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What Is So Special About Male Adolescent Sexual Offending? A Review and Test of Explanations Through Meta-Analysis

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We tested special and general explanations of male adolescent sexual offending by conducting a meta-analysis of 59 independent studies comparing male adolescent sex offenders (n = 3,855) with male adolescent non-sex offenders (n = 13,393) on theoretically derived variables reflecting general delinquency risk factors (antisocial tendencies), childhood abuse, exposure to violence, family problems, interpersonal problems, sexuality, psychopathology, and cognitive abilities. The results did not support the notion that adolescent sexual offending can be parsimoniously explained as a simple manifestation of general antisocial tendencies. Adolescent sex offenders had much less extensive criminal histories, fewer antisocial peers, and fewer substance use problems compared with non-sex offenders. Special explanations suggesting a role for sexual abuse history, exposure to sexual violence, other abuse or neglect, social isolation, early exposure to sex or pornography, atypical sexual interests, anxiety, and low self-esteem received support. Explanations focusing on attitudes and beliefs about women or sexual offending, family communication problems or poor parent–child attachment, exposure to nonsexual violence, social incompetence, conventional sexual experience, and low intelligence were not supported. Ranked by effect size, the largest group difference was obtained for atypical sexual interests, followed by sexual abuse history, and, in turn, criminal history, antisocial associations, and substance abuse. We discuss the implications of the findings for theory development, as well as for the assessment, treatment, and prevention of adolescent sexual offending.

Keywords: adolescent sexual offending, general delinquency, atypical sexual interests, sexual abuse, meta-analysis

Many resources have been devoted to the prevention of sexual crimes and the management of sex offenders in the past 20 years. Sex offender registration and community notification laws were introduced in the 1990s, civil commitment proceedings against high-risk sex offenders re-emerged during the same time period, and specialized sex offender treatment programs have proliferated in correctional and mental health settings. Social policies and associated clinical practices have benefited from major improvements in clinicians' ability to assess the likelihood of reoffending of individual sex offenders, but less progress has been made in developing successful interventions to reduce such likelihood (for reviews, see Lalumière, Harris, Quinsey, & Rice, 2005; Seto, 2008). Assessment, treatment, and policy efforts could all benefit from a better understanding of the etiology of sexual offending.

Early work on the causes of sexual offending focused almost exclusively on adult offenders.[1] Many investigators are now rec-

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We were able to find current contact information for 48 of the 57 (van Wijk was the first author of three studies) first authors (or second authors, if the first author was unavailable) and the first author's academic advisor, in the case of master's theses or doctoral dissertations, for the studies we examined in this meta-analysis. Twenty-three of the 48 first authors or academic advisors we contacted responded to our e-mails or letter. We would like to thank Mary Davis-Rosanbalm, Kevin Epps, Paul Frick, Gordon Hall, Daniel Hilliker, Clive Hollin, Melissa Jonson-Reid, Brian Jory, Alejandro Leguizamo, Carin Ness, Hank Schneider, John Sivley, Derek Truscott, Ineke Way, Anton van Wijk, Jeff Wong, and Barry Zakireh for checking the results we reported for their studies, and for their comments. We are also grateful to Michael Miner for providing unpublished data and to Dustin Pardini for conducting additional analyses to determine if we could use data from van Wijk, Loeber, et al. (2005). We apologize to anyone we have missed from this list.

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[1] Most research has also focused on male offenders, at least in part because the large majority of sexual offenses are committed by males (Steffensmeier, Zhong, Ackerman, Schwartz, & Agha, 2006). Most of the research cited in this review, and all of the theories, have focused on offenses committed by males, either against female peers or adults or against either boys or girls.

ognizing that the study of adolescent offenders might offer great promise for understanding the onset and course of sexual offending. Some adult sex offenders report committing their first sexual offense before the age of 18 years (Abel, Osborn, & Twigg, 1993), and some adolescent sex offenders began engaging in problematic sexual behavior, including coercive sexual behavior, in childhood (Burton, 2000). Many adolescent sex offenders desist from further sexual offending, but at least 15% go on to commit detected sexual offenses within an average of five years of opportunity (Caldwell, 2002; Worling & Långström, 2006).

Theoretical explanations of adolescent sexual offending have tended to focus on offense-specific factors, that is, on causes that are thought to be uniquely or primarily relevant to sexual crimes. Thus, except for a minority who are thought to commit sexual offenses as part of a broader pattern of delinquency, adolescent sex offenders are viewed as a distinct group of offenders whose sexual offenses are explained by special factors that differ from the factors that explain the offenses of other juvenile delinquents (e.g., Becker, 1990, 1998; Worling & Långström, 2006). This has led to statements such as the following from the National Adolescent Perpetrator Network (1993): "Sexually abusive youth require a specialized response from the justice system which is different from other delinquent populations" (p. 86). An offense-specific view is also common in the literature on adult sexual offending (e.g., Ward, Polaschek, & Beech, 2006). We begin with a brief review of theories of sexual offending and then describe the rationale for the present quantitative review.

Theories of Sexual Offending

In their review of the literature on adolescent sexual offending, Davis and Leitenberg (1987) noted that clinicians have suggested that such factors as poor social skills, fear of rejection and anger toward women, low self-esteem, feelings of personal inadequacy, having been sexually abused, exposure to violence, and atypical sexual interests may have causal impact. Drawing from and extending these clinical impressions, different multifactorial theories have been proposed to explain adult, and subsequently adolescent, sexual offending and to distinguish them from other kinds of offending (for recent reviews see Barbaree & Langton, 2006; Stinson, Sales, & Becker, 2008; Ward et al., 2006; for more specific theories on sexual offending against children, see Finkelhor, 1984; Seto, 2008; Ward & Siegert, 2002; and for more specific theories on sexual offending against women, see Lalumière et al., 2005; Malamuth, Sockloskie, Koss, & Tanaka, 1991).

The most prominent multifactorial theories of sexual offending are briefly described below, in chronological order of publication. Although originally formulated to explain adult sexual offending, these multifactorial theories can provide a useful framework for studying adolescent sexual offending because they are implicitly developmental in some aspects (e.g., the effects of parent–child attachment or early adverse experiences). These theories are sometimes vague about the specific predictions that one could make regarding differences between sex offenders and other types of offenders, but, where possible, we derive testable predictions. Additional predictions about the role that individual variables play in explaining adolescent sexual offending are presented later. We do not discuss theories that have been developed to specifically explain sexual offending against children or sexual offending against peers or adults, because the studies we review in this meta-analysis do not allow us to adequately test theories that distinguish sexual offending according to victim age. We do, however, examine sexual victim age as a moderator of group differences when there are sufficient studies.

Marshall and Barbaree (1990) described a theory of sexual offending that suggests that adverse early experiences (especially child abuse and neglect) can disrupt the development of inhibitory control (self-regulation skills) over normal aggressive tendencies and sex drive. Adverse early experiences can also disrupt the development of healthy attachment and social skills. These interpersonal problems, in turn, impede the formation of relationships with peers and thus increase the likelihood that the individual will sexually coerce peers or adults or will engage in sexual contacts with younger children. Adolescence, especially early adolescence, is seen as a critical time period in this theory because an at-risk individual typically begins experiencing greater sex drive as a result of entering puberty yet is less able to fulfill this in socially acceptable ways. In addition, sexual arousal from contacts with children or coercive sex is conditioned by the reward of sexual gratification, as well as by the impact of sexual arousal and orgasm on negative mood, both through the sexual offenses and later masturbation to fantasies about the offenses.

Marshall and Barbaree's (1990) theory suggests that sex offenders should differ from other offenders on measures of child abuse and neglect, social skills deficits, self-regulation problems, and sexual arousal to children or to coercive sex. One strength of this theory is its developmental perspective, where childhood experiences influence adolescent development and behavior. Another strength is its explicit hypothesis about the origins of sexual arousal to children or to coercive sex. The theory is unclear, however, about why individuals who are unsuccessful in peer relationships choose sex with children or coercive sex rather than options such as sex with prostitutes or masturbation to pornographic material or why difficulty in controlling aggressive tendencies is ever expressed through sexual contacts with children among adolescents who are sexually attracted to peers or adults.

Hall and Hirschman (1991, 1992) identified four major factors they thought could explain sexual offending: personality problems, affective dysregulation, cognitions that justify sexual offending, and sexual arousal to children or to sexual coercion. Hall and Hirschman suggested that these factors could operate singly or in combination but that a single factor typically was the most important for a particular individual. The quadripartite theory therefore also suggests that there are different types of sex offenders; for example, Hall and Hirschman suggested that offenders who were primarily motivated by affective dysregulation would commit offenses opportunistically, use higher levels of violence, and commit both sexual and nonsexual offenses.

A strength of Hall and Hirschman's (1991, 1992) four-factor theory is that it explicitly recognizes that there may be different paths to sexual offending and different types of adolescent sex offenders. However, the theory does not explain why one factor is the most important for a particular individual or how the factors interact to increase the likelihood of sexual offending. Hall and Hirschman's theory would predict that sex offenders would score higher, on average, than other offenders on measures of personality problems, affective dysregulation, cognitions that justify sexual offending, and sexual arousal to children or to sexual coercion.

In their integrative theory, Ward and Beech (2005) attempted to integrate macro-level factors, such as evolutionary selection pressures and sociocultural factors, with individual factors such as genetic predispositions, early experiences of sexual or physical abuse, and individual differences in empathy, cognitive distortions, emotional problems, interpersonal competence, and sexual interests. These researchers argued that clinical problems–in particular, emotional problems, social difficulties, offense-supportive attitudes and beliefs, and sexual problems—arise from the interaction of neuropsychological deficits and environmental triggers in particular sociocultural contexts. For example, they suggested that emotional problems include mood problems resulting from deficits in motivation and emotional dysregulation and impulsivity arising from deficits in executive function. These emotional problems are linked to sexual offending when individuals use sex as a means of coping with negative emotional states (e.g., masturbation to sexual fantasies). Triggers can include stressful events such as relationship conflict. Social difficulties are seen to be the result of problems with attachment, whereas sexual problems, including paraphilic sexual interests and excessive sexual drive or sexual preoccupation, are seen as the product of attachment problems, mood regulation problems, and offense-supportive attitudes and beliefs. Ward and Beech did not discuss the origins of offense-supportive attitudes and beliefs except for noting that these cognitions are likely to form early and thereby serve as schemas for the perception and integration of subsequent information about women, children, or sex.

Ward and Beech (2005) suggested that their integrated theory provides a conceptual framework to unify other theories and generate novel research hypotheses. One strength of this theory is that it seeks consilience in theorizing about sexual offending by linking concepts from biology, psychology, and neuroscience. However, this theory does not clearly define or specify the factors that are thought to help explain sexual offending. For example, it does not explain what genetic predispositions are involved, nor does it explain how sexual problems such as paraphilic sexual interests or excessive sexual drive or sexual preoccupation arise from the other problems they considered. Using the examples provided by Ward and Beech, one could predict that adolescent sex offenders differ from other adolescent offenders on measures of their sexual and physical abuse histories, emotional regulation problems, personality traits such as impulsivity and empathy, social skills, attitudes and beliefs about sexual offending, and atypical sexual interests.

Comparing Theories of Sexual Offending

There are similarities across these theories of sexual offending. All of them recognize a role for atypical sexual interests, and all of them suggest that disinhibition, whether it is viewed as a trait (e.g., lack of empathy) or state (e.g., intoxication), increases the likelihood that someone will commit a sexual offense. The theories differ in whether all of the factors are thought to play a role or if a subset, or even a single factor, is sufficient to lead to sexual offending. Finally, Marshall and Barbaree (1990) and Ward and Beech (2005) present developmental perspectives, such that experiences and processes in childhood and adolescence lead to a greater likelihood of sexual offending as an adolescent or adult, respectively. As we discuss later, these multifactorial theories include individual factors that have been emphasized in special explanations of adolescent sexual offending.

Ward et al. (2006) have reviewed and critiqued these theories in greater detail. All of the theories have limitations according to the criteria of unifying power, internal consistency, ability to predict future behavior, heuristic value, falsifiability, or parsimony. A particular concern is the extent to which these theories can be empirically tested, because many concepts are not clearly operationalized (e.g., "personality problems") or because it is sometimes unclear what specific and testable predictions the theorists themselves make. An additional concern is the extent to which these theories, developed to explain adult sexual offending, might apply to adolescent sexual offending. In this meta-analysis, we have operationalized and tested aspects of these theories using comparisons of adolescent sex and non-sex offenders.

Methodological Considerations

Davis and Leitenberg (1987) highlighted a number of methodological problems in the adolescent sex offender literature more than 20 years ago. They noted that the studies they reviewed were predominantly descriptive, did not include suitable comparison groups of adolescents without a sexual offense history, did not use standardized measures, and combined different types of sex offenders. Indeed, Davis and Leitenberg succinctly articulated the primary rationale for the present meta-analysis: "Studies of the characteristics of adolescent sex offenders are ultimately concerned with the basic question of why some adolescents commit sexual crimes and others do not" (p. 420).

Reviewing the research published since Davis and Leitenberg's (1987) review, it is still true that the reliability and validity of many study measures has not been established, that many studies rely on self-report, that studies do not always include suitable comparison groups, and that most studies are cross-sectional in nature, limiting the causal inferences that can be made. Moreover, the majority of studies are of adolescents held in custody (either incarcerated at detention facilities or placed in residential treatment centers) and recruited from similar but different settings. At the same time, there now exist studies examining specific factors identified by Davis and Leitenberg as candidate causes of adolescent sexual offending but for which no empirical evidence existed when they completed their review.

Purpose of this Quantitative Review

Despite the conceptual and methodological issues that have been identified regarding the adolescent sex offender literature, a quantitative synthesis of the research comparing sex and non-sex offenders can lay a valuable foundation for theoretical and applied advances regarding adolescent sexual offending. Garber and Hollon (1991) have nicely explained the logic of specificity designs in psychopathology research, which involve comparisons between clinical groups of interest, such as comparisons of persons with schizophrenia with persons who have other psychotic disorders, or in this context, adolescent sex offenders and other adolescent offenders.

Specificity-design studies allow researchers to determine whether a variable distinguishes adolescent sex offenders and is therefore a potential causal candidate. Variables that distinguish adolescent sex offenders from other adolescent offenders could

then be pursued in longitudinal research (to determine whether they predict the onset of sexual offending rather than follow it) and in experimental research (to determine whether randomized interventions that target these variables can reduce the likelihood of onset or maintenance of sexual offending). Factors that do not distinguish between the two groups cannot be sufficient causes of adolescent sexual offending (although they still might play a more complex causal role, for example, by interacting with another variable to increase the likelihood of sexual offending). Garber and Hollon (1991) further distinguished between *broad specificity,* involving differences between a clinical group and a higher order category (such as adolescent sex offenders and delinquents in general), and *narrow specificity,* involving differences between clinical groups such as comparisons of sex offenders with drug offenders.

Although we cannot fully test the multifactorial theories we have briefly summarized here by examining specificity designs, a meta-analysis of studies comparing adolescent sex offenders with other adolescent offenders would be theoretically informative. Theories that do not include factors distinguishing adolescent sex offenders from other offenders would be incomplete, whereas theories that include factors that do not distinguish between the two groups would need to be reconsidered (by either dropping the factor, or specifying interactions or other more complex causal relationships). Below, we discuss special explanations of adolescent sexual offending that are particularly amenable to testing with specificity designs.

In the present quantitative review, we focus on the validity of special explanations of adolescent sexual offending that are testable by comparing adolescent sex offenders with other adolescent offenders. This meta-analysis differs from a recent narrative review by van Wijk et al. (2006) by including a larger number of studies, studies drawn from a longer period of time, and data on a much larger set of variables; using quantitative estimates of the magnitude of any group differences; and having greater statistical power to detect group differences. We contrast offense-specific theories with the more parsimonious view that sexual offending is simply one of many manifestations of general antisocial tendencies (which we also refer to as the "general delinquency explanation") and therefore can be explained with the same risk factors and processes that have been successfully used in research on juvenile delinquency (Loeber & Farrington, 1998; Quinsey, Skilling, Lalumière, & Craig, 2004; Rutter, Giller, & Hagell, 1997). General antisocial tendencies (or general delinquency risk factors) include personality traits such as impulsivity and sensation seeking, pro-criminal attitudes and beliefs (e.g., "victims of crime get what they deserve"), and associations with delinquent peers. All of these factors predict delinquent behavior and are prominent in developmental models of juvenile delinquency in psychology and criminology. Besides parsimony, there are empirical reasons to believe that the general delinquency explanation has promise; for instance, criminologists have consistently found that offenders rarely specialize in a particular type of crime, and offense-specific models have typically had little empirical success (Gottfredson & Hirschi, 1990).

In the following sections, we discuss the links between adolescent sexual offending and general delinquency, review the evidence in support of the general delinquency explanation of adolescent sexual offending, and summarize special explanations of adolescent sexual offending. We then identify predictions that can be derived from general and special explanations of adolescent sexual offending and present the results of a meta-analysis of 59 independent studies that compared adolescent sex offenders with adolescent non-sex offenders and thereby allowed us to test these predictions and to test predictions derived from the theories of sexual offending we reviewed earlier. We conclude by outlining a model of adolescent sexual offending that is informed by the results of this meta-analysis and that offers consilience with recent developments in psychology and criminology and by discussing the implications of our findings for the assessment, treatment, and prevention of adolescent sexual offending.

The General Delinquency Explanation

Adolescent sexual offending could be parsimoniously explained as a manifestation of general antisocial tendencies. First, a majority of adolescent sex offenders have also committed nonsexual offenses (see France & Hudson, 1993), so specialization in adolescent sexual offending is uncommon. Second, adolescent sex offenders who later commit another crime are more likely to engage in a nonsexual crime, such as theft, than another sexual crime (Caldwell, 2002; Worling & Långström, 2006). Third, analyses of the criminal trajectories of adolescent offenders suggest that sexual crimes tend to be committed after an escalating history of nonsexual offenses (Elliott, 1994). Finally, variables associated with risk for general delinquency (such as antisocial personality traits, pro-criminal attitudes and beliefs, associations with delinquent peers) are associated with both sexual and nonsexual recidivism among adolescent sex offenders (Caldwell, 2002; Lipsey & Derzon, 1998; Prentky, Pimental, & Cavanaugh, 2006; Worling & Curwen, 2000).

From these different lines of empirical research, one might expect that adolescent sex and non-sex offenders would score similarly on measures of general delinquency risk factors—past nonsexual criminal behavior, early conduct problems, antisocial personality traits, antisocial attitudes and beliefs, association with delinquent peers, and substance abuse—because these two groups are essentially drawn from the same population of adolescent offenders. One could even propose that adolescent sex offenders should score higher, as a group, than other adolescent offenders on these measures, because sexual offenses are serious violations of social norms when compared with many nonsexual crimes, such as theft or possession of illegal drugs, and sexual offending is often observed at the end of an increasingly serious sequence of nonsexual offenses.

Special Explanations of Adolescent Sexual Offending

Influenced by the theories we have mentioned, special explanations for adolescent sexual offending have focused on such factors as sexual abuse history, poor childhood attachment, heterosocial incompetence, atypical sexual experiences, and atypical sexual interests. In comparison, a general delinquency explanation would focus on such variables as antisocial personality traits, early conduct problems, antisocial attitudes and beliefs, parental discipline, supervision, and monitoring, interactions with delinquent peers, and substance abuse, all of which have been found to distinguish delinquents from nondelinquents in criminological and psychological research (reviewed in Quinsey et al., 2004; Rutter et al., 1997).

The Sexually Abused Sexual Abuser

The most frequently discussed special factor in explanations of adolescent and adult sexual offending is sexual abuse history[2] (Johnson & Knight, 2000; Knight & Sims-Knight, 2003; Kobayashi, Sales, Becker, Figueredo, & Kaplan, 1995; Marshall & Barbaree, 1990). The sexually abused sexual abuser hypothesis suggests that (male) children who are sexually abused are more likely to engage in sexual offending later in life. Burton (2003) described plausible mechanisms linking sexual abuse and later sexual offending, including modeling of the perpetrator, conditioning as a result of pairing any sexual stimulation caused by the sexual abuse with cues such as the type of acts that occurred, and adopting permissive attitudes and beliefs about adult–child sex. Consistent with the idea that modeling or another learning process might explain the link between experiencing sexual abuse and later sexual offending, Burton found that adolescent sex offenders who had been sexually abused tended to perpetrate the same kinds of sexual acts they had experienced themselves.

