

Interpersonal Relationships and Sex Differences in the Development of Conduct Problems

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This article investigates the role of interpersonal relationships in shaping sex differences in the manifestation, etiology, and developmental course of conduct problems and their treatment needs. The review examines whether: (1) Girls' conduct problems are more likely than boys' to manifest as a function of disrupted relationships with caretakers and peers; (2) For girls more than for boys, the outcomes of conduct problems in adolescence and adulthood, and related treatment needs, are more likely to be a consequence of the quality of interpersonal relationships with others, particularly opposite-sex peers and partners. Evidence reviewed suggests that boys and girls share many similarities in their expression of conduct problems, but that a relational perspective does unify important differences. There is fair evidence that girls with conduct problems are more likely to come to the attention of authorities because of chaotic, unstable family relationships, and to express antisocial behavior in the context of close relationships; there is stronger evidence that the course and outcomes of conduct problems in females versus males pertain to interpersonal relationship impairments. Those sex differences map onto specific differences in treatment needs. Further empirical testing of the proposed relational model is indicated.

KEY WORDS: antisocial behavior; behavior; conduct disorder; aggression; delinquency; sex.

The number of delinquency cases involving young women processed by the juvenile justice system is growing rapidly, and, by some reports, more rapidly than cases involving young men (Scahill, 2000; Sickmund, 1997). "Front line" juvenile justice and mental health professionals working with these troubled youths argue that the risk factors, characteristics, outcomes, and treatment needs for delinquency may differ in girls and boys (Chamberlain & Reid, 1994). A better understanding of precursors of sex differences in antisocial behavior may expand our comprehension of antisocial behavior in general (Moffitt, Caspi, Rutter, & Silva, 2001; Smith, 1995).

In response to the public interest in girls' antisocial behavior, academics have generated a sizeable

body of research in the past 15–20 years regarding sex similarities and differences in the presentation, etiology, course and outcome of childhood conduct problems, and delinquency. Several reviews have addressed sex differences in the development of aggression in the early years (e.g., Maccoby & Jacklin, 1974; Tieger, 1980). Others have reviewed conduct disorder in girls and sex differences in its diagnostic patterns (Keenan, Loeber, & Green, 1999; Loeber & Keenan, 1994; Silverthorn & Frick, 1999), but the scope of these articles did not permit discussion of developmental mechanisms that might explain some observed sex differences in the course, outcome, and treatment needs for conduct problems.

One broad developmental factor that may explain sex differences in conduct problems over the life span is the role of interpersonal relationships for adjustment. Reis, Collins, and Berscheid's (2000) review pointed to the crucial influence of interpersonal relationships on human development and behavior. Interpersonal bonds may act as a social control

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against norm violation and rule breaking (Sampson & Laub, 1993). Smith (1995) summarized a review of trends in youth crime by stating, "... it now seems that the formation of social bonds may turn out to be the central explanation for desistance from crime after adolescence" (p. 430). There is a large and robust empirical literature supporting the connection, across the life span, between the quality of mental health and personal relationships with family, peers, and romantic partners (e.g. Hartup & Stevens, 1997; Myers, 1999). Recent theories of the effect of personal relationships on brain development, especially during infancy, are backed by accumulating neurobiological data (Greenough, Black, & Wallace, 1987; Siegel, 1999).

The quality of personal relationships certainly impacts both males' and females' adjustment across the lifespan, yet gender acts as a profound contextual factor for the development of human relationships (Laursen & Bukowski, 1997). From the earliest months, caregivers respond differently to sons and daughters (Rossi, 1977; Smith & Lloyd, 1978), and newborn female infants are, compared to newborn males, more receptive to touching and talking, and more likely to cling to their mothers (Kagan, 1978). Parents spend more time fostering close interpersonal relationships with their female infants and young children (Benenson, Morash, & Petrakos, 1998). During preschool and elementary years, boys and girls begin to segregate by gender, possibly as a function of differences in types of play and styles of interpersonal influence (Maccoby, 1990). Young girls spend more time than boys attending to emotional cues in their sibling and peer relationships, and are reinforced for prosocial behavior in relationships at higher rates than boys, by parents and teachers (Ross, Tesla, Kenyon, & Lollis, 1990). Adolescence marks a transition from family to peer orientation for both sexes, but girls gain independence from their parents more slowly, and are more closely monitored by their parents (Huston & Alvarez, 1990), especially in lower class families (Hagan, Simpson, & Gillis, 1987). In late childhood and early adolescence, girls already report more emotional sharing and support in their same-sex friendships than boys (Giordano, Cernkovich, & Pugh, 1986), and in their relations with parents (Noller, 1994). Adolescent and adult females' relationships tend to be more exclusive and intimate, whereas males' tend to be based on more inclusive, hierarchically stratified social networks of peers (Reis et al., 2000). In general, sociologists and psychologists argue that the quality of social bonds

may be more central to female than male development (Cross & Madson, 1997; Sampson & Laub, 1993).

Sex differences in the development of relationships in normative populations map readily onto sex differences in the developmental course of psychopathology. The greater relevance of close interpersonal relations for girls may increase their vulnerability to depression when those relationships malfunction (Hops, 1995; Leadbeater, Blatt, & Quinlan, 1995). So important is the quality of marital satisfaction for women that couples therapy for women who are depressed can be a highly effective treatment for depression (Beach, 1996, 2001). Substance abuse in women is linked to unmet affiliative needs, and interventions centered on affiliation and social ties are viewed as promising for these addicts (Brunswick, Lewis, & Messeri, 1991; Brunswick, Messeri, & Titus, 1992). More recent evidence from a study of a representative birth cohort followed prospectively until early adulthood suggests that, although the rates of antisocial behavior and conduct disorder are far higher in boys, the two sexes actually share many types of risks, comorbid conditions, and odds of poor adult outcomes (Moffitt et al., 2001). Neuropsychological risk factors, including low constraint, high negative emotionality and high impulsivity, were essential predictors of a pattern of early onset, life course persistent antisocial behavior. This pattern, however, was extremely rare in girls, largely because they have low exposure to these neuropsychological risks. The authors urged researchers to look to social processes for explanations of the development of girls' antisocial behavior, including peer and intimate relationships.

Taken together, the above findings suggest that looking to the quality and meaning of interpersonal relationships across the lifespan may offer clues about how conduct problems might appear and evolve differently in males and females. The present review had two main goals. The first was to examine whether, for females compared to males, the types of conduct problems that present to clinicians and law enforcement officials, and the etiology of those problems, are more likely to manifest as a function of disrupted interpersonal relationships with caretakers and peers. To this end, the paper first reviews studies on sex differences in types of juvenile offenses, age-based changes in the prevalence of conduct disorder, its comorbidity with other psychiatric disorders, and the use of social aggression. We then review studies on etiological factors pertaining to interpersonal

relationships, such as the effects of gender socialization, parenting styles, abuse and neglect, pubertal change, peer group influence, and prior mental health problems.

The second goal was to examine whether, relative to males, females' outcomes of conduct problems in adolescence and adulthood, and the related treatment needs, are more likely to be determined by the quality of interpersonal relationships, particularly with opposite-sex peers and partners. To address this issue, we first review studies on sex differences in the developmental course of conduct problems, including age of onset, persistence and desistance, personality disorder development, and the effects of opposite-sex relationships on developmental outcomes. We then review studies on sex-specific treatment outcomes for conduct problems. We suggest applications of current findings about the manifestation and course of conduct problems in males and females, to sex-specific treatment approaches. We conclude with a call for research examining causal pathways linking the quality of interpersonal relationships, adjustment, and conduct problems for males and females.

METHOD

This review was intended to selectively focus on studies pertaining to conduct problems and interpersonal relationships. Studies were drawn from peer-reviewed journals, book chapters, and government agency publications (e.g. Statistics Summaries for the Office of Juvenile Justice and Delinquency Prevention). Literature searches were conducted with both "PSYCHINFO" and "Sociological Abstracts" using the following terms: "Gender and Conduct Problems," "Gender and Conduct Disorder," "Gender and Aggression," and "Gender and Delinquency," and "Gender and Antisocial." We repeated these searches substituting "Sex" or "Girls" for "Gender." A hand examination of key journals (e.g. *Criminology*, *Child Development*, *Developmental Psychology*, *Development and Psychopathology*, *Journal of Abnormal Psychology*, *Journal of Consulting and Clinical Psychology*, *American Journal of Psychiatry*, *American Journal of Public Health*, etc.) from 1985 to 2000 was also conducted. The citations of each study generated from the literature searches were also searched by hand. We excluded studies that were not empirical (e.g., case studies), but included reviews of empirical studies in peer reviewed journals.

To integrate findings from a range of disciplines, including developmental and clinical psychology, psychiatry, criminology and sociology, the review is not confined exclusively to conduct disorder. Relevant studies address sex differences in aggressive behavior, delinquency, conduct disorder, oppositional defiant disorder, and antisocial behavior. We use the term "conduct problems" as the umbrella structure that includes all of these variations. Others have advocated focusing on a specific definition, such as chronic physical aggression (Tremblay, 2003). However, a recent study of the epidemiology of psychiatric disorders suggests that heterotypic, rather than homotypic continuity of disorder may be more characteristic of females (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). As such, we reasoned that we might better capture the developmental course in females by widening the net to include a broader range of behavior patterns and the relational context in which these develop.

