Blokland, 2011; Kurlychek, Brame, & Bushway, 2006, 2007; Soothill & Francis, 2009). Using hazard models, this research has shown definitively that individuals who have not offended for a very long time—between 7 and 10 years—have a very small probability of offending in the next year. In fact, they often seem to have the same level of risk as individuals without a criminal history. This line of research has thus established that it is possible to distinguish risk levels among individuals with criminal histories, although in this case it takes at least 7 years of waiting before the desisters reveal themselves.

Some scholars in criminology are very comfortable with the idea of prospectively identifying risk levels and of using these predictions in policy (see Andrews, Bonta, & Wormith, 2006). However, as Rhodes (2011) warned, these more contemporaneous risk tools have a limited ability

to make risk distinctions. An individual’s criminal propensity can only be known within fairly wide confidence limits (Bushway et al., 2009), and any risk prediction exercise will necessarily involve considerable error (Gottfredson and Moriarty 2006). If, as the evidence seems to be suggesting in ever louder ways, individuals are making choices to desist, the difficulty in being able to predict who among an active group of offenders will desist at any given point is hardly surprising. Moreover, the nature of this identity transformation does not lend itself to easy manipulation by outsiders.

What, then, is the job of the researcher? One possibility is that researchers can begin by doing a better job of identifying those who have desisted once they have indeed stopped offending. Waiting for extremely long periods of time to be sure that someone has “truly” stopped offending despite the fact that we know that his or her level of criminal propensity is very low seems wasteful. Another option is to utilize information from other domains in addition to information about the absence of offending in order to provide a richer picture of desistance. Those who change their identity necessarily engage in a number of other behaviors that structure and support their decision to desist (move, get jobs, alter their social networks, get their children back, start attending church or A.A.; for an example, see Kirk, 2012). These behaviors are observable, and can shed light on the probability that an individual has desisted. Bushway and Apel (2012) develop this idea more fully in an essay on signaling.

In this chapter, and elsewhere (Paternoster & Bushway, 2009; Bushway & Paternoster, 2012), we have also outlined the beginning of an identity theory and in doing so have tried to put theoretical fences around our own work and other recent thinking about criminal desistance. There is a great deal of more work to be done. For instance, we have only alluded to the kinds of changes in preferences that are integral to changes in identity. Part of the identity change to a non-offender, we think, is a change in the preference one has for crime—in essence, crime has much less appeal. There is also ample evidence in the ethnographic literature to indicate that something like a change in the discount rate occurs among offenders



(Shover, 1996), and while the discount rate may generally diminish with age, it likely occurs at different ages for different offenders. Further, Giordano et al. (2007) have argued that one's preferences for peers and the "party life" it offers greatly diminish among him or her seeking or maintaining a way out of crime.

We have left the specific content of these changes in preferences for the moment unspecified, and much work needs to be done in understanding the link between changes in identity and behavioral attempts to support that new identity. While we think we have offered a reasonable outline for a new theory of desistance, only time will tell how useful our efforts have been. We have also discussed using of hazard models on panel data to explain short-term changes in behavior. In particular, hazard models can be used to compare instantaneous desistance with gradual declines in behavior over time. This approach, presented more fully in Kurlychek et al. (2012) appears to show strong support for sudden, sharp changes in behavior consistent with a time series model of structural breaks.

In all of the empirical work highlighted in this chapter, we specify parametric statistical models with parameters and assumptions that can then be "fit" to the data to see which models best explain the data. This approach is a radical break from an approach that focuses on distinguishing between key explanatory variables to test different theoretical models (Sampson & Laub, 1993). We believe that this approach of using formal statistical models with identifiable features will lead to more productive theory testing and building. Although only limited work has been done so far, the work that has been done suggests that theories of desistance need to account for sudden and sharp changes in behavior. We are hopeful that future work in this area will shed light on the validity of this insight.

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# “Getting Out:” A Summary of Qualitative Research on Desistance Across the Life Course

# 14

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## Abstract

Large-scale, longitudinal studies have identified important correlates of desistance, but, due to the nature of the inquiry, are limited in their ability to describe the mechanisms by which desistance occurs. For this type of explanation, more detailed and nuanced studies of desistance experiences and the meanings applied to them must be conducted. At this time, some of the most promising studies on the mechanisms of desistance are qualitative. They are commonly based upon retrospective narratives focused on the inter- and intrapersonal dynamics of desistance and on life circumstances. This chapter describes recent qualitative studies of desistance with a particular emphasis on how individuals change from offending to sustained, non-offending.

Twenty-nine recent studies were identified. The collection of studies represents a wide variety of samples with different research questions and definitions, and different study designs. Collectively, however, the studies show remarkable consistency in their results. The studies are divided into common groupings to allow the reader to compare and contrast similarly focused studies. Beginning with comprehensive studies, the sections include social structural issues, cognitions and identity transformation, relationships, and spirituality. Several studies focus on narrow populations, including the young, women (including female/male contrasts and women-only studies), and minority men. The section concludes with descriptions of studies of programs and practices on desistance.

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The qualitative summaries confirmed the findings of existing research evidence on desistance, and shed light on processes and mechanisms that often go unexamined in quantitative research on desistance—agency/motivation and the psychological reorientation and reevaluation of relationships and life events. The themes identified in these summaries highlight a number of factors that, as reported by the research participants and observations of others, contribute to desistance—stable, meaningful, committed relationships (particularly with intimate partners and children); motivations and commitment to change; valued social roles and pro-social, structured activities; and psychological reorientation and reevaluation of criminal acts.

### Keywords

Qualitative • Narrative • Desistance • Cognitive shifts • Identity transformation

## Introduction

The United States now has achieved a milestone unprecedented in its history. A Pew Center on the States (2008) report estimates that 1 in 99 Americans are incarcerated in the nation's jails and prisons, over 2.3 million adults. If one considers not only those incarcerated on a given day, but also those who are admitted to prisons and jails annually, the numbers are staggering. In 2010, the average daily census of US jails was nearly 750,000 with approximately 12.9 million Americans booked into jail in that year (Minton, 2011). These numbers represent an average weekly turnover rate of 64.9% (Minton, 2011). In 2010, 1.6 million people were incarcerated in state and federal prisons and over 700,000 were released (Guerino, Harrison, & Sabol, 2011). Every year, millions of individuals will be returning to their homes from prisons and jails.

These millions represent people who already have engaged in criminal behavior; many have embarked on a substantial criminal career. The goal of corrections agencies and society should be to intervene with these individuals to reduce or eliminate their contributions to crime. Decades of research exist that explores and explains why people commit crimes. In fact, many corrections agencies now base their supervision practices on the risk and need principles first suggested by Andrews, Bonta, and Hoge (1990). Risk assessments, such as the Level of Service Inventory (LSI-R; Andrews & Bonta, 1995), are valid tools

to identify those most at risk of committing a new crime. Each of the LSI-R's domains is predictive: criminal history, criminal peers, pro-criminal attitudes, antisocial personality traits, employment/education, family/marital status, leisure/recreation, and mental health/substance abuse. Deficits in one or more of these areas increase the risk of re-offending. The assumption is that if these deficits are addressed, the offender is less likely to re-offend. Treatment and other programs have been developed around this logic, particularly cognitive-behavior interventions, with some success. However, there remains an outstanding empirical question of whether the causes (or correlates) of crime are the same as those of desistance.

## Empirical Evidence of Desistance over the Life Course

As defined by Mulvey and colleagues (2004), "Desistance is a decline over time in some behavior of interest." Desistance, as a construct, applies to any behavior: criminal or noncriminal, positive or negative. Understood this way, desistance from crime as a process should have the same basic characteristics as desistance from any other negative behavior. It is understood that desistance comprises a specific behavior change (e.g., a reduction in offending or ceasing to commit crime; see Laub & Sampson, 2001 for discussion of definitions). Sustained behavior change, however, often requires substantial changes in other



aspects of an individual's life, including cognitions and attitudes, identity and its attendant roles, meaningful things to do, and membership of social networks (see, for example, Veysey, Heckman, Mazelis, Markoff, & Russell, 2006). Laub and Sampson (2001), in fact, clarify this issue, stating, "A unifying framework can distinguish termination of offending from the process of desistance. Termination is the point when criminal activity stops and desistance is the underlying causal process" (p. 1). This is consistent with the premise of primary and secondary desistance (Maruna & Farrall, 2004). Primary desistance requires the cessation of the behavior, but secondary desistance is founded upon the assumption of a pro-social replacement identity with new cognitions/attitudes, roles, and social networks.

Desistance over the life course represents a complicated set of issues, and research to date has demonstrated several persistent findings often with conflicting theoretical explanations for those findings. According to Laub and Sampson (2003, p. 16), there are four well-established empirical findings that must be accommodated by any theory of persistence or desistance over the life course: (1) the prevalence of criminal participation declines with age; (2) the incidence of crime does not necessarily decline with age; (3) there is substantial continuity of criminal behavior over the life course (i.e., persistent offending from delinquency through adult crime); and (4) there is substantial variation in criminal behavior over the life course (e.g., not all delinquents continue into adult crime nor do all adult criminals have delinquent pasts).

There is general agreement that crime declines with age (see Farrington, 1986 for discussion of the age-crime curve). This is true at the macro level, but is not necessarily so within individuals or within certain crime types (Farrington, 1986). Most individuals desist in early adulthood, although some continue to commit crimes throughout life (Moffitt, 1993). Many theories have been proposed to explain these findings, including developmental, maturational, biological, life course, routine activities, rational choice, and social control among others (see Laub & Sampson, 2003; Mulvey

et al., 2004 for detailed discussions). Each of these suggests that as people age, they also age out of crime. Some theories suggest that cessation from crime is associated with psychological/emotional maturation and physical aging (see, for example, Glueck & Glueck, 1940; Gottfredson & Hirschi, 1990). Others, such as the life course perspective (Sampson & Laub, 1993), suggest that normal developmental processes account for much of the cessation in early adulthood. These processes include transitions from peers to spouse (or otherwise stable relationship), engagement in long-term, stable employment, and, in some studies, recovery from addictions (Mulvey, 2011).

This substantial body of knowledge confirms the age-crime relationship, as well as the consistent correlates of desistance. What is less well understood are the mechanisms by which individuals stop committing crimes. Many large-scale studies that find a relationship between employment, marriage, etc. and desistance argue that these events reflect several underlying mechanisms; specifically, the spouse/job provides (1) social control via attachment to and surveillance by the pro-social other, (2) routine activities that limit unstructured time, and (3) new relationships with people who reinforce pro-social behavior and limit time with antisocial peers (see Laub & Sampson, 2003; Mulvey et al., 2004 for detailed descriptions). In particular, Laub and Sampson (2003; Sampson & Laub, 1993) argue that these events represent turning points in the life course.

Large-scale, longitudinal studies have identified important correlates of desistance, but, due to the nature of the inquiry, are limited in their ability to describe the mechanisms by which desistance occurs. For this type of explanation, more detailed and nuanced studies of desistance experiences and the meanings applied to them must be conducted. At this time, some of the most promising studies on the mechanisms of desistance are qualitative. They are commonly based upon retrospective narratives focused on the inter- and intrapersonal dynamics of desistance and on life circumstances. This chapter describes recent qualitative studies of desistance with a particular emphasis on how individuals change from offending to sustained, non-offending.

## Qualitative Studies of Desistance

Twenty-nine recent studies were identified. While several studies dating to the 1970s exist, we believe that the present set best represents the current thinking and theory about desistance informed by recent theory and findings from quantitative studies. Table 14.1 describes the basic characteristics of the studies. As can be seen, the studies were published between 1994 and 2012. Most are in-depth, semi-structured interviews that, at a minimum, collect participant life history narratives with some focus on the desistance experience. Seven are longitudinal with a minimum of one follow-up covering as brief a time as one year (Leverentz, 2006) to well over 40 years (Laub & Sampson, 2003). The remaining studies are either small sample case studies (e.g., Christian, Veysey, Herrschaft, & Tubman-Carbone, 2009) or single point-in-time retrospective studies (e.g., Sommers, Baskin, & Fagan 1994[2004]). Some studies contrasted groups, most commonly desisters and persisters (e.g., Maruna, 2001), while others analyzed within-person change over time (e.g., Leverentz, 2006).

Most of the studies were conducted in the United States ( $n = 17$ ) or in the UK/Ireland ( $n = 10$ ) with one in Sweden and one in Australia. The ages of the participants varied from the young only (e.g., Haigh, 2009) to studies covering the whole life course (e.g., Laub & Sampson, 2003). Sample participants and sample sizes varied considerably. Sample size varied from single-person case studies (e.g., Walker, 2009) to 276 (McIvor, Murray & Jamieson, 2004). Participants varied from community samples (e.g., McIvor et al., 2004) to individuals under correctional supervision (current or former; e.g., Farrall, 2002) to program participants (e.g., Maruna, LeBel, Mitchel, & Naples, 2004). Seven studies focused on women, three of which had female-only samples (e.g., Herrschaft, Veysey, Tubman-Carbone & Christian, 2009) and four that contrasted women and men (e.g., Giordano, Cernkovich, & Rudolph, 2002). In addition, one study was comprised solely of Black and Latino men (Hughes, 1998).

In most cases, the studies defined desistance. This consisted of traditional definitions, such as

not committing a crime for a specific period as reported by the respondent and/or through official records (e.g., Haggard, Gumpert, & Grann, 2001). Other studies defined desistance as a process and required only that criminal participation is reduced (e.g., Byrne & Trew, 2008) or that there is a commitment to desistance (e.g., “actively engaged in the beginning stages of the behavioral change process.” Schroeder & Frana, 2009). Yet others allow the individual to establish the language and meaning of desistance (e.g., Haigh, 2009).

The collection of studies, therefore, represents a wide variety of samples with different research questions and definitions, and different study designs. Even so, collectively the studies indicate consistent themes as will be seen in the next section.

## Study Descriptions

The 29 studies have been divided into common groupings to allow the reader to compare and contrast similarly focused studies. Beginning with comprehensive studies, the sections that follow focus on a variety of subtopics, including the role in the desistance process of social structural issues, cognitions and identity transformation, relationships, and spirituality. Several studies focus on narrow populations, including the young, women (including female/male contrasts and women-only studies), and minority men. The section concludes with descriptions of studies of the effects of programs and practices on desistance.

### Comprehensive

In arguably the most comprehensive study of desistance and persistence over the life course, Laub and Sampson (2003) used a mixed method design to collect and analyze quantitative and qualitative data collected from men who participated in Glueck and Glueck’s (1940) longitudinal study of male delinquents. Painstakingly searching for these men in their 60s, they interviewed 52 to collect detailed life calendars and narratives.

Three groups of men were identified: (1) desisters; those who had no arrests for any serious crime

**Table 14.1** Summary of qualitative studies of desistance

Study	Year	Design	Sample	Definitions	Ages	N=
Byrne and Trew	2008	Case studies	UK, 18 men and women participating in a probation program	“Stopping or significantly reducing offending,”	19–50	f = 9 m = 9
Christian et al.	2009	Retrospective narratives of transformations	US, Subsample (“formerly incarcerated”) of those who successfully negotiated negative identity ( <i>n</i> = 37)	Self-identified as “successful”	20s to 60s	8
Farrall	2002	Prospective repeated interviews	UK, 199 male and female probationers	“Reductions in offense severity or the frequency ... [are] indications of the emergence of desistance”	17–35	f = 26 m = 173
Farrall and Bowling	1999	In-depth interviews	UK, 2 case studies of original 34, not otherwise described	Desistance not further defined	19, (Unknown)	2
Farrall and Calverly	2006	Interview, 4th wave of Farrall (2002) study	UK, 51 male and female probationers, subsample of Farrall (2002)	“Reductions in offense severity or the frequency ... [are] indications of the emergence of desistance”	22–40	f = 6 m = 45
Gadd and Farrall	2004	Retrospective case study	UK, 2 men	“Appear to be desisting from crime”	29, 34	2
Giordano et al.	2002	Life history narratives at 13-year follow-up	US, 210 formerly institutionalized delinquent girls and boys at 1st adult follow-up	Response to the question: “Would you say that the overall amount that you do things that could get you in trouble with the law is about the same, more, or less than when you were interviewed back in 1982?”	Avg = 29–30	f = 109 m = 101
Giordano et al.	2003	Life history narratives at 13-year follow-up	US, 180 formerly institutionalized delinquent girls and boys at 1st adult follow-up	Desisters: No frequent or serious offending and not incarcerated at follow-up period Persisters: Frequent and/or serious offending and/or incarcerated at follow-up period Unstable: desisted at 1st follow-up but resumed prior to 2nd or desisted shortly before 2nd follow-up	Not reported	f = 97 m = 83

(continued)

**Table 14.1** (continued)

Study	Year	Design	Sample	Definitions	Ages	N=
Giordano et al.	2008	Life history narratives, 2 adult follow-ups; 13 and 21 years post baseline	US, 152 formerly institutionalized delinquent girls and boys at 2nd adult follow-up (41 spiritually centered interviews)	Desisters: No frequent or serious offending and not incarcerated at follow-up period Persisters: Frequent and/or serious offending and/or incarcerated at follow-up period Unstable: Desisted at 1st follow-up but resumed prior to 2nd or desisted shortly before 2nd follow-up	24–40	f = 77 m = 75
Haggard et al.	2001	Open-ended interviews of “extreme cases”	Sweden, subsample of a longitudinal epidemiological study. High-risk and chronic offenders who had not recidivated “exhibited unexpected positive outcomes”	Had not been convicted of a crime in the past 10 years (official and self-report)	Late 20s to early 40s	40
Haigh	2009	Semi-structured interviews	Australia, 25 youth attending youth centers and articulating that they “wanted to change their life”	Self-defined: Wanted to “stop doing crime”	18–24	f = 8 m = 17
Healy	2010	Semi-structured interviews; life-stories	Ireland, male probationers	Persisters: “anyone reporting the commission of a crime” Primary desisters: “no self-reported offending for at least a month” Secondary desisters: “no self-reported offending for at least a year”	18–35	73
Herrschaft et al.	2009	Retrospective narratives of transformations	US, Subsample (“formerly incarcerated”) of those who successfully negotiated negative identity ( <i>n</i> = 37)	Self-identified as “successful”	20s to 60s	9
Hughes	1998	In-depth interviews	US, inner-city men (Afr-Amer and Latino) with history of destructive behavior	Attempted to change their lives positively, no longer involved in violence and positive involvement in the community	18–27	20
Laub and Sampson	2003	Life calendars, life-history narratives	US, sample from Glueck and Glueck study ( <i>n</i> = 500) of 10–17 year old male delinquents interviewed at ages 61–69 ( <i>n</i> = 19 for desisters group)	Desisters: No arrests for any serious crime as an adult Persisters: “arrested at multiple phases of the life course” Zigzag criminal careers: Late life offending, intermittency, late life desistance	7–70	52

Leverentz	2006	4 interviews over 1-year period	US, women with current or past involvement in a halfway house	Self-reported "interest in changing their lives and ceasing their offending and drug use"	Avg=41.3	49
Martinez	2009	Semi-structured interviews	US, former prisoners and family members	Noncriminal paths not further defined	Not reported	14
Maruna	2001	Life story interviews	UK, formerly incarcerated people all of whom "offended on ... a weekly basis for some stretch of at least 2 years"	Desisters: At least 1 year of crime-free behavior and no intent to commit crime in future ( $n=55$ ) Persisters: Acknowledged continued criminal behavior ( $n=34$ )	25–35	f=10 m=40
Maruna	2004	Content analysis of life story interviews	UK (same sample as above)	Desisters: No intent to commit crime in future and at least 1 year of crime-free behavior Persisters: Acknowledged continued criminal behavior and intent to continue	25–35	89
Maruna et al.	2004	Case study (interviews and observations)	US, program key participants	Self-defined "success," "rehabilitation," "reformed"	–	–
McIvor et al.	2004	In-depth interviews	UK (Scotland), 276 (by age group) youth drawn from two towns	Resisters: "if they had never offended" Desisters: If offended in past, but not in the past 12 months Persisters: "if they had committed at least one serious offence or several less serious offences in the previous 12 months"	14–25	f=138 m=138
Michalsen	2011	In-depth interviews	US, formerly incarcerated women	Desistance not further defined	20–68	100
Morash	2009	Interviews with open-ended questions	US, women who had recently been incarcerated for 45 days or more and had substance abuse problems	Beyond use: No drug use for a year and evidence of positive changes Making it: Continued drug use but no other evidence of failure and indications of positive changes Failure: Incarcerated for a violation or new crime	Not reported	41
Panucchio et al.	2012	Case studies	US, juveniles in a case management program	Desistance not further defined	14–19	44
Presser and Kurth	2009	Narrative analysis	US, ex-convict	Socially negotiated identities	39	1
Schroeder and Frana	2009	In-depth semi-structured interviews	US, men living in a halfway house	"Actively engaged in the beginning stages of the behavioral change process."	20 to over 50	11

(continued)

**Table 14.1** (continued)

Study	Year	Design	Sample	Definitions	Ages	N=
Sommers et al.	1994 [2004]	Life history interviews	US, “women with at least one official arrest for a violent street crime and to have desisted from all criminal involvement for at least 2 years”	“Have desisted from all criminal involvement for at least 2 years”	22–38	30
Walker	2009	Case study	US, prisoner participant in intervention	To develop resources needed to live “healthy, happy and peaceful lives”	Not reported	1
Webster et al.	2006	Longitudinal; biographical interviews	UK, young people who at reinterview were engaged in “insecure ‘poor work’ ( <i>n</i> = 11); parenting ( <i>n</i> = 11); and long-term criminal and/or dependent drug-using careers ( <i>n</i> = 12)”	Desistance not further defined	23–29	34



as an adult, (2) persists; those who were "arrested at multiple phases of the life course" (p. 150), and (3) an intermediate group that had "zigzag criminal careers" including late life offending, intermittent offending, or late life desistance.

Desisters stopped offending early in life. Reflecting on the past, they make no excuses for their early behavior. For the most part, they grew up to be conventional adults and are exceptionally proud of their accomplishments, particularly given what they had to overcome. This group is also characterized by "generativity." "They have worked and are working to make things better for the next generation" (p. 144). They have given back to society through military service and altruistic endeavors, such as opening their home to foster children.

Despite poverty, lack of education, and troubled childhoods, these former delinquents got out of a life of crime primarily through three "structural turning points:" marriage, military service, and/or work. The authors claim that desistance is more than a maturational process and that desistance involves "knifing off" the offenders from "their immediate environments and offering them a new script for the future" (p. 146). Marriage and work were recognized by the respondents to provide both social support and informal social control. Even given these situational changes in life, much of the desistance is attributed to personal agency.

Persisters and desisters share the same childhood risk factors, but end up in very different places. As adults, there are several differences. As a general statement, persisters are not connected. They have long histories of incarceration, job and residential instability, failure in marriage and family life, and alcoholism. They lack close relationships and consistent structure over their life span. Like the desisters, this group of men also expressed personal agency and responsibility for their actions and choices.

Giordano, Cernkovich, and Rudolph (2002), in a landmark, longitudinal, mixed method study, investigated the role of cognitions in the desistance process. They were particularly interested in understanding the thinking behind and the meaning assigned to traditional structural factors,

such as marriage and employment, in individuals' move toward a pro-social lifestyle. In-depth life narratives were collected from 109 female and 101 male formerly institutionalized serious delinquents 13 years after the initial interviews.

They proposed a theory of cognitive transformation that comprises four cognitive types: (1) openness to change, (2) increased recognition of the desirability of change (i.e., exposure to "hooks for change"), (3) being able to "envision and begin to fashion an appealing and conventional 'replacement self'," and (4) changes in the way the individual perceives crime or a criminal lifestyle (pp. 1001–1002). They conclude, "the desistance process can be seen as relatively complete when the actor no longer sees these same behaviors as positive, viable, or even personally relevant" (p. 1002). These cognitive changes build one upon another and are related to external action.

The first finding is that there is evidence of cognitive transformations in the respondent narratives as predicted. However, when applied to different levels of advantage, they state

Given a relatively "advantaged" set of circumstances, the cognitive transformations and agentic moves we describe are hardly necessary; under conditions of sufficiently extreme disadvantage, they are unlikely to be nearly enough. Emphases within control theory are similarly tethered to structure, arguably to the "relatively advantaged" end of the continuum. In short, a reasonable distribution in terms of access to traditional forms of social capital/control is required for variables like marriage or employment to emerge as key predictors (pp. 1026–1027).

While most of the people in the study fall at the extremely disadvantaged end of the continuum, the authors note that the respondents displayed a great degree of variation in their commitment to change, the types of "hooks for change" they identify and the uses they make of them, and in the timing of the effects (i.e., immediate and delayed). Openness to change was strikingly different for the respondents. Some had well-articulated future-oriented plans while others seemed stuck or reluctant or had only a vague notion. Hooks for change included prison or treatment experiences, religion, children, and marriage/relationships. Similar to other studies,

these hooks were complicated and did not necessarily follow the predictions of social control theories. (The gender contrasts are discussed below).

Healy (2010) also used a mixed methods approach to analyze desistance among persistent adult offenders in Ireland. She found that those who had offended during the past year (secondary desisters) were more likely to have active criminal thinking lifestyles compared to those who did not report criminal activity during the past month (primary desisters). The process of reform was often initiated by a personal decision to change. The most common reasons cited for desisting concerned establishing relationships with parents, partners, and children and becoming more aware of the consequences of a criminal lifestyle. Those who persisted lacked personal agency while those who desisted created a narrative that accepted and made use of social capital that was available, though over time all were ambivalent about desisting.

Although both static and dynamic factors have been found to be important in the desistance literature, Healy argues that criminal thoughts (a dynamic factor) were more important than static factors. Further, in terms of long-term outcomes, dynamic and cognitive factors contributed to helping offenders avoid crime, but interestingly, greater levels of social capital increased the likelihood that offenders would reoffend. The major finding was that criminal attitudes and criminal thinking influenced whether offenders engaged in criminality, but although their influence waned over time, they were still important during the desistance process.

Haggard Gumpert, and Grann (2001) studied desistance from a unique perspective. They were interested in the extreme cases of chronic offenders who were at high risk of violent re-offending, but who had not been reconvicted of any crime in 10 years or more, "against all odds." Four men agreed to participate and met the criteria of high risk, chronicity (i.e., at least two prior convictions for violent crimes and five or more convictions in total), opportunity (i.e., they had not been incapacitated during the follow-up period), and desistance (as defined above). Three of the men were in their 40s and one in his late 20s. They all

lived in or outside small cities in Sweden; three had families; and one worked full-time as a self-employed farmer, two part-time in supported employment, and one was unemployed. All of the men had histories of mental health treatment.

All four men identified a turning point that began their journey toward a noncriminal lifestyle. The primary turning points involved reflections on negative experiences of crimes, arrests, and incarceration in prison or forensic hospitals. Two also cited relationships as being turning points (one with an intimate partner and one with a psychiatrist). These insights, however, did not lead to immediate change, and desistance was the result of a long process of reducing negative behaviors. Further, they invested enormous effort into living a "normal" life in the face of widespread stigmatization and their fears of the potential to lose control of their emotions and actions in stressful situations.

The narratives of these men support prior studies in several ways. First, desistance is a slow process of change. Second, close family ties, specifically stable relationships with wives/intimate partners and the care of their children, were essential for maintaining a crime-free lifestyle. Third, stopping or decreasing substance use was important to sustained desistance. The narratives also revealed findings contradictory to many desistance studies. First, these men did not create ties to conventional society. In fact, they isolated themselves from everyone except close family because they were "unsure of their own reactions to different situations and others' responses to them" (p. 1061). Second, employment is often described as a critical factor in desistance. In this study, none of the men discussed work as important in their continued desistance. Third, the risk of punishment was not a reason cited by these men for refraining from crime.

The authors conclude, "to the men included in this study, with their antisocial personality traits and long histories of criminal activity, the desistance seemed to be a process triggered by strong negative experiences connected to their criminal lifestyles ... To avoid risky situations, they chose to live socially isolated except for orientation toward their families ... In view of their history

of a long deviant lifestyle, they emphasized the importance of long postrelease support and monitoring" (p. 1062).

Gadd and Farrall (2004) used a narrative analysis of case studies of two men "who appeared to be desisting from crime" (p. 123) to (1) reflect on the concepts of criminal careers and desistance and (2) illustrate how objective states may be subjectively and differentially represented. The two men interviewed were Dan, a 34-year-old unemployed laborer who lived in a city in North England, and Anthony, a 29-year-old who lived in South England with his sister. Both men had a common narrative of how and why they became involved in crime.

[W]e could say that both men's criminal careers were characterized by trajectories that commenced with the early onset of delinquency, developed into relatively heavy involvement in property crime and substance abuse, and culminated in occasional acts of violent crime in adult life, interspersed with regular recreational drug use and convictions. Their trajectories were punctuated by transitions—such as leaving home, settling down and separation, finding and losing jobs, having children and step-parenting and (through different means) coming to understand their fathers' mistakes—that eventually established a path towards desistance. (p. 140)

This summary appears to confirm many predictions of theories of criminal careers. However, the narratives that are generated display complexities and contradictions that would not be predicted. Previous research suggests that relationship ties and employment reduce criminal behavior. However, in Dan's case, close family relations increased violence (i.e., severe domestic abuse), while a tedious job created frustration and a violent outburst for Anthony. The impact of these types of experiences, therefore, is dependent on the participants' subjective meanings.

Further, the authors argue that narratives in general reflect a greater social discourse that is gendered and age-graded. They suggest that Dan and Anthony's narratives of crime and desistance reflect how their anxieties and fears were shaped by contradictory and lofty social expectations about masculinities, including violence and what it means to be a good man, husband, and father. They conclude, "While the concepts of 'transition' and 'trajectory'

may be useful at an aggregate level, the meanings that produce continuity and change depend upon continually shifting *psychodynamics* that are to some extent biographically unique, and have the potential to disrupt, expedite and/or hinder changes in the social arena" (p. 148).

All of the following studies have a narrower focus than the comprehensive ones presented above.

## Social Structure

Farrall and Bowling (1999) used two case studies to investigate the roles of agency and social structure on desistance in an effort to expand the theoretical discussion of desistance. They claim that the desistance literature focuses on either the offender's actions or on structural constraints, creating a false dichotomy. They base their analysis on a middle ground theory of "structuration," stating that it is a mistake to consider a person's actions independent of the structures within which she or he is embedded.

As they describe, structuration theory (Giddens, 1984) is based upon how individuals behave within social groups. This includes knowledge to act, rules that constrain and enable action and resources to accomplish them, power to organize the behavior of self and others in an action, position-practices that reflect social expectations of role performance, and routines that guide most day-to-day actions.

Using the life stories of two individuals who had participated in a previous study, the authors use structuration theory to explain how and why these two men desisted from crime. Of particular note are the effects of interpersonal constraints on behavior and role expectations. They conclude that "desistance from offending *can* be explained with reference to individual decision making and to life changes" (p. 264) and encourage the field to explore "the individual and structural mechanisms and processes through which people stop offending" (p. 265).