Thus, sexually abused sexual abuser explanations would predict a specific association between sexual abuse and sexual offending such that adolescent sex offenders are more likely to have experienced sexual abuse than adolescent non-sex offenders. Adolescent sex offenders may also be more likely to have experienced (nonsexual) physical abuse or other forms of maltreatment, because different forms of abuse often co-occur, but one would expect larger group differences in sexual abuse specifically. In fact, physical abuse, neglect, and exposure to violence are related to general delinquency (Kitzmann, Gaylord, Holt, & Kenny, 2003; Maxfield & Widom, 1996). If a modeling process is involved in the link between sexual abuse and sexual offending, then we would also expect adolescent sex offenders to score higher than non-sex offenders on variables reflecting exposure to sexual violence, but not (or not as much) for variables reflecting exposure to nonsexual forms of violence.

Poor Childhood Attachment

A great deal of attention has been paid to childhood attachment in the literature on adolescent sexual offending (Marshall & Barbaree, 1990; Marshall, Hudson, & Hodkinson, 1993; Righthand & Welch, 2001; Ryan, 1999; Smallbone, 2006). Marshall and Marshall (2000) have suggested that poor childhood attachment increases the risk of childhood sexual abuse because vulnerable boys are more likely to seek relationships with adults other than their parents. Insecure attachment is also thought, by these authors, to increase the likelihood of sexual offending because poorly attached individuals are more likely to try to fulfill their intimacy needs in inappropriate relationships. Indeed, recent studies have reported that adult sex offenders differ from other offenders in being more likely to have insecure childhood and adult attachment styles (Lyn & Burton, 2004; Marsa et al., 2004). Smallbone suggested that insecure attachment can increase the likelihood of sexual offending by reducing empathic capacity, increasing emotional dysregulation, and increasing the likelihood of a coercive interpersonal style (see also Baker, Beech, & Tyson, 2006).

Explanations that focus on poor childhood attachment would predict adolescent sex offenders to score differently from adolescent non-sex offenders on measures of childhood attachment and other aspects of the parent–child relationship, such as communication and satisfaction. However, there is no expectation that adolescent sex offenders would differ on other aspects of family functioning or family variables that are associated with general delinquency, such as whether the youth lived with both biological parents, familial substance abuse, or familial criminal history (Amato & Keith, 1991; Loeber & Farrington, 1998).

Social Incompetence

Explanations that focus on social incompetence suggest that adolescent sex offenders seek sexual contact with much younger children or that they sexually coerce peers or adults because they do not have the social skills to fulfill their sexual and emotional needs in age-appropriate and consensual relationships (Finkelhor, 1984; Marshall & Barbaree, 1990; Ward & Siegert, 2002). In other words, a social incompetence explanation proposes that adolescent sex offenders have difficulty initiating or maintaining age-appropriate and consensual relationships because they have deficits in such skills as approaching someone, engaging them in conversations, and accurately decoding affective cues during interactions with similar-aged peers (Becker & Kaplan, 1988; Knight & Prentky, 1993; Marshall et al., 1993; Marshall, Serran, & Cortoni, 2000; Worling, 2001). Consistent with this hypothesis, Dreznick (2003) reviewed 14 studies (13 involving adult male offenders) and found that sex offenders scored significantly lower on both self-report and performance measures of heterosocial skills (social skills in interactions with opposite-sex peers; Sell, Wells, & Wypij, 1995) than did non-sex offenders. The sole study of adolescent offenders found a similar group difference (Katz, 1990).

Social incompetence explanations predict that adolescent sex offenders would score significantly lower than adolescent non-sex offenders on measures of heterosocial skills. Adolescent sex offenders might also score lower than non-sex offenders on more general measures of social skills and other social problems, but the size of the group difference would be expected to be larger for heterosocial skills in particular.

Sexual Development

Some explanations suggest that adolescent sex offenders differ from other adolescents in aspects of their sexual development (Knight & Sims-Knight, 2003; Malamuth et al., 1991; Marshall & Barbaree, 1990). For example, Marshall and Marshall (2000) suggested that sexually abused individuals are different from non-abused individuals in having an earlier onset of masturbation and

[2] *Sexual abuse* is not a good scientific term because it is generally not behaviorally defined, and it often implies both harm to the child and the intent to exploit or harm on the part of the older person, without assessing either harm to the child or the older person's intent. The one common element across different operationalizations of sexual abuse is that there is sexual contact between a child and a distinctly older youth or adult. However, this phrase is cumbersome to use. We use the term *sexual abuse* because it is widely used in scientific and nonscientific writings and because many of the studies in this meta-analysis that examined sexual contact between a child and an older youth or adult used items that refer to sexual abuse. Similarly, we use the term *physical abuse* in this article.

greater use of sex as a means of coping with stress and other problems. A related idea is that adolescent sex offenders experience earlier and more frequent exposure to sex, either by observing others engaged in sexual activity or viewing pornography (Beauregard, Lussier, & Proulx, 2004; see Seto, Maric, & Barbaree, 2001).

At the same time, adolescent sex offenders would be expected to be less successful in forming conventional sexual relationships, to the extent that they have heterosocial skills deficits, as discussed in the previous section. Integrating these hypotheses, one would predict adolescent sex offenders, in comparison with adolescent non-sex offenders, to have had earlier and more frequent exposure to sex, either directly or through exposure to pornography, an earlier onset of masturbation, and greater use of sex as a means of coping. However, one would also expect adolescent sex offenders to have had a later onset of sexual activities with consenting and age-appropriate partners and fewer consenting and age-appropriate sexual partners compared with other delinquents.

Atypical Sexual Interests

Explanations that focus on atypical sexual interest suggest that some adolescent sex offenders differ from other adolescents in their sexual interests in children or in coercive sex with peers or adults and that these atypical sexual interests motivate their sexual offenses (Becker & Kaplan, 1988; Finkelhor, 1984; Hall & Hirschman, 1991, Hall & Hirschman, 1992; Marshall & Barbaree, 1990; Seto, Murphy, Page, & Ennis, 2003; Ward & Siegert, 2002). The expectation of a group difference has been confirmed in laboratory studies of adults that consistently have found sex offenders to differ from other men in their relative sexual arousal to depictions of children or coercive sex (e.g., Lalumière, Quinsey, Harris, Rice, & Trautrimas, 2003; Rice & Harris, 2002), and measures of atypical sexual interests are significant predictors of sexual recidivism by adult sex offenders (Hanson & Morton-Bourgon, 2005; Seto, Harris, Rice, & Barbaree, 2004).

Two studies have shown that adolescent sex offenders, as a group, show relatively more sexual arousal to stimuli depicting children or coercive sex than do young adult comparison groups (Robinson, Rouleau, & Madrigano, 1997; Seto, Lalumière, & Blanchard, 2000), and two studies reported that arousal to stimuli depicting children predicted sexual recidivism among adolescent sex offenders (Clift, Rajlic, & Gretton, 2009; Rice & Harris, 2009). Seto et al. (2003) found that sexual arousal to stimuli depicting children was correlated with child victim characteristics among adolescent sex offenders in a similar fashion as among adult sex offenders (Seto & Lalumière, 2001). Worling and Curwen (2000) found that self-reported sexual interest in children was associated with sexual recidivism among adolescent sex offenders. Integrating these findings, we would predict adolescent sex offenders to score higher on measures of atypical sexual interests than adolescent non-sex offenders.

Psychopathology

Different theorists have speculated that affective dysregulation and personality problems can help explain sexual offending (Hall & Hirschman, 1991, 1992; Ward & Siegert, 2002). Indeed, studies have often found high levels of psychopathology—such as anxiety, depression, and personality problems–in clinical or correctional samples of adolescent and adult sex offenders (Galli et al., 1999; Kafka & Hennen, 2002). Kafka (1997) suggested that the association of psychopathology and sexual offending reflects an underlying disturbance in serotonergic brain systems, because serotonin levels are associated with mood, sexual behavior, and aggression. Treatment with selective serotonin reuptake inhibitors can reduce sex drive, and some clinical investigators have suggested that treatment with such medications might even selectively reduce paraphilic sexual arousal (Fedoroff, 1993; Greenberg & Bradford, 1997; Kafka, 1997). If these special explanations involving psychopathology are correct, then we would expect adolescent sex offenders to score higher than adolescent non-sex offenders on measures of mood and personality problems.

Cognitive Abilities

Cognitive limitations have been associated with sexual offending. Cantor, Blanchard, Robichaud, and Christensen (2005) conducted a meta-analysis of studies that compared male sex offenders with other males on measures of intelligence. Approximately 30% of the studies were of adolescent sex offenders. Adult sex offenders scored significantly lower on measures of intelligence than did other adult offenders, who, in turn, scored lower than nonoffending controls. There was no significant difference between adolescent sex offenders and other adolescent offenders, however, although the trend was for the sex offenders to have a lower mean intelligence score. Cantor et al. (2004) found a similar pattern of results for more specific measures of verbal and visuospatial learning and memory. Persons with lower cognitive abilities may have poorer judgment or impulse control and thus may be more likely to commit sexual offenses opportunistically. Alternatively, persons with lower cognitive abilities may be more likely to be sexually rejected by peers and thus may be more likely to turn to children or to engage in sexual coercion against peers or adults.

One limitation of the Cantor et al. (2005) meta-analysis is that it compared all available samples of sex offenders with all available samples of non-sex offenders. The samples of sex offenders and of non-sex offenders may have differed in ways that affected the intelligence scores that were obtained. In a direct comparison, one could predict that adolescent sex offenders would score significantly lower than other adolescent offenders on measures of cognitive abilities, including measures of intelligence, learning difficulties, and academic achievement.

The Importance of Victim Age

Sexual victim age might moderate any differences between sex offenders and non-sex offenders on the theoretically derived variables examined in this meta-analysis. Adult sex offenders who target other (usually female) adults tend to be similar to non-sex offenders on measures of general delinquency risk factors and are more antisocial than adult sex offenders who target children (reviewed by Lalumière et al., 2005; Seto, 2008). One could assume a similar pattern of results among adolescent sex offenders when they are distinguished according to victim age: Adolescent sex offenders with peer or adult victims might be similar to other adolescent offenders on measures of general delinquency risk factors, whereas adolescent sex offenders with child victims might

score lower on these measures. Thus, the magnitude of any difference in general antisocial tendencies found between an undifferentiated group of adolescent sex offenders and a group of non-sex offenders would depend on the proportion of the adolescent sex offender group who had victimized children.

Sexual victim age might also be an important moderator for some special explanations of adolescent sexual offending. For example, the mechanisms proposed by Burton (2003) and Marshall and Marshall (2000) would suggest that the link between childhood sexual abuse and later sexual offending would be stronger for adolescent sex offenders with child victims than for adolescents who sexually offend against peers or adults, because the sexual abuse and any resulting sexual fantasies would involve child cues. As another example, Dreznick (2003) found that adult sex offenders with child victims scored significantly lower on measures of heterosocial skills than adult sex offenders with adult victims. Thus, we might expect that adolescent sex offenders with child victims would score even lower on measures of heterosocial skills than those who offended against peers or adults.

Overview of Hypotheses

A quantitative review of relevant studies using specificity designs to compare sex and non-sex offenders allows testing of hypotheses derived from special and general explanations of adolescent sexual offending. Examining how adolescent sex offenders compare with other adolescent offenders on theoretically derived variables would suggest which factors need to be further considered in the difficult longitudinal and experimental work that is needed to support causal inferences and, therefore, would contribute to the development of a comprehensive theory of adolescent sexual offending that does not rely on extrapolation from the adult offender literature.

Drawing from special explanations of adolescent sexual offending, we derived the following hypotheses:

Hypothesis 1. Adolescent sex offenders will be more likely to have histories of childhood sexual abuse than will non-sex offenders, and will also have greater exposure to sexual violence, but they will not differ (or will differ less) with regard to other forms of abuse, neglect, or exposure to non-sexual violence.

Hypothesis 2. Adolescent sex offenders will score higher than non-sex offenders on variables reflecting poor childhood attachment but will not score higher (or will differ less) on variables reflecting other aspects of family functioning, such as familial substance abuse and familial criminality.

Hypothesis 3. Adolescent sex offenders will score higher than non-sex offenders on variables reflecting heterosocial skills deficits. They may also score higher on variables reflecting general social skills deficits and other social problems such as isolation, but the difference should be larger for social skills involving interactions with opposite-sex peers.

Hypothesis 4. Adolescent sex offenders will score higher than non-sex offenders on variables reflecting atypical sexual development, such as early exposure to sex or pornography, but lower on variables representing conventional sexual experiences, such as number of consenting and age-appropriate sexual partners.

Hypothesis 5. Adolescent sex offenders will score higher than non-sex offenders on variables reflecting atypical sexual interests (e.g., interest in sex with prepubertal children, interest in coercive sex).

Hypothesis 6. Adolescent sex offenders will score higher than non-sex offenders on measures of psychopathology, especially measures of mood problems or personality problems other than antisocial personality traits.

Hypothesis 7. Adolescent sex offenders will score lower than non-sex offenders on measures of cognitive abilities.

We also examined group differences with regard to impression management, to determine whether the comparisons of study variables based on self-report could be explained by socially desirable responding.

In contrast, a general delinquency explanation of adolescent sexual offending predicts that adolescent sex offenders and non-sex offenders would be similar on general delinquency risk factors. In particular, the general delinquency theory predicts that the two groups will show a similar (and high) amount of past criminal behavior, conduct problems, antisocial personality traits, antisocial attitudes and beliefs, association with delinquent peers, and substance abuse. According to this explanation, there should be no difference between the two groups on factors postulated by special explanations. Although this prediction may appear to be a Sisyphean attempt to prove the null hypothesis, because the general delinquency explanation proposes no differences between adolescent sex offenders and non-sex offenders, the use of meta-analysis helps to minimize problems associated with the relatively low statistical power of individual studies and the concomitant risk of Type II error. Demonstrating no significant difference between adolescent sex and non-sex offenders with a cumulatively large sample size and no significant heterogeneity of effect sizes would support the general delinquency explanation.

Special and general explanations of adolescent sexual offending are not mutually exclusive: It is possible that both special and general factors are relevant such that adolescent sex offenders are similar to adolescent non-sex offenders on antisocial tendencies but significantly different on other theoretically derived variables (see Lussier, 2005). In this situation, a pattern of significant group differences in our meta-analysis would suggest the relative contributions of special and general factors in explaining adolescent sexual offending. Finally, we expected that sexual victim age would be a significant moderator of group differences, because of the importance of sexual victim age among adult sex offenders and recent evidence about the relevance of sexual victim age in adolescent sexual offending.

Method

Selection of Studies

We conducted searches of multiple electronic databases (Applied Social Sciences Index and Abstracts, Criminal Justice Abstracts, Criminology: A Sage Full-Text Collection, CSA Social

Services Abstracts, ERIC, Expanded Academic ASAP, International Bibliography of the Social Sciences, MEDLINE, National Criminal Justice Reference Service, ProQuest Digital Dissertations, PsycINFO, Social Sciences Abstracts at Scholars Portal, Social Science Citation Index, Sociology: A Sage Full-Text Collection, and Violence and Abuse Abstracts) to identify potential specificity design studies, on the basis of their titles and abstracts, using variations of the following search terms: "adolescent sex offenders," "juvenile sex offenders," "adolescent sexual offending," and "juvenile sexual offending." We also reviewed the reference lists of relevant studies, review articles, and book chapters, along with the electronic conference abstracts that were available from the 2000 to 2005 annual meetings of the Association for the Treatment of Sexual Abusers, a large international organization of practitioners and researchers in the sex offender field. We contacted the first authors of studies that were included in the meta-analysis, or senior authors or faculty advisors when first authors were unavailable, and asked them whether they had any unpublished manuscripts containing data from comparisons of adolescent sex and non-sex offenders. Finally, we contacted active investigators in the field of adolescent sexual offending and asked them whether they had any unpublished manuscripts that would be suitable for this meta-analysis.

We selected English-language studies presented, published, or indexed (in the case of unpublished theses and dissertations) from 1975 to 2008. We excluded studies reported before 1975 because these studies included sex offenders who would no longer be considered as such under contemporary laws. For example, Atcheson and Williams (1954) and R. Roberts, McBee, and Bettis (1969) included a substantial number of youths designated as "sexual delinquents" because of their promiscuity or homosexual behavior. Contemporary sexual offender laws typically define sexual offenses in terms of sexual behavior directed toward someone who does not consent to the behavior (in the case of sexual coercion of peers or adults) or who is not legally able to provide consent (in the case of sexual acts involving children or youths below a legally defined age of consent). Few studies of adolescent sex offenders were reported before 1975 (see review by Barbaree, Hudson, & Seto, 1993).

Studies had to include at least one group of male adolescents who had committed a documented sexual offense and at least one comparison group of male adolescents who had committed a documented nonsexual offense. In most cases, offenses were documented by a criminal charge, as most of the adolescents in the study samples had been charged for their crimes. For example, Napolitano (1996) was excluded because the adolescent sex offenders had a documented sexual offense, whereas the comparison group did not necessarily have a documented nonsexual offense (although all of the comparison participants met diagnostic criteria for conduct disorder, indicating that they had engaged in antisocial behaviors, many of which could have resulted in criminal charges, e.g., drug use, theft, assaults). We did not include data from groups of "status" offenders, that is, adolescents who were in trouble for behaviors such as truancy or running away that would be legal if they were older (e.g., Ford & Linney, 1995); some studies, however, included some status offenders among their non-sex offenders (e.g., Lincoln, 1993).

In 11 of the studies we included, some adolescents had not been charged but had been placed in residential or treatment settings because of sexual offenses they admitted or that were documented in clinical files and were combined with other adolescents who had been charged. All of the studies included adolescents who had been charged: Davis-Rosanbalm (2003) and Dunning (1991) also included adolescents who self-reported crimes; Epps (2000), Miller (1997), and L. C. Roberts (1997) included adolescents with documented offenses, for example, from child protection agency records; and Frazier (1999), Miner (2003), Ness (2001), and Zakireh (2000; Zakireh, Ronis, & Knight, 2008) included adolescents who were in treatment because of their sexual offending. Veneziano, Veneziano, LeGrand, and Richards (2004) indicated that participants were either court-ordered or referred to residential treatment. Racey, Lopez, and Schneider (2000) indicated only that a majority of the adolescents in their sample had been charged.

Sex offenders could have been adjudicated for a nonsexual offense, but non-sex offenders did not have any adjudicated sexual offenses. Some adolescents assigned to the non-sex offender group, however, may have committed officially undetected sexual offenses. Fleming, Jory, and Burton (2002) and Spaccarelli, Bowden, Coatsworth, and Kim (1997) found that 20% and 14%, respectively, of their adjudicated non-sex offenders admitted having committed sexual offenses. We retained these studies in the meta-analysis because many other studies were also likely to include data from non-sex offenders who had committed officially undetected sexual offenses. Excluding these two studies while retaining the others would introduce a study selection bias, as the majority of other studies classified non-sex offenders on the basis of their criminal records only; only seven studies explicitly indicated that they excluded non-sex offenders who self-reported committing sexual crimes. Van Wijk and his colleagues assigned adolescent offenders according to their index or referral offense, so non-sex offenders with a prior criminal history might have committed sexual offenses in the past (van Wijk, Blokland, Duits, Vermeiren, & Harkink, 2007; van Wijk, Vreugdenhil, van Horn, Vermeiren, & Doreleijers, 2007). As we note in the Discussion, the inclusion of some adolescents with sexual offense histories in the non-sex offender groups would attenuate any group differences found in this meta-analysis.