Some methodological issues were common to many of the studies reviewed, so we begin with a discussion regarding this matter.

Methodological Issues With Existing Studies

Definitions and Measurement of Conduct Problems

The prevalence of conduct problems depends on whether one is measuring conduct disorder, delinquency, or juvenile arrests. Juvenile arrest rates reflect youth age 10–17 who have been apprehended for a crime, a classification that is biased by failing to represent offenses that did not result in apprehension. Rates of delinquency and conduct problems differ for self-report, collateral (e.g. parent), and official reports. At times, this may mean that different studies are studying quite different behaviors, which may have implication for conclusions drawn from these findings.

Sample Differences

Studies reviewed here were based on a wide range of samples, including those recruited from juvenile justice agencies, community samples, and social services samples. Not surprisingly, the results from these different samples often vary considerably. The etiology, course, and outcome of conduct problems among youth who do have contact with juvenile

justice agencies, or who receive treatment for conduct problems, may be quite different than those drawn from community samples. As we discuss in greater detail later, females with conduct problems come to the attention of authorities much less frequently than males, and may be less likely than boys to receive treatment for existing conduct problems. Thus, these sample differences may be even more pronounced for females than for males, since the probability of contact with authorities in community samples is so low for females.

Incomplete Interpretation of Odds Ratios

Using odds ratios, as in logistic regression, allows researchers to examine whether the likelihood of hypothesized risk factors or outcomes may differ by sex. For instance, one might examine whether the odds of having a substance abuse disorder in adulthood differs for conduct disordered boys and girls. Researchers sometimes interpret two odds ratios as differing from one another, without testing whether this difference is statistically significant (Cohen, Cohen, & Brook, 1995). Or, they may examine several groups, and draw incomplete conclusions from the odds ratios. Some of the findings pointing to sex differences run the risk of being overstated, and the present paper indicates where conclusions are mitigated by this issue.

Controlling for Confounding Variables

Researchers traditionally statistically control for variables that may covary with an independent variable of interest, by including them as covariates when testing hypotheses about that independent variable. For example, Robins (1986) controlled for the effect of depression when testing hypotheses about adult outcomes of conduct disorder. However, this approach may be paradoxically problematic, if sample sizes (and power) are not large enough to detect interactions. This might result in missed sex differences when such differences actually exist.

Age

The effect of age and developmental stage on sex differences in conduct problems is a critical factor that is often overlooked in measurements of any

of the above definitions of conduct problems, and may account for inconsistent findings across studies. For example, Cairns and Cairns (1994) found that twice as many 7th grade boys as girls qualified for the “at-risk for aggression” classification, whereas in 4th grade almost equivalent proportions of boys and girls qualified. Further, sex differences in violence in the U.S are decreasing (Cairns & Cairns, 1994; Hyde, 1984; Snyder, 1997), which will undoubtedly affect the number of boys and girls labeled as conduct disordered, delinquent, etc. Moreover, sex differences may also affect linkages between age/developmental stage and conduct problems, and the research reviewed here has paid less attention to this issue.

Base Rates

It is well documented that conduct problems exhibit different base rates for males and females. Thus, one shortcoming of extant research is the difficulty of interpreting differences in statistics of association for behaviors that have such disparate base rates. We elaborate on this issue later in this review.

Is the Presentation of Conduct Problems in Girls and Boys Differentially Associated With Interpersonal Relationships?

Juvenile Offenses and Arrests

Whereas males continue to predominate in the juvenile justice system, females are no longer rare (Budnick & Shields-Fletcher, 1998). In 1999, females were involved in 27% of juvenile arrests (Snyder, 2000). The rate of officially reported arrests of juvenile females is growing, and at higher rates than in male juveniles, especially for violent crimes. Between 1992 and 1996, the number of juvenile females arrested for Violent Crime Index offenses increased by 25%, versus no increase in arrests of male juveniles for the same offenses. Juvenile females arrested for Property Crime Index offenses rose 21%, versus a 4% decrease in males (Snyder, 1997). These rates were based on the number of arrests per 100,000 juveniles aged 10–17 years. The problem of lower base rates for female versus male arrest is apparent here, such that an equal percentage point increase for females and males would appear as a faster rate of change in females. On the other hand,

the trend is consistent with claims observed elsewhere that sex differences in violence in the United States are decreasing (Cairns & Cairns, 1994; Hyde, 1984), and mirrors the overall narrowing of sex differences in crime rates in many countries (Smith, 1995).

Boys are clearly arrested for juvenile offenses more often than girls. An important question regards whether boys and girls differ in the type of offenses that they commit, versus the type of offenses for which they tend to be arrested. A review of sex differences in types of juvenile offenses suggests that the method of assessment is critical. Self-report measures typically find that lesser offenses, such as status offenses (i.e. those that are offenses only by virtue of a youth's status as a minor) are committed equally frequently by male and female adolescents (Figueria-McDonough, Barton, & Sarri, 1981). Yet, analyses of official arrest reports suggest that adolescent females are more likely to be *arrested* for status offenses than are males (Chesney-Lind, 1988), and within this category, detention is more likely among females for running away, and among males for liquor law violations (Puzzanchera et al., 2000). Females in the 1980s were underrepresented in every arrest category except for status offenses and larceny in comparison to self-report data on delinquent behavior (Chesney-Lind, 1989). Several researchers hypothesize that higher rates of arrests for status offenses among girls reflect attempts to run away from abusive home environments, resulting in exposure to circumstances that lead to dependence on crime for survival, such as prostitution (Chesney-Lind, 1988; Widom & Kuhns, 1996). Boys' running away has been hypothesized to be part of a broader constellation of antisocial behaviors (Luntz & Widom, 1994). Only Widom & Kuhns' study tested specific comparisons between males and females using a longitudinal design; this hypothesis thus awaits replication across multiple samples.

The argument that females' juvenile arrest is manifestly different than males' may initially seem persuasive. However, some research, in the attempt to highlight female juveniles' concerns in the justice system, has cast a fairly narrow focus on the female overrepresentation in specific types of arrests, such as status offenses. A closer examination suggests a more complex picture. For instance, the online Sourcebook of Criminal Justice Statistics (<http://www.albany.edu/sourcebook/>) suggests that there are two crimes in which females account for more arrests than males: running away from home

(59% female) and prostitution/commercialized vice (61% female). However, other offenses also show a male to female ratio less than 2:1: larceny(theft (36% female); forgery(counterfeiting (38% female), fraud (44% female), and embezzlement (49% female). In fact, running away is certainly more common in females, but it accounts for only 3% of all arrests of females. Several other types of offense account for a greater proportion of arrests: larceny/theft (14%), other assaults (9.5%), fraud (4.9%), drug abuse violations (8.9%), Driving Under the Influence (7.4%), liquor law violations (4.7%), and disorderly conduct (4.9%). Similarly, Chamberlain and Reid (1994), in a sample of 12–18-year-old male and female referrals to a community-based alternative to institutionalization, obtained official reports of juvenile arrests, and found that, whereas females were arrested more often than males for status offenses, they did not specialize in status offenses; 72% also committed property offenses and 41% also committed person-to-person offenses. Puzzanchera et al.'s (2000) study also reveals that, although petitioned status offense cases showed greater involvement among males in liquor law violations, and of females in runaway cases, runaway cases accounted for only 12% of all status offenses involving detention.

Several studies have also found that female arrests are more likely than males' to be for crimes against family members or intimate partners. For instance, Snyder's (2000) analysis of 1999 juvenile arrest data found that female juvenile delinquents were involved in 38% of offenses against children and the family, and there was a 143% increase in their involvement in such crimes from 1990–1999. In comparison, girls were involved in 17% of Violent Crime Index offenses, and 29% of Property Crime Index offenses committed by juveniles in 1999. Though Snyder did not include data on the victims of the offenses against children and the family, the relatively higher involvement of female juvenile delinquents in this type of offense compared to other types of offenses suggests that family conflict is an important contextual factor in their arrest. Homicide by girls compared to boys is also more likely to be prompted by interpersonal conflict rather than criminal motive, and to be directed toward young children (Loper & Cornell, 1996), and family members (Kruttschnitt, 1993).

In summary, juvenile offenses in females may relate partially, but certainly not exclusively to disruptions in interpersonal relationships.

Conduct Disorder

Conduct Disorder is diagnosed significantly more often in males than in females, regardless of age (Cohen et al., 1993; McGee, Silva, & Williams, 1984; Offord et al., 1987). There is some debate around the application of existing DSM criteria for conduct disorder to girls. Zoccolillo (1993) argued that the DSM-IV criteria for conduct disorder were gender biased since physical aggression was weighted especially heavily, and these behaviors are not typical of girls with other types of conduct problems (e.g. running away, lying, etc.). He also argued that the same behaviors would be considered normal in males and pathological in females. In view of such biases, he proposed adjusting the criteria for conduct disorder, by de-emphasizing serious physical aggression as a key criterion, so that girls' problem behavior could be more readily identified as such. Zahn-Waxler (1993) and others disagreed, stating that relaxing this criterion for conduct disorder is unwarranted (Doyle et al., 2003; Moffitt et al., 2001) and would result in the inclusion of individuals who do not fit the same pattern of impairment over the life course. Some of these critics (e.g. Zahn-Waxler, 1993) have instead argued for broadening the criteria to include behaviors more commonly observed in girls with conduct problems, such as "indirect" or "social aggression" (Galen & Underwood, 1997, see subsection below on "Indirect Aggression"), but others do not support this idea (Moffitt et al., 2001). In fact, Moffitt et al.'s (2001) exhaustive review of sex differences in the development of antisocial behavior in their longitudinal study found no evidence for different patterns of symptoms of conduct disorder for boys and girls.

