

---

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

11

Marvin D. Krohn, Chris L. Gibson,  
and Terence P. Thornberry

---

## 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.

---

## Keywords

Late bloomer • Adult-onset trajectory • Life course

---

M.D. Krohn (✉) • C.L. Gibson  
Department of Sociology and Criminology & Law,  
University of Florida, Gainesville, FL, USA

T.P. Thornberry  
Department of Criminology and Criminal Justice,  
University of Maryland, 2200 LeFrak Hall,  
College Park, MD 20742, USA  
e-mail: thornbet@umd.edu

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.

---

## 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 Visser (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.

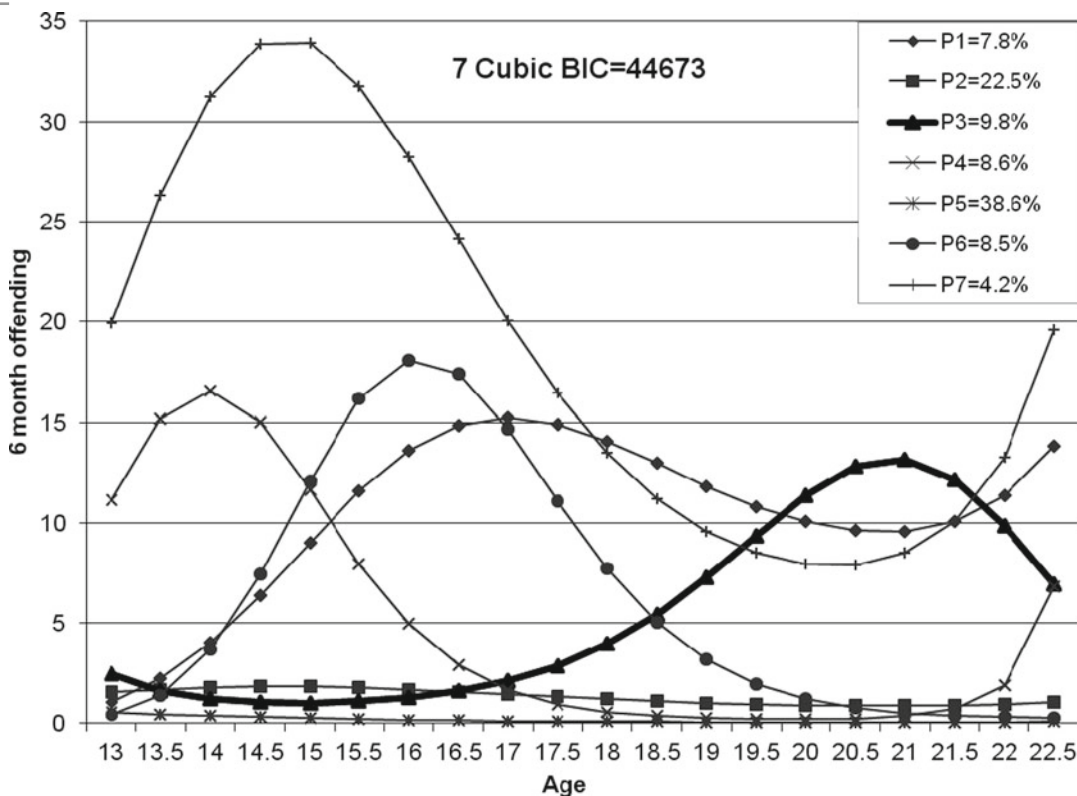
As noted earlier, some individuals exhibit high rates of involvement in crime early in the life course, others do not start until adolescence and then quickly desist, and still others wait until emerging adulthood to start their upward slope in offending. The group-based trajectory method allows for 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.

---

### **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.

---

### **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-

---

<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 “cocoon” 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.