Studies included adolescents who committed sexual offenses involving physical contact with a victim, but at least eight of the studies we examined in this meta-analysis also included some adolescents who had committed noncontact sexual offenses, such as indecent exposure: Csercsevits (2000), Gregory (1998), and Spaccarelli et al. (1997) indicated only that they included noncontact offenders; Krauth (1998) indicated that 7% of her sample had committed exhibitionistic offenses; two of the 17 adolescent sex offenders in the sample originally reported by Lewis, Shanok, and Pincus (1979; 1981) had committed exhibitionistic offenses; Milloy (1994, 1996) indicated that 9% of her sample had committed noncontact offenses; and Zakireh (2000; Zakireh et al., 2008) indicated that 2% of his sample had committed voyeuristic offenses. van Wijk, Blokland, et al. (2007) indicated that 18.8% of their sample had committed nonviolent sexual offenses such as indecency or exhibitionism, but indecency could still involve sexual contact, so the proportion who engaged in noncontact sexual offenses was not clear. We did not find any studies that exclusively recruited adolescents who committed sexual offenses that did not directly involve contact with a victim.

We limited studies to adolescents, defined here as persons ages 12 to 18 years, so studies of children or adults were not included. Some studies included a few younger participants (e.g., ages 10 and 11 years in Krauth, 1998) and others included a few older subjects (e.g., age 19 years in Zakireh, 2000), but most of the participants in a given study were between the ages of 12 and 18 years. For example, the participants in L. C. Roberts (1997) ranged from 13 to 20 years, but only three of the 35 sex offenders and one of the 31 non-sex offenders was over the age of 18 years. We excluded van Wijk, Loeber, et al. (2005) because some of the participants were adults at the time they committed the offense that placed them in the sex offender versus non-sex offender groups, and study variables included information obtained during adulthood. We also focused on studies of males, because males commit the large majority of sexual offenses, and there were too few studies of female adolescent sex offenders for meta-analysis (Snyder & Sickmund, 2006). Osburn (2003) and Shields and Jordan (1995) were excluded from the meta-analysis because some of the non-sex offenders were female, whereas none or only one of the sex offenders was female.

Both groups of adolescents had to be assessed in the same or an equivalent correctional, mental health, or community setting (i.e., they had to have an equivalent point of entry into the original study). Miner (2003) was included even though the two groups of offenders were predominantly recruited from different settings, because the residential treatment center from which the majority of the sex offenders were recruited was comparable in security level and availability of services to the training school from which the majority of the non-sex offenders were recruited (Michael Miner, personal communication, January 3, 2007). The study reported by Yackovich (2002) was excluded from the meta-analysis because all but one of the adolescent sex offenders was assessed in a residential treatment program, whereas all of the adolescent non-sex offenders were recruited from a correctional facility. Franklin (2000) was included in the meta-analysis, but only the data from adolescent sex offenders and non-sex offenders assessed as inpatients were used; the data from sex offenders assessed as outpatients were excluded because there was no equivalent outpatient group of adolescent non-sex offenders.

We selected studies that provided data for at least one variable that could be assigned to one of the meta-analysis variable domains described below. Subgroups of sex offenders or non-sex offenders, when present, were merged for the meta-analysis; for example, violent and nonviolent non-sex offenders were combined for the group comparisons. Studies that selected participants on the basis of characteristics that were also variables in the meta-analysis were usually excluded. For examples, Blaske, Borduin, Henggeler, and Mann (1989) selected sex and non-sex offenders whose fathers were absent, Maring (1998) selected offenders who met the diagnostic criteria for conduct disorder, and Thomas (1986) excluded offenders who had ever committed a physical assault. We retained studies that used selection or exclusion criteria that we considered to be necessary to conduct the study (e.g., a minimum intelligence score for studies involving the completion of questionnaires, participants not being actively psychotic at the time of the study assessment). Studies that matched adolescent offender groups on age, socioeconomic status, ethnicity, or other variables that were not analyzed in this meta-analysis were also included.[3]

Studies had to provide sufficient information to calculate an effect size, reported here as Cohen's *d*. Our search led to the inclusion of 59 independent studies representing a total of 3,855 adolescent sex offenders and 13,393 adolescent non-sex offenders. These studies are summarized in Table 1 and are marked in the Reference list with an asterisk. For studies that reported overlapping data sets, we selected the study that provided more data for the meta-analysis: Awad and Saunders (1991) was selected over Awad, Saunders, and Levene (1984) because the former reported data on a larger sample. Fleming et al. (2002) was selected over Burton, Miller, and Tai Shill (2002) because the former included more variables. Lewis et al. (1979, 1981) and Rubinstein, Yeager, Goodstein, and Lewis (1993) reported on different variables from the same sample of sex and non-sex offenders, so all three are included in the meta-analysis and recorded as one study. Rubinstein et al. (1993) reassigned two of the non-sex offenders to the sex offender group upon discovery of additional information. Daleiden et al. (1998) and Hilliker (1997) had almost entirely overlapping samples but reported on different variables (Daniel Hilliker, personal communication, January 17, 2006), so both are included in the meta-analysis and recorded as one study. Similarly, Zakireh (2000) and Zakireh et al. (2008) reported data from the same sample but reported on different variables, so both are included in the meta-analysis and recorded as one study.

The question of overlap could not be answered definitively for several studies, which were therefore retained in the meta-analysis. Jonson-Reid and Way (2001) reported on a large sample from 10 counties covered by the California Youth Authority, and Macri (2000) also collected data from the California Youth Authority; Capozza (1997) and Etherington (1993) reported data from California samples, and Katz (1990) appeared to have presented data from a California sample. Miller (1997) and L. C. Roberts (1997) collected their data around the same time from the same correctional facility in Illinois, and both completed their studies as part of the dissertation requirement of the same graduate program. Some studies were clearly conducted at the same sites but were separated by the time period in which data were collected. Awad and Saunders (1991) and Butler and Seto (2002) collected their data from the same Toronto clinic, but from temporally nonoverlapping samples, whereas Jacobs, Kennedy, and Meyer (1997) and Mattingly (2000) collected their data from the same Florida training school but at different times.

Selection of Variables

We examined the domains of age of first criminal justice contact, extent of criminal involvement, conduct problems, antisocial tendencies, substance abuse, childhood abuse and exposure to violence, family problems, interpersonal problems, sexuality, psychopathology, cognitive abilities, and impression management. Results from the domains of age at first criminal justice contact, extent of criminal involvement, and conduct problems have been presented in a different form in a book chapter (Seto & Lalumière, 2006); we added five studies to these domains that we found after the completion of the chapter (Chewning, 1991; Epps, 2000; Gregory, 1998; van Wijk, Blokland, et al., 2007; van Wijk, Vreug-

[3] Lists of excluded studies and variables are available from the authors.

Table 1
Summary of 59 Studies Included in Meta-Analysis

Study	Source for offender samples	Sample size	Age range or mean age (in years)
Abbott (1991)	Probation, majority at mental health clinic	40 ASOs, 40 NSOs	12–17
Aljazireh (1994)	Residential treatment centers	54 ASOs, 16 NSOs	12–18
Awad & Saunders (1991)	Family court clinic	94 ASOs, 24 NSOs	Mean age = 14
Barham (2001)	Residential treatment centers	42 ASOs, 32 NSOs	14–17
Benoit & Kennedy (1992)	Secure training school	50 ASOs, 50 NSOs	12–18
Briley (2004)	Training school	51 ASOs, 19 NSOs	13–20
Butler & Seto (2002)	Family court clinic	32 ASOs, 82 NSOs	12–16
Capozza (1997)	California Youth Authority	57 ASOs, 54 NSOs	15–20
Caputo et al. (1999)	Detention facility	23 ASOs, 47 NSOs	13–18
Chewning (1991)	Probation offices	20 ASOs, 20 NSOs, 20 NOs	12–18
Csercsevits (2000)	Detention center or treatment program	69 ASOs, 71 NSOs	12–18
Daleiden et al. (1998); Hilliker (1997)	Correctional facilities in three states	289 ASOs, 138 NSOs, 135 NOs	16–20
Davis-Rosanbalm (2003)	Secure detention facility	46 ASOs, 63 NSOs	13–17
Dunning (1991)	Residential or outpatient treatment	55 ASOs, 53 NSOs	13–18
Epps (2000)	Various youth agencies	54 ASOs, 54 NSOs	13–17
Etherington (1993)	Residential treatment center	20 ASOs, 20 NSOs, 20 NOs	13–18
Fagan & Wexler (1988)	One of five urban juvenile courts	34 ASOs, 208 NSOs	Mean age = 16
Fleming et al. (2002)	Training school, residential treatment center, or group home	161 ASOs, 196 NSOs	Mean age = 17
Flores (2003)	Juvenile detention facility or probation	30 ASOs, 34 NSOs	11–17
Ford & Linney (1995)	Evaluation center or long-term residential facility	35 ASOs, 26 NSOs	12–18
Franklin (2000)	State training school	30 ASOs, 29 NSOs, 22 NOs	13–17
Frazier (1999)	Detention center, training school, or treatment program	30 ASOs, 36 NSOs	12–19
Gregory (1998)	Detention facilities	58 ASOs, 116 NSOs	12–17
Griggins (1989)	On probation	26 ASOs, 26 NSOs	12–18
Hill (2000)	Detention centers	26 ASOs, 110 NSOs	13–17
Hollin & Swaffer (1993)	Residential treatment center	7 ASOs, 11 NSOs	15–20
Jacobs (1999); Jacobs et al. (1997)	Training school	78 ASOs, 78 NSOs	13–18
Jonson-Reid & Way (2001)	California Youth Authority	304 ASOs, 5,778 NSOs	11–18
Katz (1990)	Residential treatment facilities	31 ASOs, 34 NSOs, 71 NOs	Mean age = 15
Krauth (1998)	Texas juvenile corrections	218 ASOs, 200 NSOs	10–17
Krupica (1997)	Correctional facility	40 ASOs, 40 NSOs	14–18
Lee (1994)	Youth service or family court system in Alabama	34 ASOs, 35 NSOs, 24 NOs	12–18
Leguizamo (2000)	Secure training school	75 ASOs, 53 NSOs	13–20
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Secure correctional school	19 ASOs, 80 NSOs	Mean age = 15
Lincoln (1993)	Juvenile courts	30 ASOs, 28 NSOs, 27 NOs	9–17
Lindsey et al. (2001)	Secure treatment facility	27 ASOs, 54 NSOs, 74 NOs	13–18
Macri (2000)	California Youth Authority	62 ASOs, 64 NSOs	15–25
Mattingly (2000)	Training school	120 ASOs, 145 NSOs	13–18
Miller (1997)	Residential youth center	50 ASOs, 50 NSOs	13–18
Milloy (1994, 1996)	Washington state juvenile corrections	59 ASOs, 197 NSOs	Mean age = 16
Miner (2003)	Residential or correctional facility	38 ASOs, 38 NSOs	13–17
Ness (2001)	Residential treatment center	47 ASOs, 90 NSOs, 80 NOs	12–18
Oliver et al. (1993)	Juvenile court assessment clinic	50 ASOs, 100 NSOs	Mean age = 15
Racey et al. (2000)	Mental health center, training school, or treatment program	36 ASOs, 38 NSOs	13–18
Risk (1993)	Youth correctional facility	17 ASOs, 17 NSOs, 17 NOs	15–17
L. C. Roberts (1997)	Juvenile detention center	35 ASOs, 31 NSOs	13–20
Sivley (1998)	Court-ordered treatment	31 ASOs, 34 NSOs	12–17
Spaccarelli et al. (1997)	Juvenile assessment unit	24 ASOs, 186 NSOs	12–17
Tarter et al. (1983)	Court-referred psychiatric assessments	14 ASOs, 59 NSOs	Mean age = 16
Tinklenberg et al. (1981)	Secure detention center in California Youth Authority	63 ASOs, 230 NSOs	12–21
Truscott (1993)	Adolescent offender assessment unit	23 ASOs, 130 NSOs	12–18
Valliant & Bergeron (1997)	Juvenile custodial facility	16 ASOs, 13 NSOs, 13 NOs	16–18
Van Ness (1984)	Youth correctional facilities	29 ASOs, 27 NSOs	14–19
van Wijk, Blokland, et al. (2007)	Forensic psychiatric service	712 ASOs, 4,768 NSOs	Mean age = 17
van Wijk, van Horn, et al. (2005)	Forensic assessment service	112 ASOs, 165 NSOs	Mean age = 15
van Wijk, Vreugdenhil, et al. (2007)	Youth detention centers	30 ASOs, 368 NSOs	12–18
Veneziano et al. (2004)	Residential treatment facility	60 ASOs, 60 NSOs	12–17
Wong (2002)	Custodial facility or community services	50 ASOs, 25 NSOs	Mean age = 16
Zakireh (2000); Zakireh et al. (2008)	Inpatient or outpatient treatment facilities	50 ASOs, 50 NSOs	13–19

Note. The maximum sample sizes listed here are reported in the original studies; because of missing data, smaller samples may have been used in the calculations reported in the following tables. The mean age is reported when the age range of participants was not clearly specified. The total sample sizes reported in this article (3,855 ASOs and 13,393 NSOs) refer to the number of participants with valid information for at least one study variable. ASOs = adolescent sex offenders; NSOs = adolescent non–sex offenders; NOs = nonoffenders.

denhil, et al., 2007) and excluded five other studies on the basis of a reconsideration of our study selection criteria (Blaske et al., 1989; Maring, 1998; Nagel, 1996; Shields & Jordan, 1995; Symboluk, Cummings, & Leschied, 2001).

Studies were double-coded and discrepancies in coding were resolved by the two authors. Assignments to study domains were made by consensus of the two authors. Some of these domains are self-explanatory from their labels; the others are described below. All variables having to do with one of these domains were included, with some exceptions. Variables reflecting conduct problems specifically in the sexual domain were excluded; this exclusion was not perfect because sexual items were embedded in some composite measures (e.g., "total conduct problems" reported in Butler & Seto, 2002, includes an item about forcing sex on someone). Variables with asymmetric sources of information were excluded; for example, Rubinstein et al. (1993) reported on sexual abuse history, but this information was obtained from interview and file information for the adolescent sex offenders and from interview alone for the non-sex offenders. Variables that could not be assigned to a study domain were excluded from the meta-analysis (e.g., Rorschach inkblot test scores; McCraw & Pegg-McNab, 1989).

Effect Size

We used Cohen's *d* as the index of effect size. Cohen's *d* represents the standardized mean difference between groups of adolescent sex offenders and adolescent non-sex offenders $[(M_{aso} - M_{nso}) / SD_{pooled}]$. A *d* value of +.50, for example, indicates that adolescent sex offenders scored one half standard deviation greater than non-sex offenders on that variable. Because *d* is rarely reported in studies, we calculated it from group means and standard deviations when these were available; otherwise, we calculated *d* from *t*-test values.

For comparisons reported as percentages (e.g., proportion of offenders with prior offense histories) or frequencies, we calculated chi-square statistics, corrected for continuity, which could then be transformed into a *d* value. We did not include variables with insufficient information to calculate *d,* such as statements about the presence or absence of a statistically significant difference without any accompanying statistics. Thus, Kempton and Forehand (1992) was excluded from the analysis because none of the variables they reported had sufficient information for our analysis.

Analytical Strategy

We examined different variable categories in many of the domains. For example, the domain of antisocial tendencies contains the variable categories of antisocial personality traits, antisocial attitudes and beliefs, and antisocial associations. Each study could contribute only one effect size per variable category. When a study reported more than one variable for a given category, an average weighted effect size was calculated for these variables and used in the meta-analysis. Sample size sometimes varied from variable to variable within a study.

All effect sizes were independent within a category. Individual studies could contribute effect sizes to more than one variable category, within or across domains. Study effect sizes were weighted by the study inverse variance for the main analyses. We used a commercially available statistical program, Biostat's Comprehensive Meta-Analysis, Version 1.0.25 (an update to Version 1; 2000), for the calculation of average *d* values, 95% confidence intervals, and heterogeneity of *d* values, under a random-effects model. A random-effects model was chosen over a fixed-effect model because we expected that there might be multiple (true) effect sizes as a result of factors that we could not examine in this study; for instance, the size of the group difference might vary depending on sample characteristics, such as the type of sex offenders (intra- vs. extrafamilial offenders) or of non-sex offenders (adolescence-limited offenders vs. life-course-persistent offenders). A random-effects model produces wider confidence intervals than does a fixed-effect model and thus is more conservative (Borenstein, Hedges, Higgins, & Rothstein, 2009).

The two groups were considered to be different in a given variable category when the 95% confidence intervals around the average *d* value did not include zero. We examined victim age (discussed earlier) and source of information (see next section) as potential moderator variables when the heterogeneity statistic (*Q*) was statistically significant at $p < .05$, a sufficient number of studies for such an analysis existed, and there was a rationale from previous research for examining victim age or information source as moderators.

Source of Information

A salient methodological issue in adolescent offender research is the validity of self-report. For example, adolescent sex offenders may report a more extensive history of sexual abuse because the intuitive association between childhood sexual abuse and later sexual offending may help justify their behavior or because being identified as a victim of sexual abuse might elicit sympathetic treatment. At the same time, adolescent non-sex offenders may be more reluctant to report a history of sexual abuse because of greater embarrassment or shame in talking about their sexual experiences. Moreover, the imperfections of human memory are well documented, and longitudinal research shows significant differences can exist between adult memories of early adolescence and what was actually reported by the participants at the time (Offer, Kaiz, Howard, & Bennett, 2000; Widom & Morris, 1997; Widom & Shepard, 1996). To examine this issue, we distinguished, when possible, between variables based on self-report and variables based on information obtained from other sources (parents, teachers, or clinicians; clinical or institutional files; or police, court, or correctional records). We also compared the two groups of adolescent offenders on variables in the domain of impression management to determine whether differences might be attributable in part to socially desirable responding.

Publication Bias

We included both published and unpublished studies in this meta-analysis. Sources of studies included peer-reviewed journal articles, theses and dissertations, government reports, and conference presentations; some of the data reported by Lewis and colleagues came from a book chapter (Lewis et al., 1981), but other data from these authors came from two peer-reviewed articles (Lewis et al., 1979; Rubinstein et al., 1993). We considered studies appearing in peer-reviewed journal articles to be

published ($k = 27$); all other sources were considered to be unpublished ($k = 32$). We examined whether publication status affected the size of the group differences in most of the variable domains.

Results

Overview

The main results are reported in Tables 2 through 12. Each table shows the effect size for each variable or group of variables, listed by study, along with the sample size and the group mean or percentage values for each variable. The lines in boldface indicate the meta-analytic calculations, including number of studies (k), overall sample size, average d, the 95% confidence interval for d, and the Q statistic of heterogeneity among the d values. The main results for tests of the general and special explanations of adolescent sexual offending are summarized in Figures 1 through 7. Following Cohen (1992), we considered effect sizes of 0.20 as small, 0.50 as medium, and 0.80 as large. As a basis of comparison for the effect sizes obtained in this meta-analysis, Moffitt and Caspi (2001) compared 47 adolescent male life-course persistent offenders with a large cohort of adolescents and obtained effect sizes of approximately 0.20 for parental convictions, 0.50 for inconsistent discipline, 0.75 for mother's mental health problems, and 1.00 for peer rejection.

We began by determining whether a general delinquency explanation was sufficient to account for adolescent sexual offending. We first examined domains pertaining to general delinquency risk factors (age of first criminal justice contact, extent of criminal involvement, conduct problems, antisocial tendencies, and substance abuse) and then examined domains relevant to special explanations of adolescent sexual offending: childhood abuse and exposure to violence, family problems, interpersonal problems, sexuality, psychopathology, and cognitive abilities. Finally, we examined the additional domain of impression management.

Age at First Criminal Justice Contact

Nine studies contributed to the domain of age at first criminal justice contact (Table 2). Age at first contact was early for both groups. Adolescent sex offenders were slightly older than non-sex offenders at age of first contact with the criminal justice system, but this difference was small and not statistically significant. There was no significant group difference when we examined the six studies that reported age at first contact from official records (police, court, or correctional records). Effect sizes were heterogeneous for both the overall and official record comparisons, suggesting the presence of additional moderator variables.