Comorbidity With Other Disorders

Conduct disorder is characterized by elevated comorbidity in both boys and girls, primarily anxiety, depression, substance dependence, and Attention Deficit and Hyperactivity Disorder. Loeber and Keenan (1994) and Keenan et al. (1999) reviewed in detail sex differences in psychiatric comorbidity of conduct disorder, finding that prior oppositional defiant disorder (ODD) was common to both sexes, but that depression was comorbid with conduct disorder (CD) in girls more often than in boys. Recent epidemiological research finds evidence for greater continuity of psychiatric disorder in girls than boys aged 9–16, and specifically, depression was comorbid

with CD in girls but not boys when other types of comorbidity were controlled (Costello et al., 2003). Childhood depression is consistently associated with interpersonal impairments, chiefly social isolation, withdrawal, and lack of peer support (Renouf & Harter, 1990; Renouf, Kovacs, & Mukerji, 1997). Thus, even though CD is associated with peer rejection among both boys and girls (Quinton, Pickles, Maughan, & Rutter, 1993), girls who later develop CD may bring to the expression of this disorder an additional pattern of disrupted interpersonal interactions consistent with depression and distinct from those observed in boys.

The overlap of conduct disorder and depression is of special interest given the consistent correlation of internalizing and externalizing syndromes, and the timing of the two disorders (Achenbach, 1991; Cohen, Gottlieb, Kershner, & Wehrspann, 1985). We will return later to this issue and its implications for a relational explanation of sex differences in conduct problems.

Direct vs. Indirect Aggression

Some propose that sex differences in rates of conduct disorder may be accounted for by boys' greater use of physical aggression, and girls' tendency to use social aggression to express anger or inflict harm (Crick & Grotpeter, 1995). Such socially aggressive behaviors typically attempt to damage another's self-esteem or social status, using verbal rejection, negative facial expressions, circulating slanderous rumors, manipulating social networks, or social ostracism (Cairns, Cairns, Neckerman, Ferguson, & Gariepy, 1989; Galen & Underwood, 1997). Several studies of community samples find that these behaviors are more common among girls than boys (Kazdin, 1992; Lagerspetz, Bjorkqvist, & Peltonen, 1988) and are perceived as more distressing by girls than boys (Crick, 1995). One study found evidence that boys and girls have more tolerant attitudes toward physical aggression by boys and relational aggression by girls, and that nonnormative aggression (e.g. physical aggression by girls) predicts maladjustment in both sexes (Crick, 1997).

Most studies of community samples find that sex differences in indirect or social aggression are less evident in early childhood (Tiet, Wasserman, Loeber, McReynolds, & Miller, 2001), increase with age, and are most evident in adolescence, at least in same-sex conflicts (Bjorkqvist, Lagerspetz, & Kaukiainen,

1992; Cairns et al., 1989). (For exception to this age trend see Crick, Casas, & Mosher, 1997). In a sample of female juvenile delinquents referred for a community alternative to incarceration, Chamberlain & Moore (2002) found high levels of relational aggression both perpetrated and received by girls from their friends (no assessments of relational aggression were available for their sample of boys). These behaviors were also reported to be significant threats to their relationships with foster parents, and to the stability of the foster care placements (see section on treatment implications later in this review). Interestingly, there is some evidence that relational aggression loads onto a “dating abuse” factor perpetrated by adolescent girls toward their boyfriends, but not for boys’ dating abuse toward their girlfriends (Wolfe et al., 2001).

Research on girls’ friendships indicates relationship-based explanations for their greater use of indirect or social aggression than boys. First, girls are socialized from an early age against using physical aggression, particularly toward other girls (Keenan & Shaw, 1997). Second, children’s friendships are often segregated by gender, at least until late childhood or adolescence, resulting in girls’ limited exposure to and approval of physical aggression in their own peer relationships (Feiring & Furman, 2000). Third, the greater value placed on intimacy and mutual support in girls’ social relationships, and the small group size typical of female–female friendships (Markovitz, Benenson, & Dolenszky, 2001; Reis, 1998) may render social aggression a more effective aggressive tactic (Crick & Grotpeter, 1995; Lagerspetz et al., 1988). That is, tactics aimed at undermining or damaging close relationships may be more meaningful to girls than boys because girls have more “pair” social networks (Bjorkqvist et al., 1992), and therefore place higher value on the close quality of these relationships. Finally, girls’ more advanced verbal skills at this age may facilitate effective use of these tactics, though no study that we know of compared the verbal skills of girls who are high on relational aggression to those of males who are high on physical aggression.

Whereas the study of “relational,” “social,” or “indirect” aggression offers promising direction to the understanding of sex differences in conduct problems, there are several important caveats. The most important of these is that, despite accumulating evidence that girls do use more relational aggression than boys, and that it has negative effects for both perpetrators and victims, studies do not definitely

show that girls with conduct problems use relational aggression *instead* of physical aggression. With the exception of Tiet et al. (2001), almost no studies have tested whether indirect aggression is differentially associated with serious conduct problems (e.g. juvenile delinquency or conduct disorder) in males and females. As such, it is not yet clear that relational aggression is “antisocial” per se. The present review supports the argument that antisocial girls are *also* socially or relationally aggressive, but research needs to build a better case in order to argue that girls are *differentially aggressive*. A second caveat pertains to measurement. Relational aggression has been measured almost exclusively by questionnaire report, albeit using teacher and peer informants. A few studies using observational measures of relational aggression exist for preschool children (e.g. McEvoy, Estrem, Rodriguez, & Olson, 2003). Studies using observational measurement among children across multiple development stages are needed to test whether reported sex differences are also observed during girls’ and boys’ social interactions.

Conclusions: Do Conduct Problems Present Differently in Boys and Girls?

We had expected that conduct problems would present differently in boys and girls, and that these differences would be explained by sex differences in the role of disrupted interpersonal relationships. The studies reviewed, however, find only fair support for this assumption. This review suggests that boys and girls share many similarities in the presentation of conduct problems, and that some of the differences have been overstated. However, interpersonal relationships may account for some important contextual differences in those patterns. Girls are more likely than boys to exhibit depressive disorders, which results in longstanding gender-specific patterns of interpersonal deficits. There is some evidence that girls’ antisocial behavior is more likely than boys’ to be motivated by interpersonal conflict, particularly with family members. Girls who are antisocial may *also* be relationally aggressive, but this claim needs to be substantiated with studies using multiple methods of assessment and longitudinal follow-up of antisocial males and females in representative samples. Finally, an important question that remains to be answered for both boys and girls is whether running away is a gateway activity that leads to further delinquent activities, or whether running away is part of a

general pattern of antisocial behaviors. We now turn our attention to whether sex differences in the etiology of conduct problems may be determined by interpersonal relationships.

Etiology

Gender Socialization

Several reviews found support for gender socialization as a mechanism for sex differences in conduct problems. Sex differences in aggression emerge around the preschool years (age 4–5); boys and girls tend to segregate by sex in their peer interactions around this age, thereby limiting girls' exposure to the use of physical aggression, while increasing boys' exposure (for reviews see Keenan & Shaw, 1997; Maccoby & Jacklin, 1974). Keenan and Shaw's (1997) review of observationally measured childhood aggression generated moderate support for a hypothesis that socialization efforts, by parents, peers, and teachers, influence the development of girls' psychopathology by channeling early problems into primarily internalizing problems. They also found moderate evidence that changes in girls' rates of problem behavior, compared to boys', may be attributed to the development of adaptive skills that, in turn, facilitate the development of prosocial behavior. Several studies further suggest that elevated levels of gender-atypical behavior, such as callous-unemotional traits (Frick, Cornell, Barry, Bodin, & Dane, 2003) and unhelpfulness toward others (Cote, Tremblay, Nagin, Zoccolillo, & Vitaro, 2002) may, in combination with other risks, increase the vulnerability to conduct problems among girls more than in boys. These studies suggest the possibility that failures in gender socialization among girls may interact with other vulnerabilities, such as poor parenting or hyperactivity, to increase the risk for conduct problems. Further research will be required to test this hypothesis.