Webster, MacDonald, and Simpson's (2006) study draws from the Teeside Studies that used a qualitative, longitudinal approach to examine criminal and drug careers. The follow-up

interviews of 34 men and women (of the original 185 interviewed in 1999 and 2000) now between the ages of 23 and 29 were used. Respondents were “primarily engaged in insecure ‘poor work’ ( $n=11$ ); parenting (young mothers) ( $n=11$ ); and long-term criminal and/or dependent drug-using careers ( $n=12$ )” (p. 9).

The authors begin by discussing crime initiation, persistence, and desistance within the context of disadvantaged Teeside neighborhoods that have undergone three important changes during the lives of the respondents: (1) a sharp increase in poverty and crime, (2) rapid deindustrialization and the loss of manufacturing and other jobs, and (3) the influx of cheap and accessible heroin. While there is no necessary link between drugs and crime (i.e., each can exist without the other), the authors report that, “For the majority of all interviewees, drug-driven crime was *the* central fact that explained most of the problems in the areas we studied” (p. 15).

Many of those who have made a commitment to staying clean and crime free attributed their actions to “critical moments” or turning points, but these critical moments are also discussed in the context of a return to drugs and crime as well. They also cited relationships, family responsibilities, maturing, and effective treatment, among other things. The authors conclude that, “the establishment of stable partnerships, parenthood and employment in the lives of those with long-term criminal and dependent drug-using careers are critical factors in both motivating and sustaining desistance” (p. 18).

The authors describe desistance in this group as fragile, and this fragility becomes clear in the respondents’ narratives of the challenges they face, including finding employment and housing, and, most importantly, giving up their old friendships. For those who couldn’t make it, they describe the vicious circle of drugs, crime, and incarceration.

Webster and colleagues challenge current research and practice, stating,

Criminal career research and its operationalization in risk assessment devices have not taken sufficient account of the role of accelerated social and economic change in engendering and concentrating risk factors in destabilized neighbourhoods among their inhabitants. Neither do they take account of unpredictable life events. In isolating individual risk

factors from their context in biography, place and social structure, such devices offer ways of managing offenders rather than addressing the causes and cessation of individual offending (p. 18).

## Cognitions and Identity Transformation

Maruna (2001) study of desistance is rooted in psychological studies of the narrative framework for understanding people’s lives. The work is focused on the “phenomenological or sociocognitive aspects of desistance” (p. 38). Data came from the Liverpool Desistance Study (LDS), which included extensive life history interviews with 55 men and 10 women who had been incarcerated primarily for drug-related and property offenses.

Based on offender self-reports, 30 of the participants were categorized as desisters, individuals who “said they would not be committing crimes in the future and reported over a year of crime-free behavior” (p. 47). Twenty of the participants were classified as persisters because they were actively involved in crime and planned to continue committing crimes. Fifteen participants did not clearly fit either category. The persisters and desisters were matched on demographic and crime-related criteria such as age, gender, crime type, offending history, and education.

The book provides an in-depth discussion of desistance, building on Matza’s concept of drift into and out of criminal activity and highlighting the dynamic aspects of both criminality and desistance. Maruna argues that desistance has traditionally been conceptualized as “an abrupt cessation of criminal behavior” (p. 22) or termination of an event. One problem with this notion is that given that crime itself is sporadic, with considerable “drift” into and out of periods of offending, termination may be a continual process. Instead, “desistance might more productively be defined as the long-term abstinence from crime among individuals who had previously engaged in persistent patterns of criminal offending” (p. 26). This conceptualization allows for desistance to unfold as a process that involves maintenance of a crime-free life.

Maruna's study finds important distinctions in the life narratives of the persisters and desisters. The persisters write a "condemnation script" (p. 75) that is fatalistic, suggesting that their life course was determined for them by outside forces from the time they were young. These offenders tended to focus on childhood events, such as poor treatment from parents or sexual abuse, as defining moments in their lives. This emphasis on the past can be detrimental to the sense of agency and focus on the future that is a critical component of desistance. While the persisters in the study reported that they were tired of offending and wanted to change their lives, "they feel powerless to change their behavior because of drug dependency, poverty, a lack of education or skills, or societal prejudice" (p. 74). This deterministic condemnation script is both an explanation for persistence and a cognitive reinforcement that positive change is unlikely. The persisters lack self-efficacy and agency, and create a feedback loop in which they put themselves in situations that reinforce their victim mentality.

In contrast to the persisters, the desisters create a narrative Maruna calls a "redemption script" (p. 87) focused on explaining how they came to be offenders and why and how they are changing their lives. The script provides a level of continuity in the self-narrative, even as people change from their past selves: "The desisting person's self-story, therefore, not only has to allow for desistance but also has to make desistance a logical necessity" (p. 86). There are several dimensions to the redemption script, which,

begins by establishing the goodness and conventionality of the narrator—a victim of society who gets involved with crime and drugs to achieve some sort of power over otherwise bleak circumstances... Yet, with the help of some outside force, someone who "believed in" the ex-offender, the narrator is able to accomplish what he or she was "always meant to do"... Newly empowered, he or she now also seeks to "give something back" to society as a display of gratitude (p. 87).

Maruna calls this process "making good," which entails claiming one's prior negative experiences as a source of strength, and finding ways to redeem oneself by giving back. This generativity is a critical part of the process exhibited by new

ways of thinking and behaviors that demonstrate and reinforce the former offender's new identity. Acknowledgment of the transformation by significant people in the former offender's life is also important, and can be affirmed through "redemption rituals."

Maruna, LeBel, Mitchell, and Naples (2004)<sup>1</sup> case study is a theoretical examination of desistance from crime using the "looking-glass self-concept." They use data from focus groups of clients and counselors (many of whom were in recovery and/or had graduated from the program themselves) in a housing and employment program for ex-offenders. The primary goal of the study was to explore how counselors' and other authorities' positive assessments of client change create a Pygmalion-type effect. In essence, the "reformed identity" of persons in the desistance process is concretely recognized (often in an official process) and this reaffirms and solidifies the new identity.

The authors found that both counselors and clients in the program had a difficult time articulating what constitutes "successful" reform, giving responses that may be summarized by "you know it when you see it" suggesting that it is not what one does (i.e., there is no single objective measure) but who one is. The authors found evidence of the Pygmalion effect insofar as people do report that they rely on "testimonies from respectable others" (p. 277) to confirm they have changed. They often use these new labels to "override these previous deviant labels" (p. 278). Further, people who were doing well were given responsibilities in the program. Recognized by counselors, clients also found that "being trusted with additional responsibility over others" (p. 278) was profoundly transforming.

However, the authors state that reform is more than a passive relabeling process. They assert that "self-conceptions are built on the experience of 'self as a causal agent' as well as the reactions of others" (p. 279). Their data confirm this active role. Clients displayed motivation to change,

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<sup>1</sup>A revision of this paper is included in *How offenders transform their lives* Maruna et al., 2010.



described a “calling” in which they “find meaning and purpose outside of crime” (p. 279) that was unique to each individual, and found satisfaction in giving back. The authors conclude by emphasizing that individual change and societal reactions are both required for ex-offenders to be truly reintegrated into society. Above and beyond the factors associated with desistance in the literature, the authors suggest that “maintaining successful desistance from crime might involve the negotiation of a reformed identity through a process of prosocial labeling” (p. 279).

Continuing in this vein, Maruna (2004) incorporates findings from the psychology literature on explanatory styles to examine the “psychological mindset that seemed to best support efforts to ‘go straight’ and maintain a desistance from crime” (p. 188). Data come from the LDS, which included life story interviews with 100 British men and women who had been incarcerated for mainly drug-related and property-type offenses. Based on self-reports, 55 of the participants were categorized as desisters defined as those who had at least one year of crime- and drug-free behavior and no intent to commit crime in the future. Thirty-four of the participants were classified as persisters because they were actively involved in crime and had no intention of stopping. The study matched the two groups on categories such as age, gender, crime type, and education.

The work draws from psychological theories about explanatory style, “a person’s tendency to offer similar sorts of explanations for different events in their life narrative.” (p. 185)

Explanatory styles have three components: (1) internality vs. externality (i.e., the causal agent is self or other); (2) stability vs. instability (i.e., duration is constant or short-lived); and (3) globality vs. specificity (i.e., the effects affect all aspects or just one area of life) (see pp. 184–185). In psychology, explanatory styles are predictive of depression for those whose negative event attribution is internal, stable, and global. Importantly, research has demonstrated that explanatory styles can be modified.

Maruna proposes that explanatory styles can be applied in the same fashion to desistance. This research hypothesizes that active and former

offenders differ in explanatory style in the same ways that depressives and non-depressives differ. He states, “Desisting ex-offenders should therefore view positive events as the product of more internal, stable, and global causes (i.e., ... ‘because I am a good person deep down’) and negative events as the product of more external, unstable and specific causes (e.g., ‘That was just a phase I was going through,’ or ‘That wasn’t the ‘real me,’ it just happened’)” (pp. 187–188).

Maruna found that persisters tended to attribute the cause of negative events to those outside oneself. More importantly, desisters tended to have explanatory styles that attributed positive events to the self, that the cause is permanent and will affect all aspects of life (i.e., internal, stable, global). He concludes by suggesting that interventions should focus less on criminogenic thinking (explanatory styles of persisters) and more on the stability and globality aspects of explanatory styles of desisters.

Christian, Veysey, Herrschaft, and Tubman-Carbone’s (2009) study focused on perceived moments of transformation for formerly incarcerated individuals. This is a sub-analysis of a larger study that asked people with stigmatized identities (i.e., mental illness, substance abuse, incarceration, histories of physical/sexual abuse) to describe a time when their lives changed for the better. The narratives took a basic structure of presenting (1) the original (negative) identity, (2) a statement of the perceived problem, (3) a description of the transformation (that was further divided into internal vs. external control, whether the narrative described an event or a process, and whether there was evidence of a cognitive shift), and (4) a concluding identity.

Of the original 37, eight (three men and five women) had been incarcerated. None of the respondents claimed that the problem identity was “criminal;” most stated that their initial identity and problem were related to addiction. Within the transformation description, four described single events, three described multiple step processes, and one described a mixed process. Only one person wrote that the change was internally motivated and only two described some sort of cognitive shift. The end identity fell



into three categories: (1) person in recovery, (2) advocate, and (3) other conventional citizen roles. This study suggests that desistance may be a by-product of identity transformation, as the focus for this sample of people was not on stopping criminal behavior but on addressing addictions.

Presser and Kurth (2009) investigated the transformative process through communicative exchanges using a single subject case design. They were concerned with how one offender, James, created and managed his identity with co-conversationalists (interlocutors), and how he assimilated or resisted their perceptions of his identity. James was drawn from a larger study of 27 men who participated in a study on the life stories that ex-offenders tell about themselves. They selected James because he had claimed both of the study's story lines: that he had both moral decency (a stability narrative) and that he was basically decent but had some faults in his past and was reformed (a reform narrative).

They found that James' interlocutors had multiple discrepant expectations and that there were also discrepant aspects of his stability and reform narrative. On this point, Presser and Kurth (2009) write, "Although James alleged personal reform ('this is what I *used* to be'), he also insisted on cunning and resilience as most central to all that he was and is ... someone who does time well and in fact succeeds in various contexts" (p. 84). Part of his "cunning and resilience" is related to his criminal identity, but it also related to his non-criminal self. As James switched identities back and forth, it served as a way to create a defiant self. They argue that not all aspects of a resistant or a defiant criminal identity should be corrected or perceived as pathological, but rather that reframing and using their preferred identity, and aspects of it, can be transformative toward desistance.

## Relationships

The study by Giordano, Cernkovich, and Holland (2003) is a mixed-methods study of the role of friendship in desistance. The data come from a

longitudinal study of institutionalized male and female delinquents reinterviewed 13 years later as adults. For the qualitative study, 180 life history narratives were compiled from 97 women and 83 men. The study focused on several outstanding issues in the desistance literature, including the effect of marriage on peer contacts, the social control element of intimate relationships, changes over time in peer influence, and the effects of pro-social peers. Finally, the authors note important gender differences particularly as they relate to women's difficulties finding pro-social mates.

Giordano and colleagues' work is focused on exploring the mechanisms that operate within the desistance process, particularly cognitive transformations and social support/reinforcement. The results of the narrative analysis suggest that an intimate relationship operates in at least two ways to support desistance; it serves as a "cover" or excuse and it reaffirms an emerging identity. The intimate partner effect is also a two-edged sword. Depending on the partner's orientation toward crime, the relationship may support or undermine efforts to refrain from criminal activity. Similarly, peers can be sources of support for pro-social behavior and even criminal peers lose their influence as people age. Participants describe how they develop friendships to reinforce their new lifestyles while spending less time with old peers.

The authors suggest that life events such as marriage, child bearing, or employment be viewed as part of the primary desistance process, and that cognitive shifts are part of the identity transformation process that is critical to long-term desistance.

In his chapter on social support exchanges, Martinez (2009) analyzed former prisoner-family member relationships and their potential for desistance. Using data from dyads of former prisoners and corresponding family members in Chicago, he sought to understand how relationships were perceived as supportive and how those perceptions contribute to desisting from crime. Research evidence from the social psychological literature confirms that *perceived* support serves as a protective factor for a range of life stressors and may, in fact, be more important than the actual tangible support provided.

The findings indicate that the perceptions of social support exchanges have the potential to contribute to the quality of the relationship. In addition, family members were found to interpret their support provision as an act whereby they exerted meaningful control, which was encouraging them to continue to contribute to the relationship. Relatedly, former prisoners were encouraged to pursue noncriminal paths and those who did not were concerned that continued support might be lost. If needed, former prisoners believed that support would be provided despite any resource deficiencies or if support would actually be provided.

## Spirituality

Giordano and colleagues (2008) used the same data set as the 2003 study to investigate the role of spirituality and religion in desistance. In addition to the quantitative data, interviews with 41 men and women were conducted that focused on spirituality and religion. The study contrasted desisters and persisters defined as the following:

“[We] classify desisters as those subjects who had self-report offending histories free of frequent and/or serious offending and were not incarcerated at both adult follow-up periods, and persisters are classified as those subjects who show frequent and/or serious offending and/or were incarcerated at both follow-up data-collection periods” (p. 108).

The authors explore spirituality and religious participation as “hooks for change” identified in earlier research (Giordano et al., 2002; see summary below). The quantitative analyses reveal that there is an inverse relationship between religiosity and self-reported criminal involvement in 1995. However, religiosity in 1995 does not increase the likelihood an individual will be a desister in 2003. Despite these findings, the life history interviews reveal that spirituality and religion are important to a majority of the participants and they are perceived to be contributors to desistance. The authors note, “Respondents find their faith to be generally rewarding, but they also construct positive meanings specifically around spirituality’s desistance potential” (p. 114).

Reflected by respondents’ narratives, spirituality as a “hook for change” appears to operate through various mechanisms, including the following: (1) it is a form of social capital that is readily available to people who do not often have access to other forms; (2) religious teachings specifically encourage pro-social behavior and are consulted on a regular basis; (3) it provides resources for emotional coping (particularly letting go of anger); and (4) it provides opportunities to create relationships with pro-social others.

The authors conclude that while religion and spirituality may be important hooks for change, issues such as “a steady source of income, respectable companions, and prosocial partners are in relatively short supply” (p. 119). They stress that disadvantaged neighborhoods and social networks may outweigh the benefits of spirituality.

Schroeder and Frana (2009) also conducted a study of the role of spirituality and religion in desistance. They interviewed 11 men living in a halfway house in a city in the Midwest. The men’s ages ranged from 20 to 50. All of the men had histories of persistent criminal activity, incarceration, and problems with drugs and alcohol. The participants in the study were White, in part because no racial/ethnic minorities resided in the halfway house at the time the interviews were conducted.

Drawing from Durkheim, the authors situate the study in literature about emotions, religion, and coping. They contend their work fills gaps in criminological research that does not pay enough attention to spirituality/religion in desistance nor fully explain the mechanisms behind the process when religion is a contributor to desistance. The authors do not provide a specific definition of desistance, but state that the men had “intentional moves away from crime” (p. 726).

The findings center on the use of religion/spirituality to cope with the emotions of anger, anxiety, and depression that were associated with the men’s alcohol and drug use. Religion and/or spirituality helped the men address anger through several different mechanisms related to their interactions with others (i.e., being more tolerant and kind) and self-perceptions (i.e., forgiving themselves for past behavior). The men also used religion/spirituality to temper feelings of anxiety

"by giving them a way of coping with daily stressors, providing comfort in and distractions from especially anxious situations, and through the promise of a better future offered through organized religion or spiritual devotion" (p. 731). The men were able to cope with depression because of the hope offered by religion, as well as "a much needed distraction from the adverse life circumstances (unemployment, divorce, legal troubles, addiction) that often plague their lives" (p. 735).

### Populations: Young

McIvor, Murray, and Jamieson (2004) examined young people and offending in Scotland. Although the paper explicitly examines gender differences, the authors also describe desistance for two groups of young people. Focusing on in-depth interviews with 276 young men and women, McIvor and colleagues examined the individual choice and decision-making that Maruna (2001) found to be critical in not reoffending. The younger persisters (those who had committed a serious crime or multiple serious crimes in the past year) evidenced a greater sense of optimism about desistance than the older persisters, while older persisters were less likely to indicate a reduction of, or a desire to stop, offending. The discussion of gender differences from this study is presented below.

Haigh's (2009) study focuses on how young people desist from crime. Based in Australia, the study involved in-depth interviews of 25 young people between the ages of 14 and 24 broken into two age groups: 14–17 year olds ( $n=15$ ) and 18–24 year olds ( $n=10$ ). Seventeen were young men and eight were young women. All of the respondents were attending youth centers and had expressed that they wanted to change their life.

Underlying this analysis is the belief that engaging in crime is part of normal life for these youth and that desistance requires them to leave what is familiar to adopt pro-social lifestyles that are alien. The author states,

The implications drawn from this analysis suggest that for young people to desist from crime requires some essence of doubt around their usual ways of

thinking and acting. It also requires recognition that this shift for young people encompasses significant loss and a heightened sense of vulnerability in the transition phase, and, importantly this approach also highlights that for alternative choices to emerge, young people need encouragement and motivation to believe that transformation is indeed possible. (p. 308).

As such, this study carefully investigated the transition state, the period of uncertainty and exploration of alternative lifestyles.

When discussing attempts to "move away from crime," older youths stated that they needed to make a conscious decision, that it had to be their choice, not imposed on them by someone else. They also discussed fear of criminal sanctions. Younger people stated that they changed through the influence of an external agent, such as parents, program participation, or new school environments. Once the decision was made, all youth expressed difficulties in sticking to their decision. They all commented that, "it was much easier to revert to offending than to take a legitimate path" (p. 314). The author speculates that this difficulty resides in basic psychological processes. Repeated criminal behavior builds "habitual knowledge" of doing crime, reinforcing expectations and motivations to continue to engage in crime; essentially, crime is normalized embedded within attitudes, beliefs, and cognitions, and within a social network. Change occurs through interruptions; involuntary ones, such as detention, and voluntary, such as a reevaluation of the consequences of crime. Youth affirm this process through their descriptions of problematic issues that raise questions about past beliefs and actions. The author states, "In the process of doubt and the subsequent interpretation of relevant competing interests, there is also an element of loss. ... [The] 'vacancy' represents the dismantling of their taken-for-granted world, and therefore young people are particularly vulnerable until new rules of thumb and home-base knowledge emerge" (p. 318). To move forward, young people must (1) choose among alternate paths, (2) be motivated to make a change, and (3) put their plans into action.

Focusing on the subjective orientation and social circumstances of returning juvenile offenders, Panuccio, Christian, Martinez, and Sullivan (2012) propose a social support model to explain

factors that influence juveniles' desistance process. They argue that although motivation is an important element of desistance, alone it may be insufficient, but combined with social support from the juveniles' social networks it can trigger motivation that sets juveniles on a path to desistance. Using data from a family case management program, Panuccio et al. conducted detailed analyses of 44 case studies of juveniles through case files, observations, juvenile and family interviews, case manager interviews, home visits, detention facility visits, and/or participation in a focus group. Included in the analyses were case studies of 14 juveniles for whom at least three categories of information were available. Their ages ranged from 14 to 19, all were male except one female, ten were African American, and four were Hispanic, and their release date ranged from three months to one year at the time of the study.

Their data indicate that desistance cannot occur without motivation despite increased social support. Although program and parole requirements can be overwhelming, their findings show that those who did not desist engaged in problematic behaviors beyond those associated with the program and parole. For those who did have the desire to change, "case studies reveal a variety of sources of motivation for desistance: fear of future confinement; psychological maturation; social bonds to parents, children, and intimate partners; perceived and valued opportunities for education and employment; and the availability of programmatic support" (p. 150). Supportive family members and program staff were also significant in that they mutually reinforced each other such that they provided an increased level of monitoring and support to ensure juveniles' desistance. Essentially, their argument is "that social support often plays an important role both in triggering the motivation to desist and also in helping to sustain that motivation over time" (p. 156).

### **Populations: Women-Only Studies**

Leverentz (2006) conducted a qualitative study of the role of romantic relationships during the reentry process for female ex-offenders. Based upon previous research that notes a significant

positive "marriage effect" for sustaining desistance particularly for men, this study investigates the meaning of pro-social ties within ongoing and new heterosexual relationships, same-sex relationships, and for relationship-avoidant women. In-depth interviews were conducted up to four times over the course of a year with 49 female ex-offenders and occasionally with their romantic partners ( $n=4$ ). The women were recruited from a halfway house in Chicago. Half of the women were current members of the house at the time of the interview, and half were former residents. The average age of participants was 41 years. Fully 88% were African American, 6% White, and 6% Latina. All of the women had problems with addiction.

Eight percent of women were married at the time of the first interview while 63% had never been married. The women who were in ongoing relationships had three outcomes related to their relationships and crime and/or drug use. One group relapsed and attributed their failure to their partners' negative influence. One group ended their relationships to get away from their partners who continued to use or commit crimes. They did this both to ensure their own recovery, but also because they had little left in common once the women were committed to abstaining. The final group stayed within their relationship. This group provides the best analysis of what is meant by pro-social attachments. In these cases, both partners are in recovery and are ex-offenders. They serve to support and reinforce each other in positive ways. However, they also reported that when one person relapsed, it was difficult for the other not to relapse as well.

New relationships offered women opportunities to be with non-using men (although most had a history of addiction or offending). These relationships also were associated with positive outcomes (i.e., these relationships acted as conventional controls and provided support), as well as negative outcomes similar to long-term relationships. Same-sex relationships operated the same as heterosexual relationships. Most women met each other in recovery settings, but some met women in conventional places such as work or educational settings. A final group of women consciously avoided relationships choosing to emphasize their own growth and recovery.

These women understood that men had been influential in their previous drug use and offending. Therefore, they chose to remain unattached to further their recovery and crime-free lifestyle.

Sommers, Baskin, and Fagan (2004) conducted a study of the desistance process for violent female offenders. In-depth life history interviews were conducted with 30 women who had desisted from violent street crime for at least two years. All of the women were deeply embedded in street life, having serious substance abuse problems, using all their resources as well as committing crimes to support their addictions. They had ties only to others in the same lifestyle with virtually no connections to conventional persons or institutions.

The study is based upon the authors' three-stage theory of desistance involving catalysts for change, discontinuance, and maintenance of the decision to stop (p. 323). In analyzing the stories of the respondents, the authors identify three themes as key aspects of the desistance process for women that map onto the three-stage model: resolving to stop, breaking away from the life, and maintaining a conventional life. Fear of dying in the streets, fear of incarceration, despair, and isolation (mostly from children and family) were cited as reasons for the resolve to stop.

Having made this initial step, the women reported going through a difficult transitional period where they repeatedly had to make and remake the decision to abstain from drug use. At this point, they had to "decide how to establish and maintain conventional relationships and what to do with themselves and their lives" (p. 329). Through professional help (e.g., residential drug treatment), they got off the streets and began to create new social relationships and new identities.

Creating and maintaining a conventional life were difficult, since most had burned bridges with family and old friends. Treatment programs provided support for the initial steps, but long-term change occurred after treatment. The authors state,

In the course of experiencing relationships with conventional others and participating in conventional roles, the women developed a strong social-psychological commitment not to return to crime and drug use. These commitments most often revolved around renewed affiliations with their children, relationships with new friends, and the acquisition of educational and vocational skills (p. 330).

They conclude that, "desistance appears to be a process as complex and lengthy as that of initial involvement" (p. 330).

Michalsen (2011) examined how mothering serves as a turning point fostering desistance. The research is situated in life course research that points to the potential for parenthood to promote pro-social behaviors and desistance. Our knowledge about this process for women is surprisingly limited given societal expectations that they will be primary caregivers for children.

For the study, 100 women in New York were recruited through a purposive sampling strategy involving presentations and flyers posted at social service agencies and word of mouth. To be included in the study, women had to have given birth to at least one child, been incarcerated, and be over age 18 at the time of the interview. The sample was 71% African American, 5% White, and 21% Hispanic. The average age was 40 years old, with a range from 20 to 68 years. Desistance was defined as "engaging in fewer behaviors that could get them into trouble at the time of the interview than before their most recent incarceration" (p. 356). Based on the women's self-reports of their involvement with criminal activity, 92% of the women in the sample were categorized as desisters.

Children were mentioned as the reason for desistance by the highest percentage of respondents (54%), but children were not the most frequently mentioned first (rank order is considered an indication of the salience of the factor). In contrast, the experience of incarceration and sobriety was mentioned first more often than children. In examining how and why children encourage desistance, women reported the emotional benefit of receiving unconditional love from their children. Children also provide a source of pride for their mothers, and a pro-social means of structuring time and activities.

It is important to recognize, however, that while children are an important positive factor in the desistance process, caring for them was perceived as a significant source of stress that has the potential for negative impacts on desistance. In light of gender differences in expectations for parenting, more research is needed about the potential detrimental aspects of parenting during the desistance process.



## Populations: Contrasts of Women and Men

Giordano, Cernkovich, and Rudolph's (2002) study focused primarily on women's narratives of cognitive transformation. However, they did analyze male narratives as well. In the quantitative analyses, they found that gender was not related to relationship attachment or employment. The narratives also revealed that women and men shared many background and risk factors (e.g., poverty, low educational attainment, dysfunctional family background) and their narratives tended to reflect similar kinds of hooks for change and language. They also found several differences; "women were more likely than men to describe religious transformations and to focus heavily on their children as catalysts for changes they had made. Men more often assigned prominence to prison or treatment, or focused on family more generally (the wife and kids)" (p. 1052). In addition, women who were successful desisters typically claimed gender-stereotyped conventional identities, such as caring mother and good wife.

Byrne and Trew (2008) conducted an analysis of men's and women's pathways into and out of crime. In their previous study (2005), they found that "crime orientation" and social relations were related to participants' involvement in crime; and life problems mediated the relationship between these factors and crime. The pathways into crime were associated with events that acted as negative turning points, substantial lifestyle changes, positive offending experiences, and general disadvantage.

In their study, they analyzed the semi-structured interviews of nine men and nine women probationers in Northern Ireland. Participants' ages ranged from 19 to 50 years, and most were convicted for property offences. For the purpose of this chapter, we describe only the portion of the analysis that examines desistance. In this study, desistance is defined as "stopping or significantly reducing offending" (p. 244). The participants varied considerably on their reported commitment to stopping. Some were fully committed to change, some wanted to reduce the level of offending, others stated that they hoped they could do so, and two had no intention of changing.

Participant descriptions of criminal involvement reflect common gender stereotypes. The men talked about crime in ways that reinforced notions of masculinity such as "economic independence, control, aggressiveness and a capacity for violence" (p. 248). Women often described situations in which they found themselves unable to financially provide for themselves and their children. They chose illegal means to support themselves, because they believed that being a bad mother was worse than being a criminal. Women were also more likely to discuss other problems, such as childhood abuse, mental health issues, substance abuse, and relationship problems.

The authors suggest that the pathways out of crime were, in fact, the pathways into crime in reverse for both men and women. Included in their discussions of the desistance process, participants described "changes in themselves, their financial situation, their thoughts and feelings about crime, and their social relationships" (p. 244). There was evidence of positive turning points (although not as frequent and more likely to be related to internal, not external, factors), lifestyle changes particularly as they relate to supportive relationships, shame and fear related to crime, and improved life circumstances (particularly financial).

Using the same data set as Christian and colleagues (2009), Herrschaft and colleagues (2009) analyzed the narratives of eight men and 23 women who successfully negotiated a stigmatized identity, including those who had been incarcerated (see discussion above for more information on study characteristics). The primary focus was to investigate whether narratives of transformation were different or similar for women and men. This was done with the understanding that women's and men's pathways may appear similar from an objective perspective, but perceived differently by the respondent within the structure of their narratives.

Based on feminist theory of the prominence of relationships in women's lives, the narratives' elements that related to the primary reason for change were divided into status-related factors (e.g., employment, education, treatment) and relationship-related factors (e.g., children, family members, friends, caring professionals). Women were



more likely to identify relationship-related factors and men status-related factors as crucial turning points. This resulted in gendered paths toward identity transformation. The ordering of the narrative elements also differed by sex. The male path moved from the negative identity, to fixing specific deficits (e.g., getting a job) that led to identification with a new identity that was then solidified through social support. The female path moved from the negative identity direct to perceiving oneself differently (i.e., positive identity) that was affirmed through social supports and finally, but not always, to addressing the noted deficit.

In their study on desistance and gender differences, McIvor, Murray, and Jamieson (2004) found gender differences in how young men and young women perceived the role of relationships in the desistance process. Young men who desisted wanted to avoid harming family relationships and engaged in active participation toward fulfilling their responsibilities with their partners or families.

Although gender differences were highlighted, the authors argue that the desistance process may actually be the same for young men and young women. Specifically desistance was related to maturation, lifestyle and relationship changes, age, and age-related transitions for both young women and young men. These factors are more accurate predictors of desistance than gender.

### **Populations: Minority Group Members**

Hughes (1998) conducted an exploratory study of desistance focused on turning points in the lives of 20 young adult, inner-city Black and Latino men. The men were between 18 and 27 years old. The participants were selected if they had a history of destructive behavior, are attempting to change their lives positively, no longer were involved in violence, and were positively involved in the community.

Collectively, the men described four factors that served as turning points for them: (1) respect and concern for children, (2) fear of physical harm or incarceration (or both), (3) contemplation time, and (4) support and modeling. In regard to respect and concern for children, six men made

decisions based upon fear for or love of their own children. In four other cases, the decision was based on the consequences of their drug dealing on the children of their buyers. They were upset when they realized that children were being affected by their actions.