Extent of Criminal Involvement

Seventeen studies contributed to this domain (Table 3). Both groups had extensive criminal histories when compared with a representative American sample of adolescents: Snyder and Sickmund (1999) reported that 9% to 12% of male youths between the ages of 12 and 16 years had ever been arrested, whereas 4% to 7% had been arrested two or more times. Every one of the 17 studies reported that adolescent sex offenders had a less extensive criminal history than did non-sex offenders. This consistent finding was obtained despite the fact that non-sex offenders were constrained in their offense history; by definition, non-sex offenders could not have any adjudicated sexual offenses, whereas sex offenders could have charges for both sexual and nonsexual offenses. Five of the 17 studies specifically examined only nonsexual offense histories (Flores, 2003; Hilliker, 1997; Ness, 2001; Sivley, 1998; Zakireh, 2000).

The average effect size for extent of criminal involvement was statistically significant and medium in size. Similar results were observed among the 11 studies that provided information on only those offenses that occurred prior to the index offense and among the six studies that provided information on prior offenses only and relied on official records. The effect sizes were heterogeneous in

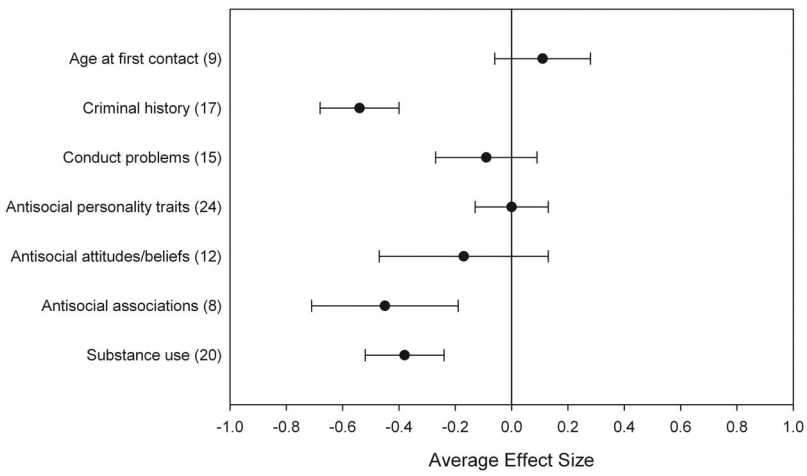

Figure 1. Antisocial tendencies. Number of effect sizes are indicated within parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

Table 2
Age at First Criminal Justice Contact (Nine Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 9$	**Age at first contact**			**907**	**6,795**	**0.11**	**−0.06 to +0.28**	**23.8, $p < .005$**
$K = 6$	**Official records only**			**559**	**6,565**	**0.12**	**−0.08 to +0.31**	**13.9, $p < .05$**
Barham (2001)	Age first offense	13.2	13.3	42	32	−0.03		
Daleiden et al. (1998); Hilliker (1997)	Age first arrest	12.7	11.9	289	138	0.33		
Flores (2003)	Age first charge[a]	13.6	12.2	30	34	0.72		
Gregory (1998)	First adjudication ≤13[a]	43%	51%	58	116	0.12		
Jacobs (1999); Jacobs et al. (1997)	Age first state referral[a,b]	12.7	12.0	78	78	0.33		
Jonson-Reid & Way (2000)	Incarcerated before 15[a]	9%	6%	304	5,778	−0.05		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Age first juvenile court	11.6	12.3	17	61	−0.37		
Milloy (1994, 1996)	Age first conviction[a]	13.4	13.4	59	197	0.00		
Van Wijk, Vreugdenhil, et al. (2007)	Police arrest <13[a]	47%	34%	30	361	−0.12		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval. Studies are scored such that a positive *d* indicates that ASOs had an older age at first contact than did NSOs.
[a] Information from official records. [b] First referral to state juvenile correctional authorities.

all of these comparisons, suggesting the presence of additional moderator variables.

Conduct Problems

We defined conduct problems as disruptive, troublesome, or rule-breaking behaviors that may not necessarily lead to involvement in the criminal justice system. Examples of conduct problems include fighting, disruptive classroom behavior, and truancy. Fifteen studies contributed to this domain (Table 4). Both groups scored fairly high on conduct problems (e.g., above-average scores on the Youth Self Report when compared with age-based norms); majorities of both groups had been suspended or expelled from school in three of four studies, as compared with 42% of a representative sample of adolescents between the ages of 12 and 16 year who had ever been suspended from school (Snyder & Sickmund, 2006). Eleven of the 15 studies found that adolescent non-sex offenders had higher scores in this domain. The overall group difference effect size was negative, small, not statistically significant, and significantly heterogeneous.

Some conduct problem variables were based on the offenders' self-report only, whereas other variables were based on reports from others (e.g., parents, teachers, clinicians). We calculated, for each study, an average effect size for all variables based on self-report and an average effect size for all variables based on other sources of information. Only three studies produced effect sizes for both self-report and other sources of information (Butler & Seto, 2002; Epps, 2000; Ford & Linney, 1995). Nine studies included variables based solely on self-report; they produced a small, nonsignificant, and positive average effect size. Nine studies included variables that were based on sources other than self-report. These studies produced a negative and significant mean effect size, thus suggesting that adolescent sex offenders had fewer conduct problems than adolescent non-sex offenders using sources other than self-report. The heterogeneity statistics suggested that other moderators were also present.

Antisocial Tendencies

We defined antisocial tendencies as personal characteristics associated with a propensity to engage in antisocial or criminal behavior, comprising personality traits, attitudes and beliefs, and associations with delinquent peers. This domain can be contrasted with the previous three domains, which contain variables reflecting actual involvement in antisocial or criminal behavior. The distinction is not perfect because some variables in this domain include behavioral items; for example, the Psychopathy Checklist assesses personality traits such as impulsivity, grandiosity, and callousness but also contains items about early behavioral problems and criminal involvement. Thirty-one studies contributed to this domain, which we divided into three categories (Table 5). The source of information was almost exclusively self-report.

The category of antisocial personality traits ($k = 24$) includes such measures as the Psychopathic Deviate scale of the Minnesota Multiphasic Personality Inventory (sources of the scales are reported in the original studies), subscales of the Jesness Inventory,

Table 3
Extent of Criminal Involvement (17 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 17$	**Criminal history**			**1,772**	**9,483**	**−0.54**	**−0.68 to −0.40**	**71.6, $p < .0001$**
$K = 11$	**Prior criminal history only**			**1,124**	**8,913**	**−0.45**	**−0.61 to −0.29**	**38.8, $p < .0001$**
$K = 6$	**Prior criminal history; official records only**			**566**	**6,276**	**−0.51**	**−0.79 to −0.22**	**29.2, $p < .0001$**
Abbott (1991)	Any prior history	32%	75%	40	40	−0.88		
Barham (2001)	No. prior offenses	1.5	2.6	42	32	−0.51		
Butler & Seto (2002)	No. prior charges[a]	2.8	6.8	32	81	−1.02		
Daleiden et al. (1998); Hilliker (1997)	No. charges	7.0	11.5	289	138	−0.49		
Epps (2000)	No. offenses and convictions[a]	7.2	12.1	54	54	−0.45		
Flores (2003)	No. charges[a]	4.8	12.5	30	34	−1.35		
Ford & Linney (1995)	Any prior offenses[a]	54%	96%	35	26	−0.93		
Gregory (1998)	Ever prior adjudication[a]	59%	64%	58	116	−0.08		
Hill (2000)	No. court referrals[a]	4.4	8.6	26	110	−0.91		
Jacobs (1999); Jacobs et al. (1997)	No. prior delinquent referrals[a]	12.1	17.0	78	78	−0.45		
Jonson-Reid & Way (2001)	3+ prior petitions[a]	37%	58%	304	5,778	−0.18		
Krauth (1998)	No. juvenile referrals[a]	1.6	2.9	218	200	−0.71		
Milloy (1994, 1996)	No. prior convictions[a]	3.9	7.0	59	197	−0.61		
Ness (2001)	% with previous. . .[b]			47	90	−0.20		
	Break and enter	8%	23%					
	Stolen property	0%	9%					
	Unlawful driving auto	0%	12%					
	Assault and battery	8%	22%					
	Retail fraud	13%	21%					
	Larceny	8%	16%					
	Destruction of property	6%	13%					
	Home invasion	4%	13%					
	Curfew violation	4%	10%					
	Parole/probation breach	4%	9%					
	Felonious assault	6%	7%					
	Incorrigibility	8%	4%					
	Weapons	0%	6%					
	Other criminal behavior	26%	49%					
	Other status offenses	2%	8%					
Sivley (1998)	Convicted any nonsexual	26%	59%	31	34	−0.63		
Van Wijk, Blokland, et al. (2007)	Has criminal record	53%	78%	379	2,425	−0.40		
Zakireh (2000); Zakireh et al. (2008)	No. prior arrests	1.7	1.9	50	50	−0.12		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval.
[a] Information from official records. [b] Includes only crimes with a base rate of 5% or more for one of the two groups, in order to avoid diluting any real group difference by including crimes with very low base rates.

and the Buss Durkee Hostility Inventory. Adolescent sex offenders did not differ from non-sex offenders, and both groups tended to have above-average scores relative to norms on standardized personality measures (Minnesota Multiphasic Inventory–Adolescent Version, Millon Adolescent Personality Inventory, and modified version of the Psychopathy Checklist—Revised). Only five studies presented data based on sources other than self-report, again with no significant group difference.

Adolescent sex offenders did not differ from non-sex offenders in the variable category of antisocial attitudes and beliefs ($k = 12$). We could also distinguish between antisocial attitudes and beliefs about sex, women, or sexual offending and other kinds of antisocial attitudes and beliefs. Some theorists have proposed that sex offenders are especially likely to endorse antisocial attitudes and beliefs related to their sexual offending, such as favorable attitudes about having sex with children, negative attitudes about women, and acceptance of myths about rape (Hall & Hirschman, 1991, 1992; Ward & Beech, 2005; Ward, Hudson, Johnston, & Marshall, 1997). Thus, unlike the other categories in this domain or the previous general delinquency domains, one could predict from special explanations that adolescent sex offenders would score higher than non-sex

Table 4
Conduct Problems (15 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 15$	**Conduct problems**			**1,311**	**4,816**	**−0.09**	**−0.27 to +0.09**	**66.2, $p < .0001$**
$K = 9$	**Self-report only**			**305**	**832**	**0.08**	**−0.25 to +0.40**	**36.9, $p < .0001$**
$K = 9$	**Other sources of information**			**1,125**	**4,135**	**−0.28**	**−0.44 to −0.13**	**20.8, $p < .01$**
Awad & Saunders (1991)	Antisocial behavior	53%	88%	94	24	−0.19		
	School behavioral problems	67%	71%					
	Kindergarten difficult	22%	25%					
Butler & Seto (2002)	Total conduct problems	9.4	15.8	30	47	−0.75		
	YSR externalizing[a]	55.5	59.2	30	75			
	YO-LSI education/employment[b]	3.2	4.8	32	82			
Chewning (1991)	Fighting[a]	35%	85%	20	20	−0.37		
	Shoplifting[a]	50%	80%					
	Running away[a]	15%	40%					
	Stealing[a]	40%	55%					
	Lying[a]	55%	65%					
	Setting fires[a]	25%	25%					
	Destroy things[a]	35%	45%					
	Ditched class (truancy)[a]	65%	80%					
	School suspension[a]	35%	55%					
Davis-Rosanbalm (2002)	Nonsexual violence[a]	5.9	4.1	43	46	0.53		
Epps (2000)	No. school suspensions	0.96	0.97	54	54	−0.18		
	No. school expulsions	0.41	0.48					
	Behavioral/emotional problems	54%	72%					
	Truancy	37%	52%					
	Delinquency[a]	29.6	37.4					
	YO-LSI education/employment[a]	5.5	5.9					
	Violent behavior at school	41%	44%					
Etherington (1993)	K-SADS conduct disorder[a]	63.1	55.5	20	20	0.56		
	MAPI attendance[a]	57.4	48.2					
	MAPI social conformity[a]	67.5	59.4					
Ford & Linney (1995)	Other delinquency[a]	28%	15%	35	26	0.09		
	Ever suspended from school	71%	88%					
	Emotional problems in class	26%	35%					
	Fighting[a]	14%	19%					
	Cruelty to animals[a]	11%	0%					
	Fire setting[a]	17%	4%					
	Stealing[a]	14%	4%					
Gregory (1998)	Expelled from school	12%	16%	58	116	−0.08		
Krauth (1998)	Suspended last year	54%	83%	216	185	−0.50		
	Physically aggressive	43%	73%	215	194			
	Cruel to animals	4%	4%	156	195			
	Weapon use	16%	48%	185	176			
	Arson	13%	5%	164	192			
	Theft	25%	68%	181	196			
	Truancy	25%	63%	208	161			
	Running away	12%	32%	192	195			
Milloy (1994, 996)	Verbal threats	41%	38%	59	197	−0.01		
	Assaults	25%	28%					
	Assaults (special security)	9%	6%					
	Used weapon in offense	17%	19%					
	Excessively aggressive	25%	21%					
	Previous escape from custody	14%	21%					
Ness (2001)	Delinquency	64%	93%	47	90	−0.30		
	Disciplinary school problems	32%	46%					
	Fire setting	13%	0%					
	Truancy	26%	46%					
	Running away	11%	27%					
	Disobedience, authority problems	74%	97%					

Table 4 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Spaccarelli et al. (1997)	Serious violence[a]	38%	51%	24	186	−0.14		
Van Wijk, Blokland, et al. (2007)	Diagnosed conduct disorder	18%	36%	557	3,377	−0.26		
Van Wijk, Vreugdenhil, et al. (2007)	YSR externalizing[a]	51.9	55.7	30	358	−0.32		
Zakireh (2000); Zakireh et al. (2008)	MASA expressive aggression[a]	0.73	0.37	49	47	0.87		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; K-SADS = Schedule of Affective Disorders and Schizophrenia for School-Aged Children; MAPI = Millon Adolescent Personality Inventory; MASA = Multidimensional Assessment of Sex and Aggression; RBPC = Revised Behaviour Problem Checklist; YO-LSI = Young Offender Level of Supervision Inventory; YSR = Youth Self-Report. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Six of ten items pertain to school behavioral problems.

offenders on antisocial attitudes and beliefs about sex, women, or sexual offending. This prediction was not supported: Adolescent sex offenders did not differ from non-sex offenders across the nine studies that reported antisocial attitudes and beliefs about sex, women, or sexual offending. Adolescent sex offenders scored significantly lower than non-sex offenders on antisocial attitudes and beliefs that were not related to sex, women, or sexual offending.

Finally, adolescent sex offenders scored lower than non-sex offenders in the category of antisocial associations for all but one of the eight studies. We defined antisocial associations as interactions with delinquent peers or gang involvement. The group difference was of medium size and statistically significant. The group difference appeared to be particularly large for studies that were based on self-report.

Substance Abuse

There was much variability in the definition and prevalence of substance use problems across the 20 studies contributing to this domain (Table 6). Nevertheless, all but one study produced a negative effect size, suggesting greater substance use problems among non-sex offenders. The average effect sizes were small to medium, and were heterogeneous for all comparisons. Source of information did not have a significant impact on group differences, and type of substances (alcohol vs. other drugs) did not seem to matter either.

General Delinquency Risk Factors and Victim Age

The average effect sizes of the variable categories in the criminal history and antisocial tendencies domains are presented in Figure 1. As shown, adolescent sex offenders were less antisocial overall than were adolescent non-sex offenders. Most of the average effect sizes, however, were significantly heterogeneous, suggesting that one or more study or sample characteristic moderated effect sizes. As noted, we had found that source of information was a significant moderator for conduct problems and antisocial associations. In this section, we examined sexual victim age as a moderator of group differences, collapsing across all variable categories.

Fifteen studies included in the domains of age at first contact, extent of criminal involvement, conduct problems, antisocial tendencies, and substance abuse provided information about the proportion of the adolescent sex offender sample who offended against at least one child; the other sex offenders had peer or adult victims only. For this analysis, we calculated, for each of the 15 studies, an average weighted effect size for all antisocial variables. Age at first contact was reverse coded so that a younger age meant greater delinquency risk. We then correlated these study-average effect sizes with the study proportions of adolescent sex offenders who offended against children.[4] The proportions of offenders with child victims ranged from .38 to 1.0 across the 15 studies. The resulting correlation, statistically controlling for study sample size, was $r(12) = -.07$, $p = .81$. We also examined the partial correlation when the proportion of adolescent sex offenders with child victims and sample size were log-transformed, to compensate for non-normal distributions on these variables, and obtained a similar result, $r(12) = -.21$, $p = .47$.

We next focused on the six studies that provided data that allowed us to directly compare sex offenders against at least one child and sex offenders against only peers or adults on at least one antisocial variable (Awad & Saunders, 1991; Epps, 2000; Ford & Linney, 1995; Krauth, 1998; van Wijk, Blokland, et al.,

[4] In all but two of the studies we examined for this analysis, child victims were defined as a minimum of three to five years younger than the offender. Some studies included maximum victim ages, ranging from 10 to 13 years; for example, Epps (2000) specified that all child victims were age 10 or younger without specifying a minimum age difference. Griggins (1990) did not specify the child victim criteria but did report the specific victim ages; the oldest victim was 13, five years younger than the 18-year-old offender (who also had committed an offense against a 5-year-old victim). Lee's (1994) study differed from the other studies by defining child victims as either four years younger than the offender or 10 years old or younger. Chewning (1991) did not specify the age criteria, noting only that all of the adolescent sex offenders had committed "child molestation" offenses and had not committed rape or sexual assault offenses. van Wijk, Blokland, et al. (2007) defined child victims as a minimum of five years younger than the offender. Victims who did not meet these criteria for being categorized as child victims were categorized as peer or adult victims. Ideally, one would want to categorize child versus peer or adult victims on the basis of the victims' pubertal status rather than according to their chronological ages (see Seto, 2002).