Parenting

Low parental involvement and supervision are key predictors of conduct problems in boys (Loeber & Stouthamer-Loeber, 1986; Wasserman & Seracini, 2000), but far fewer studies have involved girls. Even fewer have used large enough samples to capture high-risk males and females in numbers that allow for testing of sex differences and sex-by-age interactions

(though some such studies are currently underway). One such study of a large, representative birth cohort (Moffitt et al., 2001) reported no sex differences in the predictive value of parental involvement, supervision, and harsh punishment for conduct problems. A second longitudinal study of a representative sample of boys and girls in upstate New York found that power assertive punishment strategies accounted for as much as 50% of the variance in both sexes' behavior problems, even after accounting for earlier behavior problems (Cohen & Brooks, 1995). Such techniques of controlling and disciplining children rely on scolding, physical punishment, threatened or actual privilege removal, etc. These contrast with cognitive techniques, such as explaining, distracting, and comparing the child's behavior to standards.

Studies of clinical samples, on the other hand, have investigated additional dimensions of parenting and find sex differences. Among girls and boys in one community treatment study for juvenile delinquents, girls averaged a rate of out-of-home placements almost three times that in boys (Chamberlain & Moore, 2002), and multiple transitions in parental figures accounted for a higher proportion of the variance in delinquency scores in girls than in boys (Leve & Chamberlain, 2005). In another treatment study of juvenile delinquents, conflict with parents was higher in families of female than male juvenile delinquents (Henggeler, Edwards, & Borduin, 1987).

Other research suggests that the content of parent-child conflict may relate to girls' interpersonal relationships with boys. Sociological research finds that conflicts between adolescent girls and their parents are more likely than those with sons to center on parental control of girls' behavior with opposite sex peers, to protect girls from sexual exploitation and pregnancy (Hagan et al., 1987). Finally, basic research on parent-child conflict suggest that the level of emotional involvement and interdependency in mother-daughter relationships results in greater levels of intensity during conflict and in greater levels of emotional distress in girls versus boys (Gore, Aseltine, & Colten, 1993; Noller, 1994). In sum, although boys and girls with conduct problems tend to be poorly supervised, punished harshly, and rejected by their parents, there is some evidence that the content of these conflicts for girls may relate more specifically to their opposite sex relationships, and that the higher levels of emotional engagement in mother-daughter relationships may result in more intense and distressing conflicts.

Neglect and Abuse

Research on sex differences in abuse and neglect as risks for conduct problems has produced conflicting results. Early studies suggested that victimization, particularly sexual abuse, was predictive of conduct problems in girls more than in boys. However, some of these studies were based on unrepresentative samples of male and female juvenile delinquents (Chesney-Lind, 1988), and others deduced sex differences from comparisons of delinquent versus nondelinquent females, rather than comparing males and females (Calhoun, Jurgens, & Chen, 1993).

Two reviews of the effects of sexual abuse on children found no sex differences in the adjustment of males and females (Kendall-Tackett, Williams, & Finkelhor, 1993; Rind, Tromovitch, & Bauserman's, 1998). More recent studies also find that abuse predicts criminal offending in both male and female juveniles, even net of the effects of out-of-home placement (Cohen, Smailes, & Brown, 2000; Moffitt et al., 2001; Widom & Maxfield, 2001), and that the effect of abuse on offending is not mediated by running away from home (Kaufman & Widom, 1999).

Several studies suggest that the quality, rather than the prevalence, of child abuse may differ for the two sexes. Two studies of juvenile delinquents suggest that, whereas the ratio of delinquent females to males who have been sexually abused is similar to that observed in general population, female delinquents are more likely than males to have multiple experiences of sexual abuse (Chamberlain & Moore, 2002; Chesney-Lind, 1989). Others suggest that girls' sexual abuse tends to start earlier, to last longer, and to be perpetrated by a family member (Finkelhor & Baron, 1986). Thus, whereas child abuse per se may not differentiate girls and boys with conduct problems, a history of prolonged sexual abuse within the family is one instance of relationship-based risk for conduct problems in girls versus boys.

Pubertal Changes

Puberty is of special interest to a consideration of the role of interpersonal relationships on sex differences in conduct problems, because it is tied to increases in opposite-sex peer interactions. Either early or late onset of puberty has *small* effects on the risk for conduct problems in boys (Moffitt et al., 2001).

In contrast, several well-designed longitudinal studies have converged to indicate that pubertal changes may play an important role in the development of conduct problems for girls. For instance, Stattin and Magnusson (1990) followed an epidemiological sample of Swedish girls, and found that the early onset of menarche predicted norm violation and sexually precocious behavior. Simmons and Blyth (1987) found that early maturing girls had more conduct problems in school, as well as lower academic problems and more body image disturbances. Caspi and Moffitt (1991) found that the early onset of menarche in girls in an epidemiological sample of New Zealand adolescents predicted juvenile delinquency.

Perhaps the most interesting finding in the area of menarche and conduct problems comes from Caspi, Lynam, Moffitt, and Silva (1993), who found that girls' responses to the social and biological effects of early onset menarche on conduct problems depended on the context in which they occurred. Specifically, the effect of early menarche on norm violation, familiarity with delinquent peers, and self-reported delinquency was found only for girls enrolled in mixed-sex schools, not for girls in all-girl schools. These effects were not explained by differential selection into schools. Delinquent behavior was also more stable among girls attending mixed-sex schools than all-girl schools. Analyses of girls in mixed-sex schools revealed that, in girls without a history of earlier behavior problems, the effect of early maturation was mediated by familiarity with delinquent peers. In contrast, for girls in mixed-sex schools who already had a history of early onset behavior problems, the effect of early maturation was direct, not mediated by their familiarity with delinquent peers. The authors conclude that puberty and boys are required for the initiation and maintenance of female delinquency, and that different pathways to antisocial behavior may exist in girls with and without a history of early behavior problems. Puberty may signal to others in the social environment that a girl is entering a new level of readiness for certain types of experiences. These early maturing girls may attract older delinquent boys; perhaps older nondelinquent boys are more attracted to nondelinquent girls at their own level of maturity. The availability of older, norm-violating male peers who model such behavior seems essential to early maturing girls' delinquency. If a girl already has a history of early behavioral or emotional problems, however, the stress of early maturity may result in a magnification of existing behavioral problems.

Peer Group Influence

In the last 15 years, substantial advances have been made in understanding the contribution of peer networks to the etiology and maintenance of conduct problems in boys (Bjerregaard & Smith, 1993; Dishion, Andrews, & Crosby, 1995; Ennett & Bauman, 1994; Kandel, Davies, & Baydar, 1990). In comparison, much less is known about the role of girls' peer networks on their conduct problems. Conduct disorder in adolescence is associated with more deviant peers group for both males and females (Moffitt et al., 2001; Quinton et al., 1993). Magnusson (1988) found that affiliation with older peers played a powerful role in accounting for the deviancy of older maturing Swedish teenage girls. Whether the sex of these older peers is important has not yet been determined. We did not find any study that investigated whether females with conduct problems have more opposite-sex friends in their peer networks (both romantic and nonromantic partners) than nonaggressive females. The Caspi et al. (1993) study on puberty in mixed- versus same-sex schools does provide some support for this hypothesis.

Age/developmental stage is a key consideration in examining peer relations for problem behavior in girls (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988); in 4th grade, girls identified as aggressive by peers and teachers did not tend to affiliate differentially with other aggressive girls, nor were their best friends necessarily aggressive. In contrast, aggressive fourth grade boys were already affiliating with other aggressive boys, and their best friends tended to be aggressive. In the 7th grade cohort (early adolescence), aggressive girls were affiliating with other aggressive girls, and their best friends tended to be aggressive as well. This finding is of interest since conduct problems tend to first appear in adolescence in girls.

A further question regards sex differences in the level of influence exercised by the peer groups of males and females on conduct problems. There is almost no research on this topic. One study found that adolescent girls, both delinquent and nondelinquent, report less use of influence by their peer group than adolescent boys (Giordano et al., 1986). Boys' antisocial acts, including physical aggression, are mostly directed against strangers, and are typically committed in a larger peer group format; in contrast, girls' aggression occurs most often between her and a family member (Pepler & Craig, 1999), and antisocial acts are committed in same sex pairs (Bottcher, 2001;

Chamberlain & Reid, 1998). Further, mixed-sex peer groups probably influence females' willingness to engage in antisocial behavior, even if these acts are committed in sex-specific format. This topic is ripe for further research.

Prior Mental Health Problems

Longitudinal prospective studies of representative samples generally find that behavioral risks (e.g. hyperactivity) for onset of antisocial behavior are similar in males and females, but that boys are exposed to more of these risks (see Moffitt et al., 2001). The Great Smoky Mountains Study (Rowe, Maughan, Pickles, Costello, & Angold, 2002) analyzed data based on four waves of data in a community sample of children aged 9–16 and concluded that ODD was a strong risk factor for CD in boys, but that ODD provided no increased risk for CD among girls. The authors concluded that the developmental relationship between ODD and CD may apply to boys more so than to girls, and that the onset of CD in girls may be tied to other psychiatric risks. Later, this same research group found evidence that depression is a significant *predictor* of conduct disorder in girls, but not boys (Costello et al., 2003).

Earlier in this review, we concluded that depression was more likely to co-occur in girls than in boys with conduct problems. For boys, depression is typically conceptualized as an outcome of externalizing behavior, or at least as an outcome of other risks for externalizing disorders. Loeber & Keenan (1994) suggest that disruptive behavior disorders result in impaired family interaction styles, peer difficulties, and academic problems, all of which may lead to depression in adolescence. Patterson and Stoolmiller (1991) suggest a similar model, where academic failure and peer rejection may lead to depressed mood later in adolescence. Yet, several studies suggest that depression may be a stronger predictor of conduct problems in girls than in boys (Kovacs, 1996; Renouf & Harter, 1990).