Fifteen of the respondents reported having been shot or stabbed and 19 of the 20 had been incarcerated as a juvenile or as an adult. Most described a fear of injury or death if they stayed on the streets as a reason for getting out of the drug dealing business. In addition, those who had served time as adults were afraid of more prison time. This too served as an incentive to change.

Eleven individuals decided to, or realized they could, make a change when they had time out of their chaotic environments. Some were in a residential program, some had moved to other areas, and some were in prison. This was a time to think and reexamine their lives and values. What was clear from the narratives was that it was not where the reflection occurred, but rather time away from the lifestyle.

Every respondent discussed the importance of a "consistently dedicated person. . . . The kinds of support participants described as influential in their decisions to change included unconditional acceptance of them, particularly at times of relapse into destructive behavioral patterns; availability on a consistent basis when they needed advice, counseling, or just someone to talk to; involvement with them in activities that were recreational and gave a feeling of 'family;' assistance with job training and placement or educational attainment; and instillation of self-worth and self-esteem" (p. 148). These individuals were professionals, intimate partners, and family members. In fact, seven men reported that they were inspired to change when their formerly addicted parent(s) got into recovery.

### **Program Effects**

In his study of desistance among English probationers and probation officers, Farrall (2002) found that motivation and social circumstances were the main factors explaining why probationers

desisted. Specifically probationers cited their own motivation to change, gainful employment, and repairing old and establishing new relationships as key to overcoming obstacles. Probationers noted that probation officers did provide some support and guidance. However, probation officers were frequently reluctant to assist probationers specifically with family and employment problems, but when they did offer assistance in these areas, it supplemented the already existing desistance efforts of the probationers. The most commonly reported solutions offered by probationers who desisted, in order, were “just learning to cope with it,” engaging in the process of finding employment or establishing new peer relationships, and seeking counseling or drug abuse treatment.

Interestingly, Farrall found that there were large discrepancies between probationers and probation officers in their assessments of the probationers’ problems. For instance, “probationers who reported a particular obstacle to desistance were likely to be supported in this assessment by their officers—but the reverse was not true: probationers less frequently supported their officers’ assessments” (p. 83). He argues further that probationers who desisted likely would have desisted without the help of their probation officers and that initial motivation at the time of supervision was associated with desistance. Largely, family and employment changes were key determinants in desistance where probationers used their own motivation to change.

This study highlights the need to focus on subtle changes in experiences whereas previous quantitative research has focused on turning those experiences into events. Farrall’s study clearly indicates that motivation was strongly associated with desistance and further offending, and that social circumstances are key determinants in the desistance process.

In their follow-up study to Farrall (2002), Farrall and Calverly (2006) report on the findings of the fourth wave of interviews, specifically on desistance and motivation and the effect of probation supervision (51 of the original 199 were interviewed). The offending trajectories from phase three to phase four remained fairly consis-

tent, but there was an increase of previously classified persisters who turned to a desistance trajectory, largely “because of the influence of a new partner or the adoption of the role of ‘father’” (p. 32). Alternatively, those who were classified as desisters who turned into persisters did so mainly because of problematic relationships. Farrall and Calverly assert that stable social circumstances, a “package of adulthood”—employment, stable relationships, and children—were associated with desistance.

Emotional trajectories of desistance were also found to be a major force toward desistance. That is, how others in the desister’s social network feel about the desister is equally important as the desister’s feelings, particularly when considering trustworthiness and establishment or reestablishment of emotional ties.

In terms of probationers’ views on probation officers, not much had changed from those reported in Farrall (2002). Still, overwhelmingly ex-probationers reported retrospectively that probation offered little assistance although some probation officers’ acts served as “consciousness raising” whereby probation officers’ input on the effect of their crimes on victims, in particular, was made clear to probationers. Probation officers did “chip away” at antisocial beliefs and attitudes, and one-to-one supervision might be a path toward achieving this.

Concerned about formerly incarcerated women substance abusers, Morash (2009) investigated the role of parole supervision in women’s change processes and desistance. All of the women who participated in her study had left jail or prison and were on community supervision. These women experienced post-release challenges such as problems with children and family, employment, and housing.

The women who experienced levels of success indicated an “appreciation of an individually tailored, needs-focused approach that linked them to specific, multiple services” (p. 132). Although these women reported controls as helpful (e.g., frequent drug tests, home visits, inquiring with their families, and participation in residential treatment programs), they reported the following as more helpful toward desisting

from substance abuse and crime: helping them process their feelings constructively, specifically around problematic relationships and abuse; wraparound services (e.g., easy access to employment services); program and relationship aspects of monitoring; and group support from other offenders or drug abusers.

In addition to the women who succeeded (desisted), Morash offers insight into the women who did not succeed (persisted). Taken together, persisters were more closely monitored, resisted treatment or were involved in inadequate interventions, valued defiant and lawbreaking identities, and/or associated with people using drugs. What was most productive for women to pursue a path toward desistance was, "women's willingness to reveal their feelings, shift away from partners who continued to break the law, and later self-perceptions that included lawbreaking and non-conformity as positive" (p. 138).

In her note on modified restorative circles, Walker (2009) advocates for their use to increase desistance from crime. Modified restorative circles involve a group of incarcerated individuals and various people from corrections, but the focus is on assisting the incarcerated individual to develop his/her own plan for reintegration. Using a single case study, she describes how the process works and is perceived by the participants. She argues that these circles can create an environment that facilitates desistance by increasing self-efficacy, establishing support, creating positive emotions, and reconstructing life narratives. Essentially, Walker views modified circles as having the capacity to allow offenders to focus on their strengths and positive self-narratives that are reinforced by peers, leading to desistance from crime.

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## Discussion

The 29 qualitative summaries provided here confirmed the findings of existing research evidence on desistance, and shed light on processes and mechanisms that often go unexamined in quantitative research on desistance, particularly agency/motivation and the psychological reorientation and reevaluation of relationships and life

events. The themes identified in these summaries highlight a number of factors that, as reported by the research participants and observations of others, contribute to desistance: stable, meaningful, committed relationships; valued activities and engagement in pro-social activities; psychological reorientation and reevaluation of criminal acts; and recovery from addictions.

### Importance of People (Intimate Partner, Children, Supportive Others)

Across all studies, individuals note the importance of people in their lives in their desistance from crime. The meaning of relationships varies from study to study. In many cases, it is the support and social control elements that pro-social others provide. In some cases, it is the sense of satisfaction and responsibility for the care of others that help to maintain desistance. In other studies, the kinds of people are the focus. For example, one study found that their subjects isolated themselves from conventional others except for close family members in order to protect themselves, while in another study the question of whether intimate partners with histories of criminal actions and drug addiction can be considered pro-social influences despite their pasts.

The studies commonly reveal that the effects of relationships are not simple as many quantitative analyses suggest, but are dependent upon how individuals perceive the relationship. For example, for women the presence of children is often cited as a reason to remain crime free, but for some childcare responsibilities add stress that may be related to failure. Similarly, intimate relationships support pro-social behavior, but just as easily can be associated with relapse and recidivism.

Finally, professionals may or may not have an impact of individuals' desistance process. In Farrall's studies, probationers did not find that officers helped in many meaningful ways. If they were helpful, the authors believed that the officers only supplemented a process that the probationer had already initiated. In contrast, in Maruna's work, individuals report that authorities who reflect the best to ex-offenders encourage them to believe

in themselves. The ex-offenders then use these public acknowledgements as claims of reform.

## Employment and Valued Activities

Surprisingly, employment and other valued activities were not prominent in individuals' reports of important factors. In some studies, employment is mentioned as one key, but it does not attain the prominence that it has in quantitative studies. While securing and maintaining employment was important for desistance, the participants did not mention that doing so independent of other factors was of prime concern. Rather, employment, as was the case with Farrall (2002) and Farrall and Calverly's (2006) probationers, was part of a "package of adulthood" with stable relationships and family attachments working in concert.

## Cognitive Shifts and Identity Transformations

Several studies were devoted to an analysis of the role of cognitive and psychological processes that appear to operate within desistance. Cognitive shifts coupled with concrete behavioral changes affirmed through interpersonal relationships or formal or informal social networks appear to be promising directions for understanding the mechanisms of desistance. The models are related, but each provides a nuanced perspective. Sommers and colleagues (1994) describe a process that involves resolving to stop, breaking away from the life, and maintaining a conventional life, while Giordano and colleagues discuss four types of cognitive shifts that are associated with permanent change, including the "hooks for change" and identity transformation. Maruna and colleagues also find support for identity transformation and underscore the importance of the "looking glass self." Several studies investigate how the stories that persons who have criminal pasts tell themselves and others describe the desistance process and are predictive of desisting or persisting. Most of these studies acknowledge the importance of both the cognitive, psychologi-

cal processes as well as the necessity of structural opportunities without which they would have difficulty succeeding.

One of the common themes in this area was how participants reinterpreted their life events and their perceptions about their criminality. There was a sense of "fragility" that comes with reorienting their purpose. Shedding an accustomed life for one that is unknown is very difficult. The participants reported that desisting from crime largely involved acknowledging the effects of their criminal behavior, reorienting/reinterpreting how those events can be used to forge a noncriminal lifestyle and noncriminal identity, and how positive ties with individuals in their close network can affirm their motivation to desist from crime. However, these changes come at a substantial cost. Particularly challenging was the "knifing off" of past relationships, stigmatization, and staying clean and sober. Even with a commitment to change, life events (e.g., death in the family, loss of a job) can send the individual back to his or her former lifestyle.

## Recovery from Addictions

Not surprisingly, but also not prominent in the more general discussion of desistance, is the importance of recovery from addiction. In the vast majority of respondents across all studies, addiction to alcohol and/or drugs is tied directly and explicitly to criminal behavior and trouble with the law. In many cases, recovery was described as critical in order for the person to move forward into a conventional, noncriminal life.

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## Future Research Directions

Research on desistance, both quantitative and qualitative, has made substantial progress over the past two decades. Even so, many fundamental concepts are not well conceptualized or defined, and many questions remain unanswered. These issues fall into three general areas: methodological, time, and specific correlates.

## Methodological

First and foremost is the definition of desistance. Clearly, the authors in this review conceptualize desistance in a variety of ways from the absence of arrests or convictions over a specified period of time to very vague notions of intent to desist. A consistent definition measured in a similar fashion is important for future research. Two similar concepts may be useful in this regard: primary and secondary desistance (Maruna & Farrall, 2004) and termination and desistance (Laub & Sampson, 2001). These ideas distinguish between the absence of criminal behavior and the adoption of a pro-social lifestyle.

Related to this point is the focus of desistance studies. Most research, qualitative studies included, investigates the factors related to a nonevent (i.e., no criminal behavior). The methodological problems associated with measuring and making generalizations from a nonevent are well known in criminology. If, however, we use the definitions noted above, future research will be based upon the *presence* of observable indicators. In this review, particularly in the cognitive shift and identity transformation descriptions, these concepts are beginning to take shape. In fact, Maruna's Good Lives Model is founded upon this very idea.

Methodologically, many of the studies discussed here rely on convenience samples of populations under probation or parole supervision, in residential or other treatment programs, or who are recipients of social services. The research is by definition capturing unrepresentative samples of those who desist, which is not in itself problematic, but does present particular limitations. Identifying those who are least connected to programs and services, and examining the desistance process for these individuals, would be a substantial contribution to studying what is arguably a hidden population.

Experts in narrative-based research commonly acknowledge that narratives are a form of storytelling that is independent of objective fact. The narrative is the result of a present self-reflecting on the past self with 20/20 hindsight, often identifying critical turning points that,

when they occurred, were not particularly noteworthy, yet, in some ways, represent a greater "truth." Future narrative studies of desistance could substantially further our knowledge by carefully analyzing the structure and language of the narrative. For example, some emerging research, noted in this review, suggests that the content of the narrative (e.g., Maruna, 2004; positive vs. negative scripts) itself is predictive of success.

Finally, like any human process, the predictors of desistance are varied and complex. Overwhelmingly, researchers in quantitative (and qualitative to some degree) criminology rely on the principle of parsimony (i.e., explaining the greatest amount of variation with the fewest variables). Emerging from other fields, particularly physics and biology, is a counterpoint that suggests that superior models are based upon modeling complexity (e.g., chaos or complexity theory) where algorithms replace individual variables. Qualitative research is a first step in understanding the "hows" and "whys" of change in groups of individuals. This type of inquiry is critical and should be conducted in ways that carefully describe contingencies and variability.

## Time

With the exception of Laub and Sampson (2003), none of the studies reviewed in this chapter take on the issue of time (i.e., developmental stage). Given the age limitations of nearly all studies, it is difficult to distinguish whether the mechanisms of change are constant or variable over the life course. Narratives of the young and those of other ages appear to reflect similar influences, although the studies that contrast the very young with the young demonstrate differences in reasons for, and motivation and expectations of, change. Laub and Sampson's quantitative analyses demonstrate that while there is an age effect, structural changes maintain predictive power of who desists and who persists. This suggests that the inter- and intrapersonal mechanisms may also function regardless of age. Future research should begin to



investigate how specific factors affect desistance at various ages whether through longitudinal or cohort studies.

## Specific Factors

Given the importance of people and relationships in desistance, future research should find innovative ways to account for the dynamic nature of these relationships. For example, a romantic partnership or friendship that fosters pro-social attitudes and behaviors at one point in time could ultimately evolve into a source of strain and contributor to offending. Conversely, individuals who encourage offending or substance abuse may themselves desist or stop using drugs, and become a central part of the support system leading to desistance. Even the same person may serve different roles and functions in varying contexts. Future research should aim to capture the complexity of relationships over time and in diverse settings. Network analysis would be a valuable contribution to this area.

Many studies operate on the implicit belief that desistance processes work across different demographic strata, such as age, gender, and race/ethnicity (and country, for that matter). Gender has received the most attention with mixed results. Some studies reveal distinct gender differences, others find that males and females engage in desistance in similar fashion, while others take a middle road acknowledging that the desistance process is the same, but structural opportunities differ. We need to develop a deeper understanding of the ways that gender differences influence desistance, particularly in regard to gender stratification in employment opportunities and wages, and women's familial roles. Women may not reap the same benefits from marital and romantic attachments that men do, nor have adequate opportunities for securing meaningful work providing a livable wage. Moreover, family caretaking and child rearing are significant demands women face that could compromise recovery from addictions/and or desistance.

We know virtually nothing about how desistance is experienced by persons of different ethnic backgrounds or of the intersections of race, class, gender, and developmental stage. This area is an unexplored, but critical, territory for future research.

Finally, we know that desistance doesn't occur in a vacuum. Individuals are imbedded in social networks, in communities, and in society. Regardless of an individual's efforts at reform, he or she cannot be successful without opportunities and support from the community and society at large. Laws and regulations, stigma and fear, and poverty interact with the individual's personal resources to help or hinder desistance. Future research must focus on untangling the relationships among individual behavior, structural disadvantage, and neighborhood context.

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# Pandora's Box: The Consequences of Low Self-Control into Adulthood

# 15

Matt DeLisi

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## Abstract

The current chapter evaluates the long-term consequences of low self-control in a broad, transdisciplinary way that demonstrates the stable, enduring, and unmistakable course of self-regulation from infancy through late adulthood. The long-term consequences of self-control are relatively stable across life, such that those with high levels of self-control benefit from it throughout their life, and those with low self-control display its negative features over their life span. I demonstrate the continuity of self-control by utilizing three relatively distinct literatures: (1) criminological research that articulates how self-control deficits contribute to antisocial development and criminal justice system noncompliance, (2) longitudinal research that explores the developmental course of self-control/self-regulation constructs across life stages, and (3) personality psychology research that sheds light on the stability and continuity of constructs directly relevant to self-control.

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## Keywords

Self-control • Self-regulation • Crime • Personality • Conscientiousness

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## Introduction

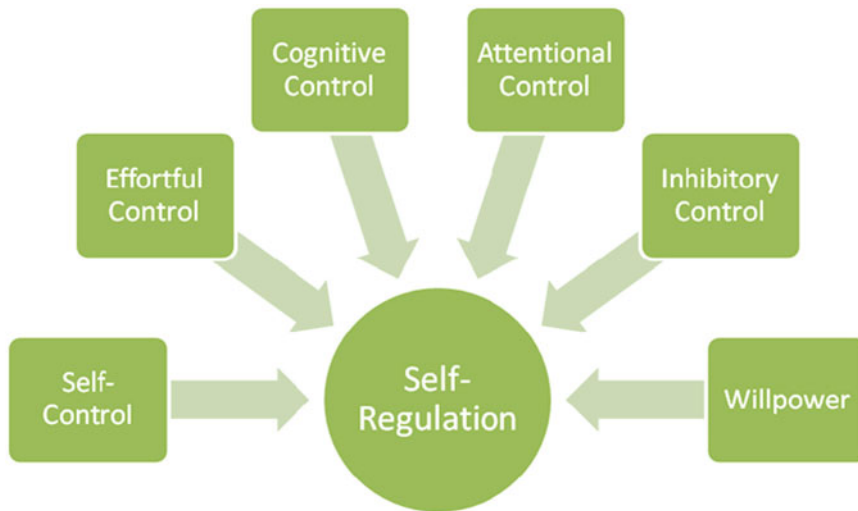
The publication of Michael Gottfredson and Travis Hirschi's *A General Theory of Crime* (1990) created a firestorm of research within

criminology that brought a new individual-level focus to the study of crime. Their self-control construct, with its presentation of an individual with low gratification delay, low persistence, high activity-level/physicality, low investment in long-term commitments, low cognitive skills, and high self-centeredness, has been empirically linked to a staggering array of imprudent, maladaptive, and antisocial behaviors (Buker, 2011; de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012; DeLisi, 2011; Goode, 2008). Today, self-control is a central piece of criminology.

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**Fig. 15.1** Nomological network of self-regulation constructs

Of course, self-control and cognate constructs (e.g., willpower, self-regulation, effortful control, cognitive control, attentional control, inhibitory control, and others shown in Fig. 15.1) in other fields have long been associated with variance in conduct problems, externalizing symptoms, and antisocial behavior. At the most fundamental level, the nomological network of self-control and related constructs relates to an individual's rudimentary level of self-governance that is required to function in society.<sup>1</sup> As Moffitt et al. (2011, p. 2693) recently acknowledged,

“The need to delay gratification, control impulses, and modulate emotional expression is the earliest and most ubiquitous demand that societies place on their children, and success at many life tasks depends critically on children's mastery of such self-control.” In this way, criminology has only relatively recently realized the importance of self-control to behavior vis-à-vis the research epistemology in psychology, psychiatry, and the neurosciences.

The aim of the current chapter is to evaluate the course of self-control through adulthood in a very broad, transdisciplinary way. At times, the discussion in this chapter explicitly focuses on Gottfredson and Hirschi's (1990) conceptualization of self-control, and the attendant responses from criminologists who have empirically examined their theory. At other times, synonymous constructs from other academic disciplines are utilized to demonstrate the stable, enduring, and unmistakable course of self-regulation from infancy through late adulthood. Gottfredson and Hirschi were explicit throughout their work that self-control was relatively stable across life, such that those with high levels of self-control would benefit from it throughout their life, and those with low self-control would display the negative features of it

<sup>1</sup>Although the nomological network of constructs broadly relating to self-regulation is similar, they are not the same. A main distinction among self-control measures is whether inhibitory or restraint processes (e.g., refraining from engaging in inappropriate, maladaptive, or antisocial behavior) or initiatory or approach processes (e.g., actively engaging in functional, prosocial conduct) are being considered. Although inhibitory and initiatory self-control are distinct, they are strongly correlated (see, de Ridder, de Boer, Lugtig, Bakker, & van Hooft, 2011). However, there is convergent validity among various measures of self-control. For instance, Duckworth and Kern (2011) meta-analyzed self-control measures among 282 samples and 33,564 participants and reported moderate convergent validity, mean effect size was  $r=0.27$ .

over their life span.<sup>2</sup> I demonstrate the continuity of self-control by utilizing three relatively distinct literatures: (1) criminological research that articulates how self-control deficits contribute to antisocial development and criminal justice system noncompliance, (2) longitudinal research that explores the developmental course of self-control/self-regulation constructs across life stages, and (3) personality psychology research that sheds light on the stability and continuity of constructs directly relevant to self-control.

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### Heterotypic Continuity of Low Self-Control

Gottfredson and Hirschi (1990) advanced self-control as the inimitable predictor of crime; thus, the construct serves as a highly robust predictor not only of antisocial behavior but also of continuity in antisocial behavior. In this way, self-control serves as a raw material of sorts that produces conduct problems, worsening into delinquency, and culminating into adult crime. There is considerable evidence for the predictive power of self-control across behavioral domains, across stages of life, and across sources of data. For instance, utilizing data from the E-Risk Longitudinal Twin Study which tracks the development of a nationally representative birth cohort of 2,232 British children, Houts, Caspi, Pianta, Arseneault, and Moffitt (2010) tracked 7 years of development between ages 5 and 12 to examine the effects of early emerging dispositional features on classroom conduct. They found that children with low self-control/self-regulation characterized by hyperac-

tivity, impulsivity, negative affect, and challenging behaviors caused a disproportionate amount of difficulty in classroom settings that required teacher effort. The enduring negative effects of self-control on classroom behavior have a myriad of consequences. Children with severe deficits in self-control not only attract the bulk of teacher attention but also deflect attention away from children who are adequately controlled during school. This creates a general sentiment of resentment toward the poorly behaved child that can set into motion the coercive processes and peer rejection that are clearly related to antisocial development (Dodge, 1980; Dodge & Sherrill, 2007).

The heterotypic continuity spreads across adolescence and into adulthood. Drawing on data from the National Longitudinal Study of Adolescent Health, Beaver, DeLisi, Vaughn, and Wright (2010) empirically studied the interplay of a host of constructs that contribute to delinquency. A particularly important feature of their study is the age of participants ranged from 12 to 20, thus spanning late childhood to early adulthood. Low self-control predicted general delinquency and violent delinquency across waves of data suggesting that the construct has an enduring association with delinquent conduct. Another study using the Add Health data (Vaughn, Beaver, & DeLisi, 2009a) found that low self-control predicted delinquency, violent delinquency, drug use, alcohol use, and a composite measure of lifetime antisocial behavior. Still other research has linked self-control to polydrug use and other drug-related problems (Vaughn, Beaver, DeLisi, Perron, & Schelbe, 2009b). Based on data from a statehood cohort of institutionalized delinquents, DeLisi and Vaughn (2008) specifically examined whether low self-control was a marker of lifelong criminality. Low self-control was a major construct that differentiated career from non-career delinquents, and the effect size was large (Cohen's  $d=0.92$ ). Additionally, youths who scored one standard deviation above the mean on the low self-control scale had an odds ratio of 5.36 of becoming a career criminal. Overall, low self-control was overwhelmingly the most robust predictor of career criminality.

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<sup>2</sup>There is seemingly no downside to having high self-control (see, Baumeister & Alquist, 2009). For example, Tangney, Baumeister, and Boone (2004) examined an undergraduate sample and found that high self-control was associated with earning higher grades, experiencing higher self-esteem, having fewer psychiatric symptoms, drinking less alcohol, having better eating habits, having better interpersonal skills, enjoying better relationships, and being more emotionally healthy. In fact, there were no negative effects from having high self-control, such as feeling overly controlled.

The pernicious effects of low self-control are also apparent in criminal justice contexts. In other words, the same interpersonal and behavioral deficits that poorly controlled people display in the creation of antisocial behavior will also be present in criminal justice contexts. This means that inmates are unlikely to do well under correctional supervision. Indeed, Gottfredson and Hirschi (1990) theorized this precisely:

Because low self-control arises in the absence of the powerful inhibiting forces of early childhood, it is highly resistant to the less powerful inhibiting forces of later life, especially the relatively weak forces of the criminal justice system. The common expectation that short-term changes in the probabilities of punishment (such as arrest) or in the severity of punishment (such as length of sentence) will have a significant effect on the likelihood of criminal behavior misconstrues the nature of self-control (pp. 255–256).

Although criminologists were slow to evaluate the criminal justice implications of self-control theory (DeLisi & Berg, 2006), a flurry of research has recently demonstrated that arrestees, inmates, and correctional clients that have low self-control are at risk for a host of negative discretionary outcomes compared to their criminal peers with better self-regulation. In an observational study of more than 3,000 citizen-police encounters in two cities in the United States, Mastrofski, Reisig, and McCluskey (2002) found that citizens with low self-control were significantly more likely to experience disrespect from police. Moreover, the effect size for low self-control was two to three times greater than the effect sizes of other important correlates to crime, such as age, sex, and income. In this way, low self-control is an individual-level characteristic that tends to worsen interactions with criminal justice practitioners over and above other correlates to crime.

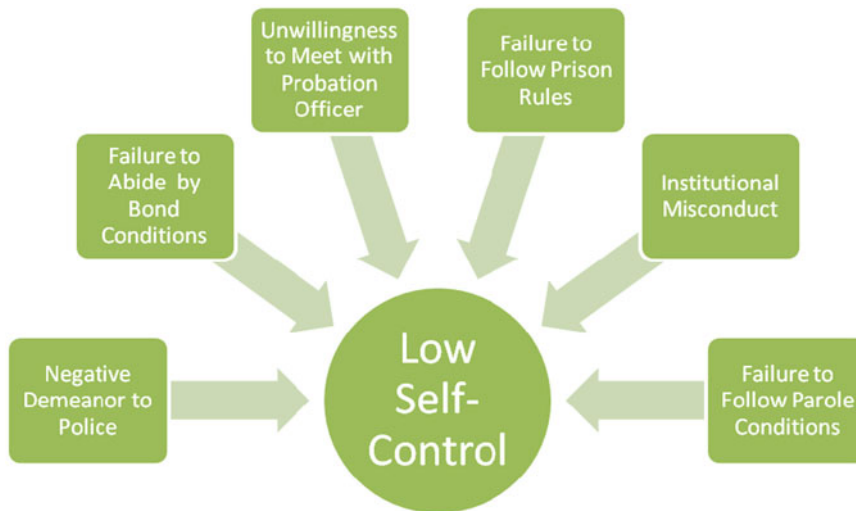
Various researchers have similarly found that the negative features of displaying low self-control not only complicate interactions with justice personnel but also contribute to a negativistic, indignant perspective toward the justice system. For example, using data from the National Longitudinal Study of Adolescent Health for participants ages 12–21, Beaver, DeLisi, Mears, and Stewart (2009) found that low self-control was

consistently related to criminal justice system involvement as measured by police contacts, arrests, age at first police contact, and arrest onset. The probabilities of arrest and conviction varied greatly. For instance, among persons scoring at the high end of the low self-control distribution, the probability of arrest was  $p=0.82$  and the probability of conviction was  $p=0.42$ . Among persons scoring at the low end of the low self-control distribution, the probability of arrest was  $p=0.39$  and the probability of conviction was  $p=0.06$ . Self-control has both behavioral and attitudinal or perceptual implications. To illustrate, Piquero, Gomez-Smith, and Langton (2004) found that persons with low self-control were more likely to perceive legal sanctions as unfair, and were likely to respond with anger and indignation toward legal sanctions. Similarly, Wolfe (2011) reported that persons with low self-control were more likely than others to consider their interactions with police as unjust and illegitimate.

Consider these findings in broader detail. The theory posits an egocentric, poorly tempered individual who perhaps above all other factors demands immediate returns from social interactions and has neither the wherewithal nor the skill set to wait for longer returns. Yet the entire structure of the criminal justice process is to subordinate oneself to governmental officials in a series of travails: talking to police officers about the circumstances surrounding an arrest, providing social and behavioral history information to pretrial services staff for bond setting, waiting to be booked by sheriff's deputies at a county jail, and coexisting with other inmates in a highly structured jail setting where offenders have little autonomy, reporting to a probation or parole officer and meeting the requirements and responsibilities that are entailed in the conditions of their sentence, and others. None of these scenarios is advantageous for an individual with low self-control; indeed all of them pose tremendous challenges.

Further empirical research bears on this point. Among a sample of adult male parolees where the average offender age was 34 years, DeLisi, Hochstetler, Higgins, Beaver, and Graeve (2008)





**Fig. 15.2** Low self-control manifestations of criminal justice system noncompliance

examined the association between an attitudinal measure of self-control and a behavioral measure of disputatiousness that tapped the hot-tempered, impulsive aspects of self-control. They found that low self-control negatively affected how well individuals got along with prison staff, whether they used drugs while in confinement, whether they physically fought with correctional officers, whether they carried a prison weapon, whether they were placed in a disciplinary unit, infraction counts, and whether they retaliated against another inmate. More impressively, these effects withstood the competing effects of 20 controls for criminal career and social background risk factors and various correctional risk measures.

Among a sample of confined delinquents selected from the California Youth Authority (the mean age of wards in these data was 17 years), DeLisi, Beaver, Vaughn, Trulson, Kosloski, et al. (2010) found that low self-control predicted assaults against other wards, aggressive misconduct, and a summary measure of misconduct; however, these effects were only observed among males, not females. Other researchers have demonstrated an association between self-control and related constructs and criminal justice system noncompliance among diverse samples, including adult boot camp graduates (Benda, 2003), prisoners (DeLisi, Hochstetler, & Murphy, 2003),

adult jail inmates (De Li, 2005) adult parolees (Hochstetler, DeLisi, & Pratt, 2010; Langton, 2006; O'Connell, 2003), among others. Figure 15.2 presents the various ways that low self-control manifests in criminal justice system noncompliance.

Self-control theory asserts that the criminal justice system will be generally ineffective at mitigating the antisocial behaviors of offenders. In this way, the theory is generally skeptical. Beyond the general skepticism that Gottfredson and Hirschi (1990) held, there is a burst of evidence suggesting that low self-control among suspects, arrestees, and assorted correctional clients is a major predictive force that will worsen their standing in the criminal justice system. The next section steps beyond the confines of self-control as it is understood in a criminological sense and explores the predictive validity of self-control—broadly defined—as an important driver of behavioral outcomes across life.

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### Enduring Evidence of Self-Control Constructs Through Adulthood

It could be said that the capacity of an individual to regulate his or her conduct and control his or her reactivity to environmental stimuli is what best

differentiates successful from unsuccessful people.<sup>3</sup> Ample evidence exists to show that self-control is relatively stable and enduring across life. Drawing on birth cohort data from the Dunedin Multidisciplinary Health and Development Study, Moffitt et al. (2011) recently evaluated the predictive validity of childhood self-control on a range of life outcomes during adulthood. The findings were startling. Persons who displayed low self-control during childhood reported a range of difficulties at age 32. These included worse physical health, greater depression, higher likelihood of drug dependence, lower socioeconomic status, lower income, greater likelihood of single-parenthood, worse financial planning, more financial struggles, and most importantly for a criminological audience, more criminal convictions. Indeed, 45% of participants with low self-control during childhood had criminal convictions at age 32, a level that is nearly fourfold higher than the prevalence of criminal convictions for persons who had high childhood self-control. To conclude, Moffitt et al. (2011) reported that childhood self-control predicted life outcomes as well as intelligence and low social class origin, both of which they noted are difficult to improve through intervention.