## References

- Arnett, J. J. (2000). Emerging adulthood: a theory of development from the late teens through the twenties. *American Psychologist*, *55*, 469–480.
- Arseneault, L., Moffitt, T. E., Caspi, A., Taylor, A., Rijdsdijk, F. V., Jaffee, S. R., Albrow, J. C., & Measelle, J. R. (2003). Strong genetic effects on cross-situational antisocial behaviour among 5-year-old children according to mothers, teachers, examiner-observers, and twins' self-reports. *Journal of Child Psychology and Psychiatry*, *44*, 832–848.
- Barnes, J. C., Beaver, K. M., & Boutwell, B. (2012). Examining the genetic underpinnings to Moffitt's developmental taxonomy: a behavioral genetic analysis. *Criminology*, *49*, 923–954.
- Beaver, K. M. (2009). *Biosocial criminology: a primer*. Dubuque, IA: Kendall.
- Beaver, K. M., Gibson, C. L., Jennings, W. G., & Ward, J. T. (2009). A gene X environment interaction between DRD2 and religiosity in the prediction of adolescent delinquent involvement in a sample of males. *Biodemography and Social Biology*, *55*, 71–81.
- Blokland, A. A. J., & Nieuwebeerta, P. (2005). The effects of life circumstances on longitudinal trajectories of offending. *Criminology*, *43*, 1203–1240.
- Blumstein, A., Cohen, J., Roth, J. A., & Visher, C. (1986). *Criminal careers and "career criminals"*. Washington, DC: National Academy Press.
- Boomsma, D., de Geus, E., van Baal, G., & Koopmans, J. (1999). A religious upbringing reduces the influence of genetic factors on disinhibition: evidence for interaction between genotype and environment on personality. *Twin Research*, *2*, 115–125.
- Bushway, S., Thornberry, T. P., & Krohn, M. D. (2003). Desistance as a developmental process: a comparison of static and dynamic approaches. *Journal of Quantitative Criminology*, *19*, 129–153.
- Carrington, P. J., Matarazzo, A., & De Souza, P. (2005). *Court careers of a Canadian birth cohort* (Crime and Justice Research Paper Series). Ottawa, ON: Canadian Centre for Justice Statistics, Statistics Canada.
- Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., Taylor, A., & Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. *Science*, *297*, 851–852.
- Caspi, A., Sugden, K., Moffitt, T. E., Taylor, A., Craig, I. W., Harrington, H., McClay, J., Mill, J., Martin, J., Braithwaite, A., & Poulton, R. (2003). Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science*, *18*, 386–389.
- Cohen, M. A. (1998). The monetary value of saving high-risk youth. *Journal of Quantitative Criminology*, *14*, 5–33.
- Cohen, M. A., & Piquero, A. R. (2009). New evidence on the monetary value of saving high risk youth. *Journal of Quantitative Criminology*, *25*, 25–49.
- Cohen, M. A., Piquero, A. R., & Jennings, W. G. (2010). Studying the costs of crime across offending trajectories. *Criminology & Public Policy*, *9*, 279–305.