A relational conceptualization provides a useful framework in which to consider why depression may be more common in girls than boys with conduct problems, and how depression may be linked with the other etiological risks considered here. Below, a transactional model is presented for depression, abuse, puberty, peer deviance, and the risk for conduct problems in boys and girls.

Transactional Model of Sex and Conduct Problems

Evidence reviewed so far suggests that whereas child abuse increases the risk for conduct problems in boys and girls, girls are more likely to experience sexual abuse at an earlier age and for more chronic periods. Some evidence further indicates that chronic or protracted sexual abuse may be a risk factor for early onset of puberty in girls (Romans, Martin, Gendall, & Herbison, 2002; Trickett & Putnam, 1993). In turn, the present review finds evidence that early pubertal onset is a risk for conduct problems in girls, but that it has little or no effect on the risk for conduct problems in boys. Further, research from several prospective longitudinal studies suggests that sex differences in depression emerge between ages 13 and 15, and the greatest difference in both overall rates and new cases is between ages 15–18 (Hankin et al., 1998; Nolen-Hoeksema, 1994).

The onset of depression is linked to puberty and its associated hormonal, rather than social changes. For instance, Cohen et al.'s (1993) epidemiological study of disorders in late childhood and adolescence found that, in girls, there was a marked rise in the prevalence of depression in the immediate post-puberty years, and the peak prevalence age for conduct disorder occurred about 2 years after the peak prevalence age for childhood depression. In boys, depression rates remained low and stable from late childhood throughout adolescence, and the prevalence of conduct disorder peaked around age 10 and then declined. Cohen et al. (1993) concluded that the prevalence curve of depression in girls suggests a triggering role of hormonal or pubertal changes. In contrast, they observed that, since the peak for conduct disorder in girls appeared 2 or 3 years after menarche, on average, this disorder appears to be related to social rather than hormonal changes. Angold, Costello, Erkanli, and Worthman (1999) found in the Great Smoky Mountains study that the emergence of the higher female to male depression ratio appears to be associated with changes in androgen and estrogen levels, rather than the morphological changes of puberty, and that pubertal status, rather than pubertal timing predicts increased rates of depression in girls relative to boys (Angold, Costello, & Worthman, 1998).

These findings suggest a transactional model whereby a common set of environmental and family risk factors for conduct problems occurs in both boys and girls, but the experience of early, protracted sexual abuse of girls increases their risk for

early puberty. Hormonal changes associated with puberty may increase girls' risk of depression, and depression may interact with family and environmental risks (e.g. low gender socialization, harsh parenting, availability of older, deviant male peers) in a transactional fashion, to increase the risk for conduct disorder. For instance, Obeidallah and Earls (1999) hypothesized that, in impoverished urban girls, depression acts as a risk for delinquency by decreasing girls' concern about their own personal safety; by withdrawal from prosocial activities and weakened attachment to social institutions that tend to constrain norm violation; and by rejection by normative peers, and subsequent association with deviant peer groups. That study found that in high-risk urban neighborhoods, girls aged 12 and 15 who were depressed self-reported engaging in more crimes against other persons and higher levels of aggressive behavior than nondepressed girls. Alternatively, depression may simply be a marker of physiological pubertal changes that increase the risk for conduct disorder.

At present, we can only speculate as to the developmental mechanisms that might explain associations among and temporal sequencing of boys' and girls' abuse, puberty, depression, peer relationships, and conduct problems. These speculative transactional models are intriguing and merit hypothesis testing, particularly using quality longitudinal designs and samples large enough to detect sex differences.

Developmental Course*Age of Onset, Persistence, and Desistance*

Initial estimates placed conduct disorder rates, per the DSM-III, and DSM-III-R, at about 7.4–8.1% in boys, and 2.7–3.5% in girls (e.g. McGee et al., 1984; Offord et al., 1987). However, most of these epidemiological studies used constricted age ranges, thus contributing to inaccurate prevalence rates and sex differences; examining a broad age range from 10 to 20 years indicated that the rate of conduct disorder depended on the age at which it was assessed (Cohen et al., 1993). That is, for children aged 10–13, the prevalence per 100 youths was 3.8 for girls and 16.0 for boys, but at ages 14–16 the prevalence was 9.2 for girls and 15.8 for boys. The rate of conduct disorder peaked for boys around age 10, but peaked for girls at around age 16. Whereas the rate of conduct disorder declined steadily for boys after age 10,

the growth curve for girls rose steadily to age 16, and then dropped sharply thereafter.

For both sexes, antisocial behavior tends to peak in adolescence and desist in adulthood (Junger-Tas, Terlouw, & Klein, 1994; Moffitt, 1994; Moffitt et al., 2001; Smith, 1995). Adolescence is a period of rapid transition during which youth are not fully tied to either the family of origin or to their own families with adult partners (Sampson & Laub, 1993). Once this transitional period is traversed, most males and females seem to decrease their involvement in crime, physical aggression, and oppositional behavior. In fact, there is some evidence that delinquency case rates decline more quickly after age 16 among females compared to males (Puzzanchera et al., 2000). However, accumulating evidence suggests that a small group of males, exhibits an early onset, life course persistent pattern of conduct disorder in childhood, followed by antisocial personality disorder in adulthood (Cohen et al., 1993; Lynam, 1996; Moffitt, 1993). Converging evidence suggests that the distinction of early onset (before age 11) versus adolescent-limited conduct disorder observed in males may not apply to females, given the near absence of early onset CD among females (Cohen et al., 1993; Moffitt et al., 2001; Silverthorn & Frick, 1999). (An exception is Cote, Zoccolillo, Tremblay, Nagin, and Vitaro's (2001) work, which found that, based on gender-specific cutoffs for behavior problems, a group of behaviorally deviant girls showed an early onset trajectory of Conduct Disorder).

Even though the specific behaviors included in the conduct disorder diagnosis onset in roughly the same chronological order (Robins, 1986), males are five times more likely to develop antisocial personality disorder in adulthood (Kessler et al., 1994; Oakley-Brown, Joyce, Weiss, Bushnell, & Hornblow, 1989; Robins & Rieger, 1991), and mental health outcomes of females are more varied and pervasive, heavily concentrated in the internalizing disorders (Robins, 1986; Zoccolillo, 1992).

Interpersonal relationships may account in several ways for the greater desistance of conduct disorder *per se* for females than males. First, females with conduct problems are at risk for early pregnancy and childbearing. This transition to early motherhood may result in decreased opportunities for criminal behavior, or strengthening of social bonds with children that inhibit the willingness to engage in antisocial behavior. For instance, females generally decrease delinquent activity (e.g. desistance from gang membership) immediately after the birth of a child,

whereas males do so less and more slowly (Chesney-Lind & Shelden, 1992; Hagedorn, 1998; Stouthamer-Loeber & Wei, 1998). Second, young antisocial females are less likely than antisocial males to enter correctional facilities (Mumola, 2000), thereby resulting in decreased exposure to seriously antisocial peers.

Early reports found that females were more likely than males to "grow out" of antisocial behavior, yet only recently have researchers begun to examine appropriate developmental outcomes by sex, such as depression, anxiety, early pregnancy and childbearing, marital discord, and poor parenting of the next generation (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996; Robins, 1986; Woodward & Fergusson, 1999). Up to 3/4 of women with conduct disorder that persists into adulthood (either antisocial personality disorder or SUD) will develop an internalizing disorder (Zoccolillo, 1992). More recently, Moffitt et al.'s (2001) comprehensive text on sex differences in antisocial behavior in their representative sample found evidence that depression was an important sex-specific adult outcome of antisocial behavior for girls.

Personality Disorder Features: Borderline Versus Antisocial

Antisocial personality disorder (ASPD) is much less likely as an outcome of conduct problems in females compared to males (Robins, 1986; Zoccolillo, 1992). This is not surprising, given that the DSM-IV requires that an individual qualify for a diagnosis of conduct disorder *prior* to age 15, and the peak age of onset for conduct disorder is around 16 in females (Cohen et al., 1993). Further, ASPD requires the absence of a long-term relationship with a partner (DSM-IV, APA, 1994), but may fail to pick up the more common pattern of highly unstable, but long term relationships in females with a history of conduct problems.

Other types of personality disorders that are more common in women, especially borderline personality disorder (BPD), share antisocial features and may be more strongly associated with conduct problems in females than in males. BPD is characterized by unstable interpersonal relationships, impulsivity, and affective dysregulation. The offspring of mothers with borderline personality disorder have elevated rates of impulse control disorders (Weiss et al., 1996). Mothers of boys with behavior problems

display behavioral traits consistent with BPD, including sensation seeking (Frick, Kuper, Silverthorn, & Cotter, 1995), antisocial, and histrionic behavior (Lahey, Russo, Walker, & Piacentini, 1989). These findings, coupled with the high incidence of assortative mating between males and females with previous antisocial behavior, suggest that BPD may be an adult outcome of conduct problems in girls. Clinically, this view fits well with research on the use of inconsistently applied, harsh discipline, and emotional rejection observed in mothers of conduct disordered boys (Ehrensaft, Wasserman, et al., 2003; Wasserman, Miller, Pinner, & Jaramillo, 1996). Thus, antisocial tendencies may be expressed in more dramatic, unstable interpersonal interactions among females with a history of conduct problems, rather than in the unattached, avoidant style observed in antisocial males.