The Dunedin data have also proven useful to understand the ways that low self-control negatively affects other life domains, specifically school and work. For example, White, Moffitt, Earls, Robins, and Silva (1990) found that preschool self-regulation/behavior problems occurring at age 3 were the best predictor of conduct problems at age 11. And the five best preschool predictors which included externalizing behaviors and neurocognitive abilities correctly classified 81% of subjects as antisocial at age 11 and 66%

of participants as antisocial at age 15. More recently, Roberts, Harms, Caspi, and Moffitt (2007) evaluated the prospective effects of self-control and other covariates on counterproductive work behaviors including lateness to work, absence from work under pretense, use of prohibited work items, conflicts with bosses, fights or arguments at work, committed acts for which they could be fired, various types of workplace theft, and drug/alcohol use at work. They found that self-control measured at age 18 years significantly predicted counterproductive work behaviors at age 26 years.

Longitudinal research on gratification delay has shown similar evidence of continuity across life. For example, Walter Mischel's pioneering work (Eigsti, Zayas, Mischel, Shoda, Ayduk, et al., 2006; Mischel, Shoda, & Peake, 1988; Mischel, Shoda, & Rodriguez, 1989) found that the amount of time children age 4 could wait for an additional treat, such as a cookie or marshmallow, was associated with several competencies during adolescence and adulthood. Those with higher gratification delay were better able to handle the stressors and frustrations of life, were more socially and cognitively competent, and scored higher on their SATs than children with low gratification delay. In other words, those with low gratification delay were less able to resist temptations that often give rise to problematic behaviors.

More recent work has extended the relationship between gratification delay and life outcomes even further. Even 40 years later, individuals who at age 4 had difficulty delaying gratification had significantly lower self-control, and those who could wait for their next treat commensurately displayed higher self-control during their mid-40s (Casey, Somerville, Gotlib, Ayduk, Franklin, et al., 2011). Mischel et al. (2011) interpret their work in a way that is directly translatable to Gottfredson and Hirschi's notion of self-control. They suggest, "experiments examining delay of gratification showed that mental representations that are 'hot' or appetitive (consummatory) hinder delay because they make it too difficult to resist the prepotent response of reaching for the immediately available treat" (Mischel, Ayduk, Berman, Casey, Gotlib, et al., 2011, p. 253). These cognitive and developmental psychological processes clearly mesh with

<sup>3</sup>There are dozens of measures of self-control including the Go/No-go Task where participants develop a prepotent motor response to a frequently appearing target, and then inhibit this response for a less-frequently appearing non-target; the Stroop Task where a previously overlearned response must be inhibited, the Reflection Task where a stimulus is presented and the participant must choose the correct response from very similar potential responses, and many others. Taken together, these measures produce data that illustrate the variation that exists for social/cognitive self-control, gratification delay, and executive functioning in the population.

the usual behavioral repertoire of those with low self-control.

Comparable findings exist for research on the association between self-discipline and prosocial functioning. For instance, in a longitudinal study of 140 eighth graders, Duckworth and Seligman (2005) explored the relationship between self-discipline and academic performance. Specifically, self-discipline as measured by self-, parent-, and teacher-reports in the fall semester significantly predicted final grades, school attendance, standardized test scores, and selection into high school programs the next semester. A replication study again found that self-discipline was the best predictor of school success, and it accounted for more than twice the explanatory variance than IQ. Taken together, these findings demonstrate that self-regulatory processes contribute to conventional and antisocial outcomes into adulthood.

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### Personality Across Life: The Salience of Conscientiousness

At face value, the self-control construct as it is known in criminology bears a striking resemblance (albeit reverse scored) to the personality dimension of conscientiousness. Conscientiousness is a core personality construct that relates to the degree of organization, persistence, control, and motivation in goal-directed behavior. In Costa and McCrae's (1992) influential measure of the Five Factor Model of Personality, conscientiousness comprises six facets. *Competence* refers to the sense that one is capable, sensible, prudent, and effective. High scorers are characterized by an internal locus of control and feel prepared to deal with the challenges of life. Low scorers are characterized as inept and unprepared. *Order* refers to the sense of order than an individual imposes on their life. High scorers are neat, tidy, and organized and low scorers are disorganized and unmethodical. *Dutifulness* relates to the degree with which one is governed by their conscience. High scorers are highly ethical and morally scrupulous. Low scorers are more casual, unreliable, and undependable. *Achievement striving* relates to the aspirations and work ethic that an individual displays. High scorers are diligent, purposeful, and have a sense of direction whereas low

scorers are not driven to succeed and are lackadaisical. *Self-discipline* is the ability to execute tasks to completion despite barriers and distractions. High scorers are self-motivated and driven to accomplishment whereas low scorers are easily discouraged and quit easily. *Deliberation* is the tendency to think carefully before acting. Whereas high scorers are cautious, deliberate, and contemplative, low scorers are hasty and spontaneous.

The extant literature is clear that offenders characterized by low self-control theoretically score on the low end of all facets of conscientiousness (see Fig. 15.3). Persons with low self-control are incompetent which would explain their difficulty with academic pursuits. Their lives are typified by low order and low dutifulness, personality features that facilitate a morally questionable, disorganized lifestyle. Persons with low self-control are neither achievement-striving nor self-disciplined, which contributes to the many failures in their personal lives, such as family dissolution, school dropout, work failure, and criminal involvement. Finally, individuals with low self-control lack deliberation in their lives, and instead are glib and impulsive. Substantively, the daily lives of offenders with low self-control in a criminological sense (Roberts et al., 2007; Ruiz, Pincus, & Schinka, 2008) are consistent with research documenting the daily lives of persons who score low on conscientiousness measures (Bogg & Roberts, 2004; Jackson et al., 2010).

The value of thinking of Gottfredson and Hirschi's (1990) self-control construct through the lens conscientiousness is that the latter construct demonstrates pronounced stability across life. Indeed, of all of the elements of personality, conscientiousness is perhaps the most important component of leading a long life. Longitudinal research has shown that conscientiousness confers greater health benefits and contributes to greater life longevity. In a seminal study using data from the seven-decade Terman Life-Cycle Study, Friedman et al. (1993) found that childhood conscientiousness was associated with greater longevity overall and among both males and females analyzed separately. Moreover, there is evidence that individuals who are both highly conscientious and have greater cognitive ability have lower mortality (Hill, Turiano, Hurd, Mroczek, & Roberts, 2011).



**Fig. 15.3** Low self-control through the lens of conscientiousness

A major reason for the enduring link between conscientiousness and health factors is that conscientious people simply avoid behaviors that pose a risk to their wellbeing. Research on the personality profiles of drug users clearly shows this. Drawing on data from over 1,100 participants from the Epidemiologic Catchment Area program in Baltimore, Maryland (average age of participant was 57 years), Terracciano, Löckenhoff, Crum, Bienvu, and Costa (2008a) found marked differences in conscientiousness with abstainers having the highest levels, current smokers and current marijuana users displaying much lower levels, and current cocaine and/or heroin users displaying the lowest levels. In fact, those who abstain from any drug use (including smoking) have significantly higher conscientiousness on all facets except order compared to various smokers and substance users. In a related study using the same data, Terracciano, Löckenhoff, Zonderman, Ferrucci, and Costa (2008b) found that three personality correlates were significant predictors of longevity: activity level, emotional stability, and conscientiousness. Of the three, conscientiousness conferred the greatest health benefit. For every one standard deviation increase in conscientiousness, there was a 27% reduction in mortality risk.

In a meta-analytic review of 194 studies on conscientiousness and health-related behaviors, Bogg and Roberts (2004) reported strong evidence that conscientiousness is associated with behaviors implicated by self-control. Specifically, more conscientious individuals were less likely to drink alcohol to excess, were less likely to use drugs, were less likely to have unhealthy eating habits, were less likely to engage in risky driving, were less likely to engage in risky sexual behaviors, were less likely to be suicidal, were less likely to use tobacco, and were less likely to commit violence crime. In other words, conscientious people are the diametric behavioral position from the modal low self-control offender.<sup>4</sup>

<sup>4</sup>Meta-analytic research makes this clear. Ruiz, Pincus, and Schinka (2008) meta-analyzed 63 samples of 15,331 participants and reported significant associations between conscientiousness and all of its facets to antisocial pathology, substance abuse pathology, and the comorbidity of antisocial and substance pathology. In a more recent meta-analytic review of 53 studies producing between 30 and 35 effect sizes for antisocial behavior and aggression, Jones, Miller, and Lynam (2011) reported significant mean effect sizes for all facets of conscientiousness to antisocial behavior and aggression. The largest effect sizes for antisocial behavior were dutifulness and deliberation. For aggression, these same facets had the largest effect sizes in addition to competence.

Gottfredson and Hirschi opened Pandora's Box with their strident theory that hailed the importance of self-control as the driver of behavior. Their theoretical instincts were spot on. It is unlikely that they could have envisioned the fervor with which criminologists tested their theory. But self-control is so much more. Self-control theory serves as a heuristic to similar constructs in allied fields that also show the vitality of self-regulation toward understanding successful functioning, and maladaptive conduct. The final section of this chapter articulates a future research agenda in two key areas that seeks to integrate self-control in its criminological connotation with other constructs in the broader nomological network of self-regulation to understand the ways that self-control manifests into adulthood.

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## Future Research Agenda

### Etiological and Stability Issues

Despite the success of Gottfredson and Hirschi's self-control theory for some of its predictions, empirical research has demonstrated serious flaws with its theoretical explanation for the development of self-control. According to the theory, self-control is instilled or inculcated through parental socialization processes where vigilant parental monitoring, parental involvement, parental supervision, and parental sanctioning/disciplining result in children who recognize the need for self-control to function in school, family, and society. There is ample evidence that parental management and parental strategies influence self-control as shown in research using data from the Cambridge Study in Delinquent Development (Polakowski, 1994), National Longitudinal Study of Adolescent Health (Perrone, Sullivan, Pratt, & Margaryan, 2004), Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (Wright & Beaver, 2005), and National Longitudinal Survey of Youth: Child and Young Adult Supplement (Hay & Forrest, 2006).

Unfortunately, a purely sociological causal explanation skirts the notion that children vary at

birth in terms of their self-regulatory capacity, and that such variance can be observed even among children reared in the same home by the same parents. These issues were directly and empirically examined in Wright and Beaver's (2005) seminal study of the factors that produce self-control. Using data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (ECLS-K), Wright and Beaver conducted two sets of analyses—those where the genetic relatedness of respondents were not considered, and thus parental socialization was the focus, and those where genetic relatedness was controlled. In seven of the eight models where the outcome variable was child self-control in kindergarten or first grade, the number of significant parenting parameters declined. In seven of the models, the number of statistically significant parenting parameters decreased from three to either one or zero. Overall, their study demonstrated that parenting effects become much weaker, and even insignificant, once alternative explanations/effects are considered. The substantive reason why parenting parameters declined is that self-control is less inculcated and made, and more of a neurological and/or genetic construct.

In a subsequent study, Wright, Beaver, DeLisi, and Vaughn (2008) found that parenting factors accounted for negligible variance in self-control—around zero to one percent—and that genetic factors and nonshared environmental factors accounted for the remaining variance. This suggests two central foci for future research: one focusing on the genetic and neural underpinnings of self-control (cf., Barkley, 1997; Beaver, Wright, & DeLisi, 2007; Heatherton & Wagner, 2011) and the other focusing on its nonshared environmental sources (Pratt, Turner, & Piquero, 2004; Turner, Livecchi, Beaver, & Booth, 2011; Turner, Piquero, & Pratt, 2005).

As biosocial research designs become more common in criminology, it is my prediction that researchers will increasingly focus on the brain-based and genetic underpinnings of self-control, and explore ways that self-control is moderated and mediated by environmental contexts. None of this research will impugn the empirical link between low self-regulation and antisociality, but



it will sharply impugn Gottfredson and Hirschi's notion that self-control is produced via parental socialization.

Although criminologists have examined the heritability and genetic stability of self-control over time, most of that research is focused on limited time periods occurring in childhood (Beaver, Wright, DeLisi, & Vaughn, 2008) and childhood through middle adolescence (Hay & Forrest, 2006). These studies have shown that self-control is moderately stable; however, more expansive longitudinal research is needed to examine the relative roles of genes, environments, and their interaction as it relates to the developmental course of self-control. For instance, psychologists recently examined the stability and change in cognitive ability over a 35-year span among more than 7,000 male twins, more than 1,200 of whom were reassessed during late middle age (Lyons, York, Franz, Grant, Eaves, et al., 2009). The heritability of cognitive functioning was moderate in young adulthood ( $h^2=0.49$ ) and late middle age ( $h^2=0.57$ ). Moreover, 71% the stability in cognitive ability over the 35 years was attributable to genetic factors. It is my hope that similar work can be done with self-control to explore the ways that it unfolds over time.

## Personality Issues

There is a degree of awkwardness in the criminological literature centering on the relation of self-control to personality. Gottfredson and Hirschi's (1990) work is generally antagonistic to a personality approach. In their words, "The search for personality characteristics common to offenders has thus produced nothing contrary to the use of low self-control as the primary individual characteristic causing criminal behavior" (p. 111). Yet the spirit of self-control as it is understood in criminology is very well captured by the personality construct of conscientious as explored earlier in this chapter. People who are highly conscientious have high self-control. People who score low on conscientiousness have low self-control. These characteristics are not "contrary" as Gottfredson and Hirschi suggested, but almost synonymous.

Others have also noted the overlap between self-control and personality factors. For example, O'Gorman and Baxter (2002, p. 538) concluded that "psychometric analysis of candidate measures of the self-control construct can be of value in locating these measures in the network of existing personality scales and in specifying their unique variance." They also found that self-control measure correlated dramatically with a measure of conscientiousness ( $r=0.89$ ). Similarly, Miller, Lynam, and Jones (2008) used the Five Factor Model of Personality with special emphasis on agreeableness and conscientiousness to explore personality correlates with externalizing behaviors. They found strong empirical overlap and concluded "that an antagonistic interpersonal approach, along with a tendency to behave rashly with little consideration of the potential consequences, is linked with an array of externalizing behaviors" (2008, p. 163). In recent years, personality psychologists have reevaluated psychopathy from the perspective of broader structural models of personality, such as the Five Factor Model. The same can be done to study self-control. An advantage of "translating" self-control into a broader personality profile (e.g., low conscientiousness, low agreeableness, moderate extraversion for example) found in structural models would be the addition of a consistent measurement-approach.

## Research Questions

Based on this discussion of a future research agenda, several pressing research questions are offered here for future investigators to develop hypotheses for theory testing. These are:

- Is the parental management hypothesis about the development of self-control tenable in the face of biological data that are now available in large-scale studies, such as the Add Health?
- Are studies of the causes of self-control that omit biological or genetic measure guilty of specification error?
- Behavioral genetic research indicates that most of the environmental variance in self-control and antisocial conditions is of the nonshared



variety. Which nonshared environmental constructs (e.g., delinquent peers, school climate, sex/gender) are most important in predicting variance in self-control?

- What is the convergent validity between executive functioning and self-control? Is the criminological version of self-control simply a metaphor for neuropsychological functioning and/or deficits?
- What is the discriminant validity between Gottfredson and Hirschi's self-control construct and the neuropsychological deficits from Moffitt's theory?
- What is the discriminant validity between Gottfredson and Hirschi's self-control construct and psychopathy?
- What is the discriminant validity between Gottfredson and Hirschi's self-control construct and broadband personality factors, most notably conscientiousness?
- In terms of measurement, can self-control be effectively operationalized by the Five-Factor Model of Personality as has been accomplished with the psychopathy construct?
- What is the absolute and relative stability of low self-control over the life span? Does it match the continuity of moderately stable constructs such as cognitive ability and personality?
- When self-control is very low or high, is its stability mostly attributable to genetic, environmental, or which combination of these?
- Can the criminological version of self-control be reconciled with extant structural models of personality?
- Is the position of Gottfredson and Hirschi (1990) that self-control is not part and parcel of personality empirically tenable?

These research questions will not only refine understanding of self-control theory in its popular criminological perspective but also integrate it to psychological and biosocial investigations of self-regulation.

To conclude, a primary reason why *A General Theory of Crime* grabbed so much attention and controversy is that it presented a believable theoretical account of what the modal criminal offender is like. And that profile is not a pleasant

one. When one steps outside the confines of criminology and assesses the signal evidence of the effects of self-control/self-regulation across life, the conclusions are striking. With self-control, those who have it, and have it at high levels are likely to reap rewards across contexts from their earliest days through the winter of life. Among those who are lacking in self-control, and particularly among those who have very little of it, life is nasty, short, and brutish.

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## Part IV

# Prevention and Intervention

## Preventing Substance Use, Delinquency, Violence, and Other Problem Behaviors over the Life-Course Using the Communities That Care System

Abigail A. Fagan and J. David Hawkins

### Abstract

This chapter describes the development and evaluation of the Communities That Care (CTC) system, a comprehensive, community-based strategy for preventing substance use, delinquency, and violence among youth. We explain how communities trained in this system access information regarding the predictors of youth crime and target these predictors using science-based and developmentally appropriate proven interventions that can be implemented from the prenatal period through young adulthood to reduce offending over the life-course. Use of this system by community coalitions has been shown to reduce the initiation and prevalence of substance use, delinquency, and violence in well-controlled scientific trials.

These results demonstrate that CTC's theory-guided strategy for building community capacity to use tested and effective preventive interventions that reduce prevalent risks and strengthen protective factors can minimize involvement in offending, as hypothesized by life-course theories. Additional research is needed to better understand which risk and protective factors are most salient and malleable during different developmental stages, the relative benefits versus costs of preventive intervention at different developmental stages, and how strategies like CTC that seek to increase the use of tested and effective preventive interventions in communities can be sustained.

Developmental life-course theories take many forms in the field of criminology. In this chapter, we highlight two developmental perspectives: the risk and protective factor paradigm (Farrington, 2000; Hawkins, Catalano, & Miller, 1992; Herrenkohl et al., 2000) and the Social Development Model (Catalano & Hawkins, 1996), and discuss how they provide the foundation for Communities That Care (CTC) (Hawkins, Catalano, & Arthur, 2002), a comprehensive,

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community-based strategy for preventing substance use, delinquency, and violence among youth. We describe the CTC system in detail, explaining how communities trained in this system access information regarding the causes of youth crime and target these causes using science-based and developmentally appropriate interventions that can be implemented from the prenatal period through young adulthood to reduce the likelihood of offending.

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## **Developmental Views of Antisocial Behavior**

The risk and protective factor paradigm (Farrington, 2000; Hawkins et al., 1992), imported into criminology from the field of public health, underlies many of the principles of the CTC system. As in public health, this paradigm provides a way of combining and organizing knowledge from empirical investigations of the predictors of a public health problem, in this case, youth crime. The paradigm is integrative, acknowledging that multiple factors lead to delinquency, and it is developmental, recognizing that the importance of specific risk and promotive/protective factors in predicting these outcomes varies over the life-course. Risk factors are characteristics of individuals, peer groups, families, schools, and communities that increase the likelihood of becoming involved in delinquency, promotive factors directly reduce the likelihood of such behavior, and protective factors moderate the impact of risk factors on antisocial behaviors. The goal of the risk and protective factor paradigm is to identify the factors that are most likely to influence offending during particular developmental periods so that this information can then be used to prevent or reduce involvement in illegal behaviors.

This approach is closely linked to criminological theory, in that risk and promotive/protective factors are the key constructs considered important in theoretical explanations of offending. For example, social learning theory (Akers, 1985) posits that endorsement of favorable attitudes (i.e., “definitions”) towards crime and

exposure to delinquent peers increase the likelihood of offending; in other words, they are risk factors for delinquency. Likewise, social control theory (Catalano & Hawkins, 1996; Hirschi, 1969) hypothesizes that social bonds in the form of commitment to school and attachment to others reduce law-breaking, and thus, these constructs can be viewed as promotive/protective factors.

The Social Development Model (SDM), another key foundation of the CTC prevention approach, is an integrated theory that recognizes that multiple risk and promotive/protective factors contribute to the etiology of both prosocial and antisocial behaviors over the lifespan (Catalano & Hawkins, 1996). In a two-pronged causal model, the SDM shows how risk factors work together to influence the development of antisocial behavior across the life-course and how promotive/protective factors jointly influence the development of healthy behaviors. To achieve positive outcomes, young people need to be immersed in family, school, community, and peer environments that foster protection, particularly the communication of healthy beliefs and clear standards for behavior and the development of strong bonds to caring individuals. These factors will help counteract youth exposure to risk factors, inhibit the development of antisocial behavior, and increase the likelihood that youth will subscribe to the prosocial beliefs and standards of those with whom they are bonded (Catalano & Hawkins, 1996). The SDM draws heavily from social control, social learning, and differential association theories, and knowledge generated by the risk and protective factor paradigm. CTC operationalizes these approaches by advocating that communities prevent antisocial behaviors by reducing risk factors and enhancing protective factors.

Following this logic, the most important targets for intervention are the risk and promotive/protective factors identified in criminological theories and shown in longitudinal research to affect the onset and maintenance of drug use, delinquency, violence, and other antisocial behaviors. According to empirical research, influential risk factors include having attitudes favorable to



violence or drug use, low self-control, peers who engage in delinquency, parents who engage in crime, parents who fail to set clear expectations and rules for children's behavior, parents who fail to effectively monitor or discipline children, low academic achievement, and residence in low-income, disorganized communities (Hawkins et al., 1992; Herrenkohl et al., 2000; Lipsey & Derzon, 1998). Although exposure to a risk factor does not guarantee involvement in crime, the likelihood of offending increases additively as the number of risk factors experienced by an individual increases (Herrenkohl et al., 2000).

It is also important to enhance promotive/protective factors. In our view, promotive/protective factors are conceptually distinct from, and not simply the absence or opposite of, risk factors (Catalano & Hawkins, 1996; Hawkins et al., 1992). Promotive factors directly predict non-involvement or low involvement in antisocial behavior and may promote prosocial, non-criminal behavior; hence the label "promotive" (Sameroff, 2006). Protective factors moderate the effects of exposure to risk factors, thereby reducing involvement in antisocial behavior (Rutter, 1985). Promotive and protective factors are distinguished from one another by their function, not necessarily their content. That is, the same factor may act as a promotive factor or as a protective factor. If the factor reduces the likelihood of antisocial behavior, regardless of the degree of risk exposure, it is acting as a promotive factor. If it reduces the likelihood of antisocial behavior only in the presence of risk, it moderates the effect of risk exposure and is functioning as a protective factor (Rutter, 1985). Because a specific factor may have both promotive and/or protective functions, in the remainder of this chapter, we will refer to both promotive and protective factors as protective factors.

Protective factors have been the focus of much less empirical research than risk factors, but there is evidence that attachments to prosocial individuals and institutions, reinforcements for prosocial behavior, a strong commitment to school and education, and collective efficacy (i.e., trust between neighbors and a willingness for adults to take informal actions to reduce crime) can all

reduce involvement in delinquency (Catalano & Hawkins, 1996; Sampson, Raudenbush, & Earls, 1997; Werner, 1989). Individual protective influences include having high intelligence, a resilient temperament, belief in the moral order, and social, problem-solving, and refusal skills (Farrington, 1996; Loeber, Pardini, Stouthamer-Loeber, & Raine, 2007; Werner, 1989).

An important contribution of the risk and protective factor paradigm to the field of criminology is the recognition that there are multiple predictors of crime and that they predict crime in a developmental progression, emerging and/or becoming salient at particular stages of life (Catalano & Hawkins, 1996; Farrington, 2003; Thornberry, 1987). For example, during early childhood, family risk factors such as child maltreatment and inadequate monitoring or supervision of children may be particularly important. During middle childhood and adolescence, school and peer experiences become more influential. Community factors gain influence during middle to late adolescence when children spend more time outside of the home. Thus, the factors that may lead to problem behaviors among young children are likely different than those that affect adolescent delinquency (Moffitt, 1993; Sampson & Laub, 1993). It is also true, however, that some risk factors, like poverty, residence in a disorganized community, low self-control, and permissive parenting, appear to be salient across development, from infancy through adolescence.

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## A Developmental View of Prevention

The risk and protection focused paradigm proposes that the most effective way to reduce crime is to create interventions that reduce risk and/or increase protection, thereby disrupting developmental processes that may otherwise lead to offending and promoting developmental processes that lead to non-offending. The emerging field of prevention science encourages the creation, testing, and dissemination of practices that affect risk and protective factors, with the goal of reducing rates of problem behaviors (Coie et al., 1993; Kellam, Koretz, & Moscicki, 1999).

Given that they are based on empirical evidence regarding the known predictors of antisocial behaviors, and how these factors develop over the life-course, such interventions have the potential to significantly improve public health.

Interventions that simultaneously target multiple risk and protective factors have the greatest potential to prevent delinquency, given that the more risk factors a youth experiences, the greater his or her likelihood of engaging in crime, and the more protective factors a youth experiences, the smaller the likelihood of engaging in crime (Coie et al., 1993; Herrenkohl et al., 2000; Pollard, Hawkins, & Arthur, 1999). It is also true that risk and protective factors predict multiple antisocial outcomes, such that an intervention that alters one or more of these predictors can have beneficial effects across a range of behaviors (Coie et al., 1993). Problem behaviors such as substance use, violent and nonviolent offending, risky sexual behavior, and mental health problems often co-occur (Hawkins et al., 1992; Jessor & Jessor, 1977), and it is recognized that such problems have common antecedents. Figure 16.1 summarizes information from etiological studies that demonstrates this overlap. As indicated by the checkmarks in each column, risk factors from all contexts have been shown in longitudinal studies to lead to multiple problem outcomes (Coie et al., 1993; Hawkins et al., 2002). Importantly from a prevention standpoint, reducing or altering the impact of one risk factor can potentially reduce multiple related outcomes. For example, an intervention that improves academic performance may not only reduce a child's likelihood of engaging in delinquency but also dropping out of school, engaging in drug use, and developing mental health problems such as depression.

In recognition of the developmental sequencing of many risk and protective factors, to have maximal impact, interventions should be developmentally appropriate, addressing the factors that are most salient for the age group targeted by the intervention and doing so in ways that are the most appropriate for this population (Beardslee, Chien, & Bell, 2011; Coie et al., 1993). Life-course theories emphasize that every

developmental stage has particular "turning points" and "transitions" that must be successfully negotiated (Sampson & Laub, 1993). At each turning point and during each developmental stage, new risk and protective factors emerge and/or become more salient, and children may respond to these influences by engaging in crime or refraining from doing so (Sampson & Laub, 1993). Failure to successfully navigate these turning points not only places the child at risk for immediate, negative outcomes but also makes future involvement in crime more likely. What is needed then, are not only interventions that take place early in the life-course, before problems arise that can "mortgage the future" (Sampson & Laub, 1993) and decrease future opportunities for success but also programs offered throughout development. Moreover, prevention programs delivered during early childhood may need to be supplemented by booster sessions at later ages in order to protect youth from newly encountered risk factors (Hahn et al., 2007).

Evidence suggests that for a small proportion of the population—life-course persistent offenders (Moffitt, 1993)—risk factors encountered in the first few years of life can set off a trajectory of persistent serious offending. Individual and family risk factors appear to be particularly salient during these early years, and these influences may best addressed by interventions that focus on the home environment. For example, home visitation programs delivered during the prenatal period though ages 2–3 provide new parents with skills to physically care for and emotionally support their young children and can help prevent the occurrence of child abuse and neglect. During middle childhood, children transition from the home to the school environment, and this change provides youth with new role models and socialization agents (i.e., teachers and peers), new challenges (i.e., developing friendships), new expectations for behavior (i.e., academic performance), and new opportunities for crime and/or conformity (Catalano & Hawkins, 1996). At this stage of development, school-based interventions can be used to provide youth with academic and/or problem-solving skills and/or increase their commitment to school. The transition from

Risk Factors	Adolescent Problem Behaviors					
	Substance Abuse	Delinquency	Teen Pregnancy	School Drop-Out	Violence	Depression
<b>Community</b>						
Availability of drugs	√	√			√	
Availability of firearms		√			√	
Community laws and norms favorable toward drug use, firearms and crime	√	√			√	
Media portrayals of violence					√	
Transitions and mobility	√	√		√		√
Low neighborhood attachment and community disorganization	√	√			√	
Extreme economic deprivation	√	√	√	√	√	
<b>Family</b>						
Family history of the problem behavior	√	√	√	√	√	√
Family management problems	√	√	√	√	√	√
Family conflict	√	√	√	√	√	√
Favorable parental attitudes and involvement in the problem behavior	√	√			√	
<b>School</b>						
Academic failure beginning in late elementary school	√	√	√	√	√	√
Lack of commitment to school	√	√	√	√	√	
<b>Peer and Individual</b>						
Early and persistent antisocial behavior	√	√	√	√	√	√
Rebelliousness	√		√		√	
Friends who engage in the problem behavior	√	√	√	√	√	
Friends who engage in the problem behavior	√	√	√	√	√	
Gang involvement	√	√			√	
Favorable attitudes toward the problem behavior	√	√	√	√	√	
Early initiation of the problem behavior	√	√	√	√	√	
Constitutional factors	√	√		√	√	

**Fig. 16.1** Risk factors demonstrated to lead to the development of multiple problem behaviors

elementary to middle school is another important turning point. During this stage, youth not only experience another new social context (e.g., moving to a new school) but also changes in social statuses and roles (i.e., increasing emphasis on peer relationships) as well as biological changes associated with puberty. Interventions during this stage will likely focus on reducing peer risk factors, either via school curricula or after-school programs, and on strengthening individual social and cognitive skills. Finally, as youth transition into late adolescence and early adulthood, they are likely to spend more time in their communities and may benefit most from interventions that seek to enhance community risk and protective factors, such as collective efficacy (Sampson et al., 1997).

There is evidence from randomized, controlled evaluations that problem behaviors can be prevented by interventions that focus on reducing risk factors and enhancing protective factors (National Research Council and Institute of Medicine, 2009; Sherman, Gottfredson, MacKenzie, Reuter, & Bushway, 1998; U.S. Department of Health and Human Services, 2001). Such interventions have been provided in a variety of settings and have targeted risk and protective factors in individual, family, school, peer, and community domains. Effective preventive interventions have been identified for youth of all ages, beginning in the prenatal period (Olds, Henderson Jr, & Cole, 1998) and extending through early adulthood (Holder et al., 2000; Wagenaar et al., 2000). Examples of programs demonstrated to be effective in reducing problem behaviors include early childhood programs, often targeting families in low income neighborhoods, that enhance children's cognitive skills and parents' child-rearing skills, including reinforcement of their children's learning; elementary and middle school curricula that seek to alter individual and/or peer factors by improving self-control, changing attitudes that are favorable to deviance, and enhancing youth's ability to resist negative peer influences; and community- and home-based interventions that provide opportunities for children to form positive attachments with prosocial adults and improve parental

efficacy in monitoring and effectively reinforcing children's behavior (Catalano & Hawkins, 1996; Mihalic, Fagan, Irwin, Ballard, & Elliott, 2004; Welsh & Farrington, 2006).