- Chung, I.-J., Hill, K. G., David Hawkins, J., Gilchrist, L. D., & Nagin, D. S. (2002). Childhood predictors of offense trajectories. *Journal of Research in Crime and Delinquency*, *39*, 60–90.
- D'Unger, A. V., Land, K. C., McCall, P. L., & Nagin, D. S. (1998). How many latent classes of delinquent/criminal careers? Results from mixed Poisson regression analyses. *American Journal of Sociology*, *103*, 1593–1930.
- Eggleston, E. P., & Laub, J. H. (2002). The onset of adult offending: a neglected dimension of the criminal career. *Journal of Criminal Justice*, *30*, 603–622.
- Elder, G. H. (1975). Age differentiation and the life course. *Annual Review of Sociology*, *1*, 165–190.
- Farrington, D. P. (1983). Offending from 10 to 25 years of age. In K. T. Van Dusen & S. A. Mednick (Eds.), *Prospective studies of crime and delinquency*. Boston, MA: Kluwer-Nijhoff.
- Gomez-Smith, Z., & Piquero, A. (2005). An examination of adult onset offending. *Journal of Criminal Justice*, *33*, 515–525.
- Grotevant, H. D., van Dulmen, M. H., Dunbar, N., Nelson-Christinedaughter, J., Christensen, M., Fan, X., et al. (2006). Antisocial behavior of adoptees and nonadoptees: prediction from early history and adolescent relationships. *Journal of Research on Adolescence*, *16*, 105–131.
- Janson, C. G. (1983). Delinquency among metropolitan boys: a progress report. In K. T. Van Dusen & S. A. Mednick (Eds.), *Prospective studies of crime and delinquency* (pp. 147–180). Boston, MA: Kluwer-Nijhoff.
- Koopmans, J., Slutske, W., van Baal, G., & Boomsma, D. (1999). The influence of religion on alcohol use initiation: evidence for genotype X environment interaction. *Behavior Genetics*, *29*, 445–453.
- Kratzer, L., & Hodgins, S. (1999). A typology of offenders: a test of Moffitt's theory among males and females from childhood to age 30. *Criminal Behavior and Mental Health*, *9*, 57–73.
- Krohn, M. D., Thornberry, T. P., Rivera, C., & LeBlanc, M. (2001). Later delinquency careers. In R. Loeber & D. P. Farrington (Eds.), *Child delinquents* (pp. 67–93). Thousand Oaks, CA: Sage.
- Krohn, M., Gibson, C., Thornberry, T., & Lizotte, A. (2011). Why do the buds bloom? An examination of why late bloomers begin to offend. Presented at the *American Society of Criminology*, *17*, Washington, DC.
- Langan, P. A., & Farrington, D. P. (1983). Two-track or one-track justice? Some evidence from an English longitudinal study. *Journal of Criminal Law and Criminology*, *74*, 519–546.
- Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: good marriages and the desistance process. *American Sociological Review*, *63*, 225–238.
- Laub, J., & Sampson, R. J. (2003). *Shared beginnings, divergent lives: delinquent boys to age 70*. Cambridge, MA: Harvard University Press.
- LeBlanc, M., & Frechette, M. (1989). *Male criminal activity from childhood through youth: multilevel and developmental perspectives*. New York: Springer.