Zanarini and Gunderson's (1997) review on comorbidity and ASPD noted that patients with BPD often meet criteria for or exhibit traits of comorbid antisocial personality disorder; though the two disorders are distinct, there is considerable overlap in family psychopathology, disorder course, and basic underlying temperament. Individuals with ASPD are distant, distrustful, and dominant, whereas those with a BPD are intensely involved, dependent, and volatile (p. 87). Yet, this observation belies an inherent sex difference in interpersonal interactions, and may explain in part why females with a history of conduct problems are rarely diagnosed with ASPD as adults. In fact, three areas were equally common in both types of personality disorder patients: sexual deviance (including promiscuity), other impulsive patterns (not including sexuality, substance abuse, self-mutilation, and suicidality) and interpersonal problems with devaluation, manipulation, or sadism. In childhood/adolescence, the patients with BPD experienced underachievement, running away from home, and lying as often as the ASPD group (Zanarini & Gunderson, 1997).

Few studies have examined sex differences in the association of conduct problems, ASPD, and other types of personality disorder. Eppright, Kashani, Robison, and Reid (1993) found higher rates of BPD in female (48%) than male (22%) incarcerated juvenile offenders. The fact that BPD was found more often in female than male offenders is not surprising, as 4 out of 5 cases are females (Swartz, Blazer, George, & Winfield, 1990). Yet, the elevated rate of comorbidity with BPD in this sample of juvenile offenders is higher than that

found in other noncriminal populations (1.9% prevalence in the ECA community sample, Swartz et al., 1990). Bernstein, Cohen, Skodol, Bezirgianian, and Brook (1996) found that anxiety or fear, depressive symptoms, immaturity, and conduct problems were associated with adolescent personality disorders from cluster B (Antisocial, Borderline, Histrionic, or Narcissistic). Gender did not moderate the effect of conduct problems on cluster B personality disorders, but as depression was factored out from the effects of conduct disorder, there may have been insufficient power to detect significant interactions. A more recent study with the same sample, however, did find evidence for a pathway from childhood externalizing symptoms to early adult cluster B personality symptoms in girls, but not in boys (Crawford, Cohen, & Brook, 2001).

Could BPD be the female equivalent of ASPD in males? Some evidence would suggest that this is so. Individuals with BPD are relationally aggressive, impulsive, hostile, sexually promiscuous, and behaviorally and affectively disinhibited. Paris's (1997) review tested whether BPD may be the female equivalent of ASPD, concluding that impulsivity accounts for the commonality between the two disorders; in females, this impulsivity is expressed primarily in the context of interpersonal relationships, whereas for males, it is expressed in a wider range of contexts. We find other similarities in the two disorders that are exhibited in gender-consistent ways. First, individuals with both types of disorder are highly manipulative and exploitive within interpersonal relationships, but the function of these behaviors tends to differ. BPD individuals may exploit others to avoid interpersonal abandonment or rejection, whereas ASPD individuals may exploit others to obtain more instrumental gains. Second, though substance abuse and high-risk sexual activities are common to both disorders, in BPD, these may serve to regulate negative emotions resulting from perceived rejection by others, versus being part of a more general pattern of risk taking for its own sake in individuals with ASPD.

Finally, collaborations between basic and applied researchers in the field of emotion suggest intriguing parallels in emotion regulation deficits and aggression. Recent evidence from brain imaging studies suggests that impulsive aggression and violence reflect dysfunction in the neural circuitry of emotion regulation, both currently and prospectively (Davidson, Putnam, & Larson, 2000). This neural circuitry driving emotion regulation is shaped by early social influences (Davidson, Jackson, & Kalin,

2000). BPD has classically been described as a disorder of emotional regulation, particularly within interpersonal relationships. BPD patients experience greater levels of negative emotions (e.g. hostility and anger) and higher emotional variability in diary studies (Farchaus-Stein, 1996), and are less aware of their own and others' emotions, in facial recognition experiments (Levine, Marziali, & Hood, 1997). Keltner and Kring (1998) reviewed studies on the linkage between emotional and social disturbances in BPD, and proposed that BPD persons cope with negative emotions via aggression and other forms of impulsive behaviors in their personal relationships. Studies of the development of emotion in young children suggest that emotional dysregulation is prospectively associated with conduct problems in grade school (e.g. Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996). In children at risk for conduct problems, both girls and boys are more emotionally reactive, but girls are more likely to suppress negative emotion, whereas boys are more likely to express negative emotion, most likely because of parental socialization cues (Cole, Zahn-Waxler, & Smith, 1994; Cole, Teti, & Zahn-Waxler, 2003). In boys, anger is associated with conduct problems, but in girls, mixed anger/sadness is associated with conduct problems (Cole et al., 1994). These developmental findings suggest the hypothesis that emotion dysregulation may express itself first as a risk for conduct problems, and later as BPD in females, but as ASPD in males. Borderline personality disorder may thus be the gendered equivalent of antisocial personality disorder in females.

To summarize, a fledgling body of research has tested the associations among conduct problems, development of personality disorders, and variations by sex. Existing research in this area is still limited, as it focuses primarily on sex differences in the prevalence of ASPD as an outcome of conduct disorder or delinquency. Most studies have lacked sufficient power to investigate separately the association between specific personality disorder features, such as BPD, and conduct problems, although some more recent studies are addressing this problem. Nonetheless, the overlap of symptoms of ASPD and BPD points to an informative avenue of research. Recent research on emotion regulation processes points to basic similarities in dysregulation in borderline personality disorder and conduct problems. Further evidence for the importance of BPD as an outcome of conduct problems in females may be found in studying BPD women's parenting styles, such as hostility,

anger, inconsistency and harsh punishment, and offspring behavior problems.

Opposite-Sex Relationships

Adolescence brings the transition from primarily same-sex peer groups, to the merging with opposite-sex peer groups. These new mixed-sex peer groups are believed to provide a basis for norms about appropriate interactions between boys and girls, and to constrain the level of sexual behavior and intimate contact between them to appropriate levels (Connolly & Goldberg, 1999). By the time they reach adolescence, most males and females with conduct problems will probably have begun associating with other peers with conduct problems (Giordano et al., 1986), and will be influenced by their peers to select other deviant peers as potential dating partners (Brown, 1999). In fact, males and females with conduct problems tend to be sexually active earlier and to have more sexual partners (Capaldi, Crosby, & Stoolmiller, 1996; Pawlby, Mills, Taylor, & Quinton, 1997), to become involved in unsupported, conflictual, and violent romantic relationships (Lewis et al., 1991; Serbin, Peters, McAffer, & Schwartzman, 1991), and are less likely to consistently use contraception (Kessler et al., 1997). Deviant peer groups offer fewer choices of supportive, nondeviant partners, and, therefore, less opportunity to learn and practice prosocial relationship behaviors that would contribute to stable, positive romantic relationship history over the lifespan (Ehrensaft, Cohen, et al., 2003). As reviewed below, partner choices may have different implications for the outcomes of conduct problems in males and females.

Assortative Mating: Behavior Genetics of Antisocial Behavior

Assortative mating refers to the likelihood of individuals with particular characteristics or disorders to selectively partner and produce offspring together. Whereas the degree of assortative mating is quite trivial for most individual difference variables, it is substantial for antisocial behavior (see reviews by Carey, 1994; Goldsmith & Gottesman, 1995). Marriage markets may be limited by geography (e.g. community, neighborhood), which is significantly associated with antisocial behavior (Rutter, 1978). Particularly during adolescence, the odds of

choosing a mate from the same school is high; since antisocial behavior is known to vary across schools, this presents another risk for assortative mating between antisocial individuals.

Krueger, Moffitt, Caspi, Bleske, and Silva (1998) found that, among couples in their longitudinal study of a representative birth cohort, individuals and their partners (dating 6 months or longer, cohabitating, or married) were positively associated on attitudes toward crime, variety of offenses committed, and delinquency of peers. The authors conclude that "assortative mating for antisocial behavior is substantial and that this finding may be due to a tendency for antisocial persons to cluster in peer groups with similarly antisocial peers." In order to understand assortative mating for antisociality, more detailed assessments of both members of the couple will need to examine the process and context within which the couple became involved, the contribution of peer groups to their mate selection, the reasons for which the individual chose to become involved and remain with a particular mate, etc. . . . Further, since relationships tend to be unstable in antisocial individuals, it would be important to assess these same variables regarding other partners (especially those with whom the subjects may have had previous children).