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## The Communities That Care Prevention System

The goal of the CTC prevention system is to accumulate and make sense of knowledge regarding what predicts crime and how to prevent it, and to share this information with community practitioners and policy makers in order to enhance positive youth development across communities (Hawkins & Catalano, 1992; Hawkins et al., 2002). The CTC system integrates the empirical evidence regarding risk and protective factors associated with problem behaviors with emerging knowledge from prevention science regarding interventions that effectively target these factors and reduce antisocial outcomes. It provides training workshops and structured, step-by-step guidance to community members to communicate findings from scientific studies and to facilitate successful community-based prevention efforts.

As mentioned, CTC is guided by the Social Development Model, particularly its explanation of how risk and protective factors interact to influence both antisocial and prosocial behaviors (Catalano & Hawkins, 1996; Hawkins & Weis, 1985). The SDM builds on existing theories and empirical evidence to posit that bonding to prosocial others (Rutter, 1980; Werner, 1989) and having clear norms against antisocial behavior (Elliott, Huizinga, & Menard, 1989) are protective factors that inhibit the development of antisocial behaviors. The SDM maintains that when youth are provided opportunities to actively participate in prosocial groups, have the skills to become successfully involved in these opportunities, and are recognized for their contributions, they will develop strong bonds to prosocial others, be more likely to adhere to prosocial norms, and be more likely to display positive behaviors and refrain from antisocial activities (Catalano & Hawkins, 1996). Not

coincidentally, the types of activities thought to promote bonding are those typically found in effective preventive interventions, and by increasing the use of such programs, communities enhance their chances of fostering healthy youth development.

By fostering agreement on the collective norms to guide behavior and encouraging active, collaborative efforts to prevent problem behaviors, CTC can also be seen as a mechanism for enhancing collective efficacy, and thus also builds upon social disorganization theory (Sampson et al., 1997). Communities with high levels of collective efficacy communicate to youth that adults care about the healthy development of young people, they disapprove of wrongdoing, and they will take collective action to ensure that such behaviors do not occur. Youth in such communities should refrain from delinquency because they feel supported by adults and do not want to disappoint them (i.e., they have strong attachment to the community), and because they believe their misdeeds will be discovered and punished.

CTC seeks to increase collective action and reduce adolescent involvement in problem behaviors via a five-phase process that includes (1) assessing community readiness to undertake collaborative prevention activities, (2) forming a diverse and representative coalition to coordinate prevention efforts, (3) using local epidemiologic data to identify elevated risk factors and depressed protective factors in the community, (4) choosing evidence-based prevention policies and programs that target these factors, and (5) implementing the new interventions with fidelity and evaluating their impact to ensure that desired reductions in youth problem behaviors are occurring. During training workshops and ongoing technical assistance, broad-based coalitions of adults and youth learn that there are identifiable risk and protective factors related to antisocial behaviors and that this information can be used to prevent the development of these outcomes. They are taught methods for conducting needs assessments to identify local levels of risk and protective factors. This information is drawn primarily from administration of the

Communities That Care Youth Survey (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002), a school-based survey which assesses levels of risk and protection among local youth, as well as student involvement in drug use, delinquency, violence, and other behaviors. Community coalitions learn how to administer this survey in area middle and high schools and how to interpret data from the Survey. They are then provided with lists and descriptions of interventions detailed in the *CTC Prevention Strategies Guide* ([www.communitiesthatcare.net](http://www.communitiesthatcare.net)) which have evidence of effectiveness from well-conducted research trials in altering risk and protective factors and reducing problem behaviors. Using information from the *Guide* and their needs assessments, coalitions select interventions that have previously been shown to alter the risk and protective factors prioritized in their community.

CTC does not mandate that coalitions choose particular interventions or sets of interventions to implement. Rather, it emphasizes that selected interventions should be aligned to the community's particular needs; that is, the new program(s) should address risk factors that are prevalent and protective factors that are not prevalent in the community, as reported by local youth on the CTC Youth Survey and from other reliable sources of risk and protection data in the community. The *CTC Prevention Strategies Guide* includes preventive interventions across development, from programs serving mothers during their pregnancy and their babies' infancy, programs offered to children and families during the early childhood years, services delivered to students in elementary and middle school grades, and targeted intervention for older adolescents who have already engaged in delinquent behavior. Ideally, communities using the CTC system will provide effective services for youth of all ages, beginning during the prenatal period and/or early childhood and continuing through high school/early adulthood. That is, they would ensure delivery of a continuum of services, in which each new intervention is directed at a particular age group/developmental period, and the risk and protective factors targeted by the

intervention matched those identified in the needs assessment as elevated or depressed by that particular age group.<sup>1</sup>

As an illustrative example, consider a community whose local data suggested, for example, high rates of child abuse and neglect among families with very young children. The CTC coalition would be guided in CTC to implement a family-focused intervention such as the Nurse-Family Partnership program (Olds, 2002) for pregnant young women or the Triple P Positive Parenting program (Printz, Sanders, Shapiro, Whitaker, & Lutzker, 2009) for families with young children, both of which have been shown to reduce child maltreatment. If archival data indicated high rates of community poverty and low levels of family/child bonding among young children, the CTC coalition might choose an early education intervention such as the Perry Preschool program (Muennig, Schweinhart, Montie, & Neidell, 2008) or Chicago Child-parent Center intervention (Reynolds et al., 2007). Both of these interventions provide low-income, mostly minority preschool youth with access to high quality education. They also enhance parent/child bonding by ensuring that parents are more actively involved in their children's education. If data from elementary school youth were to suggest low levels of commitment to school, the community might choose to implement a school-based intervention such as the Seattle Social Development Project (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999), which increases teachers' use of interactive teaching skills, cooperative learning strategies, and proactive classroom management techniques in order to more actively engage children in the classroom and encourage more positive behaviors.

This intervention also involves a parent training component intended to increase parent/child bonding and parental management skills, and it, or community-based parent training interventions such as Guiding Good Choices (Kosterman, Hawkins, Spoth, Haggerty, & Zhu, 1997) would be warranted if children reported high levels of family risk and low levels of family protection. If, in high school, students reported that many of their peers were engaging in drug use or delinquency, or that they had favorable attitudes regarding these behaviors, communities might implement a school curriculum such as Life Skills Training (Botvin, Griffin, & Nichols, 2006) which enhances individual social and cognitive skills in order to help youth resist negative peer influences. Finally, if local high school students report high levels of community norms favorable to drug use and delinquency, the CTC coalition might select a community-based initiative such as Communities Mobilizing For Change on Alcohol (Wagenaar et al., 2000), which aims to reduce access to alcohol among minors, to increase enforcement of underage drinking laws, and to change local norms and policies regarding youth alcohol and drug use.

As this hypothetical example suggests, enacting a continuum of services across the life-course can help ensure that the community targets multiple risk and protective factors for youth across the life-course. Fully saturating the developmental environment with effective prevention actions and messages should provide the best possible means of changing the community context and reducing criminal involvement. Such work is not easily undertaken, which is why the CTC model relies on broad-based coalitions to implement coordinated services. It is thus important that coalitions include representatives from agencies that serve families and youth of all age groups.

In a similar vein, CTC supports the use of universal, selective and indicated prevention programs as warranted by community data. CTC emphasizes the delivery of universal interventions (e.g., school curricula) which target for services the general population of youth and their families who face similar developmental challenges. CTC also recognizes that preventive

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<sup>1</sup>The CTC Youth Survey was developed for use in middle and high schools and its constructs have been shown to be valid and reliable for youth in these grades only (Arthur et al., 2007; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005). In order for communities to identify risk and protective factors faced by younger children, they must collect data from additional sources (e.g., archival data from health and social service agencies, community surveys of parents, etc.).



services may be needed for at-risk populations, those who already face one or more risk factors, as these youth are especially vulnerable to failing to successfully navigate important turning points and transitions. Selective preventive interventions described in the *CTC Prevention Strategies Guide* include, for example, tutoring services for children displaying poor academic performance and/or low commitment to school and mentoring services such as the Big Brothers/Big Sisters program (Tierney, Grossman, & Resch, 1995) for children from single-parent families. Communities also need to provide effective indicated services to those at highest risk, who may have already had some contact with the criminal justice system and who likely face a multitude of risk factors and low levels of protection. Interventions included in the *CTC Prevention Strategies Guide*, such as Multi-systemic Therapy (Henggeler, Mihalic, Rone, Thomas, & Timmons-Mitchell, 1998) and Functional Family Therapy (Alexander et al., 1998), have shown success in reducing future offending among low-level offenders. They do so by simultaneously targeting individual, school, peer, and family risk factors via intensive, short-term, therapeutic services delivered in the community. As these examples illustrate, CTC is a flexible and comprehensive model that can be utilized to provide a range of services during every stage of development and for youth from all backgrounds and levels of risk, thereby potentially countering risk and bolstering protection for all youth in the community.

The model also has benefits for adult members of the community, via participation in local CTC coalition. While we previously described the ways in which CTC builds upon the Social Development Model to strengthen bonds between youth and prosocial adults, the CTC system also encourages bonding between adult residents of the community, specifically by providing opportunities, skills, and recognition to foster healthy youth development through collaborative action. All interested community stakeholders are provided the opportunity to participate in the CTC coalition, develop a common vision for positive youth development, and agree upon the mechanisms that will be used to achieve this vision.

CTC training workshops provide coalition members with the skills necessary to plan and successfully implement effective preventive interventions. These actions should help ensure that community goals are achieved, and these positive results can then be widely communicated and celebrated (Hawkins et al., 2002). By increasing opportunities, skills, and recognition for community stakeholders to work together, CTC seeks to promote closer social bonds and greater collaboration among coalition members and the community as a whole (Hawkins et al., 2002). The active involvement of local residents in community planning and intervention not only builds bonding among residents but also enhances the likelihood that preventive actions are broadly supported, well implemented, and successfully sustained over time, all of which should improve the health and well-being of community youth (Hawkins et al., 2002; Wandersman & Florin, 2003).

Implementing community-specific prevention interventions recognizes the diversity in both the rates and causes of youth delinquency across communities. As shown decades ago by Shaw and McKay (1942), communities vary in rates of youth crime. CTC extends social disorganization theory by noting that communities also differ according to the types and levels of risk and protective factors faced by youth; as a result, different intervention strategies are needed in different communities (Hawkins, Van Horn, & Arthur, 2004). Rates of offending, risk factors, and protective factors may also vary *within* a community, and coalitions may wish to focus services on particular geographical regions within their city or town that show the most elevated problems (Hawkins et al., 2002).

To summarize, the CTC system is based upon several criminological perspectives, including the life-course, Social Development Model, and social disorganization theories. Following the life-course and SDM perspectives, the CTC system helps community members understand and utilize scientific information regarding the factors and processes that influence children to engage in antisocial and prosocial behaviors. The system provides coalitions with the skills necessary

to collect local data on risk and protective factors and to target these factors with effective preventive interventions that target known precursors of offending, and to implement these interventions from early childhood through early adulthood. Guided by social disorganization theory, CTC promotes the idea that communities differ in youth propensity for offending and that different strategies will be needed to produce community-wide reductions in youth delinquency. CTC also enhances collective efficacy by mobilizing and empowering community members to take collective action that will disrupt the processes that may otherwise lead to problem behaviors among youth.

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### **The Effectiveness of the Communities That Care Prevention System**

The ability of the CTC system to produce community-wide reductions in youth substance use, delinquency, and violence has been evaluated in two research projects, one quasi-experimental study conducted in Pennsylvania (Feinberg, Greenberg, Osgood, Sartorius, & Bontempo, 2007; Feinberg, Jones, Greenberg, Osgood, & Bontempo, 2010) and a randomized, controlled experiment in seven states (Hawkins, Catalano, et al., 2008). Feinberg and colleagues (2007) evaluated the effectiveness of the CTC system in a large-scale study using cross-sectional, self-reported data from students in Grades 6, 8, 10, and 12 in school districts served by CTC coalitions, compared to data from students in demographically comparable school districts not served by CTC coalitions. The total sample included about 97,000 students in 2003, which was 1–5 years after CTC activities had begun in intervention communities.

Analysis of these data found reductions in self-reported rates of past-month alcohol use among 6th and 12th grade students in CTC communities relative to control communities. In addition, 6th graders in intervention sites reported less cigarette use in the past month, 6th and 10th graders reported less delinquency in the past year, and 12th graders reported less binge drinking and

less past-month overall drug use, compared to students in comparison schools (Feinberg et al., 2007). A follow-up evaluation based on data from about 59,000 students collected in 2005 indicated no significant changes in drug use for students in intervention sites versus comparison sites (Feinberg et al., 2010). However, reductions in self-reported delinquency favoring students in communities served by CTC coalitions were found, with an effect size of 0.19.

The Community Youth Development Study (CYDS) tested the efficacy of the CTC system in a randomized controlled evaluation involving 24 communities in seven states that were matched within state prior to randomization on size, poverty, diversity, and crime indices (Hawkins, Catalano, et al., 2008). Communities were incorporated, free-standing, geographically distinct towns with a mean population of 14,646 residents (range=1,578–40,787). In 2002, communities were randomly assigned to either implement the CTC system (12 communities) or to serve as control communities ( $n=12$ ) in which prevention services were conducted as usual. In the intervention sites, coalition members received training in the CTC system, proactive and intensive technical assistance to ensure the full delivery of CTC, and 4 years of funding to plan and implement tested and effective prevention strategies (Quinby et al., 2008).

This study's process evaluation indicated that intervention sites successfully implemented all components of the CTC system (Fagan, Hanson, Hawkins, & Arthur, 2009). Broad-based coalitions were formed in all 12 intervention communities, with a median coalition size of 37 members in the first year of the project (Quinby et al., 2008), and members reported high rates of coalition functioning and support for the CTC approach (Shapiro, Oesterle, Abbott, Arthur, & Hawkins, 2011). Coalitions implemented preventive interventions that targeted the particular risk and protective factors reported as elevated or depressed based on data they collected from local youth, and different interventions were selected by different communities. Across all 12 communities, 16 preventive interventions were funded during the study and delivered to children in

Grades 5 through 9. These included school-based, afterschool, and parent training interventions (Fagan et al., 2009) that sought to change an array of risk and protective factors, including individual characteristics as well as peer, family, school, and community experiences.

While the CTC system encourages the use of preventive interventions from the prenatal period through young adulthood, communities participating in the randomized trial were asked to focus their prevention activities on middle school youth (those in Grades 5–9). This decision was guided by life-course theory's identification of early- to mid-adolescence as a particularly influential stage of the life-course (Catalano & Hawkins, 1996; Sampson & Laub, 1993) in which exposure to salient risk factors (Moffitt, 1993) and the onset of drug use and delinquency are most likely to occur (Elliott, 1994; Farrington, 2003). How children navigate this period is critical to their future development, and unsuccessful navigation puts them at high risk for engaging in problem behaviors during adolescence and continuing into adulthood (Sampson & Laub, 1993). It was hypothesized that implementation of preventive interventions during this stage of development could have an observable impact in a relatively short period of time. Because the research trial was originally funded for 5 years, the focus on early adolescence was thought to provide the best opportunity to assess intervention impact on community-wide prevalence of drug use and delinquency during the trial (Hawkins, Catalano, et al., 2008).

The randomized evaluation found significant intervention effects on drug use, delinquency, and violence, as summarized in Table 16.1. These results were based on data from a longitudinal panel of 4,407 students from all 24 communities surveyed annually from Grades 5 to 10 (Brown et al., 2009). Approximately 3 years post-baseline (when students were in Grade 7), following about 1.5 years of initial CTC training and planning and 1.5 years of prevention service provision in the intervention communities, students in the CTC sites reported significantly lower levels of targeted risk factors compared to those in control communities, controlling for baseline scores

(which were equivalent across conditions). Students were also less likely to initiate delinquent activities, although no intervention effects were found for substance use (Hawkins, Brown, et al., 2008).

At Grade 8, significantly fewer students in the CTC communities who had never used drugs prior to Grade 5 had initiated drug use according to a combined measure of cigarettes, smokeless tobacco, alcohol, marijuana, and inhalants. Reductions in initiation were found for three substances: the odds of initiating alcohol use, tobacco use, and smokeless tobacco use were 38, 44, and 57% lower among youth in CTC communities versus those in control communities (see Table 16.1). More specifically, 17% of students in CTC communities initiated alcohol use by eighth grade, compared to 25% of those in control communities, 8% initiated cigarette smoking versus 12% in control communities, and 4% initiated smokeless tobacco use versus 6% in control communities. Based on data from the full sample, analyses also showed significant intervention effects favoring CTC sites for past month alcohol use (with 16.4% of CTC youth reporting past month alcohol use, compared to 21.4% of control youth), binge drinking in the past 2 weeks (5.7% of CTC youth versus 9% of control youth), and smokeless tobacco use in the past month (4.3% versus 2.2%). The evaluation also found that the odds of initiating any delinquent act were 29% lower among youth in the CTC communities compared to those in the control communities, and the odds of engaging in a variety of delinquent acts in the past year were 25% lower in CTC versus control communities (Hawkins et al., 2009).

Intervention effects were sustained through Grade 10, 1 year following the provision of proactive technical assistance and funding to intervention sites. At this point, 94% of the 4,407 youth in the longitudinal panel had participated in at least five of the six waves of data collection. Latent growth models indicated significantly less growth in exposure to targeted risk factors from Grades 5 through 10 for intervention versus control community students, and mean levels of targeted risk factors were significantly lower among

**Table 16.1** Effects of the Communities That Care (CTC) prevention system on youth substance use, delinquency, and violence, based on a self-reported data from a longitudinal panel of 4,407 students assessed from grades 5 (baseline) to 10 (1 year post-intervention)<sup>a</sup>

Outcome	Follow-up period	Grade 7 (Hawkins, Brown, et al., 2008)	Grade 8 (Hawkins et al., 2009)	Grade 10 (Hawkins et al., 2012)
Risk factors		<ul style="list-style-type: none"> <li>• Mean levels of targeted risk factors were significantly lower (ES=0.15)</li> </ul>	<i>Not reported</i>	<ul style="list-style-type: none"> <li>• The increase in targeted risk factors from Grades 5 to 10 was significantly smaller and mean levels were significantly lower in Grade 10 (ES=0.12)</li> </ul>
Initiation of substance use		<ul style="list-style-type: none"> <li>• No significant intervention effects</li> </ul>	The odds of initiation were <ul style="list-style-type: none"> <li>• 38% lower for alcohol use</li> <li>• 44% lower for cigarette use</li> <li>• 57% lower for smokeless tobacco</li> </ul>	The odds of initiation were <ul style="list-style-type: none"> <li>• 38% lower for alcohol use</li> <li>• 46% lower for cigarette use</li> </ul>
Prevalence of substance use	<i>Not reported</i>		The odds of drug use were <ul style="list-style-type: none"> <li>• 20% lower for alcohol use in the past 30 days</li> <li>• 29% lower for binge drinking in the past two weeks</li> <li>• 44% lower for smokeless tobacco use in the past 30 days</li> </ul>	The odds of drug use were <ul style="list-style-type: none"> <li>• 21% lower for tobacco use in the past 30 days</li> </ul>
Delinquency	The odds were <ul style="list-style-type: none"> <li>• 25% lower for the initiation of delinquency</li> </ul>	The odds were <ul style="list-style-type: none"> <li>• 29% lower for the initiation of delinquency</li> <li>• 25% lower for the number of delinquent acts in the past year</li> </ul>	<i>Not reported</i>	The odds were <ul style="list-style-type: none"> <li>• 21% lower for the initiation of delinquency</li> <li>• 17% lower for any delinquency in the past year</li> </ul>
Violence	<i>Not reported</i>	<i>Not reported</i>	<i>Not reported</i>	The odds were <ul style="list-style-type: none"> <li>• 25% lower for any violence in the past year</li> </ul>

<sup>a</sup>Effects were demonstrated during a randomized trial involving 24 communities and compare youth in CTC intervention communities (N= 12) to those in control communities (N = 12) using adjusted Odds Ratios

intervention youth. Survival analyses showed significant reductions in the initiation of alcohol and cigarettes among baseline nonusers and in the initiation of delinquency. Significant intervention effects favoring CTC youth were also found for past month cigarette use but not use of alcohol, marijuana, or other drugs. Finally, the odds of engaging in any delinquent behavior in the past year were 17% lower among CTC versus comparison youth, and the odds of engaging in any violent behavior were 25% lower (Hawkins et al., 2012).

These positive intervention effects suggest that use of the CTC prevention system can lead to long-term, community-wide reductions in problem behaviors. Further, cost-benefit analyses based on data from the eighth grade follow-up analyses indicated a monetary return of \$5.30 for every dollar invested in the CTC system (Kuklinski, Briney, Hawkins, & Catalano, 2012). We cannot pinpoint the specific mechanisms or preventive interventions responsible for producing changes and cost-savings, as the trial was not designed to evaluate particular components of the CTC system. Rather, the trial was intended to determine the degree to which implementation of the system as a whole produced changes in community levels of risk and protective factors and problem behaviors.

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## Future Directions for Prevention Research

While the beneficial effects of the CTC system are encouraging, much work remains to be done to achieve reductions in youth substance use, delinquency, and violence nationally. In this section, we identify next steps that are needed to bring about broad, sustainable improvements in healthy youth development and reductions in youth substance use, delinquency, and violence. Although we make separate recommendations in the areas of research, practice, and policy, these actions should be undertaken simultaneously and in a coordinated fashion to have maximum impact. That is, research should both inform and be informed by practice and policy needs.

In his address to the American Society of Criminology over a decade ago, David Farrington (2000) called for further development of the risk and protective factor paradigm, and the etiological and intervention research agenda he outlined remains to be fulfilled. Additional research is needed to identify risk factors that are truly causes of crime, rather than correlates of offending, and to disentangle the effects of these factors which tend to be highly intercorrelated. The identification of promotive and protective factors that can directly reduce the likelihood of offending, and which mitigate the negative effects of risk factors, is particularly needed given that these factors have been subject to far less empirical investigation compared to risk factors (Hawkins et al., 1992; U.S. Department of Health and Human Services, 2001).

Etiological studies must also pinpoint the individuals for whom and conditions under which risk and protective factors are most likely to be experienced and to be salient (Kellam et al., 1999). Largely guided by life-course theories, some empirical research has attempted to document the degree to which levels and influence of risk and protective factors vary by age/developmental stage (Fagan, Van Horn, Antamarian, & Hawkins, 2011; Herrenkohl et al., 2000; Jang & Krohn, 1995; Loeber et al., 2000). Such studies are relatively rare, however, likely because they are best assessed with long-term, longitudinal data which is difficult and expensive to collect. Nonetheless, such data are available and could be utilized to increase our understanding of developmental differences in the operation of risk and protection. Similarly, future etiological research should investigate potential differences in the prevalence and influence of risk and protective factors according to sex, race/ethnicity, socioeconomic status, and other demographic characteristics.

Knowledge regarding how and for whom risk and protective factors operate over the life-course should be used to guide the development, testing, and implementation of preventive interventions. To have maximum impact, programs must be based upon a theoretical understanding of the precursors of crime and empirical evidence linking

such factors to involvement in offending (Farrington, 2000). Although the number of interventions that have demonstrated effects in well-conducted research trials is growing, effective interventions have not yet been identified for all known risk and protective factors. For example, while the CTC system has been shown to increase community collaboration for prevention (Brown, Hawkins, Arthur, Briney, & Abbott, 2007), to our knowledge, no intervention has yet established strong evidence of its ability to enhance collective efficacy. Continued development and testing of preventive interventions is needed to increase the number of interventions available for use.

Likewise, interventions must be designed for and implemented with those populations who will most benefit from services. That is, they must be developmentally and culturally appropriate and target the risk and protective factors that are most salient for the targeted population. In the evaluation stage, the intervention's effect(s) across different populations and conditions should be investigated (Coie et al., 1993; Farrington, 2000; Sherman & Strang, 2004). Some interventions have demonstrated diversity of effects across groups of participants, and some have found iatrogenic effects for certain subgroups (Kumpfer, Smith, & Franklin Summerhays, 2008; Sloboda et al., 2009). This information is important not only to inform etiological research regarding how and for whom risk and protective factors operate, but also to guide implementation efforts such that recruitment efforts target those populations who will most benefit from participation and avoid serving those who may be harmed by involvement in the intervention (Oesterle, Hawkins, Fagan, Abbott, & Catalano, 2010).

Future research should continue to investigate how risk and protective factors contribute to multiple problem behaviors (Coie et al., 1993; Durlak, 1998). Although some criminological theories attempt to explain not only crime but also "analogous," problematic outcomes (Gottfredson & Hirschi, 1990) such as substance use, unemployment, or poor health, in practice, most research focuses on criminal behaviors; specifically, violent and nonviolent crimes. The degree to which

precursors of offending also predict other problem behaviors has been less widely examined. Better empirical information regarding the overlap in the prevalence and predictors of multiple problem behaviors could broaden the field of criminology and emphasize its linkages to other disciplines, including medicine, public health, psychology, and education. Moreover, demonstration of the effects of preventive interventions on multiple outcomes would help increase their appeal to community stakeholders and policy makers, by showing that an investment in a prevention program that addresses risk factors common to multiple outcomes can pay-off in the reduction of many different types of problems.

Expanding the number of effective interventions will increase the number of options available to communities and should, in turn, promote more widespread dissemination of these practices. Currently, community prevention efforts are largely composed of untested and/or ineffective strategies (Elliott & Mihalic, 2004; Gottfredson & Gottfredson, 2002; Ringwalt et al., 2011). For example, a national study of delinquency prevention activities in schools concluded that "the majority of practices in use in schools today have not undergone rigorous evaluation" (Gottfredson & Gottfredson, 2002). A separate study of drug prevention in schools indicated that 46% of school districts most often implemented locally developed curricula that had not been carefully evaluated (Ringwalt et al., 2011). Significant community-wide reductions in youth offending can only occur through increased use of effective interventions, and the first step in achieving this goal is to increase the number of such practices.

Future experimental research should strive to not only demonstrate the overall effectiveness of the intervention but also the causal model underlying the program (Coie et al., 1993; Hawkins et al., 1992). Specification of program mediators and moderators will contribute to etiological knowledge of how risk and protective factors operate and will guide developers in refining their interventions. Moreover, such information will illuminate the core elements of the intervention (i.e., those factors responsible for producing change),



which can then be shared with practitioners in order to increase their understanding of the intervention and reduce the likelihood that they will alter or omit program elements that are critical to success. Research has demonstrated that greater implementation fidelity—that is, stricter adherence to a program’s content and guidelines—is associated with better outcomes for participants (Durlak & DuPre, 2008). Yet implementation fidelity is often compromised when communities replicate effective programs (Elliott & Mihalic, 2004; Gottfredson & Gottfredson, 2002; Hallfors & Godette, 2002). Thus, efforts to enhance program integrity can help ensure positive outcomes for youth.

Findings from etiological and experimental investigations must thus be communicated to practitioners and policy makers in order to produce significant reductions in problem behaviors. Schools and other community agencies do invest their financial and human resources in prevention strategies intended to reduce bullying, drug use and addiction, school drop-out, criminal offending, and other problem behaviors (Gottfredson & Gottfredson, 2002; Hallfors & Godette, 2002). Yet, popular community-based practices typically involve untested strategies and often include programs that have been shown to *increase* problem behaviors. For example, schools continue to implement the Drug Abuse Resistance and Education (D.A.R.E) program (Ringwalt et al., 2011), despite evidence indicating that even the most recently tested version of the D.A.R.E. curriculum can increase substance use among students (Sloboda et al., 2009). Likewise, strategies based on “scare tactics” and harsh sanctions are routinely used by community and juvenile justice agencies to reduce delinquency, even though interventions such as Scared Straight (Petrosino, Turpin-Petrosino, & Buehler, 2003) and waiving juvenile offenders to adult courts (Howell, 2003) have been demonstrated to increase offending. These examples indicate that many communities have not yet capitalized on scientific advances. Instead, despite good intentions, they are wasting financial and human resources on strategies that are not helping and may even be harming the healthy development of young people.

The best way to significantly improve the life-course trajectories of the majority of youth is to increase the dissemination and use of effective policies and programs across communities (Rotheram-Borus & Duan, 2003; Saul et al., 2008). Scientific evidence on how to achieve this goal is largely lacking, however, given that most preventive intervention research to date has focused on establishing the efficacy of a particular program or policy implemented with a particular population. Far less research has focused on methods for increasing the scope and delivery of tested and effective prevention programs (Glasgow, Lichtenstein, & Marcus, 2003); for example, by testing models such as CTC that increase the use of an intervention across multiple communities or the implementation of multiple effective strategies across many sites. Likewise, to our knowledge, no studies to date have compared the relative effectiveness of offering different types or combinations of interventions across communities; for example, comparing communities that implement prevention strategies for only one developmental age group versus those who provide multiple services to multiple age groups. These types of evaluations are challenging, but increasingly sophisticated research designs and analysis strategies (e.g., systems science research) are being developed that can be used to evaluate complex, multicomponent interventions (Landsverk, Brown, Rolls Reutz, Palinkas, & Horwitz, 2001; Rivera, Pew, & Collins, 2007).

The CTC system offers some guidance in how to foster dissemination of effective preventive interventions, as described in this chapter. By providing community key leaders, stakeholders, and other residents with scientific information about what works to prevent problem behaviors, and training and technical assistance in how to enact such interventions, CTC has been shown to increase the number of effective preventive interventions offered to residents and the number of youth and families enrolled in these programs (Fagan, Arthur, Hanson, Briney, & Hawkins, 2011). In turn, implementation of CTC has been demonstrated to significantly reduce youth drug use, delinquency, and violence community-wide

(Hawkins et al., 2009, 2012). More large-scale trials are needed to identify other strategies that will help promote dissemination of effective policies and practices.

Given that cost is a significant obstacle to installing new interventions, information on the costs relative to the benefits of prevention practices may help foster dissemination. Although the CTC trial has assessed the cost effectiveness of the CTC intervention (Kuklinski et al., 2012), relatively few trials have done so, likely due to the difficulties involved in collecting accurate cost data and in conducting the complex economic analyses. Despite these challenges, there is a growing awareness of the need to calculate monetary costs and benefits and to share this information with policy makers and potential investors.