Table 5
Antisocial Tendencies (31 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 24$	**Antisocial personality traits**			**1,114**	**1,522**	**−0.00**	**−0.13 to +0.13**	**53.4, $p < .0005$**
$K = 5$	**Other sources of information**			**363**	**449**	**0.32**	**−0.15 to +0.78**	**34.1, $p < .0001$**
Abbott (1991)	Poor empathy victim[a]	62%	68%	40	40	0.10		
	Little responsibility offense[a]	52%	38%					
Barham (2001)	SRP[a]	274.9	269.9	42	32	0.15		
	BIS-11[a]	71.5	69.8					
Caputo et al. (1999)	PSD callous–unemotional[a]	35%	7%	23	46	0.35		
	PSD impulsivity[a]	26%	24%					
Chewning (1991)	CLOIT-R hostile hemisphere	19.5	16.8	20	20	0.19		
	CLOIT-R friendly hemisphere[b]	9.0	9.4					
Dunning (1991)	CPI-R Empathy[a,b]	18.4	19.4	55	53	0.25		
Etherington (1993)	PCL-R diagnosis	65%	0%	20	20	0.43		
	MAPI forceful[a]	75.7	70.3					
	K-SADS impulsivity[a]	5.9	5.7					
	MAPI respectful[a,b]	34.6	42.0					
	MAPI cooperative[a,b]	32.4	35.1					
	MAPI confident[a]	59.9	59.0					
	MAPI social tolerance[a]	69.6	65.0					
Flores (2003)	IRI total score[a,b,c]	58.0	56.7	30	34	−0.59		
	COS empathy[a,b]	34.4	32.6					
	PSD callous–Unemotional[a]	4.2	4.8					
	JI aggression[a]	49.6	54.6					
	JI value orientation[a]	49.8	58.5					
	JI alienation[a]	53.9	60.6					
	JI social maladjustment[a]	59.2	71.6					
	JI asocial index[a]	58.8	71.6					
Franklin (2000)	IRI-A emotional concern[a,b]	3.7	3.2	30	29	−0.60		
Griggins (1990)	OSIQ impulse control scale[a]	3.7	2.7	26	26	0.45		
Hill (2000)	BDHI reactive hostility[a]	10.7	11.8	26	110	−0.33		
Jacobs (1999); Jacobs et al. (1997)	PCL-R	27.2	26.2	78	78	0.14		
	MMPI psychopathic deviate[a]	64.6	63.8					
Katz (1990)	JI aggression[a]	16.8	17.7	31	34	−0.05		
	JI social maladjustment[a]	19.5	16.4					
	JI value orientation[a]	17.8	19.4					
	JI alienation[a]	10.6	11.7					
Krauth (1998)	Demonstrated impulsivity	47%	60%	186	134	−0.24		
Leguizamo (2000)	MACI impulsiveness[a]	62.2	52.1	62	46	0.14		
	MACI delinquent prone[a]	68.9	72.9	62	46			
	BORRTI egocentricity[a]	59.2	57	75	53			
Lincoln (1993)	STAXI state anger[a]	16.1	18.4	30	28	−0.12		
	STAXI trait anger[a]	22.7	26.4					
	STAXI temperament[a]	10.5	10.5					
	STAXI repressed[a]	11.2	9.8					
	STAXI anger in[a]	18.3	18.3					
	STAXI anger out[a]	19.8	19.7					
Lindsey et al. (2001)	IRI empathic concern[a,b]	13.4	17.1	27	27	0.58		
	IRI perspective taking[a,b]	11.0	12.5					
Mattingly (2000)	MACI forceful[a]	39.2	38.1	117	126	−0.13		
	MACI unruly[a]	65.7	66.7					
	MACI social insecurity[a]	67.7	71.7					
	MACI egotistic[a]	51.7	56.5					
	MACI delinquent prone[a]	71.7	73.7					
	MACI impulsiveness[a]	60.1	57.6					
Milloy (1994, 1996)	Exploits or manipulates	39%	34%	59	197	0.04		
Ness (2001)	ARTS[a]	22.8	23.6	47	90	−0.37		
	RBQ[a]	26.4	31.7					
Oliver et al. (1993)	JI social maladjustment[a]	56.4	62.9	50	100	−0.49		
Valliant & Bergeron (1997)	MMPI psychopathic deviate[a]	65.8	65.8	16	13	−0.11		
	BDHI assault[a]	5.5	4.8					

Table 5 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
	BDHI negativism[a]	2.4	2.8					
	BDHI suspicion[a]	5.4	5.8					
	BDHI irritability[a]	4.8	5.1					
	BDHI verbal hostility[a]	8.1	8.1					
	BDHI indirect hostility[a]	3.6	4.8					
	BDHI resentment[a]	3.8	3.5					
	Antisocial tendencies[a]	35.5	37.0					
Van Ness (1984)	IAC poor anger control[a]	62%	26%	29	27	0.69		
Van Wijk, Vreugdenhil, et al. (2007)	Thrill and adventure seeking[a]	6.4	6.6	17	161	−0.23		
	Disinhibition[a]	2.9	4.2	17	162			
	Impulsivity[a]	3.7	3.8	17	163			
Zakireh (2000); Zakireh et al. (2008)	MASA PCL[a]	2.0	2.1	49	47	−0.18		
	MACI antisocial cluster[a]	39.0	45.9	50	49			
	MASA pervasive anger[a]	1.4	1.3	49	47			
$K = 12$	**Antisocial attitudes/beliefs**			**421**	**548**	**−0.17**	**−0.47 to +0.13**	**55.2, $p < .0001$**
$K = 9$	**Toward sex, women, sexual offending**			**336**	**412**	**−0.09**	**−0.46 to +0.27**	**46.8, $p < .0001$**
$K = 4$	**Nonsexual attitudes/beliefs**			**115**	**170**	**−0.46**	**−0.79 to −0.12**	**5.3, $p = .15$**
Barham (2001)	TATSA[a]	37.7	36.5	42	32	0.13		
Butler & Seto (2002)	CSS-M[a]	15.2	22.1	31	80	−0.64		
Caputo et al. (1999)	SATWS[a]	175.5	169.9	23	46	0.17		
Davis-Rosanbalm (2003)	NOBAGS beliefs about aggression[a]	1.6	1.6	36	42	−0.13		
	Hostile attribution bias in vignettes[a]	0.3	0.1	38	42			
	Dominance goal in conflict vignettes[a]	10.5	11.9	38	42			
	Revenge goal in conflict vignettes[a]	11.8	11.2	37	43			
	PCQ expected aggression outcome[a,b]	2.1	1.9	39	46			
Epps (2000)	ARVS[a]	41.7	37.6	54	54	0.72		
	BRMAS[a]	60.6	48.5					
Flores (2003)	Cognitive distortions–sex[a]	3.0	5.2	30	34	−0.62		
	HITQ rationalizations[a]	57.9	69.5					
Griggins (1990)	Sexual play with kids okay if gentle[a]	19%	0%	26	26	0.24		
	Children can make decisions about sex[a]	65%	62%					
	Conservative, exploitative attitudes about sex[a]	3.6	3.2					
Hill (2000)	RMAS[a]	36.4	42.6	26	110	−0.48		
Racey et al. (2000)	Attitudes about sex with children[a]	13.1	19.9	36	38	−1.07		
Valliant & Bergeron (1997)	CPS attitudes toward drugs[a]	20.6	24.5	16	13	−0.49		
Wong (2002)	ATSVS[a]	17.4	16.4	50	25	0.19		
Zakireh (2000); Zakireh et al. (2008)	MASA hostility towards women[a]	1.2	1.3	49	47	−0.19		
$K = 8$	**Antisocial associations**			**535**	**708**	**−0.45**	**−0.71 to −0.19**	**29.2, $p < .0005$**
$K = 3$	**Self-report only**			**293**	**260**	**−0.72**	**−0.89 to −0.55**	**0.1, $p = .95$**
$K = 5$	**Other sources of information**			**242**	**448**	**−0.27**	**−0.58 to +0.03**	**13.6, $p < .05$**
Butler & Seto (2002)	YO-LSI peer relations[d]	3.1	5.1	32	82	−0.93		
Epps (2000)	YO-LSI peer relations[d]	4.7	4.7	54	54	0.02		

(table continues)

Table 5 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Ford & Linney (1995)	High peer delinquency[a]	13%	50%	35	26	−0.79		
Krauth (1998)	Gang affiliated[a]	20%	52%	218	194	−0.71		
Krupica (1997)	Gang membership[a]	50%	85%	40	40	−0.74		
Milloy (1994, 1996)	Gang affiliation	14%	23%	59	197	−0.17		
Ness (2001)	Gang involvement	4%	9%	47	90	−0.11		
Wong (2002)	No. delinquent friends	3.0	4.2	50	25	−0.23		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non-sex offenders; *CI* = confidence interval; ARTS = Adolescent Risk-Taking Scale; ARVS = Attitudes Towards Rape Scale; ATSVS = Attitudes Towards Sex and Violence Scale; BDHI = Buss–Durkee Hostility Inventory; BIS-11 = Barratt Impulsiveness Scale-11; BORRTI = Bell Object Relations and Reality Testing; BRMAS = Burt Rape Myth Acceptance Scale; CLOIT-R = Checklist of Interpersonal Transactions—Revised; COS = Child Opinion Survey; CPI-R = California Personality Inventory—Revised; CPS = Carlson Psychological Survey; CSS—M = Criminal Sentiments Scale—Modified; HITQ = How I Think Questionnaire; IAC = Inventory of Anger Communication; IRI = Interpersonal Reactivity Index (A = Adolescent version); JI = Jesness Inventory; K-SADS = Schedule of Affective Disorders and Schizophrenia for School-Aged Children; MACI = Millon Adolescent Clinical Inventory; MAPI = Millon Adolescent Personality Inventory; MASA PCL = Multidimensional Assessment of Sex and Aggression Psychopathy Checklist; MMPI = Minnesota Multiphasic Personality Inventory; NOBAGS = Normative Beliefs About Aggression Scale; OSIQ = Offer Self-Image Questionnaire for Adolescents; PCL-R = Psychopathy Checklist—Revised; PCQ = Perceived Consequences Questionnaire; PSD = Psychopathy Screening Device; RBQ = Reckless Behavior Scale; RMAS = Rape Myth Acceptance Scale; SATWS = Sexist Attitudes Toward Women Scale; SRP-2 = Self-Report Psychopathy; STAXI = State–Trait Anger Expression Inventory; TATSA = Teenagers' Attitudes Towards Sexual Abuse; YO-LSI = Young Offender Level of Supervision Inventory. The sources for these scales are reported in the original articles. Some scale names do not match the scale names given in the test manuals or original sources; we used the scale names given by study authors for ease of verification.

[a] Based on self-report only. [b] Reverse scored. [c] Two of the four subscales in the Interpersonal Reactivity Index do not directly tap empathy (Fantasy, e.g., "I daydream and fantasize, with some regularity, about things that might happen to me" and Personal Distress, e.g., "I am usually pretty effective in dealing with emergencies"), but only total scale score was reported in this study. [d] Five of 13 items pertain to delinquent peers.

2007; Wong, 2002).[5] For this analysis, we calculated an average weighted effect size for each study, combining all antisocial variables for that study and coded in the same direction such that a positive sign meant more delinquency risk among adolescent sex offenders who offended against only peers or adults. Five of the six studies produced positive effect sizes, and the overall group difference was small and statistically significant; the weighted average *d* was 0.21 (95% *CI* = 0.05 to 0.37), with no heterogeneity in effect sizes.

The results of these two analyses are not consistent. Although the proportion of the sex offender sample that consisted of offenders against children was unrelated to the size of the group difference, a direct comparison of offenders against peers and offenders against children showed that the former group scored higher on delinquency risk variables.

Childhood Abuse and Exposure to Violence

Thirty-four studies contributed to this domain (see Table 7). We assigned the study comparisons to six variable categories, each representing a different form of abuse or exposure to violence. The average effect sizes in this domain are presented in Figure 2.

Experienced sexual abuse. All but two of the 31 studies in this variable category showed a more frequent history of sexual abuse among adolescent sex offenders, with a significant, medium to large average effect size (heterogeneous). The group difference was significant regardless of whether the information was obtained from self-report or another source. Adolescent sex offenders were also more likely to have been sexually abused than nonoffenders in the two small studies that compared these groups on this variable (Chewning, 1991; Etherington, 1993).

An examination of studies that reported proportions revealed that, on average, 46% of adolescent sex offenders and 16% of non-sex offenders reported having experienced sexual abuse. The corresponding values for studies based on other sources of information were 32% and 8%, respectively. These percentages should not be interpreted as estimates of the prevalence of sexual abuse among adolescent sex and non-sex offenders, because the operational definitions of sexual abuse varied substantially across studies. Because the same definition was used for both groups in each study, however, the group difference can be readily interpreted. This caveat applies to the physical abuse data as well (see below). Calculation of average proportion of offenders who were abused was not weighted by sample size.

[5] This note applies to this and subsequent analyses of victim age. The criteria for child victims in these direct comparison studies were as follows: at least four (Awad & Saunders, 1991) or five years younger than the offender (Ford & Linney, 1995; van Wijk, Blokland, et al., 2007; Wong, 2002); at least four years younger than the offender and 12 years old or younger (Krauth, 1998); and at least five years younger than the offender and 12 years old or younger (Aljazireh, 1994). Awad and Saunders specified that none of the offenders against peers or adults had committed offenses against child victims, but it was not explicitly stated whether the offenders against children had any peer or adult victims. Similarly, it appeared, but was not explicitly stated, that the victim age groups in Ford and Linney (1995) and Wong (2002) were mutually exclusive. Krauth (1998) did have pure victim age groups, because the one offender who had victims in both age categories was excluded from the analysis. Van Wijk, Blokland, et al. (2007) classified sexual offenders according to the age of the victim in their referral offense, so offenders could have committed offenses against victims in the other age group in their history. Aljazireh (1994) distinguished adolescent sex offenders according to their "predominant" victim age, so an adolescent sex offender with two child victims and one peer-aged victim would be classified as an offender against children; 33 of Aljazireh's 54 adolescent sex offenders targeted only children or only peers or adults.

Table 6
Substance Abuse (20 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 20$	**Any substance abuse**			**1,289**	**3,336**	**−0.38**	**−0.52 to −0.24**	**64.7, $p < .0001$**
$K = 11$	**Self-report only**			**474**	**780**	**−0.31**	**−0.49 to −0.12**	**20.2, $p < .05$**
$K = 9$	**Other sources of information**			**815**	**2,556**	**−0.45**	**−0.67 to −0.23**	**40.8, $p < .0001$**
$K = 10$	**Alcohol abuse**			**597**	**2,320**	**−0.41**	**−0.63 to −0.18**	**30.8, $p < .0005$**
$K = 10$	**Other drug abuse**			**631**	**2,528**	**−0.35**	**−0.57 to −0.16**	**31.5, $p < .0005$**
Abbott (1991)	Moderate/severe alcohol abuse[a]	10%	30%	40	40	−0.40		
	Heavy drug use[a]	2%	15%					
Awad & Saunders (1991)	Alcohol abuse history	9%	38%	94	24	−0.62		
	Drug abuse history	12%	42%					
Barham (2001)	Substance abuse	48%	62%	42	32	−0.24		
Butler & Seto (2002)	YO-LSI substance abuse	1.3	2.0	32	82	−0.36		
Chewning (1991)	Used drug[a]	15%	75%	20	20	−1.24		
	Used alcohol[a]	25%	80%					
Epps (2000)	YO-LSI substance abuse	2.2	3.9	54	54	−0.72		
Etherington (1993)	K-SADS drug addiction score[a]	51.0	47.2	20	20	0.29		
Fagan & Wexler (1988)	Drug problem[a]	0%	15%	34	208	−0.28		
Griggins (1990)	High at time of offense[a]	12%	27%	26	26	−0.52		
	Ever trouble for alcohol or drug use[a]	4%	35%					
	Use drugs[a]	31%	54%					
	Use alcohol[a]	42%	81%					
	Treated for drugs or alcohol[a]	0%	15%					
Krauth (1998)	Substance abuse	36%	75%	216	194	−0.85		
Krupica (1997)	Used alcohol[a]	58%	70%	40	40	−0.20		
	Used drugs[a]	65%	58%					
Leguizamo (2000)	MACI substance abuse proneness[a]	63.0	68.3	62	46	−0.18		
Mattingly (2000)	MACI substance abuse proneness[a]	55.5	56.9	117	126	−0.09		
Miller (1997)	Substance abuse[a]	68%	92%	50	50	−0.57		
Milloy (1994, 1996)	Alcohol abuse history	62%	86%	59	197	−0.53		
	Drug abuse history	62%	88%					
Ness (2001)	Alcohol abuse	19%	43%	47	90	−0.52		
	Marijuana abuse	26%	57%					
Tinklenberg et al. (1981)	Used alcohol	97%	98%	63	230	−0.00		
	Used cannabis	90%	94%					
	Used amphetamines	70%	72%					
	Used secobarbital	65%	68%					
	Used other barbiturates	33%	34%					
	Used hashish	63%	63%					
	Used inhalants	60%	52%					
	Used psychedelics	49%	51%					
	Used opioids	33%	35%					
	Used cocaine	38%	40%					
	Used diazepam	2%	1%					
	Used other drugs	5%	5%					
Van Wijk, Blokland, et al. (2007)	Any substance abuse	27%	44%	208	1,653	−0.21		
Van Wijk, Vreugdenhil, et al. (2007)	DISC any substance disorder[a]	27%	58%	15	155	−0.32		
Zakireh (2000); Zakireh et al. (2008)	MACI substance abuse proneness[a]	6.6	7.5	50	49	−0.43		

Note. ASOs = adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; DISC = Diagnostic Interview Schedule for Children; K-SADS = Schedule of Affective Disorders and Schizophrenia for School-Aged Children; MACI = Millon Adolescent Clinical Inventory; YO-LSI = Young Offender Level of Supervision Inventory. The sources for these scales are reported in the original articles. Van Wijk, Blokland, et al. (2007) also reported data on alcohol and other drug abuse separately.
[a] Based on self-report only.

Table 7
Childhood Abuse and Exposure to Violence (34 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 31$	**Experienced sexual abuse**			**1,894**	**2,449**	**0.62**	**0.46 to 0.77**	**154.0, $p < .0001$**
$K = 18$	**Self-report only**			**1,108**	**1,360**	**0.67**	**0.43 to 0.97**	**113.4, $p < .0001$**
$K = 12$	**Other sources of information**			**732**	**1073**	**0.54**	**0.39 to 0.68**	**19.6, $p = .05$**
Abbott (1991)	Sexual abuse[a]	18%	18%	40	40	0.00		
Aljazireh (1994)	Sexual abuse history	61%	25%	54	16	0.56		
Awad & Saunders (1991)	Sexual abuse history	12%	0%	94	24	0.25		
Benoit & Kennedy (1992)	Sexual abuse history	26%	8%	50	50	0.44		
Briley (2004)	MASA sexual abuse[a]	4.9	4.3	51	19	1.41		
Capozza (1997)	Ever sexually molested[a]	36%	7%	57	54	0.67		
Chewning (1991)	Unwilling sexual experience[a]	70%	5%	20	20	1.58		
Daleiden et al. (1998); Hilliker (1997)	Child sexual abuse[a]	63%	7%	289	138	1.20		
Davis-Rosanbalm (2003)	Sexually abused	34%	3%	29	32	0.78		
Epps (2000)	Sexually abused in family	20%	4%	54	54	0.58		
	Sexually abused outside family	39%	9%					
Etherington (1993)	Sexually abused[a]	60%	5%	20	20	1.26		
Fagan & Wexler (1988)	Sexually abused (CPS record)	9%	1%	34	208	0.31		
Fleming et al. (2002)	Sexually abused[a]	2.7	1.6	161	196	1.23		
Flores (2003)	Sexually abused	43%	9%	30	34	0.78		
Ford & Linney (1995)	Sexually abused	38%	17%	35	26	0.39		
Frazier (1999)	Sexually abused[a]	90%	42%	30	36	1.06		
Griggins (1990)	Ever molested (or attempted)[a]	27%	23%	26	26	0.00		
Hill (2000)	Sexually abused	50%	14%	26	110	0.70		
Krauth (1998)	Nonfamily sexual abuse	11%	4%	214	190	0.24		
	Family sexual abuse	10%	4%	213	186			
Krupica (1997)	Sexual abuse history[a]	33%	8%	40	40	0.58		
Lee (1994)	Sexually abused by parents[a]	3%	3%	34	35	0.00		
Leguizamo (2000)	CTQ Sexual Abuse[a]	69%	40%	75	53	0.58		
Macri (2000)	SAEQ[a]	73%	38%	62	64	0.71		
Miller (1997)	Sexually abused[a]	46%	14%	50	50	0.69		
Milloy (1994, 1996)	Sexually abused	39%	11%	59	197	0.62		
Ness (2001)	Incest victim	11%	0%	47	90	0.64		
	Nonincest sexual abuse	40%	8%					
Truscott (1993)	Sexually abused[a]	44%	17%	23	130	0.43		
Van Wijk, Vreugdenhil, et al. (2007)	Incest abuse history[a]	7%	2%	30	365	0.12		
Veneziano et al. (2004)	Sexually abused	62%	18%	60	60	0.94		
Wong (2002)	Sexual abuse[a]	50%	32%	50	25	0.29		
Zakireh (2000); Zakireh et al. (2008)	MASA sexual abuse[a]	54%	0%	50	49	1.44		
$K = 20$	**Experienced physical abuse**			**1,131**	**1,269**	**0.19**	**0.04 to 0.34**	**52.0, $p < .0001$**
$K = 11$	**Self-report only**			**544**	**636**	**0.24**	**0.09 to 0.40**	**15.3, $p = .11$**
$K = 8$	**Other sources of information**			**533**	**617**	**0.05**	**−0.04 to +0.25**	**14.5, $p < .05$**
Abbott (1991)	Physical abuse[a]	20%	28%	40	40	−0.12		
Aljazireh (1994)	Physical abuse history	70%	12%	54	16	1.03		
Awad & Saunders (1991)	Physical abuse history	28%	12%	94	24	0.24		
Benoit & Kennedy (1992)	Physical abuse history	40%	44%	50	50	−0.04		
Briley (2004)	MASA physical abuse[a]	21.9	20.8	51	19	0.09		
Chewning (1991)	Disciplined by beating[a]	1.6	1.5	20	20	0.04		
Epps (2000)	Physically abused in family	24%	28%	54	54	−0.04		
	Physically abused outside of family	2%	2%					
Etherington (1993)	Physically abused[a]	45%	10%	20	20	0.71		
Fleming et al. (2002)	Physically abused[a]	2.8	2.2	161	196	0.49		
Flores (2003)	Physically abused	50%	21%	30	34	0.57		
Frazier (1999)	Physically abused[a]	100%	86%	30	36	0.42		