- Lussier, P. S., Tzoumakis, J. C., & Amirault, J. (2012). Criminal trajectories of adult sex offenders and the age effect: examining the dynamic aspect of offending in adulthood. *International Criminal Justice Review*, 20, 147–168.
- Magnusson, D. (1988). *Individual development from an interactional perspective: a longitudinal study*. Hillsdale, NJ: Erlbaum.
- Massoglia, M. (2006). Desistance or displacement? The changing patterns of offending from adolescence to young adulthood. *Journal of Quantitative Criminology*, 22, 215–239.
- Mata, A. D., & van Dulmen, M. H. (2012). Adult-onset antisocial behavior trajectories: associations with adolescent family processes and emerging adulthood functioning. *Journal of Interpersonal Violence*, 27(1), 177–193.
- McDermott, S., & Nagin, D. S. (2001). Same or different? Comparing offender groups and covariates over time. *Sociological Methods and Research*, 29, 282–318.
- McGee, T. R., & Farrington, D. P. (2010). Are there true adult onset offenders. *British Journal of Criminology*, 50, 530–540.
- Moffitt, T. E. (1993). “Life-course-persistent” and “adolescence-limited” antisocial behavior: a developmental taxonomy. *Psychological Review*, 100, 674–701.
- Moffitt, T. E. (2005). The new look of behavioral genetics in developmental psychopathology: gene-environment interplay in antisocial behaviors. *Psychological Bulletin*, 131, 533–554.
- Moffitt, T. E. (2006). A review of research on the taxonomy of life-course persistent versus adolescent-limited behavior. In F. T. Cullen, J. P. Wright, & K. R. Blevins (Eds.), *Taking stock: the status of criminological theory. Advances in criminological theory* (Vol. 15, pp. 277–311). New Brunswick, NJ: Transaction.
- Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behavior: conduct disorder, delinquency, and violence in the Dunedin longitudinal study*. Cambridge: Cambridge University Press.
- Nagin, D. (2005). *Group-based modeling of development over the life course*. Cambridge, MA: Harvard University Press.
- Niswander, K., & Gordon, M. (1972). *The women and their pregnancies*. Washington, DC: U.S. Department of Health, Education, and Welfare.
- Patterson, G. R., Capaldi, D. M., & Bank, L. (1991). An early starter model for predicting delinquency. In D. J. Pepler & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 139–168). Hillsdale, NJ: Lawrence Erlbaum.
- Piquero, A. (2008). Taking stock of developmental trajectories of criminal activity over the life course. In A. M. Liberman (Ed.), *The long view of crime: a synthesis of longitudinal research* (pp. 23–78). New York: Springer.
- Polk, K., Adler, C., Bazemore, G., Blake, G., Gordray, S., Coventry, G., Galvin, J., & Temple, M. (1981). Becoming adult: an analysis of maturational development from age 16 to 30 of a cohort of young men. *Final report of the Marion county youth study*. Eugene: University of Oregon Press.
- Pukkinen, L., Lyyra, A.-L., & Kokko, K. (2009). Life success of males on nonoffender, adolescence-limited, persistent, and adult-onset antisocial pathways: follow-up from 8 to 42. *Aggressive Behavior*, 35, 117–135.
- Sampson, R. J., & Laub, J. H. (1990). Crime and deviance over the life course: the salience of adult social bonds. *American Sociological Review*, 55, 609–627.
- Sampson, R. J., & Laub, J. H. (1993). *Crime in the making: pathways and turning points through life*. Cambridge, MA: Harvard University Press.
- Shanahan, M., & Hofer, S. (2005). Social context in gene-environment interactions: retrospect and prospect. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 60, 65–76.
- Stratton, H., Magnusson, D., & Reichel, H. (1989). Criminal activity at different ages: a study based on a Swedish longitudinal research population. *British Journal of Criminology*, 29, 368–385.
- Thornberry, T. P., & Krohn, M. D. (2005). Applying interactional theory to the explanation of continuity and change in antisocial behavior. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending: advances in criminological theory* (Vol. 14, pp. 183–210). New Brunswick, NJ: Transaction.
- Thornberry, T.P. and M. Matsuda (2011) *Why do late bloomers wait? An examination of factors that delay the onset of offending*. Presented at the Stockholm Criminology Symposium, Stockholm, Sweden
- Tracy, P. E., & Kempf-Leonard, K. (1996). *Continuity and discontinuity in criminal careers*. New York: Plenum.
- van der Geest, V., Blokland, A., & Bijleveld, C. (2009). Delinquent development in a sample of high-risk youth: shape, content, and predictors of delinquent trajectories from age 12 to 32. *Journal of Research in Crime and Delinquency*, 46, 111–142.
- Van Koppen, M. V., De Poot, C. J., Kleemans, E. R., & Nieuwebeerta, P. (2010). Criminal trajectories in organized crime. *British Journal of Criminology*, 50, 102–123.
- Warr, M. (2002). *Companions in crime: the social aspects of criminal conduct*. Cambridge: Cambridge University Press.
- White, H. R., Bates, M. E., & Buyske, S. (2001). Adolescence-limited versus persistent delinquency: extending Moffitt’s hypothesis into adulthood. *Journal of Abnormal Psychology*, 110, 600–609.
- Wiesner, M., & Capaldi, D. M. (2003). Relations of childhood and adolescent factors to offending trajectories of young men. *Journal of Research in Crime and Delinquency*, 40, 231–262.
- Wolfgang, M. E., Thornberry, T. P., & Figlio, R. M. (1987). *From boy to man, from delinquency to crime*. Chicago: University of Chicago Press.
- Zara, G., & Farrington, D. P. (2009). Childhood and adolescent predictors of late-onset criminal careers. *Journal of Youth and Adolescence*, 38, 287–300.