To this end, the Washington State Institute of Public Policy (WSIPP) has analyzed the effectiveness and costs relative to benefits of a variety of crime prevention services targeting youth and families, including juvenile justice services, child welfare programs, early childhood education practices, substance use prevention programs, and mentoring programs. Their first comprehensive review of prevention policies and practices concluded that there was “credible evidence that certain well-implemented programs can achieve significantly more benefits than costs” and that “taxpayers will be better off if investments are made in these successful research-based programs” (Aos, Lieb, Mayfield, Miller, & Pennucci, 2004). The findings from their study were so persuasive that the Washington state legislature changed its budget and policies to reduce investment in unsuccessful crime prevention strategies and increase investment in successful and cost-effective interventions. The state has since evidenced reductions in juvenile offending, adult recidivism, and reductions in criminal justice costs (Aos et al., 2011). This example indicates that state-wide changes in prevention policies can result in state-wide reductions juvenile offending. If other states were to adopt similar practices, the potential for national-level changes would be significant.

Increasing support for science-based preventive interventions across the country can pay off,

both financially and in increasing the healthy development of youth. Increasing etiological research regarding the risk and protective factors that are associated with problem behaviors, using this information to design preventive interventions, testing the efficacy of these practices, and promoting the use of effective prevention services across the country are all necessary steps in achieving desired results. This work must be done simultaneously and collaboratively by researchers, practitioners, and policy makers in order to have the best chance of success in preventing problem behaviors across the life-course (Beardslee et al., 2011).

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## Abstract

A central tenant of the life course paradigm as applied to criminology is that the causes of the onset and termination of criminal behavior vary over different stages of the life course. Since crime prevention and intervention programs are designed to change these causal characteristics and conditions, it follows that effective crime prevention and intervention programs will likely target different causal factors for interventions involving children, adolescents, and adults. A scientific standard for identifying effective, evidence-based crime prevention programs and practices is proposed and programs meeting this standard are described. The risk and protective factors targeted by these programs and practices designed for children, adolescents, and adults are examined and differences and similarities across these stages of the life course are described.

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## Keywords

Evidence-based programs • Evidence-based practices • Systematic reviews • Universal programs/practices • Selected programs/practices • Indicated programs/practices

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## Introduction

Over the past two decades there have been major advances in prevention science research. New theoretical paradigms emerged in which interpersonal violence and drug use were viewed as public health problems and a life course developmental

perspective focused attention on the timing of critical life events and their interaction with changing social contexts across different stages of development. Large longitudinal studies increased our understanding of the major risk and protective factors predictive of violence, drug use, and criminal behavior and their patterns of change over time. Better measures of identified risk and protective factors and types of criminal behavior were developed and new types of statistical analysis were invented to address many of the problems frequently encountered in earlier

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evaluation studies. Public and governmental support for randomized control trials and rigorous experimental designs grew substantially and the concept of evidence-based programs and practices became an accepted condition for selecting and funding crime prevention and intervention programs.

While much progress has been made, concerns about the effectiveness of current prevention programs, existing systems of care and justice processing and treatment remain. Probation, group homes, correctional facilities, and waivers of juveniles out of the juvenile system into the adult system rarely have demonstrated positive effects and sometimes appear to be harmful (Bishop, 2000; Lipsey, Howell, Kelly, Chapman, & Carver, 2010; Petrosino, Buehler, & Turpin-Petrosino, 2010). Many deterrence and punitive-oriented programs have also proven ineffective and sometimes iatrogenic (Lipsey et al., 2010; Sherman, Farrington, Welsh, & MacKenzie, 2002; US Surgeon General, 2001). A systematic review of crime prevention programs currently being implemented in the US would reveal that most of these programs have no credible evidence of their effectiveness, and of those with some rigorous evaluation, relatively few appear to have demonstrated effectiveness and a few appear to be harmful. Over 80 % of the 1,000 programs in the Blueprints database have no credible evaluations.

On the positive side, this research also has provided a rich body of evidence demonstrating that a few programs are effective, both for preventing the onset of criminal behavior and for successfully intervening with serious and violent offenders (Elliott & Tolan, 1998; Greenwood, 2006; IOM, 2008; Sherman et al., 2002; US Surgeon General, 2001; Office of Justice Programs <http://www.crimesolutions.gov>). Moreover, these programs often have positive effects on other important outcomes such as mental health, academic achievement, parenting practices and family well-being, and employment.

The interest in evidence-based programs has also been fueled by huge financial deficits at both the federal and state levels, leading to serious consideration of the high costs of incarceration and the efficiencies associated with investments

in more cost-effective programs and practices. In 2002, the White House encouraged all federal agencies to support evidence-based programs and to discontinue programs without evidence of effectiveness (Office of Management and Budget, 2002), and it is now common practice that federal and state funding for prevention programs be designated primarily or even exclusively for evidence-based programs and practices.

A central tenant of the life course paradigm as applied to criminology is that the causes of the onset and termination of criminal behavior will vary over different stages of the life course. Since crime prevention and intervention programs are designed to change these causal characteristics and conditions, it follows logically that effective crime prevention and intervention programs will likely vary over different stages of the life course. This chapter summarizes what is currently known about the types of crime prevention and intervention programs and practices proven to be effective at specific stages of the life course.

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## Identifying and Selecting Effective Programs

### Identifying Effective Programs

While there are currently over a dozen lists of effective or evidence-based crime prevention programs being promoted, the process and standard to be employed for identifying effective crime prevention/intervention programs has proved to be controversial. At present, there is no consensus within the research and practice communities about the scientific evidentiary standard that should be used to designate or certify an individual program as effective or “evidence based”.

The currently available lists, primarily posted on the Web by federal agencies and professional organizations, each employs its own selection process and scientific standard for certifying the specific programs recommended on their list. This standard varies from any positive effect from any type of study, to consistent positive effects from multiple randomized control trials. On some lists, the standard is not made explicit. Moreover,

even when formal scientific standards for certification are provided, these standards often are applied inconsistently to program evaluations and the process for selecting evaluation studies to be included in the review is not always inclusive of all available qualifying studies.<sup>1</sup>

There are over 200 specific programs identified as exemplary, effective, or promising crime prevention or intervention programs on the OJJDP Model Program list alone. While this proliferation of recommended evidence-based programs demonstrates significant progress in violence and crime prevention research and knowledge, the different standards and processes used by different agencies raise concerns about the quality and practical utility of this information.

After reviewing the variation in current certification practices, Biglan and Ogden (2008) charge that professional organizations and federal agencies certifying programs as “evidence-based” are failing to meet their responsibilities to protect practitioners and clients from ineffective programs and practices. The Institute of Medicine’s, 2008 report on what works in health care notes that a significant proportion of evidence reviews lack scientific rigor and fail to address clients’, practitioners’, and funders’ need for current, trustworthy information about a program’s effectiveness. This criticism applies equally to crime prevention program reviews.

Multiple lists with different selection processes and scientific standards and an inconsistent application of standards present a confusing picture to both public and private agencies looking for guidance in selecting an evidence-based program. Relatively few programs on the available online lists meet a high standard of evidence for their effectiveness. As a result, these lists should be viewed with caution, particularly when selecting programs for inclusion in national violence and crime prevention initiatives.

In sum, there is a danger of over-selling crime prevention and intervention programs and exaggerating the practical, real-world effectiveness of these programs.

### **Establishing A Scientific Standard: Systematic Reviews**

There is a general consensus among prevention science criminologists that systematic reviews hold the most promise for identifying effective crime prevention programs. Briefly, this method involves a transparent set of explicit procedures to find, evaluate and synthesize the results of multiple high-quality evaluations of a specific program. When possible, a statistical analysis of the findings from each study should be conducted to estimate an average effect across all available studies (The Campbell Collaboration <http://www.campbellcollaboration.org>; Lipsey & Wilson, 1998; Shadish, Cook, & Levine, 1991; Welsh & Farrington, 2006a, 2006b). When there are a sufficient number of high quality evaluations (randomized control trials and well-conducted quasi-experimental evaluations) of a given program, meta-analysis provides the best estimate of a program’s impact (effect size) and the generalizability of its effects.

Unfortunately, there are very few specific programs that have a sufficient number of high quality evaluations to conduct a reliable meta-analysis. When the number of high quality program specific evaluations is limited, there is substantial heterogeneity across studies, or the screened studies involve different units of analysis, a meta-analysis is not appropriate. In this event, the systematic review proceeds without the meta analysis, following the prescribed set of criteria and processes, i.e., a clear search strategy, the selection of high quality evaluations based on an explicit set of scientific criteria, a rigorous quantitative review of findings, and the synthesis of findings across selected studies. But in this case, the synthesis is based upon the judgment of expert reviewers rather than a formal statistical analysis.

In practice, the differences in recommended programs across published lists of evidence-based programs involve differences in the extent to

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<sup>1</sup>The review process for the National Repository for Effective Prevention Programs (NREPP), SAMHSA, is one in which programs are submitted to the agency for review and may not include all available evaluations of that program.

which the systematic review method is used, and when used, on differences in the inclusiveness of the search process, the scientific criteria for study inclusion, and the quality, strength, and consistency of the findings required in the synthesis and certification as an effective program.

It is critical that recommended programs meet a high scientific standard of proven effectiveness. There is a long history of programs with limited evidence of effectiveness launched on a national scale with great promise and a huge cost only to prove ineffective or harmful and a waste of taxpayer's money, e.g., Scared Straight, gun buy-back programs, juvenile transfers into adult courts, twenty-first Century Community Learning Centers, D.A.R.E., and the Job Partnership Training Act.

A high standard results in fewer programs being recommended but a lower risk of program failure when taken to scale. A lower standard results in more programs being recommended with a potentially greater overall impact, but with a greater risk of program failure. From a public policy perspective, the recommendation of programs that turn out to be ineffective when taken to scale has a greater negative impact on public confidence in prevention science than the recommendation which may underestimate the potential number and impact of effective programs but has a lower failure rate.

A scientific standard for certifying programs as effective or "evidence-based" has been proposed.<sup>2</sup> In 2003, the White House Task Force on Disadvantaged Youth released its Final Report recommending that federal agencies develop a consistent approach to the assessment of program evaluations. In response to this recommendation, the Working Group of the Federal Collaboration on What Works (Federal Collaboration)<sup>3</sup> was

created in 2004 to establish a scientific standard for classifying prevention programs with respect to their demonstrated effectiveness. The report of the Federal Collaboration was published in 2005 and recommended both a scientific standard and a rating classification for prevention and intervention programs.

Briefly, this standard proposed four scientific criteria for judging the effectiveness of a program: (1) study design, (2) replication, (3) independence, and (4) sustainability. The standard for certification as an Effective program required *statistically significant positive behavioral effects in a well-conducted randomized controlled trial (RCT), at least one external (independent) replication with a well-conducted RCT, evidence from at least one RCT that these effects are sustained for at least 1 year post-intervention, and that there is no evidence of an iatrogenic effect*. Randomized control trials are widely recognized as the best evaluation design, and when rigorously conducted, provide the strongest evidence for the effects of the program. A well conducted evaluation is one that employs valid and reliable measures, an appropriate analysis and adequately addresses the potential threats to the internal validity of study findings (Brown, Berndt, Brinales, Zong, & Bhagwat, 2000).

The evidence standard for certification as Promising required *statistically significant positive effects from at least one well conducted RCT or quasi-experimental study (QED), evidence of sustained effects for at least 1 year post-intervention, and no evidence of iatrogenic effects*.<sup>4</sup>

While the Department of Justice played a central role in the development of the Federal Collaboration standard, neither the Office of Justice Programs (OJP) nor the Office of Juvenile Justice and Delinquency Prevention (OJJDP) has

<sup>2</sup>The Society for Prevention Research has also proposed a standard which is much more complex and difficult to implement than the Federal Collaboration standard reviewed here. See <http://www.preventionresearch.org>.

<sup>3</sup>The Working Group included members from the Center for Substance Abuse Prevention, SAMSHA; The National Institute of Drug Abuse; The National Center for Education Evaluation, Institute of Education Sciences; the Office of Justice Programs, The National Institute of Justice; and the Office of Juvenile Justice and Delinquency Prevention.

<sup>4</sup>See <http://www.ncjrs.gov/pdffiles1/nij/220889.pdf>. The classification proposed two levels of "effective" which are collapsed into a single category here. The distinction between "effective" and "effective with reservation" is that the replication for the latter need not be independent, i.e., can involve the same research team that conducted the original trial.

**Table 17.1** Scientific standard for program certification

Minimums required	Federal Working Group	Blueprints	Coalition for evidence-based policy
<b>Model/Top Tier</b>			
RCT <sup>a</sup>	Yes	Yes	Yes
Replication	Yes (RCT)	Yes (QED) <sup>b</sup>	No <sup>c</sup>
Sustainability	Yes (12 months)	Yes (12 months)	Yes (12 months)
Independence	Yes	No	No
<b>Promising</b>			
RCT <sup>a</sup>	No (RCT or 2QEDs) <sup>b</sup>	No (RCT or QED) <sup>b</sup>	Yes
Replication	No	No	No
Sustainability	Yes	No	No <sup>d</sup>
Independence	No	No	No

<sup>a</sup>Randomized control trial

<sup>b</sup>Quasi-experimental design

<sup>c</sup>One multisite trial would meet minimum standard for Top Tier

<sup>d</sup>Sustainability is a factor in evaluating the quality of the RCT, but it is not clear that it is always required. However, it appears to be met in the Top Tier, but not in all the Near Top Tier crime prevention programs listed.

formally adopted this standard for programs they recommend as effective on their Web sites, <http://www.crimesolutions.gov> and <http://www.ojjdp.gov/mpg>. Moreover, none of the currently maintained online lists of recommended programs are applying this standard in their certification of evidence-based programs.

Two currently maintained Web-based lists of effective programs come close to implementing this standard: the Blueprints for Violence Prevention list (Elliott, 1997; Elliott & Tolan, 1999; Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001) and the Coalition for Evidence-Based Policy list (<http://www.coalition4evidence.org> and <http://www.colorado.edu/CSPV/Blueprints>). The standard for each of these lists compared to the Federal Collaboration standard is summarized in Table 17.1 for an Effective rating (Model and Top Tier) and a Promising (or Near Top Tier) rating.

## The Coalition for Evidence-Based Policy

The Coalition standard for Top Tier programs requires the following: (1) two well-conducted RCTs with statistically significant positive effects or one multisite RCT with positive effects and (2) evidence of sustainability for

1 year post intervention.<sup>5</sup> An independent evaluation is not required. Near Top Tier requires one well-conducted RCT with positive effects. The review guidelines also include other criteria such as program cost and ease of implementation in the rating decision.<sup>6</sup>

With respect to the search criteria, programs are nominated for review, i.e., there is no systematic search for or review of all available program evaluations. A total of 14 programs are listed and the targeted program outcomes are very broad, including academic, health, housing, employment, welfare, mental health, and emotional well-being, as well as violence, drug, and crime outcomes (<http://www.coalition4evidence.org>).<sup>7</sup> There are only four Top Tier programs that address crime outcomes and two Near Top Tier programs that address these outcomes.

<sup>5</sup>For this standard, sustainability is not necessarily post-intervention sustainability and independent replication is not required.

<sup>6</sup>Program cost is problematic as a criterion for judging the scientific effectiveness of a program. Cost is clearly relevant to the decision to adopt a program, but even here, the issue is more a matter of the cost benefit than the absolute cost.

<sup>7</sup>See <http://www.coalition4evidence.org>.

## Blueprints for Violence Prevention

A Model Program on the Blueprints list requires (1) a well-conducted RCT with significant positive behavioral effects, (2) a replication with a RCT or a well-conducted QED, and (3) sustainability of effects for at least 1-year post-intervention. An independent evaluation is not required. Certification as Promising requires a well-conducted RCT or two QED's. It does not require evidence of sustainability, but otherwise is similar to the Federal Working Group standard for Promising.<sup>8</sup> Blueprints recommends that only Model programs be taken to scale, and Promising programs should be implemented on a limited scale and with an evaluation if possible. Blueprints conducts a systematic search for all published evaluations of violence, drug, and crime prevention and intervention programs and have over 1,000 programs in the program database. A formal review does not require a nomination or application. The Blueprints review process includes all the elements of a systematic review: an inclusive search process, explicit eligibility criteria and screening, a rigorous quantitative review of each evaluation, a synthesis of findings based on the quality, strength, and consistency of findings across studies, and a structured, detailed written report on each review.

When there are mixed effects from multiple well-conducted studies, both the Blueprints and Coalition standards require a predominance of positive effects. Blueprints also requires that there be no evidence of iatrogenic effects in these evaluations and that programs have some minimal capability for dissemination.

As might be expected, there is substantial overlap between the two lists with three of the four Top Tier programs included in the Model list and one of the two Near Top Tier programs on the Promising list. Many Model and Top Tier programs identified have multiple RCTs and independent evaluations

and thus meet the Federal Working Group standard for Effective.

Each Web site also provides additional information on each recommended program. For example, Blueprints provide descriptions of each program's theoretical rationale, risk and protective factors targeted for change, specific populations involved in the evaluation trials, required resources for implementation with fidelity, potential funding sources, and for Model programs, estimates of expected effect sizes and benefit-to-cost ratios.

## Other Evidence-Based Web Site Lists

While the focus in this chapter will be on evidence-based programs meeting the scientific standard required on the Coalition and Blueprints Web sites, there are several others that provide recommendations or evaluations of crime prevention and intervention programs.

The Department of Justice (OJP and OJJDP) web-based lists of recommended programs use a complex rating system that scores program evaluations on a number of dimensions. For example, the OJP list rates programs on their conceptual framework, design quality, strength and direction of outcomes, and fidelity of implementation. Scoring is based on multiple dimensions of each of these criteria (<http://www.crimesolutions.gov> and <http://www.ojjdp.gov/mpg>). The complex scoring system is such that a program could be rated Effective without meeting any of the Federal Collaboration standards, i.e., it is possible for a program with a single, low quality QED to be rated as Effective or a single high quality QED with no sustainability of its effect to be rated Effective. As a result, these lists include many programs that are not rated as evidence-based programs on the Coalition or Blueprints lists and reflect a lower standard than proposed by the Federal Collaboration or employed by the Coalition or Blueprints lists.

The OJP Web site provides other important information about programs, such as the clarity of the program's conceptual framework and support for this framework in the literature, evidence for displacement effects, and the fidelity of

<sup>8</sup>The Blueprints review process rates programs on the Federal Collaboration standard as well as the Blueprint standard but does not publish or disseminate these ratings. See <http://www.Colorado.edu/cspv/Blueprints>.



implementation in evaluations. Moreover, it is the only Web site that classifies programs as ineffective or iatrogenic based on their rating of evaluations.

The OJP Web site currently lists 58 crime prevention and intervention programs rated as Effective and 101 programs rated as Promising. The OJJDP Model Program Guide lists 82 programs as Effective, 35 as Exemplary and 104 as Promising. The number of programs considered to be evidence-based is thus much larger on these Web sites.

The Campbell Collaboration and the Cochrane Library<sup>9</sup> are regularly maintained Web sites that include systematic reviews of a wide range of prevention programs. The Campbell Collaboration Crime and Justice Group library<sup>10</sup> currently includes systematic reviews of 31 delinquency, crime, and substance abuse interventions. Most of the Campbell Collaboration reviews involve generic types of interventions rather than a particular program, but there are some systematic reviews, typically meta-analyses, of specific programs as well, e.g., Scared Straight, Multisystemic Therapy and Multidimensional Treatment Foster Care. There is no common scientific standard involved across meta-analyses<sup>11</sup> and these reviews and programs are not specifically recommended or classified as effective or promising on these Web sites, but rigorous systematic reviews of some programs are available here. There are plans to provide updates on the Campbell Collaboration Crime and Justice Group systematic reviews every 2–3 years (Welsh & Farrington, 2006a, 2006b).

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## Evidence-Based Prevention and Intervention Programs by Life Course Stages

There is considerable confusion between the terms “evidence-based programs” and “evidence-based practices.” They are often used interchangeably.

<sup>9</sup> See <http://www.thecochranelibrary.com>.

<sup>10</sup> See [http://www.campbellcollaboration/crime\\_and\\_justice/index.pbp](http://www.campbellcollaboration/crime_and_justice/index.pbp).

<sup>11</sup> The Crime and Justice Group has adopted the Consolidated Standards of Reporting Trials to standardize the reporting of methodological information.

In this review of crime prevention and intervention over the life course, a distinction is made between the two. Programs involve *a coherent package of elements that include a specific change strategy designed to modify specific risk or protective factors that are linked to specific outcomes in designated populations with specific delivery protocols and processes*. The package typically includes implementation manuals, training, technical assistance and fidelity checklists. Evidence-based programs are those proven effective based upon a systematic review of the evaluation evidence of their effectiveness. Evidence-based practices are *types of general strategies, approaches or policies that have been proven effective in preventing crime based on a systematic review of the evaluation evidence of their average level of effectiveness*. Evidence-based programs will be discussed first, then evidence-based practices, each by the stage of the life course when they are normally implemented.

A list of evidence-based programs by developmental stage is presented in Table 17.2. These are crime prevention and intervention programs rated as Model/Top Tier or Promising/Near Top Tier on the Blueprint or Coalition Web sites. When it comes to selecting an effective program, several additional factors should be considered. These include things such as the resources necessary to implement the program with fidelity, program fit with target population, start-up costs, available funding streams, and the cost-effectiveness of a program.

This is a conservative list of effective evidence-based programs. There are a number of reasons for limiting the list to those found on maintained Web sites and to Web sites that employ a high scientific standard. There are several excellent books providing descriptions of crime prevention and intervention programs and practices, reviews of the evaluation evidence for their effectiveness and a recommendation of which ones should be considered evidence-based or effective (Sherman et al., 2002; Welsh & Farrington, 2006a, 2006b). The lists in the Sherman et al., and Welsh and Farrington books are already outdated.

New evaluations result both in new programs meeting the standard for an evidence-based rating

**Table 17.2** Evidence-based crime prevention/intervention programs by life course stage

Programs	Childhood (0–11)	Adolescent (12–17)	Adult (18+)
Universal	Olweus Bully Prevention Program (BPP)	Midwestern Prevention Project (MMP)	Safer California Universities
	Promoting Alternative Thinking Strategies (PATHS)	LifeSkills Training (LST)	
	Incredible Years (IYS)	Olweus Bully Prevention Program (BPP)	
	Fast Track	Project toward No Drug Abuse (Project TND)	
	Good Behavior Game (GBG)	Athletes Training and Learning to Avoid Steroids (ATLAS)	
	Guiding Good Choices (GGC)	Fast Track	
		Guiding Good Choices (GGC)	
	Triple P-Positive Parenting Program		Triple P-Positive Parenting Program
	Seattle Social Development Project (SSDP)	Project Northland	
	Raising Healthy Children	Orebro Prevention Program	
	Communities That Care Program (CTC)	Strengthening Families 10–14	
	Child First	Raising Healthy Children	
	First Grade Class Room Prevention Program	Communities That Care Program (CTC)	Communities That Care Program (CTC)
		SPORT	
		In Shape	
Selected	Steps to Respect		
	Big Brothers Big Sisters (BBBS)	Big Brothers Big Sisters (BBBS)	
	Nurse Family Partnership (NFP)	Functional Family Therapy (FFT)	Nurse Family Partnership (NFP)
	Olweus Bully Prevention Program (BPP)	Olweus Bully Prevention Program (BPP)	
	Incredible Years (IYS)	Project toward No Drug Abuse (Project TND)	
	Fast Track	Behavioral Monitoring and Reinforcement Program (BMRP)	
	Brief Strategic Family Therapy (BSFT)	Brief Strategic Family Therapy (BSFT)	
	Triple P-Positive Parenting Program	Fast Track	
	Perry Preschool Project	Triple P-Positive Parenting Program	Triple P-Positive Parenting Program
	Strong African-American Families (SAAF)		
Preventative Treatment Program		Brief Alcohol Screen and Intervention for College Students (BASICS)	
Child FIRST			
Indicated	Incredible Years (IYS)	Functional Family Therapy (FFT)	
	Fast Track	Multisystemic Therapy	
	Triple P-Positive Parenting Program	Multidimensional Treatment Foster Care (MTFC)	
		Fast Track	

and old programs no longer meeting the standard. One of the early Model programs on the Blueprints list (Quantum Opportunities) was removed several years ago as a result of a new multisite RCT of Quantum Opportunities completed by the US Labor Department. There also are a number of programs once considered evidence-based interventions (e.g., LIFT, CASASTART) that are no longer available for dissemination. The list in Table 17.2 also is likely to be outdated in the next 3–5 years. Those looking for information on evidence-based programs should consult the Web-based lists of recommended programs that are kept current with the accumulation of evidence about crime prevention and intervention programs.

Evidence-based programs are located in three stages of the life course: childhood (ages 0–11), adolescence (ages 12–17), and adulthood (ages 18 and older). Model/Top Tier programs are in bold. Programs also are classified as universal, selected, or indicated, indicating the targeted population for the intervention. *Universal* programs are prevention programs designed for all children, adolescents, or adults; *selected* programs are designed for children, adolescents, and adults that are at some elevated risk for involvement in criminal behavior; and *indicated* programs are intervention programs for persons who have already engaged in criminal behavior and are designed to reduce or terminate their involvement in criminal activity. Overall, 40 evidence-based programs are listed in Table 17.2, 13 Model/TopTier and 27 Promising/Near Top Tier programs.

## Evidence-Based Programs for Children

While all of the programs listed in Table 17.2 are considered crime prevention or intervention programs, those designed for children involve outcomes that are risk factors for later criminal activity, specifically antisocial or aggressive behavior, substance abuse, and child maltreatment/abuse. Some of the adolescent programs also involve these risk factors but most target delinquent behavior as the primary outcome.

As might be expected, the majority of childhood programs are implemented as both universal and selected programs, targeting both general populations and at-risk populations. The Olweus Bullying Prevention Program, Fast Track, The Incredible Years, Child FIRST and Triple-P Parenting Programs all target both populations.

Nearly all of these childhood programs are effective in reducing aggressive and antisocial behavior among children. Three of these programs are specifically bullying prevention programs (BPP, BSFT and Steps to Respect) and three (Child FIRST, NFP and Triple-P) are child abuse prevention programs.<sup>12</sup> Two programs are childhood substance use and abuse prevention programs (GGC and First Grade Classroom Prevention Program). While this might be considered surprising for child interventions, substance use prior to age 11 is one of the strongest risk factors for serious crime during late adolescence and early adulthood (Lipsey & Derzon, 1998; US Surgeon General, 2001).

The stages of the life course might well have differentiated between early and late childhood programs. Only four of these programs qualify as early childhood programs: NFP, IYS, Triple-P Parenting and Child FIRST. While there may not be a gap in evidence-based programs for this early stage of the life course, there are relatively few crime-risk prevention programs for preschool age children.

There are only three childhood indicated programs. Each of them is a complex, multilevel intervention. As a result, there is substantial overlap across the types of childhood interventions, with many programs being delivered to both universal populations and selected high risk populations and a few delivering their program to indicated groups of children as well.

## Adolescent Evidence-Based Programs

There are slightly more of these evidence-based crime prevention programs targeting adolescents than children, especially for indicated popula-

<sup>12</sup> All three targeted antisocial behavior as well as child maltreatment/abuse, but abuse was the only behavioral outcome demonstrated for the Triple-P Parenting Program.

tions, i.e., delinquent youth. The age line between the childhood and adolescent stages of the life course does not neatly distinguish between intervention programs, as a number of childhood programs also offer their program to early adolescents, primarily middle-school students. Two of the three elementary school bullying prevention programs also have demonstrated effects on middle school populations (BPP and BSFT). Adolescent programs appear to be somewhat more focused on a particular type of population, they are more uniquely universal, selected or indicated. And there are more indicated adolescent than childhood programs.

The types of behavior targeted for change among these evidence-based programs is primarily substance abuse. Eight of the 15 universal programs<sup>13</sup> are specifically alcohol and drug prevention programs, and another three have demonstrated effects on alcohol and/or drug use in addition to other forms of delinquent behavior. Most of the indicated programs use rearrest as the outcome that demonstrates their effectiveness in intervening or treating delinquent youth.

## Adult Evidence-Based Programs

There are very few adult prevention and intervention programs that have demonstrated positive effects on criminal behavior. It is not surprising that there are few true prevention programs since the onset of involvement in crime occurs primarily during adolescence (Elliott, 1994; Loeber, Farrington, & Waschbusch, 1998; US Surgeon General, 2001). While there are many adult intervention and treatment programs being implemented in the US and abroad, there are few high quality evaluations of specific programs. Research on adult interventions tends to involve meta-analyses of generic programs rather than program specific evaluations (Sherman et al., 2002; Taxman & Beienko, 2012; Welsh & Farrington, 2006a, 2006b).

Two of the adult programs with demonstrated effectiveness are substance abuse programs for college-age young adults, Safer California Universities, a universal program, and BASICS, a selected program for at-risk students. The other two programs are the Triple-P Parenting Program and the Nurse Family Partnership. The Triple-P program has interventions for children and adults while NFP targets at-risk, first pregnancy women, a selected program. Both programs have demonstrated effects for both the parents and their children.

The Communities that Care intervention has been listed as an adult program. The CTC intervention is not a specific program but rather an evidence-based delivery system that promotes the selection, implementation and evaluation of evidence-based programs. Depending on the programs selected in any particular implementation of CTC, all stages of the life course and types of intervention could be involved. It is most appropriately viewed as a community level intervention designed to change the community's use of data in their decision making and their investment in evidence-based programs and practices.

## Overview: Evidence-Based Programs Over the Life Course

There are 40 crime prevention and intervention programs that meet a relatively high standard of effectiveness that are fairly evenly split between childhood and adolescent stages of the life course and universal and selected target populations. There are no evidence-based programs meeting this standard for intervening with adults who have already experienced the onset of criminal behavior and only four universal or selected programs are designed for adults.

Most of these programs are individual-change programs designed to reduce the risk of onset for individuals or the rate of individual offending. There are some exceptions. Universal programs were most likely to demonstrate effects on social environments. These programs were predominantly school-based programs and most of these

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<sup>13</sup>Not counting CTC.

programs assessed changes in school or classroom climates as well as individual changes in behavior. For example, all of the bullying prevention programs demonstrated changes in school or classroom climate or family dynamics resulting from the implementation of the program. All of the parent training modules incorporated into these programs were designed to change the dynamics and/or structure of the family context, but the assessments often involved only individual change measures, primarily changes in mothers' parenting practices.

Most of the strongest risk factors for the onset of serious criminal behavior are targeted for change in these evidence-based programs. There is one exception: there are no delinquent peer group or gang prevention/ intervention programs. This constitutes a serious gap in prevention programming since these are among the strongest adolescent predictors of future involvement in criminal behavior (Lipsey & Derzon, 1998; US Surgeon General, 2001).