Implications of Antisocial Partners for Males and Females

Although the odds of assortative mating with other antisocial partners is high for both men and women, the effects of such a pairing may differ for the two sexes. Moffitt et al. (2001) found that girls involved with an antisocial partner at age 21 were the ones whose antisocial behavior persisted into adulthood. For boys, having an antisocial partner had no effect on persistence. Research suggests that this effect may be explained by sex differences in the implications of sexual behavior and emotional commitment. The increased risk for sexual initiation, emotional commitment, and risk taking with older, less stable partners increases the girls' risk for early pregnancy (Woodward & Fergusson, 1999), and economic dependency, without the necessary economic and emotional support. Females also tend to lack supportive female relationships, and are heavily reliant on their partners for support and companionship (Pawlby, Mills, & Quinton, 1997). Females appear to be more susceptible to the antiso-

cial influence of their partners than males; for instance, females are most often introduced to drugs by a boyfriend, whereas males are typically introduced by male peers (Miller, Alberts, Hecht, Trost, & Krized, 2000). Whereas antisocial females tend to overvalue their male partners, antisocial males are reinforced within their peer groups for hostile, rejecting talk about women (Capaldi, Dishion, Stoolmiller, & Yoerger, 2001). They also are not committed to or economically supportive of their partners and children (Jaffee, Caspi, Moffitt, Taylor, & Dickson, 2001; Sampson & Laub, 1993). For males who partner with an antisocial female, the implications for pregnancy and childbearing are markedly less serious for their economic future. As an illustration, 90% of incarcerated fathers in state prison identified their child's mother as the current caretaker during the incarceration, but only 28% of state incarcerated mothers described the father as such (Mumola, 2000). The mothers were five times more likely than fathers to report that their children's current caretaker was a foster home or agency (10% vs. 2%). Further, these mothers were twice as likely to be unemployed, and three times as likely to be receiving income from transfer payments such as welfare and unemployment insurance.

Partner Violence

Partner violence has important implications for the intergenerational transmission of antisocial behavior. It often occurs in the presence of young children (Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997), increases the risk of child maltreatment (Appel & Holden, 1998), may serve as a model of aggressive behavior, and can result in chaotic disruptions to the family that put children at risk for conduct problems (Jouriles et al., 2001).

Males and females with conduct problems are at risk for perpetrating and receiving partner violence (Capaldi & Clark, 1998; Ehrensaft, Cohen, et al., 2003; Magdol, Moffitt, Caspi, & Silva, 1998). However, partner violence toward females is much more likely to result in injury and psychological distress (Straus, 1999), so it is a particularly dangerous outcome of antisocial behavior for females. Girls with conduct problems may have more difficulty exiting relationships when they become psychologically or physically abusive because they remain tied to their abusers through their early childbearing, economic limitations, and social isolation.

Women's own violence toward their partners also presents a paradox, since women report more aggression toward partners than toward strangers, and it is the only arena showing an absence of the pronounced sex difference in physically aggressive behavior (Moffitt et al., 2001). Measurements of adult antisocial behavior have generally not included verbal and physical aggression toward partners and children. However, the common use of aggression in the context of intimate family relationships by females suggests that, rather than discontinuing their antisocial behavior, females may concentrate its expression in late adolescence and adulthood within those relationships.

Implications of a Supportive or Nondeviant Partner

The effect of having a supportive partner seems significant for desistance in both males and females. Quality of marital attachments predicts decreases in delinquency for males (Laub, Nagin, & Sampson, 1998; Sampson & Laub, 1993) and higher odds of switching out of conduct disorder for females (Quinton et al., 1993). Stable family life, a nondeviant peer group, and planful behavior reduced the risk for assortative mating with antisocial males. Having a nondeviant partner has a protective effect on women institutionalized in childhood (Rutter & Quinton, 1984).

It is not clear why males are more likely to *desist* if they have a supportive marital partner, but having an antisocial partner has no effect on the odds of males' *persistence* of antisocial behavior. Perhaps this is because the presence of a "supportive" marital partner has been measured independent of the partner's degree of antisocial behavior. That is, a female may be counted as supportive of her partner even if she also participates in antisocial behavior (Sampson & Laub, 1993). Alternatively, a supportive partner may influence a male to conform to social and legal norms because he already has adaptive interpersonal skills that allow him to form such a protective relationship with a female.

In summary, assortative mating is high among those with conduct problems, and its effects on outcome seem worse for females. Females may be more likely to commit indiscriminately to antisocial partners, as a function of weak social networks. Having a nonantisocial partner appears to buffer both males and females from persistent antisocial behavior. Yet, we know little about the process by which antisocial

individuals become attracted to one another and involved in relationships beyond the fact that these individuals have shared norms about deviant behavior. More longitudinal research is needed on motivations for partner selection, and on the context in which antisocial individuals meet and become involved with their partners across the life span.

Conclusions on Developmental Course: Interpersonal Relationships Play a Different Role in the Developmental Course and Outcome of Conduct Problems and Antisocial Behavior in Girls Versus Boys

The research reviewed here suggest that interpersonal relationships have a sex-specific role in explaining sex differences in the onset of conduct problems, and for particular mental health outcomes, chiefly depression, and possibly borderline personality functioning. Recent studies represent an advance over prior research on developmental outcomes of conduct problems, in their inclusion of a broader range of possible outcomes, especially social ones. Recent work with both representative and clinical samples suggest reasonably strong evidence that depression, personality disorder development, and intimate partner selection may be important sex-specific adult outcomes of antisocial behavior for girls. Taken together, these findings suggest the conclusion that the course of conduct problems in females compared to males is tied more closely to the quality of interpersonal relationships. Selection of antisocial partners, early sexual behavior, and violence in romantic relationships are outcomes common to both males and females with conduct problems, but have worse implications for the developmental course of antisocial behavior in females. Because of the implications for pregnancy and early childbearing, these outcomes increase the risk of conduct problems for future generations of youth.

The present evidence for sex differences in outcomes is moderately strong, and deserving of further research to resolve methodological limitations. It is possible that some findings pointing to sex differences may be overstated, because differences between odds ratios for males and females have not always been tested for significance, and because base rates of conduct problems differ in males and females, with attending problems in drawing conclusions from comparing measures of association, such as odds ratios, regression coefficients, correlations,

and mean differences. Further research will be needed to replicate and elaborate current findings, comparing the same social and mental health outcomes in representative samples of males and females large enough to detect interactions with sex.

We now turn our attention to treatment implications of current findings on interpersonal relationships and sex differences in the development of conduct problems.

Gender Differences in Treatment Needs

Despite considerable interest in gender differences in treatment needs and responsiveness, there is in effect very little research on gender differences in treatment for conduct problems. As a case in point, the Center for the Study and Prevention of Violence (CSPV) at the University of Colorado at Boulder identified 10 "Blueprints," or model prevention and intervention programs that meet scientific standards of proven program effectiveness. Of these, only Multidimensional Treatment Foster Care and Multisystemic Therapy have published results on the program's effectiveness with girls, or on gender-specific implementation issues (Chamberlain & Reid, 1994).

Chamberlain and Reid (1994) found that delinquent boys and girls referred for their Treatment Foster Care responded to treatment differently. Foster parents reported that boys improved steadily from the first to the 6th month of treatment. Girls, on the other hand, displayed comparatively lower behavior problems than males in the first month of treatment, but worsened by 6-month follow-up. There were no differences in program completion (71%), or in rates of re-arrest. However, longitudinal follow-up data are needed to determine whether other critical outcomes, such as unemployment, early pregnancy, school dropout, and mortality rates are impacted by the treatment (Chamberlain & Moore, 2002). The authors concluded that, in view of their higher numbers of parental transitions (changes in family structure), and higher rates of out-of-home placements, a priority with antisocial girls is an overall approach that focuses on stabilizing the daily environment and behavior problems, and preventing further placement changes. Two further pivotal treatment needs for antisocial girls were development of playful competency, and skills to replace relational aggression.

Henggeler and colleagues' Multisystemic Therapy has been applied to both antisocial boys and girls.

The authors consistently find no sex differences in the effectiveness of their treatment (Borduin et al., 1995; Henggeler, Melton, & Smith, 1992; Henggeler, Melton, Smith, Schoenwald, & Hanley, 1993), but the outcomes were primarily crime rates, aggression, and delinquency. Other sex-specific outcomes, including mortality, suicide attempts, pregnancy, early childbearing, and dependence on multiple sources of welfare (Moffitt et al., 2001) were not tested for sex-differences. Further, samples of juvenile delinquents comprise more males than females, so there may have been insufficient power to detect interactions by sex.

Perhaps underlying this dearth of research on gender differences in treatment is a lesser likelihood that conduct disordered girls will receive treatment than conduct disordered boys. Some research indicates that this is so. Offord, Boyle, and Racine (1991) found that girls with conduct problems are less likely to receive services, and proposed that girls may be diagnosed initially with internalizing disorders, which are less disruptive for caretakers and school personnel.

Within the juvenile justice system, girls have typically been ignored or punished more harshly for less serious crimes than boys (Chesney-Lind, 1989). Differences in how boys and girls come to the attention of authorities, and in the type of interventions they receive when they do present, may critically affect the course of future contacts with judicial and psychiatric facilities. When they are arrested for a juvenile crime, males are more likely than females to be sentenced to a correctional facility (Mumola, 2000). Juvenile courts are less likely to use formal processing for female (47%) than male (60%) cases; males are five times more likely to be waived to criminal court than females (1% vs. 2%). Detention is more likely for male versus female juveniles charged with delinquency offenses (20% vs. 15% of delinquency cases) (Puzzanchera et al., 2000). There are fewer criminal facilities for females than for males, perhaps reflecting traditional social and criminological views that females' conduct problems should be dealt with by treatment within the community. As criminal facilities tend to be quite violent environments, greater exposure to such facilities in males could further widen the sex gap in outcomes, subsequent social and employment opportunities, and future intervention needs.