Table 7 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Hill (2000)	Physically abused	46%	36%	26	110	0.12		
Krauth (1998)	Physical abuse	17%	29%	215	185	−0.28		
Krupica (1997)	Physical abuse history[a]	43%	37%	40	40	0.07		
Lee (1994)	Hit by parent[a]	29%	40%	34	33	−0.17		
Leguizamo (2000)	CTQ physical abuse[a]	89%	75%	75	53	0.33		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Ever physically abused	76%	64%	17	70	0.14		
Ness (2001)	Physically abused	28%	22%	47	90	0.09		
Truscott (1993)	Physically abused[a]	83%	73%	23	130	0.11		
Zakireh (2000); Zakireh et al. (2008)	MASA physical abuse[a]	66%	45%	50	49	0.39		
$K = 4$	**Exposed to or presence of sexual violence in family**			**327**	**292**	**0.24**	**0.01 to 0.46**	**4.7, $p = .19$**
Frazier (1999)	Witness sexual abuse[a]	57%	22%	30	36	0.68		
Griggins (1990)	Family member involved in sexual offense[a]	46%	54%	26	26	−0.08		
Krauth (1998)	Sex offender in family	10%	4%	196	177	0.20		
Leguizamo (2000)	Exposure to molestation[a]	0.5	0.3	75	53	0.18		
	Exposure to adults forcing sex on other adults[a]	0.8	0.8					
$K = 8$	**Exposed to or presence of nonsexual violence in family[b]**			**399**	**582**	**0.11**	**−0.03 to +0.26**	**7.6, $p = .37$**
Abbott (1991)	Witness spousal abuse[a]	18%	35%	40	40	−0.35		
Caputo et al. (1999)	M-CTS witness violence[a]	56%	43%	23	46	0.21		
Fagan & Wexler (1988)	Sibling abuse	11%	3%	34	208	0.22		
Flores (2003)	Witness domestic violence	57%	59%	30	34	−0.02		
Ford & Linney (1995)	Relative killing pet[a]	17%	4%	35	26	0.11		
	Relative fighting[a]	17%	17%					
Frazier (1999)	Witness family violence[a]	82%	76%	30	36	0.07		
Krauth (1998)	Witness family violence	26%	22%	174	157	0.08		
Lee (1994)	Mother hurt in domestic violence[a]	68%	36%	33	35	0.60		
$K = 5$	**Exposed to nonsexual violence outside family[b]**			**165**	**273**	**−0.14**	**−0.37 to +0.08**	**4.4, $p = .36$**
Briley (2004)	Exposure to violence[a]	73.0	87.0	51	19	−0.46		
Davis-Rosanbalm (2003)	Frequency exposure serious violence[a]	2.8	2.9	44	51	−0.05		
Frazier (1999)	Witness nonfamily violence[a]	93%	91%	30	36	0.04		
Hill (2000)	Exposure to violence[a]	27.0	30.2	26	110	−0.37		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Witness extreme violence	79%	63%	14	57	0.18		
$K = 11$	**Experienced emotional abuse or neglect**			**562**	**709**	**0.28**	**0.05 to 0.50**	**34.9, $p < .0005$**
$K = 7$	**Self-report only**			**405**	**421**	**0.25**	**0.02 to 0.49**	**14.6, $p < .05$**
$K = 4$	**Other sources of information**			**157**	**288**	**0.34**	**−0.09 to +0.87**	**20.3, $p < .0005$**
Abbott (1991)	Emotional abuse[a]	30%	35%	40	40	−0.05		
Chewning (1991)	Disciplined by shouting or insults[a]	2.0	2.4	20	20	−0.36		
Epps (2000)	Emotional abuse in family	17%	7%	54	54	0.14		
	Neglect	24%	20%					
Fleming et al. (2002)	Emotionally abused[a]	2.7	2.1	161	196	0.48		
	Emotional neglect[a]	2.4	2.0					
Flores (2003)	Neglect	27%	24%	30	34	0.00		
Frazier (1999)	Emotionally abused[a]	100%	92%	30	36	0.25		

(table continues)

Table 7 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Hill (2000)	Neglect	38%	1%	26	110	1.18		
Leguizamo (2000)	CTQ physical neglect[a]	63%	64%	75	53	0.05		
	CTQ emotional neglect[a]	61%	55%					
Ness (2001)	Neglect	45%	39%	47	90	0.05		
	Emotional abuse	23%	21%					
Van Ness (1984)	Intrafamily violence or neglect[a]	41%	15%	29	27	0.53		
Zakireh (2000); Zakireh et al. (2008)	MASA psychological abuse[a]	68%	37%	50	49	0.61		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non-sex offenders; *CI* = confidence interval; CPS = Child Protective Services; CTQ = Childhood Trauma Questionnaire; MASA = Multidimensional Assessment of Sex and Aggression; M-CTS = Modified Conflict Tactics Scales; SAEQ = Sexual Abuse Exposure Questionnaire. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Some variables in this domain may also include exposure to sexual violence.

Most studies reported rates of sexual abuse, so we also calculated an odds ratio for each study and an overall weighted odds ratio for the set of studies. Twenty-nine studies reported the number (or percentage) of the two groups of adolescent offenders who had been sexually abused, for an overall odds ratio of 5.54 (95% *CI* = 4.00 to 7.69). Studies based on self-report only (k = 16) obtained an average odds ratio of 5.35 (95% *CI* = 3.10 to 9.24), and studies based on other sources of information (k = 12) obtained a similar average odds ratio of 5.75 (95% *CI* = 4.10 to 8.06). The source of information was unclear for one study (Aljazireh, 1994). These results show that adolescent sex offenders had more than five times greater odds than adolescent non-sex offenders for having been sexually abused, according to either self-report or other sources of information.

Experienced physical abuse. A majority of the 20 studies in this category showed a higher prevalence of physical abuse among adolescent sex offenders. The average effect size was significant, small, and heterogeneous. The average group difference was positive and significant for studies using self-report, but not for studies using other sources of information. There was little heterogeneity left after distinguishing studies by source of information. An examination of studies that reported proportions revealed that, on average, 59% of adolescent sex offenders and 49% of non-sex offenders reported having experienced physical abuse. The proportions for studies based on other sources of information were 37% and 30%, respectively.

Because most studies reported rates of physical abuse, we also calculated an odds ratio for each study and an overall weighted odds ratio. Seventeen studies reported the number (or percentage) of the sample who had been physically abused, for an average odds ratio of 1.60 (95% *CI* = 1.05 to 2.43). Studies based on self-report only (k = 8) obtained an overall odds ratio of 1.67 (95% *CI* = 0.95 to 2.92) and studies based on other sources of information (k = 8) obtained an average of 1.24 (95% *CI* = 0.74 to 2.08). The source of information was unclear for one study (Aljazireh, 1994).

Sixteen studies reported rates of abuse for both sexual and physical abuse. Among these studies, the average odds ratio for sexual abuse was 4.81 (3.30 to 7.01), and the average odds ratio for physical abuse was 1.60 (1.03 to 2.48). These results are similar to those obtained for studies that reported rates of only sexual abuse

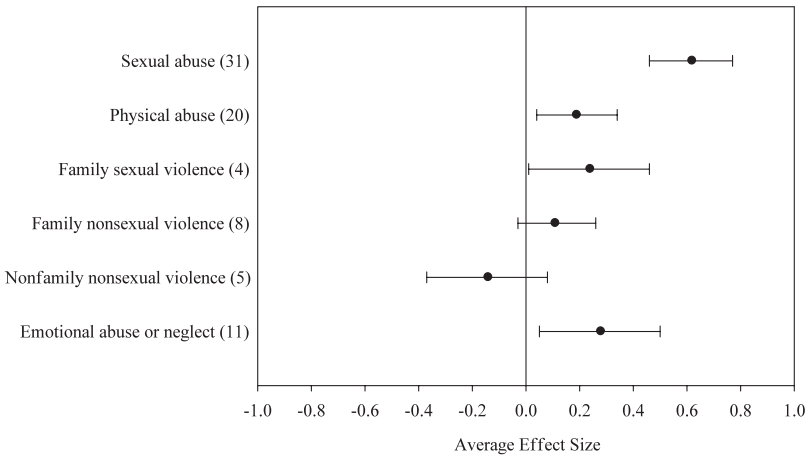

Figure 2. Childhood abuse and exposure to violence. Number of effect sizes are indicated within parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

or only physical abuse and show that the average group difference was much greater for sexual abuse than for physical abuse.

Exposure to (or presence of) sexual or nonsexual violence in the family. Three of the four studies reporting on exposure to (or presence of) sexual violence in the family, involving other individuals, showed that adolescent sex offenders had higher scores, with an average effect size that was significant, small, and homogeneous. Three studies in this category relied on self-report.

Six of the eight studies that reported on exposure to (or presence of) nonsexual violence in the family, involving other individuals, reported higher percentages among the adolescent sex offenders, but this group comparison was not statistically significant. It is possible that two of the summary scores included under "exposure to nonsexual violence" also included sexual behaviors, because spousal abuse (Abbott, 1991) and sibling abuse (Fagan & Wexler, 1988) could include sexual abuse, so this comparison may not be purely about nonsexual violence.

Exposed to nonsexual violence outside of the family. There was no difference between the groups in the five studies that reported information in this variable category.

Experienced emotional abuse or neglect. Nine of the eleven studies reported a greater prevalence of emotional abuse or neglect among adolescent sex offenders. The average effect size was positive, small to medium, significant (except for the small number of studies that used other sources of information), and heterogeneous.

Experience of abuse and victim age. Fifteen studies included in the categories of sexual abuse and physical abuse provided information about the proportion of the adolescent sex offender sample who had offended against child victims; the rest of the sample offended against peers or adults. Using the same analytical procedure we used to examine the impact of victim age on delinquency risk variables, we calculated the correlation between the proportion of the adolescent sex offenders who had targeted children and the effect sizes for variables pertaining to sexual abuse ($k = 15$) and physical abuse ($k = 11$). The proportion of the adolescent sex offenders who had targeted children varied from .41 to 1.0 across the 15 studies.

Partial correlations, statistically controlling for sample size, were $r(12) = .25$, $p = .40$, for sexual abuse and $r(8) = -.47$, $p = .17$, for physical abuse, respectively. These results indicate that the proportion of adolescent sex offenders against children was not significantly related to the size of the effect for sexual or physical abuse; there was a tendency for more positive effects for sexual abuse when the proportion was large and the opposite tendency for physical abuse. A similar pattern of results was obtained when the proportion of adolescent sex offenders with child victims and sample size were log-transformed: $r(12) = .25$, $p = .40$, sexual abuse; $r(8) = -.51$, $p = .14$, physical abuse.

We then examined the seven studies that provided data on at least one sexual or physical abuse variable separately for sex offenders against at least one child and offenders against only peers or adults (Aljazireh, 1994; Awad & Saunders, 1991; Epps, 2000; Ford & Linney, 1995; Krauth, 1998; Lee, 1994; Wong, 2002). For this analysis, we calculated an average weighted effect size for each study, combining all variables pertaining to sexual abuse and then all variables pertaining to physical abuse. There were too few studies to examine other forms of abuse or exposure to violence in this way. All effect sizes were coded such that a positive sign meant that more abuse was reported for adolescent sex offenders who targeted peers or adults. The weighted average d for the seven studies reporting on sexual abuse was -0.30 (95% $CI = -.48$ to $-.12$), indicating that sex offenders against peers or adults scored significantly lower on sexual abuse variables than sex offenders against children. The average d was -0.11 for the five studies reporting on physical abuse (95% $CI = -.30$ to $+.09$), suggesting no group difference.

The results of these two different analyses of the relationship between victim age and sexual abuse were somewhat consistent: The correlational analysis suggested that the (sex offender vs. non-sex offender) group difference on sexual abuse was larger when the proportion of offenders against children among sex offenders was high, and that sex offenders against children had been more often sexually abused than sex offenders against peers. With regard to physical abuse, the correlational analysis suggested that groups with more offenders against children were nonsignificantly less likely to have been physically abused, relative to non-sex offenders, whereas the direct comparison analysis suggested no difference between the two victim age subgroups.

Family Problems

Twenty-nine studies contributed to this diverse domain, comprising four variable categories (see Table 8). The average effect sizes appear in Figure 3.

Relationship, communication, or satisfaction problems. This category contained variables pertaining to problematic family relationships, communication, and satisfaction (15 studies), including variables specifically having to do with childhood attachment. There was no significant difference between the two groups. We focused further on the four studies that reported specifically on the relationship between the adolescent and his parents and found no difference between the two groups.

Separation from a parent. This category contained variables pertaining to not having lived with both biological parents for any reason, including parental separation or divorce (16 studies). Many adolescents were separated from one or both of their biological parents, and there was no significant group difference in this category.

Familial substance abuse. In this category, four of the five studies showed a higher prevalence of substance abuse among the families (predominantly parents) of adolescent non-sex offenders, but the average effect size was small, non-significant, and heterogeneous.

Familial criminality. Finally, in the fourth category, seven of eight studies reported a greater prevalence of criminality in the family of non-sex offenders, but this group difference was small and not statistically significant. Familial criminality was common in both groups.

Family problems and victim age. Twelve studies included in the domain of Family Problems provided information about the proportion of the adolescent sex offender sample who offended against at least one child; the other adolescent sex offenders had peer or adult victims only. For this analysis, we calculated, for each of the 12 studies, an average weighted effect size for all family problems variables. We then correlated these study-average effect sizes with the study proportions of adolescent sex offenders who offended against children. The proportions of offenders with child victims ranged from .41 to 1.0 across the 12 studies.

Table 8
Family Problems (29 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
$K = 15$	**Relationship, communication, satisfaction problems**			**917**	**1,490**	**−0.01**	**−0.34 to +0.32**	**183.6, $p < .0001$**
$K = 11$	**Self-report only**			**583**	**942**	**0.14**	**−0.13 to +0.41**	**51.2, $p < .0001$**
$K = 6$	**Other sources of information**			**420**	**636**	**−0.23**	**−0.83 to +0.38**	**101.3, $p < .0001$**
$K = 5$	**Parent–child relationship**			**190**	**223**	**0.06**	**−0.50 to +0.61**	**29.5, $p < .0001$**
Abbott (1991)	FACES perceived family dysfunction[a]	10%	28%	40	40	−0.20		
	FACES nonbalanced adaptability[a]	32%	48%	40	40			
	FACES nonbalanced cohesion[a]	40%	55%	40	40			
	Dissatisfaction with family[a]	40%	52%	40	40			
	PACS adolescent little openness with mother[a,b]	14%	38%	37	40			
	PACS adolescent very problematic with mother[a,b]	22%	35%	37	40			
	PACS adolescent little openness with father[a,b]	19%	39%	31	34			
	PACS adolescent very problematic with father[a,b]	23%	29%	31	34			
	Emotionally distant from parents[a,b]	62%	60%	40	40			
	FACES mother's perceived family dysfunction	6%	16%	32	37			
	FACES father's perceived family dysfunction	24%	27%	20	15			
	FACES mother nonbalanced adaptability	23%	38%	32	37			
	FACES father nonbalanced adaptability	19%	60%	20	15			
	FACES mother's nonbalanced cohesion	33%	43%	32	37			
	FACES father's nonbalanced cohesion	38%	38%	20	15			
	Mother's dissatisfaction with family	49%	43%	32	37			
	Father's dissatisfaction with family	55%	47%	20	15			
	PACS mother little openness with adolescent[b]	19%	38%	31	37			
	PACS mother very problematic with adolescent[b]	23%	30%	31	37			
	PACS father little openness with adolescent[b]	29%	27%	21	15			
	PACS father very problematic with adolescent[b]	24%	27%	21	15			
Briley (2004)	Family environment[a]	98.1	100.4	51	19	−0.03		
Butler & Seto (2002)	YO-LSI family problems[c]	3.0	3.9	32	82	−0.40		
Epps (2000)	YO-LSI family problems[c]	4.7	4.9	54	54	0.44		
	PRQ[a,b]	45.4	36.3					
Etherington (1993)	MAPI family rapport[a]	77.3	61.6	20	20	0.74		
Fleming et al. (2002)	FPSCI affirming communication[a,d]	9.4	10.2	161	196	0.31		
	FPSCI incendiary communication[a]	7.8	6.4					
	FACI-8 attachment[a,d]	27.8	29.8					
	FACI-8 positive family environment[a,d]	36.1	39.7					
Hill (2000)	FACES cohesion[a,d]	52.1	49.9	26	110	−0.24		
Krauth (1998)	Adequate adult supervision[d]	55%	8%	199	189	−1.23		
	Adequate discipline[d]	62%	9%	204	185			
Lee (1994)	FACES adaptability[a,d]	42.6	36.9	34	33	−0.59		
	FACES cohesion[a,d]	52.7	46.9	34	33			
	CRPBI-30 perceived mother acceptance[a,b,d]	25.1	20.7	34	31			
	CRPBI-30 perceived father acceptance[a,b,d]	21.4	18.3	33	28			
Mattingly (2000)	MACI family discord[a]	62.3	63.5	117	126	−0.06		
Milloy (1994, 1996)	Unsatisfactory family relations	80%	67%	59	197	0.21		

Table 8 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
Miner (2003)	Support from siblings[a,d]	3.7	4.5	38	38	0.78		
Ness (2001)	Sibling relations problems	51%	30%	47	90	0.32		
	Relatives' relations problems	28%	8%					
	Parent–child relation problems[b]	94%	90%					
Van Wijk, Vreugdenhil, et al. (2007)	Parental conflict[a]	28%	39%	25	298	−0.09		
Wong (2002)	IPPA bonds to mother[a,b,d]	89.2	90.2	50	25	0.05		
	FAM-DRS mother–adolescent communication[a,b,d]	59.6	57.7	10	6			
	FAM-DRS mother–adolescent affective expression[a,b,d]	54.4	59.0	10	6			
	FAM-DRS mother–adolescent involvement[a,b,d]	51.4	50.7	10	6			
$K = 16$	**Separated from one parent**			**1,162**	**6,722**	**−0.07**	**−0.19 to +0.04**	**25.2, $p < .05$**
$K = 7$	**Self-report only**			**270**	**400**	**−0.12**	**−0.42 to +0.17**	**16.8, $p < .05$**
$K = 7$	**Other sources of information**			**620**	**6,106**	**0.04**	**−0.06 to +0.13**	**1.9, $p = .93$**
Abbott (1991)	Divorce	48%	48%	40	40	0.00		
Aljazireh (1994)	Has not lived with both biological parents	78%	88%	54	16	−0.12		
Awad & Saunders (1991)	Has not lived with both parents	56%	54%	94	24	0.01		
Barham (2001)	Single-parent family	60%	72%	42	32	−0.20		
Chewning (1991)	Parents separated or divorced[a]	40%	30%	20	20	0.10		
Fagan & Wexler (1988)	Has not lived with both biological parents[a]	38%[e]	82%	34	208	−0.77		
Ford & Linney (1995)	Has not lived with both biological parents	80%	85%	35	26	−0.03		
Gregory (1998)	Has not lived with both biological parents	60%	53%	58	116	0.12		
Griggins (1990)	Biological father living in home[a,d]	27%	35%	26	26	0.08		
Jonson-Reid & Way (2001)	Single-parent family	27%	22%	304	5,778	0.06		
Krauth (1998)	Has not lived with both biological parents	77%	84%	218	200	−0.18		
Lee (1994)	Has not lived with both biological parents[a]	85%	91%	34	34	−0.09		
Leguizamo (2000)	Parental separation[a]	87%	83%	75	53	0.06		
Ness (2001)	Has not lived with both parents	83%	87%	47	90	−0.06		
Sivley (1998)	Has not lived with both biological parents[a]	58%	76%	31	34	−0.33		
Wong (2002)	Parents separated/divorced[a]	61%	46%	50	25	0.23		
$K = 5$	**Family substance abuse**			**285**	**650**	**−0.11**	**−0.42 to +0.19**	**12.9, $p < .05$**
Abbott (1991)	Parents abuse alcohol[a]	25%	58%	40	40	−0.64		
Flores (2003)	Biological mother substance abuse	32%	68%	30	34	−0.35		
	Biological father substance abuse	52%	48%					
Krauth (1998)	Family substance abuse[a]	42%	45%	147	177	−0.05		
Krupica (1997)	Parent had substance abuse problem[a]	50%	27%	40	40	0.43		
Van Wijk, Vreugdenhil, et al. (2007)	Parental abuse of drugs[a]	21%	25%	28	359	−0.01		
$K = 8$	**Criminality in family**			**428**	**866**	**−0.07**	**−0.25 to +0.10**	**12.1, $p = .10$**
Barham (2001)	Family criminal history	31%	36%	42	32	−0.06		
Flores (2003)	Biological mother criminality	44%	56%	30	34	−0.18		
	Biological father criminality	44%	56%					
Ford & Linney (1995)	Family criminal history	34%	65%	35	26	−0.56		
Gregory (1998)	Family criminal history	50%	31%	58	116	0.35		
Krauth (1998)	Family criminal history	45%	45%	153	166	−0.00		
Lee (1994)	Parental criminal history[a]	64%	74%	33	35	−0.17		

(table continues)

Table 8 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
Oliver et al. (1993)	Family criminal history	18%	31%	50	100	−0.25		
Van Wijk, Vreugdenhil, et al. (2007)	Parental crime history[a]	22%	29%	27	357	−0.05		

Note. ASOs = adolescent sex offenders; NSOs = adolescent non-sex offenders; *CI* = confidence interval; CRPBI-30 = Children's Report of Parental Behavior Inventory-30; FACES = Family Adaptability and Cohesion; FACI-8 = Family Attachment and Changeability Index–8; FAM-DRS = Family Assessment Measure—Dyadic Relationship scale; FPSCI = Family Problem Solving and Communication Index; IPPA = Inventory of Parent and Peer Attachment; MACI = Millon Adolescent Clinical Inventory; MAPI = Millon Adolescent Personality Inventory; PACS = Parent–Adolescent Communication Scale; PRQ = Parental Relations Questionnaire (high score = more problems); YO-LSI = Young Offender Level of Supervision Inventory. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Parent–child relationship subcategory. [c] Seven of 14 items pertain to family problems. [d] Reverse scored. [e] Value estimated from chi-square (31.0); *d* calculated from chi-square.