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### **Evidence-Based Practices Over the Life Course**

There are two current approaches to identifying effective practices, both of which rely on meta-analyses of generic types of prevention and intervention programs grouped by strategy or "topic." While the number of high quality evaluations of a specific program is typically one to three studies, the number of high quality evaluations of all programs of a given generic type is often substantially larger. This approach also allows for including evaluations involving small sample sizes that lack statistical power in the calculation of the average effect size of a generic type of intervention. For example, the Nurse Family Partnership program has three well-conducted RCTs, but there are close to a dozen RCTs of early parent training programs, a class of interventions that use some form of parent training with families of young children, or a class of programs that include some version of home visitation. A meta-analysis of early parent training programs as a group provides an

estimate of the average effect of this generic type of program, it indicates that on average, programs of this type will or will not be effective. This is not a recommendation for a given individual "brand-name" program, but rather for a general intervention strategy, approach or type of program.

Examples of generic types of interventions include cognitive-behavioral interventions (CBT), parent training interventions, boot camps, interpersonal skills training programs, drug prevention programs and bullying prevention programs. Programs grouped within a generic type of intervention can vary substantially by the population served (age, gender, ethnicity, universal, selected, indicated), targeted outcome measures, the specific change process or mechanism employed, and the intensity and duration of the intervention. The types of individual programs included also vary substantially. For example, meta-analyses of CBT include skills development programs, relapse prevention programs, anger management programs, problem solving programs, affective education programs, multimodal interventions, aggressive replacement training, cognitive restructuring, and moral recognition therapy programs. Meta-analyses of boot camps include programs like Alcoholics Anonymous, Narcotics Anonymous, drug treatment programs, aftercare programs, counseling, and therapeutic community. Discipline training, physical training and military drill are common elements. Generic intervention strategies that have a significant positive average effect size above a certain threshold based upon a well-conducted meta-analysis are considered evidence-based practices, i.e., general intervention strategies that have proven to be effective most of the time.

A second approach to identifying evidence-based practices involves a secondary analysis of the characteristics of programs that differentiate between those in the meta-analysis with strong positive effects and those with weak or negative effects. This type of analysis identifies particular characteristics of programs in this general type of intervention that are predictive of a better outcome, for example, limited to high-risk

clients, the use of feedback and modeling, booster sessions, high fidelity, and duration of the intervention. These program characteristics are then considered evidence-based practices that can be used to upgrade the effectiveness of programs using that generic strategy (Lipsey et al., 2010). There is no attempt in this chapter to catalog the characteristics of particular types of interventions that differentiate between stronger and weaker program effects.

The list of evidence-based practices in Table 17.3 includes generic types of interventions that have demonstrated significant positive effects, on average, on criminal behavior outcomes. The classification of evidence-based practices into universal, selected or indicated interventions is somewhat problematic as the meta-analysis often includes programs of more than one type in the group of programs evaluated. To a lesser extent, this is also a problem with classifying evidence-based practices into stages of the life course. When the meta-analysis includes programs with different targeted populations and stages of the life course, it is assumed in this review that the overall effectiveness of the general practice can be applied to these subgroups unless there is contrary evidence. There also is considerable overlap in the program groupings across the meta-analyses that have been conducted. The author of each meta-analysis determines the criteria for program inclusion and the screening criteria. As a result, the program groupings are not discrete. This sometimes results in multiple meta-analyses of overlapping sets of programs that produce different conclusions about effectiveness. Given these conditions, the classification of evidence-based practices in Table 17.3 is somewhat tentative.

There is no overall standard for meta-analyses. While most follow the systematic review method, each investigator determines the program selection criteria, screening criteria, coding protocol, measure of effect size, methods for handling different measures of outcomes and program characteristics to include in their analysis. The primary source for meta-analyses in Table 17.3 includes two Web sites that are fairly regularly updated, the Campbell Collaboration Web site

and the Washington State Institute for Public Policy Web site. In addition, meta-analyses reported by other reviewers are also included.<sup>14</sup>

### **Evidence-Based Childhood Prevention Practices**

During childhood, five general evidence-based practices have been identified: parent training, cognitive behavioral therapy, skills training, early education and substance abuse prevention. Parent training is an effective practice for all targeted populations, universal, selected and indicated. Skills training is effective for both universal and selected populations and CBT is effective for both selected and indicated populations. There is some overlap here between these programs, specifically between skills training and substance abuse prevention and between family interventions and parent training interventions. The set of programs included in the more general family intervention meta-analysis included parent education plus daycare or preschool, school-based child training plus parent training, and home visitation.<sup>15</sup> The substance abuse strategy was effective specifically for later tobacco use/abuse.

### **Evidence-Based Adolescent Prevention Practices**

The types of prevention practices proven effective during adolescence for both universal and selected populations is virtually the same set as

<sup>14</sup> See <http://www.campbellcollaboration.org>; <http://www.wsipp.wa.gov>; (Lipsey & Wilson, 1998; Lipsey et al., 2007, 2010; Sherman, Farrington, Welsh, & MacKenzie, 2002; Tolan, Bass, Henry, & Schoeny, 2008; Welsh & Farrington, 2006a, 2006b; Wilson et al., 2000, 2001, 2006). Meta-analysis effect sizes of 0.20 and greater are considered significant effects for Table 17.3. Effect sizes of 0.15 and greater on the WSIPP Web site were included when statistically significant, the benefit–cost ratios were substantial and the probability of achieving a positive effect was 90 % or greater.

<sup>15</sup> A Meta-analysis of early parent training by Bernazzani and Tremblay (2006) found mixed results and they recommend some caution regarding this practice for very young children.



**Table 17.3** Generic types of evidence-based practices: meta analysis

Types of intervention	Childhood (0–11)	Life course stage adolescent (12–17)	Adulthood (18+)	Community-level environmental intervention
Universal	<ul style="list-style-type: none"> <li>– Early parent trainings</li> <li>– Family interventions</li> <li>– Long-term substance abuse programs</li> <li>– Skills training programs</li> </ul>	<ul style="list-style-type: none"> <li>– Parent training</li> <li>– Family interventions</li> <li>– Long-term substance abuse programs</li> <li>– Skills training programs</li> </ul>		<ul style="list-style-type: none"> <li>– Closed circuit IV-UK only</li> <li>– Hot spot patrols</li> <li>– Improved street lighting</li> </ul>
Selected	<ul style="list-style-type: none"> <li>– Early childhood educational programs</li> <li>– Parent training</li> <li>– Behavioral parent training and cognitive behavioral therapy</li> <li>– Cognitive behavioral training</li> <li>– Skills training program</li> </ul>	<ul style="list-style-type: none"> <li>– Teen cigarette smoking</li> </ul>	<ul style="list-style-type: none"> <li>– Drug treatment programs</li> </ul>	<ul style="list-style-type: none"> <li>– Juvenile curfew with aggressive police patrols</li> <li>– Reorganization of grades/classes</li> <li>– School normative climate change</li> </ul>

(continued)

**Table 17.3** (continued)

Types of intervention	Childhood (0–11)	Life course stage adolescent (12–17)	Adulthood (18+)	Community-level environmental intervention
Indicated	<ul style="list-style-type: none"> <li>– Parent training and cognitive behavioral therapy</li> </ul>	<ul style="list-style-type: none"> <li>– Brief alcohol interventions</li> <li>– Contingency management</li> <li>– Drug treatment programs</li> <li>– Family interventions for delinquents</li> <li>– Motivational interviewing</li> <li>– Teen cigarette use</li> <li>– Victim/offender mediation</li> <li>– Family integrated transitions</li> <li>– Self-control/social competence building</li> <li>– Individual counseling</li> <li>– Behavioral modeling/modification approaches</li> <li>– Skills training programs</li> <li>– Restitution with probation/parole</li> <li>– Teen Courts</li> <li>– Cognitive behavioral programs</li> <li>– Mentoring programs</li> <li>– Adolescent transitions program</li> <li>– Diversion with services</li> <li>– Incarceration-based drug treatment</li> </ul>	<ul style="list-style-type: none"> <li>– Group counseling in prison</li> <li>– Methadone maintenance programs</li> <li>– Contingency management</li> <li>– Drug treatment programs in prison community</li> <li>– Electronic monitoring</li> <li>– Intensive supervision with treatment</li> <li>– Drug courts</li> <li>– Motivational interviewing/enhancement therapy</li> <li>– Cognitive behavioral programs in prison</li> <li>– Cognitive behavioral programs in community</li> <li>– Drug offender sentencing alternative</li> <li>– Educational programs in prison</li> <li>– Mental Health Court</li> <li>– Vocational education in prison</li> <li>– Correctional industries programs</li> <li>– Intensive supervision-diversion from prison</li> </ul>	

was demonstrated effective for children: parent training, CBT, skills training, and substance abuse prevention programs. These same intervention practices are also effective for indicated populations, but many other practices are proven effective for offenders. Substance abuse programming is, on average, effective both in institutional settings and in the community. Individual counseling is effective only with non-institutionalized offenders. Other evidence-based practices include: behavior modification, motivational interviewing, victim/offender mediation, restitution with probation/parole, mentoring and diversion. Not surprisingly there are many more types of evidence-based practices for adolescent offenders than for universal or selected adolescents. The major focus of our intervention efforts with adolescents is on juvenile offenders.

### **Adult Evidence-Based Prevention Practices**

There are no universal evidence-based practices for adults and only one for selected adults-drug treatment programs. Prevention programming for adults is almost entirely on intervention programs and treatment programs for offenders. There is substantial overlap between evidence-based practices for juveniles and adults, but some new practices have proven effective with adults. These include electronic monitoring, two types of intensive supervision, specialized courts (drug and mental health), and educational programs and correctional industries programs. Both CBT and drug treatment programs are effective strategies both in institutions and in the community. Group counseling is an evidence-based practice for adult offenders, but not for juvenile offenders (Lipsey & Wilson, 1998).

### **Evidence-Based Community and Environmental Practices**

There are a few crime prevention practices that are community- or school-level environmental interventions. Two of these are school-based

practices, school climate change and the reorganization of grades and classes. The others include the use of closed-circuit TV, hot spot patrols, improved street lighting and juvenile curfew with aggressive police patrols practices. The meta-analysis of closed circuit TV evaluations indicated this practice is effective in the UK but not in the US.

### **Overview: Evidence-Based Practices Over the Life-Course**

Four prevention and intervention strategies are effective across multiple stages of the life course and types of targeted populations: parent training, CBT, substance abuse prevention programs and skills training programs. Family-based intervention practices are generally effective during both childhood and adolescence and for universal, selected and indicated populations. Cognitive Behavioral therapy is a proven practice for selected and indicated populations across all stages of the life course. Skills training practices are also effective across two stages of the life course and for both universal and indicated populations. Finally, during adolescent and adulthood stages, drug prevention and/or intervention programs were generally effective for all targeted populations.

Most other evidence-based practices involve types of programs developed specifically for offenders. The relatively large number of proven practices available for offenders is a reflection of federal, state and local government funding priorities. We are spending the great bulk of our prevention/intervention and treatment dollars on this population to the neglect of genuine prevention programs and practices.

### **Discussion: Prevention Programs and Practices Over the Life Course**

The objective of this review is to provide information on the best available scientific evidence for crime prevention program and practice effectiveness, on what can be expected to work for persons at each stage of the life course. Given

that the risk and protective factors for criminal behavior are substantially different across the life course, it might be expected that effective programs and practices would be different for children, adolescents, and adults.

This does not appear to be the case. Parent training is an effective practice both during childhood and adolescent stages of the life course and for all three types of interventions. Specific brand-name parenting programs are also identified as effective programs for these stages and types of intervention. Not surprisingly, this is not a practice that targets adults, although there are universal and selected brand-name parenting programs for adults (NFP and Triple-P Parenting Programs). Skills training is another type of practice that includes specific brand-name programs that is effective for both children and adolescents and all intervention types (except for indicated children and adults). Substance abuse programs and practices are effective across all life course stages and most intervention types. There are few brand-name programs available for adults, but those that are available are parenting and substance abuse prevention programs. Finally, some new intervention practices are effective for adolescent and adult offenders. They are quite similar for both adolescents and adults, with only a few strategies being unique to either life course stage. This is the one type of intervention-stage of the life course where a broader range of different intervention strategies is introduced.

There are several possible explanations for this failure to find much evidence for different practices and programs across different stages of the life course. The expectation that program strategies will change assumes that different risk and protective factors require different change strategies or mechanisms. This may not be the case. A more likely explanation is that effective practice and program interventions developed to date focus on those risk conditions that are common across life course stages and that stage-unique factors are largely ignored or under developed. For example, there are no gang or peer delinquency interventions demonstrated to be effective. This is one of the strongest risk conditions during adolescence and while there are a

number of gang prevention and intervention programs in use, none have been proven effective. There are no employment or school dropout programs demonstrated to be evidence-based interventions. There are some exceptions. Several strategies to reduce neighborhood exposure to crime and neighborhood disorganization have proven to be effective practices—closed circuit TV, street lighting, hot spot patrols and juvenile curfew with aggressive police patrols. These are risk conditions primarily for adolescents and adults (US Surgeon General, 2001).

The identification of evidence-based practices and programs may have very different practical applications. Evidence-based practice information is very helpful to a program designer, indicating which intervention strategies have proven to be most effective and might be used in the development of a new program. This information also builds confidence in the validity of specific theoretical models. But what does a practitioner or funder do with this information? Ultimately, it is a program with a specific target population, intervention or treatment protocols, manuals, training requirements, etc. that will be chosen and implemented. Knowing which particular practices are effective may provide an initial screen for selecting an evidence-based program but then the practitioner must either design his or her own program using the general intervention strategy or select one of the programs included in the set of programs in the meta-analysis to implement. A program with a positive effect size can be chosen, but then we are back to a consideration of the evidence for a specific program and a systematic review of the available evidence for that program.

There is a danger that practitioners implementing routine community and justice system programs that have not been evaluated but are using an evidence-based practice, e.g., skills training, will claim their programs are therefore evidence-based programs. But not all programs using an evidence-based practice are necessarily effective. The range of effect sizes in a meta-analysis is sometimes quite large. For example, in a meta-analysis of child skills training programs, the overall effect was modest and positive ( $ES=0.38$ ). But the range in effect sizes was

–2.39 to 2.79. A significant number of programs in that meta-analysis had no positive effect and others had a negative effect on a child’s antisocial behavior (Losel & Beelman, 2003). A number of meta-analysis reviewers note that the programs included in their analysis were not representative of current routine justice system programs, but were primarily special R&D demonstration programs. The fact that a program is using an evidence-based practice does not necessarily qualify that program as an evidence-based program.

While a meta-analysis of a particular practice may find that the overall effect size is close to zero, it does not follow that there are no programs using this strategy that are effective. Any one program in the set of programs may be unrepresentative of the set of programs and its effect size substantially different from the average effect size. While most of the evidence-based programs identified in Table 17.2 are using evidence-based practices identified in Table 17.3, there are some exceptions.

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## The Future of Prevention Science

It seems critical that the scientific community arrive at some consensus on the scientific standard for certifying programs as evidence-based programs. The current lack of consensus and acceptance of almost any evidence as sufficient to call a program evidence-based has led several prevention scientist to abandon the use of this term. We need a credible scientific standard that is acceptable to both prevention scientist and practitioners. If this is not accomplished, there is a real danger of over-selling questionable programs and losing public confidence in prevention science.

One of the paths to achieving this consensus is to improve the number and quality of program evaluations. If this is accomplished, there will be a push for a higher standard and something like the Federal Collaboration standard will be adopted and more individual, brand-name program meta-analyses with high-quality RCTs will be possible. There is much room for improvement in the design and conduct of evaluation experiments. Even RCTs often fail to address significant threats

to the internal validity of the trial, e.g., failure to control for baseline differences, differential attrition, failure to account for clustering, and inappropriate statistical analyses. Occasionally the randomization process is compromised. Many program developers fail to consider the replication standard when designing new trials. Typically, the second trial of a program includes new elements or modules designed to improve program effects. But rather than designing the evaluation to both replicate the initial program and assess the potential add-on effect of the new elements, the trial is designed as an evaluation of what is essentially a “new” version of the program and the claim of replication is lost.

There is also a need for consensus on a uniform standard for meta-analyses beyond that specified in the systematic review method. Each investigator is free to determine the program screening criteria, the classification of programs in the intervention “topic” being considered, rules for coding program characteristics, what characteristics should be included in the analysis, how to measure effect size and how to handle multiple outcome effects for a given program. These differences lead to inconsistencies in meta-analysis findings for a particular practice. There is no standard and no uniformity on these matters across meta-analyses.

The inconsistencies in program classification are particularly troublesome. Because of the overlapping of individual programs included in analyses of different constructed classifications of practices or topics, there is no way to provide a cumulative summary of the evidence across meta-analyses for a given practice. A general mapping of types of programs is needed which provides a discrete set of intervention practices that can be evaluated and the results of additional analyses over time can be summed. This will require developing a set of criteria and rules for determining how programs are classified—on the change strategy employed, the targeted risk and protective factors, the outcome, the theoretical rationale, the target clients, or some combination of such criteria. At present, there is no consistency in the criteria employed for meta-analysis program classifications.

The new frontier in prevention science is translational research, the study of the dissemination, selection and implementation of programs. The identification of evidence-based programs does not guarantee their being widely adopted and implemented with the level of fidelity necessary to realize the effects found in their evaluations. The current penetration of evidence-based programs listed in Table 17.2 is quite modest at best. Moreover, a number of programs or practices demonstrated to be ineffective or harmful are still being implemented on a fairly wide scale, for example, DARE and versions of Scared Straight. Research to identify effective dissemination models and selection decisions is critical if evidence-based programs are to be implemented on a scale with a level of fidelity that can impact community rates of criminal behavior.

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## Introduction

The goal of this chapter is to argue both that prisoner reentry research may be improved by systematically drawing on life-course perspectives and, conversely, that life-course theoretical perspectives may be improved by systematically investigating reentry. The salience of these arguments stems from the fact that reentry populations in the USA have increased dramatically and thus present a significant policy challenge (Bushway & Apel, 2012; Mears & Mestre, 2012). At the same time, they present an opportunity to understand better the unfolding of offending over time and what leads some individuals to persist in crime and others to desist.

To date, relatively few studies of reentry or, indeed, of offending, follow individuals from childhood to death, despite the increasingly greater priority among criminologists and policymakers on understanding and promoting desistance from offending (Bushway & Apel, 2012; DeLisi & Piquero, 2011; Farrington, 2003; Kurlychek, Bushway, & Brame, 2012). Implicit in the notion

of desistance is the idea that offending may unfold along different trajectories (or pathways), that different groups may fall into some trajectories, and that individuals may be pushed into or out of these trajectories by various individual or social forces. Some individuals, for example, persist in offending but then may veer off this trajectory. This possibility holds particular relevance, of course, for reentry discussions because the goal of correctional systems is not only to punish those who break the law but also to reintegrate them into society.

Exceptions, such as the Laub and Sampson (2003) study, clearly exist. They followed 500 men from the pioneering Glueck and Glueck (1968) study who had been placed in Massachusetts reform schools during the 1940s. Laub and Sampson's (2003) study highlights the fruitfulness of applying a life-course perspective to understanding offending. It led, for example, to analyses that examined behavior over many decades and to the concomitant insight that there may be "counterproductive effects of punitive sanctions, such as incarceration, when considered in the long run of individual lives" (p. 291). It led, too, to an understanding that life events, such as incarceration, may influence an array of outcomes over the life course. As but one example, they found that "incarceration as a young adult had a negative effect on later job stability, which in turn was negatively related to continued involvement in crime over the life course" (p. 209). This type of study is the exception not the rule. The bulk of studies delimit their focus to cross-sectional analyses or relatively short periods of observation, typically

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measured in but a few years. In the delinquency literature, for example, longitudinal studies exist (Lieberman, 2008), but at most they typically focus on the adolescent and young adult years. Research that examines adult ex-prisoners over the life course is almost nonexistent (Kurlychek et al., 2012).

With these observations in mind, this chapter argues that reentry research and life-course scholarship can inform and benefit one another. To this end, we first provide a brief discussion of prisoner reentry and of life-course theoretical perspectives. Second, we discuss how prisoner reentry discussions can benefit from the application of life-course theoretical perspectives. Third, we flip the tables and focus on how life-course perspectives can benefit from systematically examining prisoner reentry. We then conclude by discussing directions for future research and emphasize, again, the important benefits that accrue to reentry discussions of using life-course perspectives and, conversely, of advancing life-course research by examining reentry.

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## Prisoner Reentry

The dramatic expansion of prison populations has been well-documented (see, generally, Clear, 2007; Gottschalk, 2011; Lattimore, Visher, & Steffey, 2010; Travis & Visher, 2005). Recent estimates indicate that over 708,000 individuals are released from state and federal prisons annually (Guerino et al., 2011). In 2010, state and federal jails and prisons held over 2.2 million inmates (Glaze, 2011). This growth in prison populations is mirrored by similar growth in the correctional system at large—from 1980 to 2010, the number of individuals on probation or parole or in jail or prison grew from just under two million to over seven million (Glaze, 2011). In turn, expenditures have increased as well. For example, between 1982 and 2006, the cost of corrections in America increased from \$36 billion to \$215 billion (Mears, 2010, p. 17).

The prospects for these individuals are poor. A widely cited federal study established, for example, that over two-thirds of individuals released from prison will be rearrested for a new offense within 3 years (Langan & Levin, 2002).

As scholars have emphasized, however, this problem touches on only one aspect of prisoner reentry. Viewed more broadly, reentry involves a focus on a range of other outcomes that incarceration may affect or that, in some manner, influence successful transitions. Released prisoners, for example, are substantially more likely than individuals from the general population to suffer from mental and physical illnesses, to be homeless, to have a poor employment history, to be drug abusers or drug dependent, to have a history of abuse or victimization, and to have a learning disability (Lattimore et al., 2010; Mears & Barnes, 2010; Petersilia, 2003; Travis, 2005).

Viewed even more broadly, reentry involves (1) the removal of large numbers of individuals from their families, friends, and communities, (2) the experience of incarceration and all that this experience entails, including the potential for victimization and abuse, limited exposure to rehabilitative programming, and association with other individuals who have committed crimes, and (3) the return of these same individuals to communities that may be ill-equipped to facilitate a successful transition back into society. This social problem, one recognized by Democratic and Republican presidents, including President William Clinton and President George W. Bush, in State of the Union speeches, entails not only a focus on incarcerated individuals but also on their children, families, friends, and the communities to which they return (Clear, 2007; Mears, Wang, Hay, & Bales, 2008; Visher & Travis, 2011).

Reentry thus is not simple, and its complexity has consequences for understanding offending among this population. The population is, for example, heterogeneous (Brennan, 2012). Some individuals may have substantial records of offending, significant drug, health, or psychological problems, and may return to areas marked by considerable social disadvantage. Counterparts will vary on these and many other dimensions. More formally, ex-prisoners may vary with respect to their pre-prison characteristics and the experiences that they have accumulated to that point (Visher & Travis, 2003), the experiences that they have and the programming that they

receive in prison (Adams, 1992; Bottoms, 1999; Irwin, 2005; MacKenzie, 2006), and the experiences and social networks they have in the communities to which they return upon release (Berg & Huebner, 2011; Kubrin & Stewart, 2006; Maruna, 2011). Not least, during the reentry process, they may face a diverse array of barriers, including, as Travis (2005) has emphasized, “invisible punishments” that include voting restrictions, limited or no access to public housing, and exclusion from certain employment occupations.

Juxtaposed against such considerations is a body of work that has primarily focused on “risk factors” for recidivism. The risk literature has changed dramatically in recent decades, with recent scholarship focused less on “static” risk factors (i.e., those that may be associated with or cause offending but cannot be changed) and more on “dynamic” risk factors (i.e., those that may cause offending and that can be changed) (Latessa, 2012). A prior record of offending, for example, is a static factor that strongly and consistently predicts recidivism but cannot be changed (Gendreau, Little, & Goggin, 1996). Other factors that have been associated with recidivism are also “static” predictors, including age, sex, and race. Dynamic factors that predict recidivism include such dimensions as education, employment, social support, drug abuse, poor problem-solving ability, and weak coping skills (Andrews, Bonta, & Stephen Wormith, 2006; Cullen & Gendreau, 2000; Gendreau et al., 1996; Latessa, 2011, 2012). Of course, participation in programming of various types in prison and after release may also influence recidivism (MacKenzie, 2006).

To date, there remains a relatively large disjuncture between reentry research and criminological research aimed at developing and testing theories of offending. In recent years, however, scholars increasingly have turned to theories of crime to better understand recidivism and, in so doing, have used a focus on reentry to develop and test such theories (see, e.g., Bales & Mears, 2008; Kubrin & Stewart, 2006; Laub & Sampson, 2003; Maruna, 2011). Much of this work remains at a nascent stage of development and has not, for example, systematically applied the major theories

of crime to understanding recidivism or, in a related vein systematically relied or drawn on a life-course perspective. Indeed, the bulk of reentry studies typically focus on recidivism and do so using 1–3 year follow-up periods.

There is, as we suggest below, considerable room to advance knowledge of prisoner reentry by applying a life-course perspective to the study of ex-prisoners and, concomitantly, opportunity to refine life-course perspectives of offending. One example, to which we will return, is the fact that prison constitutes a potentially significant turning point in the lives of those subject to it and entails many experiences, such as abuse and victimization or a reluctance of families or communities to accept them after release from incarceration. These experiences may well affect not only recidivism, as measured using relatively short windows of time (e.g., 1–3 years), but also desistance from offending, as well as other life outcomes (e.g., marriage and employment) over longer time spans (e.g., decades).

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## Life-Course Perspectives

In recent years, life-course perspectives on crime have emerged as one of the most prominent lenses through which to describe and understand criminal behavior (DeLisi & Piquero, 2011; Farrington, 2003). Here, we briefly discuss themes that have emerged from this line of work and then in the next section we examine the implications of these themes for reentry scholarship.

## Different Dependent Variables

Within criminology, the focus on criminal careers, developmental pathways, and life-course events—what Farrington (2003) has referred to as “developmental and life-course criminology” (DLC)—has greatly broadened the scope of what criminologists study. The emphasis, for example, is less on what differentiates offenders from non-offenders at any given point in time. Instead, attention is turned more to what might be viewed as a broader range of dependent variables. Life-course scholars, for

example, examine the onset of, persistence in, and desistance from offending. They also examine other types of variation in offending, such as the frequency, specialization, and duration of offending as well as continuity and changes in offending (Hagan & Palloni, 1988). They examine the generality of deviant behavior and the extent to which individuals' criminal propensities are manifested differently during different life stages (Massoglia, 2006; Osgood, Johnston, O'Malley, & Bachman, 1988). Finally, a life-course approach draws attention to potential collateral consequences of offending for other life domains, such as employment, health, and family relations (e.g., Hagan & Dinovitzer, 1999; Massoglia, 2008; Sampson & Laub, 1993; Siennick, 2011). More generally, as DeLisi and Piquero (2011, p. 289) have noted, life-course perspectives lead to a focus on offending, and on offenders, from birth to death.

One way to illustrate the salience of this broadened spectrum of dependent variables is to focus on the age-crime curve, over a longer age span than what has typically been used in traditional criminological studies, and how it varies by type of offense. Laub and Sampson (2003, p. 87) have shown that in fact considerable differences in the age-crime surface when we focus on different offenses and examine individuals into their 60s (cf. Steffensmeier, Allan, Harer, & Streifel, 1989). For example, they found considerable differences for property, violent, and drug offending. Property offending peaked around 16 and then rapidly declined before beginning to slowly taper off as individuals reached the late 30s. By contrast, violent offending peaked when individuals were in their 20s and more gradually tapered off as individuals reached the 30s. Finally, drug offending peaked in the mid-30s and gradually tapered off as individuals were in their 40s. In additional analyses, Laub and Sampson (2003, p. 105) showed that dramatically different trajectories of offending emerge—that is, different groups of individuals exist with different patterns of offending over the life course—when using information about offending, by type, up until age 70. At the same time, for any given group there was a declining pattern of offending over the life course. Such facts can be identified relatively easily if we

follow individuals into their 60s or beyond. By contrast, if, as is the case with the vast bulk of criminological studies, we follow individuals only for a few years, or we rely on a cross-sectional “snapshot” of adolescents, such facts not only cannot be identified but they also, by extension, cannot be explained (Farrington, 2006).

Life-course perspectives create still other dependent variables. Perhaps most prominently, they lead to the identification of trajectory groups, such as, using Moffitt's (1993) taxonomy, abstainers, life-course persistent offenders, and adolescent-limited offenders. No universally agreed-upon taxonomies exist (see, generally, DeLisi & Piquero, 2011; Laub & Sampson, 2003). And questions continue to confront criminology concerning the extent to which criminality constitutes an underlying propensity that is relatively enduring over time (Gottfredson & Hirschi, 1990; Sweeten, 2012). Even so, this avenue of research has opened the door to new ways of describing and understanding offending.

### **Traditional and New Independent Variables**

In addition to broadening criminology's set of dependent variables, life-course criminology has broadened the way that scholars think about their independent variables—that is, traditional and newly identified crime-causing factors. Basic questions immediately arise when, for example, our attention turns from predicting crime among individuals at one point in time to trying to explain crime over the life-course. Consider some of the possibilities.

First, offending itself may have causal implications for future offending (Agnew, 2005). For example, it may be that the onset of offending either serves as a marker for the likelihood of offending over the life-course or in some way is a cause of such offending (DeLisi & Piquero, 2011). Similarly, through their own behavior and processes of cumulative continuity, offenders may select themselves into environments that perpetuate their offending (Caspi, Elder, & Bem, 1987; Moffitt, 1993). For example, the commission

of several acts of crime consecutively during adolescence may trigger family, school, or societal reactions that trigger further events—strain and labeling, for example—that in turn contribute to individual changes, such as a retreat into delinquent peer networks and thus further offending. Such possibilities are not readily apparent when conceptualizing crime with no reference to changes in individuals over time. By contrast, when conceptualizing individuals within a temporal context—that is, how their lives unfold—such possibilities clearly emerge.

Second, life-course criminology leads to a revisitation of crime-causing forces identified by mainstream, or “traditional,” crime theories (Farrington, 2003; Laub & Sampson, 2003). A critical question is, for example, whether crime-causing forces, such as social bonds, strain, or social learning, exert the same, greater, or lesser influence over the life course. In a related vein, do the manifestations of these causal forces vary? It may be, for example, that the most accurate measures of the social bond differ among adolescents and adults. As but one illustration, for adolescents, marriage is not typically a possibility and so would not serve as the best measure of an individual’s bond to society. Conversely, parents tend to wane in importance as individuals age, and so, in turn, may not be the best measure of the social bond among adults.

Third, life-course criminology opens the door to consideration of crime-causing forces that are not identified by traditional criminological theories but that nonetheless constitute “risk factors” for offending or for offending trajectories (Farrington, 2003). From a life-course perspective, for example, the question arises as to whether life events or transitions exist that either directly contribute to crime or do so indirectly by altering an individual’s trajectory of offending. Marriage, for example, may affect offending at a given point in time, as reviews suggest (Siennick & Osgood, 2008), but it also may affect the trajectory of offending and this effect in turn may vary depending on where in an individual’s stage in the life course it occurs. Other life events—including entry into or out of the workforce,

divorce, parenthood, joining the military, attending college—also may be consequential.