This review points to a few sex-specific outcomes of conduct disorder that should be the focus of treatment in girls. Not surprisingly, these surround

sexuality and parenting. Impulsive dating and sexual behavior may have greater service implications for females with conduct problems than males, due to the association with the risk for early pregnancy and future risks for the next generation. The studies reviewed here support a focus on assisting girls to form supportive same-sex friendships, delay solo-dating, and develop skills that facilitate supportive, prosocial intimate relationships (Bardone et al., 1996; Moffitt et al., 2001; Pawlby, Mills, Taylor, et al., 1997).

At present, however, research cannot inform clinicians about specific interventions to successfully change antisocial girls' personal relationships. There is little data on the process by which girls with conduct problems become associated with antisocial boys, why they are drawn to these boys, rather than to prosocial boys who may offer much needed emotional support and stability. Nor do we know why girls with conduct problems become so invested in their opposite-sex relationships despite receiving so little emotional support from them, or why they receive much less support from same-sex peer friendships than girls without conduct problems. What affective, cognitive, or behavioral processes are at work here, and how might they be modified by intervention? What techniques work best to decrease the impulsive decision to become sexually active? Thus, in tandem with a greater focus on romantic relationship formation in the treatment of conduct problems in girls, longitudinal research is needed on the process by which girls become attracted to and involved with opposite-sex peers and partners, how peer group influence operates on the romantic relations of at-risk girls, what aspects may be amenable to change with intervention, and what approaches might best produce such change. Longitudinal research on developmental processes underlying peer group and romantic partner selection could tell us much about ways to alter the damaging trajectory so typical of antisocial girls' romantic relationships.

Further, treatment for antisocial girls will often require direct focus on sexual risk taking, prenatal care, and parenting skills training. This review has shown that early pregnancy and parenthood are outcomes that affect girls with conduct problems more than their male conduct disordered counterparts. The importance of addressing parenting issues among adolescent girls with conduct problems is pivotal, given their potential to contribute to the development of behavior problems in the next generation (Lewis et al., 1991; Robins, 1966). In fact, several longitudinal studies are now converging to

show prospective evidence of parenting as a mechanism for the transmission of antisocial behavior across three generations (Capaldi, Pears, Patterson, & Owen, 2003; Conger, Neppl, Kim, & Scaramella, 2003; Hops, Davis, Leve, & Sheeber, 2003; Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003). Thus, placing girls' treatment for conduct problems in the context of their own relationship with their children may be particularly relevant. Luthar and Suchman's (2000) relational therapy for substance abusing women focuses on parenting of their children; this treatment has demonstrated both improved parenting skills, and reduced substance abuse. Women's relationship to their children has traditionally been central, and a philosophy of changing antisocial behavior in the context of parenting may be especially productive for females.

OVERALL CONCLUSIONS

The current review examined whether interpersonal relationships account for sex differences in the presentation, etiology, and developmental course of conduct problems. Specifically, we anticipated that: (1) Girls' conduct problems are more likely than boys' to manifest as a function of disrupted interpersonal relationships and conflict with caretakers and peers; (2) For girls more than for boys, the outcomes of conduct problems in adolescence and adulthood, and the related treatment needs, are more likely to be determined by the quality of interpersonal relationships with opposite-sex peers and partners.

We conclude that boys and girls share many of the same characteristics in their *presentation* of conduct problems to clinicians and courts, and that some of these differences have been overstated as researchers initially began to investigate females' conduct problems. However, there is also fair evidence that interpersonal relationships account for some sex differences in presentation. Compared to boys, girls with conduct problems are more likely to present with current and/or prior depression, and a pattern of socially aggressive behavior perpetrated within the context of close relationships, rather than physical aggression in a peer group format. Many girls, compared to boys with conduct problems come to the attention of authorities and clinicians for status offenses, although they do commit other types of offenses as well. Parental supervision and monitoring are impaired in both girls and boys, but some evidence suggests that the content of those conflicts

centers on control of their intimate relationships with males, particularly since these girls are more likely to have reached early puberty, and that the level of emotional intensity may be higher for girls. The role of child abuse is less conclusive, though a few recent studies suggest that a history of multiple abusive events (especially sexual) and abuse by family members may distinguish serious female juvenile delinquents from their male counterparts. There is some evidence that when they do behave aggressively, girls tend to perpetrate this behavior against family (parents, siblings, their own children) or intimate partners, and in the context of a conflict with these individuals. This pattern contrasts with boys' violent behavior, which is primarily perpetrated against strangers. This sex difference should be viewed as preliminary until it is replicated within several large, representative samples of males and females. If such replication is obtained, attachments to caretakers, and strengthening other interpersonal relationships may prove especially key to constraining females' delinquent behavior.

Though males and females with conduct problems resemble each other in many ways, certain sex differences in the presentation and etiology of conduct problems do map onto differences in treatment needs pertaining to the quality of interpersonal relationships. As girls with conduct problems may be more likely to come from homes marked by intense emotional conflict and unstable caretaker relationships, researchers are now stressing the need to focus on stabilizing and structuring the home environment, and building interpersonal trust with caregivers, before implementing other interventions traditionally applied with boys. Current evidence does not indicate whether relational aggression is antisocial *per se*. Yet, there is some evidence that antisocial girls are also relationally aggressive. This points to a specific need to focus on decreasing girls' relational aggression toward peers and caregivers, as well as physical aggression, as these tactics maintain distress in interpersonal relationships. Social interventions that teach these girls how to form and sustain supportive relationships with same-sex peers are indicated, given the integral role of close relationships in females' healthy development.

Based on the studies reviewed here, we conclude that there is moderate evidence that outcomes of conduct problems relate to the role of interpersonal relationships with family, peers, romantic partners, and offspring. There is some evidence that certain personality syndromes, especially borderline person-

ality disorder, may be more likely adult outcomes of conduct problems in girls than boys. This may have implications for skills training to counter unstable, intense interpersonal relationships. Research in affective neuroscience suggests that learning to modulate negative affect and enhance positive affect may help prevent violence; for girls, decreases in relational and physical aggression could be important focuses of such training. However, the translation of affective neuroscience to applied interventions is still in its infancy, and continued collaboration between researchers in these fields could be highly valuable.

Finally, boys and girls with conduct problems often engage in unprotected sex, but treatment for girls will require special attention to prevention of outcomes such as pregnancy and sexually transmitted diseases, partner violence, and parenting skills for those who already have young children. Preventive services from child welfare systems may be useful for antisocial girls, given the high odds of using harsh or immature parenting practices with their own children. Whereas males and females both tend to select antisocial romantic partners, this review finds that such a selection has dire consequences for females.

DIRECTIONS FOR FUTURE RESEARCH

This review supports a moderately strong differential association of the quality of interpersonal relationships with the developmental course of conduct problems among males and females. However, the literature reviewed here does not resolve the task of sorting out the causal ordering of interpersonal relationships, adjustment, and conduct problems. One possible causal mechanism would suggest that variations in interpersonal relationship functioning lead to variations in adjustment, which in turn leads to variations in conduct problems. However, two equally plausible, competing models exist. Adjustment and conduct problems may both depend on variation in interpersonal relationships; here, rather than adjustment acting as a mediator of the linkage between interpersonal relationships and conduct problems, adjustment and conduct problems are simply different consequences of variations in interpersonal relationships. A second competing model theorizes that variations in all three of these variables are results of a common cause, such as genetic vulnerability, low IQ, etc. Future research will need to sort out these competing models if we are to properly understand the

relationships among these three variables, and implications for gender differences in development.

Additionally, as with prior reviews on sex differences in aggression and conduct disorder, we have conspicuously omitted findings on interactions of sex with racial and ethnic variables, primarily because our literature search did not yield sufficient empirical findings to draw sound conclusions on this matter. However, given the potential importance of this issue, future research on sex differences in conduct problems ought to address these variables more carefully.

The present review suggests that looking to the quality of interpersonal relationships across the life span may offer a valuable framework for conceptualizing sex differences in conduct problems. The task of compiling research on sex differences in conduct problems is made difficult by the wide range of definitions used across various studies, including antisocial behavior, physical aggression, social aggression, and pathological personality traits. Regardless of diagnosis, however, it is the specific behavioral patterns and contexts that have been noted here that truly distinguish the developmental patterns of females and males and that contribute to their differential outcomes. Although the definitions used for such behavior vary broadly, each of these share problems with constraint, affect regulation, and impulsivity. This review indicates that the expression of these problems across the course of development differs not entirely, but in important ways, for the two sexes, and that these differences may be traced in part to variations in relationships with caregivers, peers, and intimate partners. Evidence for such a relational framework is still accumulating, and further research on conduct problems that tests this model for understanding sex differences would serve to advance the field.

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