We found the resulting correlation, statistically controlling for study sample size, to be $r(9) = .09$, $p = .79$. We also examined the partial correlation when the proportion of adolescent sex offenders with child victims and sample size were log-transformed and obtained a similar result, $r(9) = .11$, $p = .75$.

We next focused on the seven studies providing data that allowed us to directly compare offenders against child victims and offenders against peer or adult victims on at least one family problems variable (Aljazireh, 1994; Awad & Saunders, 1991; Epps, 2000; Ford & Linney, 1995; Krauth, 1998; Lee, 1994; Wong, 2002). For this analysis, we calculated an average weighted effect size for each study, combining all family problems variables for a given study; all of these effect sizes were coded such that a more positive score meant more family problems among adolescents who sexually offended against peers or adults. Six of the seven studies produced positive effect sizes, for a weighted average *d* of 0.06 (95% *CI* = −0.13 to +0.24, no heterogeneity). Overall, results from these two analyses revealed no effect of victim age.

Interpersonal Problems

The interpersonal problems domain contained variables pertaining to heterosocial skills deficits, general social skills deficits, social isolation, and other social problems that can interfere with the development or maintenance of relationships with others (22 studies and four variable categories; see Table 9). Variables pertaining specifically to family relationships were assigned to the previous domain.

The results were quite consistent in this domain; the average effect sizes appear in Figure 4. Adolescent sex offenders tended to have more problems in all four variable categories, but only one of these comparisons reached statistical significance, specifically, social isolation. Studies using self-report and studies based on other sources of information produced similar results. A similar pattern of more social difficulties was observed among the three studies that compared adolescent sex offenders and nonoffenders on measures of social functioning (Chewning, 1991; Katz, 1990; Valliant & Bergeron, 1997). Unfortunately, there were too few studies available to examine the impact of victim age in this domain. Of note, the group difference for heterosocial skills deficits was not significantly larger than for more general social skills problems.

Sexuality

Surprisingly, perhaps, less than a quarter of studies included in this meta-analysis compared adolescent sex offenders with adolescent

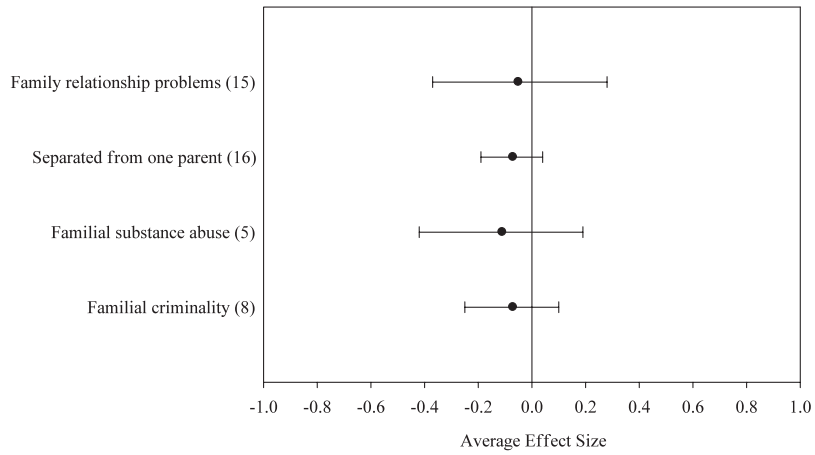

Figure 3. Family problems. Number of effect sizes are indicated within parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

Table 9
Interpersonal Problems (22 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
***K* = 5**	**Heterosocial skills deficits**			**196**	**207**	**0.29**	**−0.21 to +0.78**	**23.6, $p < .0005$**
Barham (2001)	Heterosocial anxiety[a]	111.5	120.5	42	32	−0.44		
Griggins (1990)	Fear of heterosexual contact[a]	17.9	10.7	26	26	1.09		
	Comfort around girls[a,b]	4.1	5.5					
Katz (1990)	Heterosexual skills[a,b]	89.2	105.8	31	34	0.64		
Ness (2001)	Opposite-sex relationship problems	6%	0%	47	90	0.31		
Wong (2002)	No. opposite-sex friends[a,b]	1.1	0.8	50	25	−0.16		
***K* = 8**	**Social skills deficits**			**342**	**482**	**0.13**	**−0.04 to +0.31**	**9.9, $p = .19$**
Barham (2001)	Social self-efficacy[a,b]	137.9	138.8	42	32	0.04		
Hollin & Swaffer (1993)	Social problem-solving skills[a,b]	136.6	133.3	7	11	−0.01		
	Poor social skills	35.7	37.5					
	Perceives emotions right[a,b]	10.0	10.4					
Katz (1990)	Assertiveness[a,b]	18.5	20.2	31	34	0.23		
Leguizamo (2000)	BORRTI social incompetence[a]	51.7	46.8	75	53	0.50		
Mattingly (2000)	MESSY social skills deficits[a]	50.6	52.6	75	100	−0.19		
Milloy (1994, 1996)	Social problem-solving deficits	22%	22%	59	197	0.12		
	Poor social skills	46%	32%					
Racey et al. (2000)	Correctly read facial expressions[a,b]	32%	43%	36	38	0.32		
	IPT perception[a,b]	5.0	5.7					
Risk (1993)	Social problem-solving[a,b]	141.7	141.6	17	17	−0.00		
***K* = 16**	**Poor social relations, isolation, withdrawal, introversion**			**872**	**1,019**	**0.25**	**0.04 to 0.46**	**62.1, $p < .0001$**
***K* = 14**	**Self-report only**			**739**	**805**	**0.24**	**0.01 to 0.47**	**54.6, $p < .0001$**
***K* = 5**	**Other sources of information**			**256**	**324**	**0.34**	**0.01 to 0.67**	**11.7, $p < .05$**
Awad & Saunders (1991)	Socially isolated	48%	21%	94	24	0.41		
Chewning (1991)	Many friends[a,b]	50%	80%	20	20	0.82		
	Intimacy of friendships[a,b]	1.8	2.8					
Davis-Rosanbalm (2003)	No. close male friends[a,b]	8.7	8.9	30	36	0.01		
Dunning (1991)	CPI-R sociability[a,b]	18.4	22.0	55	53	0.64		
	CPI-R internality[a]	15.8	11.1					
	FIRO-B expressed inclusion[a,b]	4.0	4.5					
Epps (2000)	Social isolation	44%	11%	54	54	0.64		
	Fewer friends than peers[a]	37%	13%					
Etherington (1993)	MAPI introversive[a]	38.6	42.0	20	20	−0.14		
Griggins (1990)	No. friends[a,b]	2.5	4.0	26	26	0.08		
	Felt ignored, embarrassed, left out by same age kids[a]	4.4	5.1					
	Ever had best friend[a,b]	85%	81%					
Jacobs (1999); Jacobs et al. (1997)	MMPI social introversion[a]	53.8	50.1	78	78	0.39		
Katz (1990)	Loneliness[a]	44.1	42.0	31	34	0.23		
Krauth (1998)	At least one close friend[a,b]	85%	66%	214	126	−0.43		
Mattingly (2000)	MACI introversion[a]	55.0	50.4	117	126	0.19		
	PIERS popularity[a,b]	41.6	42.7	67	112			
Milloy (1994, 1996)	Loner behavior	20%	22%	59	197	−0.01		
Miner (2003)	No. friends[a,b]	8.7	18.4	38	38	0.66		
	Perceived isolation from peers	14.4	10.5					
	No. people would go for advice[a,b]	7.7	8.7					
Valliant & Bergeron (1997)	MMPI social introversion[a]	56.0	49.2	16	13	0.55		
Van Wijk, Vreugdenhil, et al. (2007)	ATL extraversion[a,b]	5.3	5.4	15	163	0.01		
Wong (2002)	No. same-sex friends[a,b]	2.9	2.5	50	25	−0.12		
	MPRI emotional bonding with peers, rated by mother[b]	18.0	16.3	10	6			
	MPRI emotional bonding with peers, rated by teacher[b]	13.7	13.6	12	16			
	IPPA peer attachment[a,b]	95.0	93.1	50	25			

(table continues)

Table 9 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
$K = 6$	**Social problems—general or other**			**308**	**498**	**0.10**	**−0.05 to +0.24**	**2.8, $p = .73$**
Epps (2000)	Victim of bullying	59%	44%	54	54	0.29		
	More severe bullying than others	37%	22%					
	Peer problems	72%	56%					
Etherington (1993)	MAPI sociable[a]	57.4	58.6	20	20	−0.00		
	MAPI peer security[a]	51.4	50.4					
Mattingly (2000)	MACI submissive[a]	55.8	55.7	117	126	0.01		
Milloy (1994, 1996)	Inappropriate peer relations	25%	15%	59	197	0.22		
Ness (2001)	Peer relationship problems	58%	22%	47	90	−0.04		
	Friends' relationship problems	32%	72%					
Wong (2002)	MPRI aggression with peers, rated by mothers	15.3	15.7	10	6	0.10		
	MPRI social maturity with peers, rated by mothers[b]	9.0	7.3	10	6			
	MPRI aggression with peers, rated by teachers	17.4	16.4	12	16			
	MPRI social maturity with peers, rated by teachers[b]	8.3	9.9	12	16			

Note. ASOs = adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; ATL = Adolescent Temperament Questionnaire; BORRTI = Bell Object Relations and Reality Testing; CPI-R = California Personality Inventory—Revised; FIRO-B = Fundamental Interpersonal Relations Orientation—Behavior; IPPA = Inventory of Parent and Peer Attachment; IPT = Interpersonal Perception Task; MACI = Millon Adolescent Clinical Inventory; MAPI = Millon Adolescent Personality Inventory; MESSY = Matson Evaluation of Social Skills in Youngsters; MMPI = Minnesota Multiphasic Personality Inventory; MPRI = Missouri Peer Relations Inventory; PIERS = Piers–Harris Self Concept Scales. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Reverse scored.

non-sex offenders on variables related to sexual development, experience, or interests (see Table 10). The average effect sizes appear in Figure 5. Sex offenders did not have significantly less extensive sexual experiences (e.g., number of sexual partners) than did non-sex offenders. The two studies that reported age at first intercourse found an earlier age of onset for adolescent sex offenders. It was not clear from the reports of the studies whether age at first intercourse included sexual abuse experiences. If this category did include such experiences, then one would expect the adolescent sex offenders to have had an earlier age of onset because more of them were sexually abused, as demonstrated in a previous analysis. Any confounding of consenting and sexually abusive experiences in recording age at first intercourse would affect the magnitude of the group difference for this sexual experience variable.

There was a small and significant group difference in the eight studies that examined exposure to sex or to pornography; adolescent sex offenders reported more exposure. Finally, adolescent sex offenders reported significantly more atypical sexual fantasies, behaviors, or interests, or were more often diagnosed with a paraphilia; this was a medium to large and significant difference, with significant heterogeneity in effect sizes. There were too few studies available, unfortunately, to allow for examination of the impact of victim age in this domain.

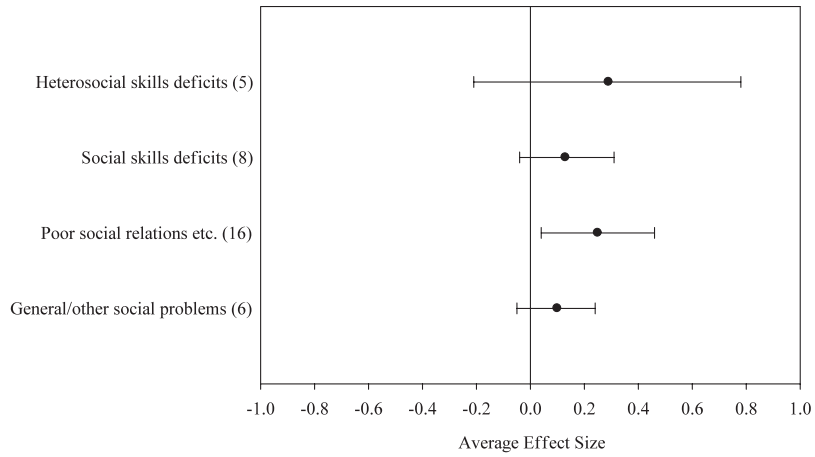

Figure 4. Interpersonal problems. Number of effect sizes are indicated within parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

Table 10
Sexuality (17 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
***K* = 9**	**Sexual Experience**			**631**	**653**	**−0.13**	**−0.49 to +0.22**	**62.2, $p < .0001$**
Capozza (1996)	Age at first heterosexual experience[a,b]	10.3	12.1	57	54	0.70		
	Age at first intercourse[a,b]	12.2	13.7					
Chewning (1991)	Dated a girl[a]	55%	95%	20	20	−0.14		
	Kissed a girl or boy[a]	85%	95%					
	Fondled a girl or boy[a]	100%	100%					
	Fondled by a girl or boy[a]	90%	85%					
	Had oral sex with a girl or boy[a]	65%	45%					
	Penetrated a girl or boy[a]	60%	70%					
Daleiden et al. (1998); Hilliker (1997)	SHF typical consenting[a]	2.9	3.5	198	124	−0.13		
	SHF atypical consenting[a]	0.6	0.5					
Fagan & Wexler (1988)	Girlfriend past 6 months[a]	76%	91%	34	208	−0.84		
	Has had no sex[a,b]	22%	3%					
Griggins (1990)	Has engaged in kissing and hugging[a]	88%	100%	26	26	−0.03		
	Heavy petting, touching of genitals[a]	62%	92%	26	26			
	Masturbating each other[a]	23%	35%	26	26			
	Oral sex[a]	12%	27%	26	26			
	Has had intercourse[a]	65%	81%	26	26			
	Ever had girlfriend[a]	77%	100%	26	25			
Krauth (1998)	Sexually active with appropriate partners[a]	42%	81%	196	58	−0.66		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Age first sexual intercourse[a,b]	11.9	13.6	15	35	0.76		
Miner (2003)	No. times had sex last year[a]	5.5	34.3	38	38	−0.75		
Ness (2001)	Multiple relations/partners	6%	3%	47	90	0.07		
***K* = 8**	**Exposure to sex or pornography**			**332**	**270**	**0.27**	**0.05 to 0.49**	**12.1, $p = .10$**
Abbott (1991)	Witness sexual relations[a]	35%	40%	40	40	−0.03		
	Viewed pornography[a]	90%	88%					
Briley (2004)	Exposure to sexual behavior[a]	25%	21%	51	19	0.14		
	Exposure to sexual media[a]	64.0	54.7					
Chewning (1991)	Saw people having sex[a]	95%	65%	20	20	0.66		
Ford & Linney (1995)	Learned about sex observing others[a]	14%	4%	35	26	0.14		
Griggins (1990)	Age first exposed to pornography magazines[a,b]	11.3	9.8	24	23	−0.02		
	Monthly or more exposure to pornography magazines[a]	58%	26%	24	23			
	Age first exposed to pornography videos[a,b]	12.6	12.3	22	24			
	Monthly or more exposure to pornography videos[s]	64%	67%	22	24			
Leguizamo (2000)	Exposure to naked adults[a]	3.0	3.2	75	53	0.14		
	Exposure to naked kids[a]	1.6	1.3					
	Exposure to adult sex[a]	2.6	2.6					
	Exposure to kid-kid sex[a]	0.5	0.4					
	Soft-core pornography before 10 years of age[a]	0.8	0.5					
	Soft-core pornography after 10 years of age[a]	1.8	1.6					
	Hard-core pornography before 10 years of age[a]	0.6	0.4					
	Hard-core pornography after 10 years of age[a]	1.5	1.3					
	Rape pornography before 10 years of age[a]	0.1	0.0					

(table continues)

Table 10 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASO	NSO	ASO	NSO			
	Rape pornography after 10 years of age[a]	0.2	0.2					
	Child pornography before 10 years of age[a]	0.0	0.0					
	Child pornography after 10 years of age[a]	0.1	0.0					
	Witness actual sex before 10 years of age[a]	0.3	0.2					
	Witness actual sex after 10 years of age[a]	0.6	0.6					
Miner (2003)	Pornography use over 3 months[a]	1.7	1.0	38	38	0.87		
Zakireh (2000); Zakireh et al. (2008)	MASA heterosexual pornography use[a]	1.97	1.49	50	50	0.33		
	MASA early family exposure[a]	1.33	1.21					
$K = 8$	**Atypical sexual interests**			**1,135**	**3,937**	**0.67**	**0.28 to 1.06**	**126.9, $p < .0001$**
Daleiden et al. (1998); Hilliker (1997)	SHF aggressive consent sex[a]	0.5	0.5	198	124	0.47		
	SHF nonconsenting sex[a]	1.4	0.2					
	SHF deviant partners[a]	0.1	0.0					
	SHF voyeurism[a]	0.7	0.8					
	SHF paraphilic[a]	0.8	0.2					
	SHF solitary sex[a]	3.0	1.4					
SFQ global deviance[a]	0.7	0.4						
Fleming et al. (2002)	Sex with animals[a]	14%	1%	161	196	0.54		
Griggins (1990)	Finds 5 year olds sexy[a]	1.3	0.5	26	26	0.51		
	Finds 8 year olds sexy[a]	1.8	0.8					
Lee (1994)	Incest with siblings[a]	21%	0%	34	35	0.63		
Miner (2003)	Sexual compulsivity	1.1	0.6	38	38	0.72		
	Sexual preoccupation	2.5	1.8					
	Hypersexuality	1.7	1.2					
	General paraphilia	0.8	0.3					
Ness (2001)	Cross-dressing[a]	6%	0%	47	90	0.31		
Van Wijk, Blokland, et al. (2007)	Diagnosed paraphilia	8%	0%	557	3,377	1.37		
Zakireh (2000); Zakireh et al. (2008)	Sexual preoccupation[a](all from MASA)	1.6	1.0	50	50	0.66		
	Sexual compulsivity[a]	1.2	0.5					
	Bondage[a]	0.4	0.2					
	Synergism/sexual agression[a]	0.2	0.1					
	Sadistic fantasy[a]	0.2	0.0					
	Sadism pornography[a]	0.4	0.7					
	Adult–child pornography[a]	0.3	0.1					
	Atypical paraphilias[a]	0.8	0.4					
	Exhibitionism[a]	0.5	0.2					
	Tranvestism[a]	0.3	0.1					
	Voyeurism[a]	1.0	0.2					

Note. ASOs = adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; SFQ = Sexual Fantasy Questionnaire, SHF = Sexual History Form, MASA = Multidimensional Assessment of Sex and Aggression. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Reverse scored.