Fourth, life-course perspectives lead to investigation of the possibility that there may be synchrony of multiple and different life events that may amplify or suppress one another or the effect of crime-causing forces. As but one example, dropping out of high school, becoming enmeshed in a delinquent peer network, failing to find gainful employment, and experiencing brief stays in custody for crimes may all combine to reinforce one another and, in turn, make it more difficult for the individual to transition successfully into healthy or prosocial trajectories (e.g., work, marriage, prosocial behavior). As another example, Giordano, Cernkovich, and Rudolph (2002, p. 1013) have suggested that attaining a “respectability package” of positive marital and employment circumstances may lead to greater reductions in offending than would marrying or becoming employed in isolation. From this perspective, changes in one trajectory are relevant not only by themselves but also for their consequences for other outcomes.

Fifth, these perspectives also lead logically to investigations of social context, and of changes in this context, including changes in family, friend, and coworker networks. As such, it encourages a more holistic assessment of the factors that give rise to behavior and the contexts within which the behavior occurs. An individual’s trajectory of offending, for example, may stem from participation in a social network that itself follows a trajectory of offending.

Sixth, life-course research points to the possibility that broader, societal contexts may change over time in ways that structure the options and constraints under which individuals operate or the meaning of certain events. For example, marriage in contemporary times may “mean” something different than it did in the 1950s, especially given the markedly greater rates of divorce and cohabitation in recent decades. Accordingly, entry into or out of marriage may exert different effects on life-course outcomes, including crime trajectories, for individuals.

Seventh, through an emphasis on changes over time, life-course perspectives lead to consideration of the extent to which behavioral changes reflect



human agency—that is, a choice to pursue a particular path of conduct—or environmental context or both (Rutter, 1989; Sampson & Laub, 1992). The question of the relative balance between these two possibilities is a time-eternal one investigated in the social sciences. Even so, life-course perspectives, more so than some criminological theories, place the question at the forefront of investigations about the causes of offending.

As the above observations suggest, a potential disadvantage of life-course perspectives is the lack of a single unifying, or general, theoretical perspective. However, the more eclectic or inclusive approach it affords opens new lines of investigation and could provide for a more comprehensive understanding of the causes of behavior.

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### **Benefits for Prisoner Reentry of Using Life-Course Perspectives**

Life-course perspectives draw our attention to new ways of conceptualizing criminal offending and its causes. Here, we highlight some of the implications that flow from this observation for understanding and conducting research on prisoner reentry. Our main conclusion is that reentry scholarship may benefit by systematically incorporating life-course perspectives into studies of ex-prisoners. In the next section, we will turn the tables and outline arguments for why life-course perspectives may benefit from a focus on reentry.

### **Ex-Prisoner Offending Trajectories**

The bulk of research on prisoner reentry focuses on recidivism. Typically, recidivism is measured using rearrest, reconviction, or reincarceration during a 6-month to 3-year time frame (see, e.g., Langan & Levin, 2002; Maltz, 1984; Villettaz, Martin, & Isabel, 2006). Exceptions exist—for example, Kurlychek et al. (2012) recently examined convicted felons in Essex County, New Jersey using a follow-up period of 18 years. Their analyses identified two groups of individuals, those who desisted instantaneously and those whose probability of recidi-

vating declined slowly over time. This type of study, one with a long follow-up period, is unusual. It is, however, needed to investigate and identify such possibilities as the idea that ex-prisoner offending can involve intermittency, that is, “the idea that a low-rate offender can go for many years before committing a new offense” (Kurlychek et al., 2012, p. 99), and, more generally, the possibility that different types of offending trajectories exist.

Long-term follow-ups afford, more generally, the possibility of identifying a range of life-course trajectories and to explore the extent to which the type and frequency of offending vary among these groups or are differentially affected by various causal forces or life events. As prior research suggests, some individuals may reach a point at which they decide to “go straight”; they may mature or lose or gain social bonds; they may experience turning points that propel them toward or inhibit offending; and they may become ensnared in cumulative disadvantage that cements failed connections to conventional lifestyles and in turn increases the likelihood of continued or increased offending (DeLisi & Piquero, 2011; Kurlychek et al., 2012; Laub & Sampson, 2003; Maruna, 2011). In each instance, identification of offending trajectories is a necessary first step, one that a life-course perspective highlights and that holds the potential for providing a considerably more rounded and fuller understanding of ex-prisoner offending.

### **Traditional Crime-Causing Factors and Ex-Prisoner Life Outcomes**

Prisoner reentry research has included theoretical investigations into the causes of recidivism and, more so, exploratory atheoretical approaches to predicting recidivism (Andrews et al., 2006; Bushway & Apel, 2012; Huizinga & Henry, 2008; Mears & Mestre, 2012). To date, however, this work has not systematically examined how the major crime-causing factors identified by traditional criminological theories affect ex-prisoner offending or, by extension, how the effects of these factors may vary over the life-course. Here, again,

exceptions exist (e.g., Laub & Sampson, 2003; see, generally, Huizinga & Henry, 2008), but they are just that, exceptions. A life-course perspective clearly points to the idea and importance of investigating causal forces and the potential for their effects to vary as individuals age.

### **Risk Factors, Life Events and Transitions, and Ex-Prisoner Life Outcomes**

#### **Risk Factors**

As emphasized above, a considerable amount of prisoner reentry research, including risk classification investigations, involves atheoretical efforts to identify correlates of recidivism. Critics may charge that such efforts run the risk of lacking a consistent or coherent foundation for making sense of the relationships, or interrelationships, between these correlates and offending (Akers & Sellers, 2009; Mears & Stafford, 2002). However, although theories play a critical role in drawing attention to certain factors that may influence offending, they at the same time can limit investigation of the broader set of forces that may be relevant and thus can place real limits on innovation in criminological research. In addition, the atheoretical nature of some risk factor research does not vitiate the potential relevance of that research for understanding the causes of recidivism over the life course (Farrington, 2003). A life-course perspective turns our attention to the potential for risk factors to vary in their effects over the life course of ex-prisoners, a possibility that to date remains largely unexamined, especially in scholarship on recidivism.

#### **Life Events and Transitions and Multiple Outcomes**

Because reentry research has not typically involved studies in which ex-prisoners were followed for many decades, it has not, by extension, systematically examined a variety of life events and transitions among this population. Viewed from a life-course perspective, however, our

focus should not just be on the first few years after release from prison, which is the approach taken in many reentry studies. Rather, we should focus on a range of life outcomes, not just recidivism, and examine their occurrence and causes over the lives of individuals released from prison (see, generally, Farrington, 2006; Laub & Sampson, 2003; Mears & Barnes, 2010). Accordingly, our focus turns not only to theoretically and atheoretically identified risk factors but also to events or transitions—such as marriage, joining the military, gaining or losing employment, homelessness, onset of disease or the successful treatment of it, death of loved ones, and so on—that may constitute critical moments for ex-prisoners. In each instance, there is the possibility that such events or transitions directly contribute to offending or do so indirectly by, for example, amplifying the effects of other criminogenic factors. Reentry scholarship clearly establishes that ex-prisoners have multiple limitations (e.g., mental and physical illness, spotty employment histories, poor education, childhood abuse) (Petersilia, 2003; Travis, 2005). These set the stage for various life events or transitions to occur and, conversely, to become more or less influential depending on the different limitations individuals have and the events that they experience.

Another way of framing the issue is to say that, viewed from a life-course perspective, we are led to think about ex-prisoners at the beginnings and ends of their lives, and then to use these life-long storylines to think about different offending groups and the factors that contributed to them. We also are led to think about more than just recidivism. Specifically, we are led to think about trajectories that relate to offending and to ripple effects that incarceration—and the social consequences of incarceration (e.g., not being able to vote or obtain certain types of employment)—may have on such outcomes as physical and mental health, marriage and other intimate relationships, family, employment, and housing. Recall, for example, Laub and Sampson's (2003) finding that incarceration experiences among young people decreased job stability, an effect that appeared in turn to contribute to continued offending (p. 209).

### **The Incarceration Experience as a Life Event or Transition**

Yet another way that a life-course perspective can inform scholarship on reentry is by drawing attention to ways in which incarceration itself constitutes a critical life event. Viewed in this light, we are led to a series of questions. What happens, for example, during prison and do prison experiences influence recidivism and other life outcomes? The range of possibilities is vast—including victimization, suicidal ideation, abuse, receipt of programming or not, mental health treatment or not, the severing of ties to family and friends (Adams, 1992; Visser & Travis, 2003)—and yet their salience for ex-prisoners has been largely unaddressed in extant research (see, generally, Cullen, Jonson, & Nagin, 2011; Nagin, Cullen, & Jonson, 2009).

Once we view “the” prison experience as in fact encompassing a range of possibilities, additional questions emerge. For example, does a first-time or second-time prison experience knife an individual off into a different trajectory from what they otherwise would experience? If so, how? How many incarceration experiences, or contacts with law enforcement and the courts, are required to turn individuals away from crime? Are some individuals impervious to change, or at least the kind that might be induced by prison? How does incarceration affect ties to families? For example, which inmates are likely to be visited and which not? And how does not being visited affect the experience of incarceration and in turn reentry? Does it, for example, adversely affect in-prison behavior, increase recidivism, and decrease employment and continuity with pre-prison housing arrangements (Berg & Huebner, 2011; London & Parker, 2009; Mears, Cochran, Siennick, & Bales, 2012a, 2012b)? To what extent are “jail-house” conversion experiences, however suspect, salient to turning individuals down different trajectories with respect to offending, health, relationships, employment, and housing? What makes some inmates more likely to have these experiences?

Viewed in this incarceration-as-a-life-event light, a related and critical question arises: To what

extent do various prison-based interventions exert effects not only on recidivism in the short-term but also on recidivism in the long-term and on other outcomes (e.g., homelessness, employment) (Farrington, 2006)? Criminal justice program evaluations rarely extend beyond several years and so, as with recidivism studies in general, provide little foothold for understanding the longer-range impacts of programming on diverse outcomes (Mears, 2010).

From a policy perspective, there are several important implications of thinking about incarceration as a life event or turning point. To date, many policy discussions treat inmates as if they are a relatively homogenous group of individuals. There is, however, considerable heterogeneity among inmates (Brennan, 2012). They vary greatly, for example, along the following dimensions, many of which intersect with one another: age, sex, race, ethnicity, prior record of offending, prior record of incarceration and non-incarcerative sanctions, education, learning disabilities, mental health, physical health, family support, community conditions from which they come and to which they return, and more. For individuals with different constellations of these dimensions, certain prison experiences—such as receiving programming or being assaulted—may have dramatically different effects. And these effects in turn may vary depending on the individuals’ likely trajectory over the life course. Such possibilities are directly relevant to policy discussions about how best to improve reentry outcomes.

### **Reentry as a Life Event or Transition**

One of the major shifts in reentry research during the past decade has been the shift toward recognizing the challenges ex-prisoners face when they return to society. These individuals, for example, have poor employment prospects and, indeed, are barred from many occupations; many of them suffer from physical and mental illnesses and drug abuse and addiction problems that affect their ability to find work and to function; many become homeless within weeks of release and cannot access public housing;

many states limit the ability of ex-felons to vote; family, children, and friends may shun them; and more (Brown & Bloom, 2009; Lattimore et al., 2010; Maruna, 2011; Petersilia, 2003; Travis, 2005; Visser & Travis, 2011). Minorities may face additional barriers because of racism and accumulated disadvantage (see, e.g., Bellair & Kowalski, 2011; see also Sampson, 2009; Wang et al. 2010). A life-course perspective encourages a more systematic investigation of these possibilities and, as importantly, how they may affect one another and different life trajectories, including not only offending pathways but also career, family, employment, and other pathways.

It bears emphasizing that, despite the considerable advances in reentry research, much remains unknown about the transition of ex-prisoners back into society. Maruna (2011), for example, has highlighted the many ways in which punishment is highly ritualized in American society and in which reentry or reintegration is not. The argument focuses on the different ways in which ex-prisoners are in many respects given no coherent or consistent opportunities to become members of the broader community in the “deepest” sense of this term—that is, as members that belong (Travis, 2005). As Maruna (2011, p. 4) has emphasized, ex-prisoners typically are provided no ritualized reentry into the social and moral fabric of American society. Indeed, if anything, they are isolated through voting, employment, and housing restrictions, which serve to highlight society’s lack of acceptance of ex-prisoners. There are, then, two life events that incarcerated individuals experience—there is, first, incarceration and, second, reentry. According to Maruna (2011, p. 8), rituals serve a critical role in negotiating these types of life events: “Rituals appear to perform a crucial, cathartic function when individuals are facing epistemically threatening life events, especially transitions and turning points.” Notwithstanding this view, there remains little known about how best to facilitate transitions back into society that increase the chances of prosocial behavior and outcomes over the life course.

## Multiple Trajectories and Ex-Prisoner Life Outcomes

As the foregoing discussion highlights, a life-course perspective on prisoner reentry leads to a focus on a range of outcomes that may be affected by incarceration and by the reentry process. Clearly, for example, prison and reentry experiences may influence social relationships, work, health, and other life domains. It may, for example, influence living arrangements (London & Parker, 2009), which in turn may influence work prospects, and the two together may influence the likelihood of subsequent offending.

A life-course perspective also leads to consideration of how different life-course trajectories may overlap with and contribute to one another. Viewed in this light, the focus turns not only to how prison and reentry experiences may affect different life-course trajectories, but also to how these trajectories may contribute to or overlap with offending trajectories and to how these lead to or are affected by incarceration. For example, youth who enter the foster care system may move frequently, experience frequent transitions from one home and school to the next, and these events in turn may dovetail with increasing involvement with gangs, violence, and the juvenile justice system (Snyder, 2004). Such a pattern need not result from foster care placement, but it is one of many patterns that may emerge. Should they occur, they in turn might contribute to or occur alongside of mental illness. Such conditions may increase the likelihood of offending or of juvenile or criminal justice system involvement. A period of incarceration then may ensue that cements a lack of attachment to prosocial institutions (e.g., schools, community organizations, churches) and trajectories of poor health and disengagement from the workforce.

## Social Context and Ex-Prisoner Life Outcomes

Much of the literature on prisoner reentry focuses on individual-level characteristics. The risk prediction literature, for example, has tended to

prioritize this focus. It has, however, shifted in recent years, with greater emphasis on social factors, such as family conditions, that might influence offending (Andrews et al., 2006). In addition, many scholars have emphasized the salience of social context (see, e.g., LeBel, 2012; Maruna, 2001; Morani, Wikoff, Linhorst, & Bratton, 2011; Travis, 2005; Visher & Travis, 2003), such as marriage (McGloin, Sullivan, Piquero, Blokland, & Nieuwebeerta, 2011; Siennick & Osgood 2008). A life-course perspective further justifies this shift by highlighting the potential salience of a wide range of social contextual factors—such as employment, relationships with friends and family, involvement in churches and community organizations—for how ex-prisoners transition back into society. In addition, the perspective draws attention to the importance of examining the static associations between these factors and offending and the dynamic associations between them. That is, we are led to focus on how incarceration may change these factors and, conversely, how changes in them may affect reentry experiences.

### **Societal Changes and Ex-Prisoner Life Outcomes**

Reentry scholars increasingly have begun examining ways in which broader societal context and changes may influence reentry (Bellair & Kowalski, 2011; Kubrin & Stewart, 2006; Mears et al., 2008, Mears et al., 2012a, 2012b; Visher & Travis, 2011; Wang, Mears, & Bales, 2010). Here, though, considerable progress remains to be undertaken. One prominent example is the effect of community-level social conditions and reentry. For example, does returning to an area with high unemployment rates increase the likelihood of recidivism? What are the effects of returning to areas where unemployment rates have increased dramatically? Few studies have investigated these questions (see, generally, Bushway, Stoll, & Weiman, 2007; Mears et al., 2012a, 2012b), despite the substantial downturn in the USA economy over the past decade and the potential for it to adversely affect ex-prisoners more

so than individuals in the general population. Released prisoners, for example, typically have weak employment histories, which in turn put them at a greater disadvantage when seeking work during a time of weakening labor markets.

Other societal conditions and changes may be consequential as well for ex-prisoners. For example, individuals released from prisons during the past three decades faced a more punitive and restrictive set of control measures during the reentry process as compared to their counterparts in prior decades (Petersilia, 2003; Irwin, 2005; Travis, 2005). Some scholarship suggests that the societal conditions for minority ex-prisoners became especially disadvantageous (Sampson, 2009) and that the reception for ex-prisoners was even more hostile to minority ex-offenders (Western, 2006; Gottschalk, 2011).

Life-course perspectives focus our attention on these and other such possibilities. In so doing, they provide a foundation for conceptualizing reentry experiences in a potentially more holistic manner, one that ultimately may provide a stronger basis for predicting recidivism and other life outcomes among ex-prisoners.

### **Human Agency, Opportunity, and Ex-Prisoner Life Outcomes**

Scholarship on ex-prisoners has not prioritized a focus on human agency. Risk prediction studies, for example, tend to identify “correlates” of offending, while reentry studies have tended to identify a wide range of conditions, challenges, and barriers that ex-prisoners experience that, in turn, reduce the chances that they will succeed. The notion that individuals can choose to change, and the study of how they do so, is featured less prominently in the reentry literature. This limitation is notable because, as Maruna (2011) has highlighted, one of the frustrating features of reentry for ex-prisoners is the closing of opportunities, both during incarceration and after release from it, to show that they have changed or can change. Inmates in supermax prisons, for example, have few and sometimes no opportunities to demonstrate improvements in their behaviors (Mears, 2010).



A question that life-course perspectives highlight is whether individuals are ready to change and, for example, take advantage of beneficial turning points (see, e.g., Giordano, Cernkovich, & Holland, 2003; Laub & Sampson, 2003). The implications of this shift in perspective are considerable for reentry scholarship and policy. For example, risk prediction efforts might be enhanced by systematically incorporating information about the willingness or readiness of an individual to change (Andrews et al., 2006; Latessa, 2012; Mears & Mestre, 2012). More broadly, a consideration of human agency leads to a more nuanced understanding of the conditions under which individuals persist in or desist from offending. As Laub and Sampson (2003, p. 281) have argued, human agency, developmental pathways, and structural conditions may operate in complicated ways that one-dimensional perspectives, such as those that emphasize the primacy of one type of factor versus others, miss or obscure. Thus, one avenue along which reentry scholarship can advance, informed by life-course perspectives, is a systematic consideration of how human agency contributes to and interacts with the experiences individuals have while incarcerated and after their release from prison.

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### **Benefits for Life-Course Perspectives of Focusing on Reentry**

We now turn to a different question: How might life-course perspectives benefit from a focus on prisoner reentry. In the previous discussion, we systematically explored how the different themes that characterize life-course research present implications for reentry research. In this section, we focus more narrowly on a smaller set of themes and, in particular, the idea that incarceration may serve as a critical life event or turning point, one that may have ripple effects on multiple life domains and do so in ways that may vary for different groups of ex-prisoners. Viewed in this light, life-course scholarship would benefit from a focus on prisoner reentry because it would gain insight into the salience of one particular life

event or turning point and how it may influence other life-course outcomes. At the same time, we explore other ways in which a focus on reentry may contribute to life-course research. For example, ex-prisoner populations face considerable accumulated disadvantages and so provide a critical population through which to investigate questions of human agency.

### **Investigation of Incarceration as a Potentially Critical Life Event or Turning Point**

One benefit to life-course research of focusing on reentry is the opportunity to explore how one significant experience—incarceration—may constitute a critical life event or turning point. That is, it may not be only the experiences, such as marriage, employment, and service in the military, identified by Laub and Sampson (2003) and others (e.g., Farrington, 2003; DeLisi & Piquero, 2011) who have conducted life-course research that are consequential. Other life events, too, may be as or more critical. Here, incarceration likely stands as a candidate for one of the potentially most significant turning points in the life of any individual, regardless of their level of criminal “propensity” prior to incarceration. This conceptualization highlights the potential for criminal behavior official reactions to that behavior to influence offenders’ outcomes.

A focus on incarceration as a potential life event or turning point—one that over 700,000 individuals who are released from prison each year have experienced—leads naturally to investigation of how incarceration may affect individuals. Put differently, how might incarceration constitute a significant life event or turning point? For example, what is it exactly about incarceration, and the experience of it, that affects ex-prisoner life-course trajectories? Which experiences propel individuals into or out of offending or into or out of other experiences, such as physical or mental health, healthy relationships with family and friends, employment, and housing? In the same vein, assuming that individuals were on different trajectories prior to their prison experience, which



groups of individuals—that is, which trajectory groups—are most affected by prison and why? What contingencies exist? For example, which combinations of past and current life conditions and events affect the experience and impacts of incarceration on individuals released from prison? To date, few studies have followed individuals into adulthood, and yet the few that have point to long-term effects associated with different trajectory groups (see, e.g., Piquero, Farrington, Nagin, & Moffitt, 2010).

Such questions are central to understanding the effects of incarceration (Nagin et al., 2009), and they also are central to illuminating the types of life experiences that can cement certain trajectories or propel individuals out of them. It is, for example, conceivable that the factors that most affect inmates in prison may be precisely the ones that would influence them outside of a prison setting. Friendships with prosocial individuals, for example, and exposure to different types of social strains may contribute to misconduct in prison and criminal behavior outside of it. However, prison constitutes a unique experience. Accordingly, it may be that, for people who experience it, the salience of social bonds and conventional life strains (e.g., economic hardship, failed marriages, and intimate relationships) may be far less consequential than other factors. As many inmate accounts convey, prison can exert a hardening influence that may amount to a type of trauma that severely limits that ability of inmates to function well in mainstream society (Adams, 1992; Irwin, 2005; Rhodes, 2004). In this respect, it well may constitute an experience that parallels what soldiers who have been involved in sustained and intensive combat can experience when they return to society. That is, they have seen and done things that many members of mainstream society would find repugnant or simply could not understand or appreciate. The parallel seems reasonable to draw, but it remains speculative at this point.

The relevance here is that criminological life-course theoretical perspectives could benefit from a focus on reentry by systematically examining what it is about the prisoner experience that may influence individuals in the short term and long

term. They may benefit as well by investigating the wide range of social and societal contexts that some scholarship suggests can influence recidivism or condition the effects of other criminogenic factors. As noted above, for example, a growing body of scholarship has examined how reentry experiences are influenced by the conditions in the areas to which ex-prisoners return (e.g., Bellair & Kowalski, 2011; Kubrin & Stewart, 2006; Mears et al., 2008; Wang et al., 2010). This work draws attention to the idea that life-course trajectories may be affected not only by individual and family factors but also by the conditions of the areas in which individuals reside or to which they move.

In a related vein, life-course perspectives can benefit from the opportunity to investigate one of the central themes in work on individuals and how their lives unfold—namely, the central role of social networks and bonds. Consider, for example, that, among the many causes of crime, social bonds constitute one of the most prominent forces identified in criminological theory. Yet, it remains unclear how durable or influential those ties are during and after incarceration. Ties to family and friends, in particular, constitute a potentially critical factor that can impede offending (Laub & Sampson, 2003). Incarceration incontrovertibly can serve to undermine those ties through, among other things, affecting living arrangements (London & Parker, 2009). It is clear, for example, that, while in prison, individuals typically are not visited and do not have much if any communication with the outside world (Bales & Mears, 2008; Mears et al., 2012a; 2012b). At the same time, research has established that loss of contact with family and friends is one of the most important concerns that inmates express (Adams, 1992), that reunification with family and friends is challenging for ex-prisoners (Visher & Travis, 2011), and that reentry can pose significant burdens on ex-prisoners' families (Naser & Visher, 2006). In short, the very nature of the prison experience constitutes a unique opportunity to investigate the ways in which the lives of inmates and their families and friends are linked.

### **Investigation of the Salience of Strategies for Negotiating Adverse Life Events**

Another benefit for life-course perspectives of focusing on reentry is the development of a greater understanding of ways in which traumatic events not only may affect subsequent behavior in the long term but also of the ways in which different strategies or interventions affect this behavior and help individuals negotiate difficult life events. To illustrate, and as noted above, Maruna (2011) has argued that one of the reasons that reentry may be difficult for ex-prisoners is the absence of any formal ritual for reintegrating individuals back into society. From this perspective, it is the individuals who experience some type of ritual—an idea suggested by Travis (2005) and embodied in part by the idea of reentry courts—who may experience a more successful reentry precisely because they are given an opportunity and supports for becoming a member in good standing of the community. Those who are not given this opportunity or such supports, and who instead are treated as pariahs, may be more likely to recidivate and to engage in other behaviors that adversely affect them and others. In turn, these may have ripple effects over time and across others in their social network or community.

There is, by extension, the opportunity to investigate more broadly how human agency operates under extreme stresses and strains and intersects with structural constraints. No doubt, individuals who commit crimes have harmed others and society may rightly exact some form of retribution. Thus, at least partly by design, incarcerative punishments clearly exact a toll on inmates (Adams, 1992; Maruna, 2011; Travis, 2005), one that is atypical of the stresses and strains experienced by members of the general public. Few citizens, for example, regularly experience long bouts of isolation, separation from all family and friends or home communities, fear of or actual abuse and violence, a social and legal stigma that can preclude employment, the right to vote, and other limitations. Accordingly, a focus

on ex-prisoners may lead to greater insights into the ways in which individuals respond to and negotiate extreme stresses or strains, how these responses vary among different individuals or social groups, and how these challenges, and individuals' ability to negotiate them, work to divert or solidify trajectories of offending.

### **Investigation of Developmental Trajectories and Critical Life Events or Turning Points**

Life-course research in criminology focuses on behavior essentially from birth to death, yet the reality remains that few studies to date, with some exceptions (see, generally, Liberman, 2008), have been able to follow individuals over time for more than a few years or “waves” of data. Against that backdrop, a focus on ex-prisoner populations provides a unique opportunity to investigate the types of questions central to life-course research. Consider, for example, that prison systems house a broad spectrum of individuals ranging from the very young, including individuals in their teenage years, to the very old. This variation provides an opportunity to examine whether incarceration, as a critical life event or turning point, differentially affects younger versus older individuals and why. One view is that young people may be especially vulnerable to the criminogenic influences of prison and to the deprivations that attend to incarceration. Youth typically are less physically, socially, emotionally, and cognitively mature than adults (Feld & Bishop, 2012). For these reasons, they may be more adversely affected by prison experiences. That said, little remains known about the experiences of inmates in general, much less the unique experiences of the very young and the very old in prison or after release from it (Laub & Sampson, 2003). Accordingly, a focus on reentry using a life-course theoretical perspective would allow for investigating such possibilities and, in turn, contribute to scholarship and theorizing about the interplay of criminogenic forces and life-course trajectories.

## Conclusion

The central argument of this chapter is that life-course theoretical perspectives hold considerable potential and promise for enhancing scholarship aimed at understanding how prison and reentry experiences may affect recidivism and other outcomes (e.g., health, marriage, friendships, education, employment, housing) over the full lives of individuals who undergo these experiences. At the same time, we argued that life-course theories and research could benefit from undertaking studies of the prison and reentry experience. Here, we conclude by identifying some of the critical research questions that, in our view, merit investigation. In so doing, we focus first on the eight dimensions that were the subject of focus when we discussed the benefits of using a life-course perspective to understand and study reentry and then on the three dimensions that were the subject of focus when we discussed the benefits to life-course scholarship of focusing on reentry.

## Prisoner Reentry

First, what are the life-course trajectories of offending among ex-prisoners and how do they vary across different social groups? Do they vary, for example, with respect to age, sex, race, ethnicity, education, mental health, and other such characteristics?

Second, to what extent do traditional crime-causing factors—that is, those identified by mainstream criminological theories—vary in their effect over the life-course, among not only the individuals in the general population but also individuals released from prison?

Third, what broadly are the risk factors for recidivism over the life-course? In particular, how do different life events and transitions contribute to offending and other life outcomes? This question is a logical precursor to in turn asking how incarceration and reentry experiences themselves constitute life events or transitions that influence offending and other outcomes.

Fourth, how do any of a range of life-course trajectories, such as those involving employment or marriage, overlap with or contribute to offending trajectories, and, in turn, how do incarceration and reentry experiences contribute to these other life-course trajectories?

Fifth, what social contextual factors, such as family or living conditions, contribute to life-course trajectories of offending and, in particular, to recidivism and other outcomes among ex-prisoners? In a related vein, how does incarceration and the reentry experience affect the social contexts in which ex-prisoners reside?

Sixth, what societal conditions and changes, such as downturns in the economy or shifts toward more punitive forms of punishment, influence the offending trajectories of ex-prisoners over the life course?

Seventh, how does human agency operate among ex-prisoners? That is, what are the opportunities for inmates and ex-prisoners to initiate change in positive directions and how is the willingness or readiness to change constrained by structural circumstances?

## Life-Course Theoretical Perspectives

Turning to life-course theoretical perspectives, a related set of questions arise. First, how do incarceration and reentry experiences constitute life events or turning points of consequence not only for offending but also for other life outcomes? This question is of broad relevance for life-course researchers in general, not just those who focus on offending.

Second, what are the strategies that inmates and ex-prisoners use to negotiate the experiences, challenges, and barriers that they face? How, if at all, do these strategies parallel those that individuals use to negotiate other difficult life circumstances? How can programs and interventions complement these strategies?

Third, how do incarceration and reentry experiences affect individuals of different ages? For example, is an incarceration experience more disruptive to achieving life goals if it occurs

during adolescence than if it occurs in later years? How does the duration or nature of the incarceration or reentry experience vary in its effect among different age groups? To the extent that variability exists, what accounts for it?

The questions above hardly exhaust the possibilities (see, generally, DeLisi & Piquero, 2011; Farrington, 2003). They highlight, however, important avenues of inquiry and, as we have argued, the many intriguing benefits that can come from the merging of life-course theoretical perspectives and prisoner reentry scholarship. We hope that they also highlight the potential importance of life-course research for policy discussions. For example, at present, a wealth of prisoner reentry programs and initiatives exist (Lattimore et al., 2010). In most instances, the efforts have been or will be evaluated using relatively short follow-up periods. In many of these instances, however, there might well be different assessments about the effectiveness of the interventions if, per life-course perspectives, longer time frames and a broader range of outcomes were used. As Farrington (2006, p. 135) has noted: "It is surprising that no experimental researcher seems to have analyzed detailed criminal career data from official sources for several years before and after an intervention. It would be valuable to analyze the effects of interventions on the onset, duration, and desistance of offending, on the frequency and seriousness of offending, on specialization and escalation, and on trajectories of offending." Clearly, if programs or policies, including various sanctions, exert different effects over the life course, there would be a need to reconsider which ones merit greater use.

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