Only three studies in this meta-analysis compared adolescent sex offenders and nonoffending males on any sexual interest or behavior variables. Chewning (1991) found that adolescent sex offenders tended to score higher, rather than lower, on variables reflecting conventional sexual experiences, and were more likely to report early exposure to sex. Lee (1994) found that adolescent sex offenders tended to be more likely to have had sexual contact with a sibling. Daleiden et al. (1998) found that adolescent sex offenders were more likely to report atypical sexual behaviors.

Psychopathology

The domain of psychopathology included general measures of psychopathology and measures of more specific aspects of psychopathology such as anxiety or depression (23 studies and seven variable categories; see Table 11 and Figure 6). Almost all psychopathology variables were based on self-report.

The pattern of results was generally consistent. Adolescent sex offenders reported more psychopathology than non-sex offenders,

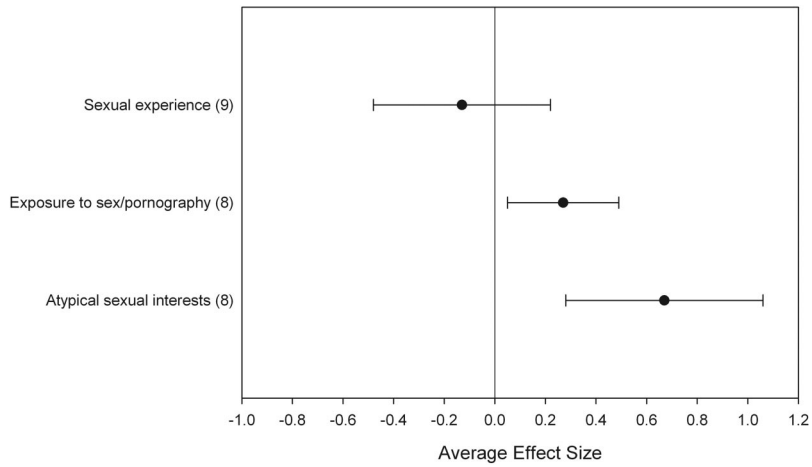

Figure 5. Sexuality. Number of effect sizes are indicated within parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

significantly so for variables pertaining to anxiety and low self-esteem and nonsignificantly so for variables pertaining to general psychopathology, depression, psychotic symptoms, and suicidal tendencies. Three studies found that adolescent sex offenders tended to score higher than nonoffenders in measures of psychopathology; non-sex offenders scored higher on neuroticism, but not significantly so (Etherington, 1993; Katz, 1990: Valliant & Bergeron, 1997). Consistent with the pattern of results obtained in the interpersonal problems domain, adolescent sex offenders experienced significantly more social anxiety than did non-sex offenders, but this difference was not significantly larger than the difference obtained for anxiety in general. Very few studies presented information on sexual victim age.

Cognitive Abilities

This broad domain, which includes 28 studies, covers general and specific tests of intelligence, as well as academic achievement problems, learning problems, and neurological anomalies (Table 12; Figure 7). Adolescent sex offenders had lower scores than non-sex offenders on general intelligence, verbal intelligence, and performance intelligence, but none of the differences were significant. However, they had significantly more learning problems or disabilities. Non-sex offenders had significantly more academic achievement problems than did sex offenders, in keeping with their significantly greater school behavioral problems (see conduct problems domain). There was no difference for neurological anomalies. The average full-scale intelligence score (14 studies), unweighted by sample size, was 88.7 for adolescent sex offenders and 90.1 for non-sex offenders. These results can be compared with those obtained in Cantor et al.'s (2005) meta-analysis; Figure 6 suggests the mean intelligence score for adolescent sex offenders was approximately 88 whereas the mean intelligence score for non-sex offenders was approximately 90.

Intelligence and victim age. Ten studies included in the variable category of general intelligence provided information about the proportion of the adolescent sex offender sample who offended against at least one child (the other adolescent sex offenders had peer or adult victims only). We correlated study effect sizes with the proportions of adolescent sex offenders who offended against children. The proportions of offenders with child victims ranged from .38 to 1.0 across the 10 studies. The resulting correlation, statistically controlling for study sample size, was $r(7) = .41$, $p = .27$. We also examined the partial correlation when the proportion of adolescent sex offenders with child victims and sample size were log-transformed, and a similar result was obtained, $r(7) = .43$, $p = .25$.

We next focused on the four studies that provided data allowing for direct comparison of offenders against child victims and offenders against peer or adult victims on general intelligence variables (Awad & Saunders, 1991; Epps, 2000; Krauth, 1998; van Wijk, Blokland, et al., 2007). The average effect size was small and not significant, with $d = 0.08$ (95% $CI = -0.31$ to $+ 0.47$). Overall, results from these two analyses did not reveal a significant effect of victim age.

Impression Management

Although most studies in this meta-analysis relied on self-report as a source of information, only six included a measure of socially desirable responding or deliberate misrepresentation (see Table 13). Results showed that sex offenders scored nonsignificantly lower on measures of impression management, denial, or lying.

Publication Bias

We examined the possibility of a publication bias favouring studies reporting significant group differences. For these analyses, we calculated a weighted average effect size for each study within six domains or variable categories that contained a sufficient number of studies and that could be rationally combined into one overall effect size: delinquency risk factors ($k = 42$), sexual abuse ($k = 31$), family problems ($k = 29$), interpersonal problems ($k = 22$), psychopathology ($k = 23$), and general intelligence ($k = 19$). All variables were coded in the same direction, so that a positive weighted average effect size would indicate that adolescent sex

Table 11
Psychopathology (23 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 9$	**General psychopathology**			**681**	**2,535**	**0.06**	**−0.03 to +0.16**	**6.4, $p = .61$**
Awad & Saunders (1991)	Moderate/severe maladjustment	80%	75%	94	24	0.04		
Butler & Seto (2002)	YSR internalizing[a]	55.4	53.0	30	75	0.19		
Epps (2000)	Mental illness	4%	0%	54	54	0.14		
Miller (1997)	Psychiatric history[a]	34%	40%	50	50	−0.08		
Milloy (1994, 1996)	Mental health concerns	42%	29%	59	197	0.22		
Sivley (1998)	Clinical maladjustment[a]	48.2	53.6	31	34	−0.36		
	Personal adjustment[a,b]	48.7	44.6					
	Emotional disturbance[a]	50.6	51.7					
Van Wijk, Blokland, et al. (2007)	Mental health history[a]	36%	34%	290	1,794	0.04		
Van Wijk, Vreugdenhil, et al. (2007)	YSR internalizing[a]	55.9	53.5	30	358	0.11		
	DISC any affective disorder[a]	0%	6%	16	159			
Zakireh (2000); Zakireh et al. (2008)	MACI social withdrawal and lack of pleasure cluster[a]	51.8	46.8	50	49	0.28		
$K = 12$	**Anxiety**			**528**	**670**	**0.28**	**0.16 to 0.40**	**7.9, $p = .72$**
$K = 6$	**Social anxiety**			**274**	**289**	**0.34**	**0.17 to 0.51**	**1.2, $p = .94$**
Etherington (1993)	K-SADS panic disorder[a]	11.2	11.0	20	20	0.46		
	K-SADS phobia[a]	17.3	16.2					
	K-SADS obsessive–compulsive disorder[a]	10.1	10.3					
	K-SADS generalized anxiety[a]	5.4	4.4					
	K-SADS ruminations[a]	2.0	1.3					
	MAPI inhibited[a,c]	53.2	46.2					
Flores (2003)	JI social anxiety[a,c]	47.9	44.1	30	34	0.38		
Griggins (1990)	OSIQ social comfort scale[a,b,c]	6.6	7.7	26	26	0.53		
Jacobs (1999); Jacobs et al. (1997)	MMPI psychasthenia[a]	56.6	53.5	78	78	0.28		
Katz (1990)	SAD social anxiety[a,c]	11.5	8.7	31	34	0.36		
	JI social anxiety[a,c]	13.6	12.8					
Leguizamo (2000)	MACI anxious feelings[a]	57.0	50.0	62	46	0.44		
Macri (2000)	PTSD reexperiencing[a]	73%	67%	62	64	0.02		
	PTSD avoidance[a]	50%	56%					
	PTSD arousal[a]	69%	64%					
Mattingly (2000)	MACI peer insecurity[a,c]	52.7	47.2	117	126	0.16		
	MACI inhibited[a,c]	50.2	44.4					
	MACI anxious feelings[a]	56.0	54.8					
	PIERS anxiety[a]	45.9	45.3	67	112			
L. C. Roberts (1997)	MMPI-2 PTSD score[a]	65.5	59.4	35	31	0.44		
Valliant & Bergeron (1997)	MMPI psychasthenia[a]	60.9	61.7	16	13	−0.05		
Van Wijk, Vreugdenhil, et al. (2007)	DISC any anxiety disorder[a]	14%	8%	14	153	0.04		
Zakireh (2000); Zakireh et al. (2008)	MACI anxious feelings[a]	60.5	50.5	50	49	0.48		
	MACI peer insecurity[a,c]	7.3	6.6					
$K = 10$	**Depression**			**459**	**530**	**0.22**	**−0.00 to +0.45**	**24.7, $p < .005$**
Etherington (1993)	K-SADS depression[a]	81.4	59.0	20	20	1.34		
Flores (2003)	JI withdrawal[a]	52.7	54.2	30	34	−0.14		
Jacobs (1999); Jacobs et al. (1997)	MMPI depression[a]	54.0	51.8	78	78	0.24		
Katz (1990)	BDI depression[a]	16.3	15.6	31	34	0.02		
	JI withdrawal[a]	12.4	12.5					
Leguizamo (2000)	MACI depressive affect[a]	61.5	44.7	62	46	0.59		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Depressive symptoms	75%	70%	8	40	0.04		
Mattingly (2000)	MACI doleful[a]	55.4	54.7	117	126	0.12		
	MACI depressive affect[a]	56.2	50.1					
Ness (2001)	Sad, withdrawn	19%	29%	47	90	−0.18		
Valliant & Bergeron (1997)	MMPI depression[a]	63.1	61.8	16	13	0.09		
Zakireh (2000); Zakireh et al. (2008)	MACI depressive affect[a]	58.7	50.4	50	49	0.28		

Table 11 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
***K* = 7**	**Neuroticism**			**338**	**630**	**−0.06**	**−0.21 to +0.09**	**6.5, *p* = .37**
Etherington (1993)	MAPI sensitive[a]	65.1	58.0	20	20	0.28		
Jacobs (1999); Jacobs et al. (1997)	MMPI hypochondriasis[a]	51.0	48.7	78	78	0.15		
	MMPI hysteria[a]	46.1	45.8					
Katz (1990)	Self-consciousness[a]	62.3	63.0	31	34	−0.08		
Mattingly (2000)	MACI dramatizing[a]	55.0	60.0	117	126	−0.26		
Milloy (1994, 1996)	Emotional instability	74%	71%	59	197	0.04		
Valliant & Bergeron (1997)	MMPI hypochondriasis[a]	51.0	57.2	16	13	−0.37		
	MMPI hysteria[a]	56.4	59.0					
Van Wijk, Vreugdenhil, et al. (2007)	ATL neuroticism[a]	4.6	5.1	17	162	−0.15		
***K* = 8**	**Psychotic symptoms**			**868**	**3,892**	**0.06**	**−0.09 to +0.21**	**10.7, *p* = .15**
Etherington (1993)	K-SADS manic syndrome[a]	28.6	24.7	20	20	0.68		
	K-SADS depersonalization[a]	2.0	1.1					
Jacobs (1999); Jacobs et al. (1997)	MMPI paranoia[a]	61.2	55.3	78	78	0.27		
	MMPI schizophrenia[a]	59.9	54.6					
	MMPI hypomania[a]	60.4	61.8					
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Auditory hallucination	47%	36%	15	67	0.03		
	Visual hallucination	7%	30%	15	63			
	Other hallucination	19%	11%	16	75			
	Paranoid thoughts	73%	67%	15	69			
	Thought disorder	70%	46%	10	54			
Mattingly (2000)	MACI borderline tendency[a]	40.2	37.1	117	126	0.15		
Valliant & Bergeron (1997)	MMPI paranoia[a]	58.9	63.2	16	13	−0.13		
	MMPI schizophrenia[a]	63.3	59.5					
	MMPI hypomania[a]	65.1	63.5					
	CPS thought disturbance[a]	26.4	30.9					
Van Wijk, Blokland, et al. (2007)	Diagnosed psychosis	3%	5%	557	3,377	−0.05		
Van Wijk, Vreugdenhil, et al. (2007)	DISC any psychotic disorder[a]	25%	35%	16	163	−0.08		
Zakireh (2000); Zakireh et al. (2008)	MACI borderline tendency[a]	5.9	6.2	50	49	−0.15		
***K* = 5**	**Suicidal tendencies**			**501**	**650**	**0.12**	**−0.12 to +0.37**	**15.0, *p* < .005**
Krauth (1998)	Suicidal ideas or attempts[a]	15%	20%	216	191	−0.12		
Leguizamo (2000)	MACI suicidal tendencies[a]	38.0	23.3	62	46	0.62		
Mattingly (2000)	MACI suicidal tendencies[a]	32.8	27.9	117	126	0.22		
Milloy (1994, 1996)	Suicidal attempts/ideation	19%	27%	59	197	−0.13		
Ness (2001)	Suicidal ideation	4%	1%	47	90	0.16		
	Suicidal	6%	1%					
***K* = 7**	**Low self-esteem**			**336**	**385**	**0.24**	**0.02 to 0.46**	**11.5, *p* = .07**
Dunning (1991)	CPI-R self-acceptance[a,b]	15.8	18.6	55	53	0.73		
	CPI-R independence[a,b]	13.4	15.9	55	53			
Etherington (1993)	MAPI personal esteem[a]	39.8	45.2	20	20	0.14		
Katz (1990)	Self-esteem[a,b]	59.2	66.6	31	34	0.43		
Mattingly (2000)	MACI self-devaluation[a]	47.5	42.6	117	126	0.19		
Ness (2001)	Poor self-esteem	66%	54%	47	90	0.19		
Valliant & Bergeron (1997)	CSEI self-esteem[a,b]	69.6	64.3	16	13	−0.28		
	CPS self-deprecation[a]	19.6	21.5					
Zakireh (2000); Zakireh et al. (2008)	MACI self-esteem deficit cluster[a]	4.1	3.9	50	49	0.19		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; ATL = Adolescent Temperament Questionnaire; BDI = Beck Depression Inventory; CPI-R = California Personality Inventory—Revised; CPS = Carlson Psychological Survey; CSEI = Coopersmith Self-Esteem Inventory; DISC = Diagnostic Interview Schedule for Children; JI = Jesness Inventory; K-SADS = Schedule of Affective Disorders and Schizophrenia for School-Aged Children; MACI = Millon Adolescent Clinical Inventory; MAPI = Millon Adolescent Personality Inventory; MMPI = Minnesota Multiphasic Personality Inventory (2 = second edition); OSIQ = Offer Self-Image Questionnaire; PIERS = Piers–Harris Self-Concept Scales; PTSD = posttraumatic stress disorder symptoms; RBPC = Revised Behaviour Problem Checklist; SAD = Social Avoidance and Distress Scale; YSR = Youth Self-Report. The sources for these scales are reported in the original articles.

[a] Based on self-report only. [b] Reverse scored. [c] Social anxiety.

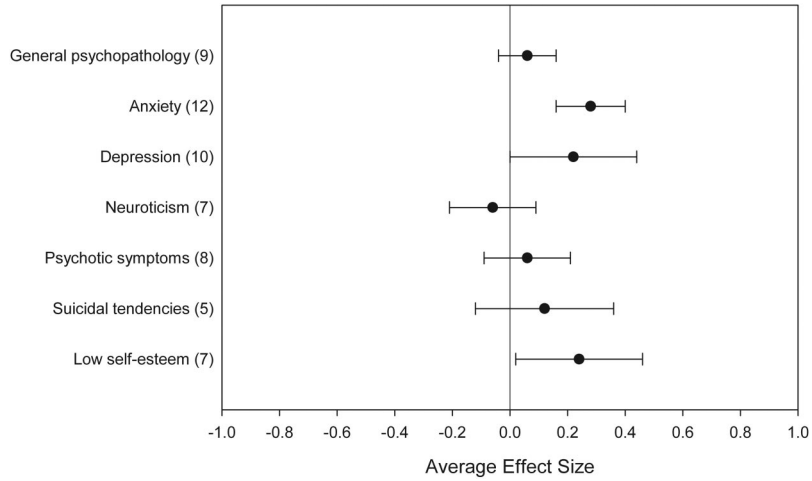

Figure 6. Psychopathology. Number of effect sizes are indicated in parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

offenders had more problems than did non-sex offenders, with the exception of general intelligence, where a positive *d* would indicate greater intelligence for sex offenders.

We then compared the weighted average effect size for published (peer-reviewed) and unpublished (non–peer-reviewed) studies, within each of the six domains or variable categories. For delinquency risk factors, published studies ($k = 20$) produced a mean effect size of −0.16 (95% *CI* = −0.29 to −0.03), whereas unpublished studies ($k = 22$) produced a mean effect size of −0.22 (95% *CI* −0.34 to −0.10). Therefore, the significant group difference favoring greater delinquency risk among non-sex offenders was obtained for both types of studies.

For sexual abuse, published studies ($k = 10$) produced a mean effect size of 0.69 (95% *CI* = 0.39 to 1.00), whereas unpublished studies ($k = 21$) produced a mean effect size of 0.63 (95% *CI* = 0.47 to 0.78). Therefore, the significant group difference showing a greater prevalence of sexual abuse among sex offenders was obtained for both types of studies. For family problems, there was no overall group difference for either published studies ($k = 8$), $d = -0.15$ (95% *CI* = −0.38 to 0.08), or unpublished studies ($k = 21$), $d = 0.01$ (95% *CI* = −0.15 to +0.17). For interpersonal problems, published studies ($k = 7$) produced a mean effect size of 0.33 (95% *CI* = 0.15 to 0.51), whereas unpublished studies ($k = 15$) produced a mean effect size of 0.19 (95% *CI* = −0.02 to 0.40). Therefore, the significant group difference showing more interpersonal problems among sex offenders was obtained only for published studies, although there was considerable overlap in the confidence intervals. For psychopathology, published ($k = 9$) and unpublished ($k = 14$) studies produced different mean effect sizes, 0.03 (95% *CI* = −0.05 to +0.12) and 0.16 (95% *CI* = 0.01 to 0.32), respectively, with unpublished studies showing more psychopathology among adolescent sex offenders. Finally, for general intelligence, published studies ($k = 11$) produced a mean effect size of −0.10 (95% *CI* = −0.26 to +0.05), whereas unpublished studies ($k = 8$) produced a mean effect size of −0.05 (95% *CI* = −0.24 to +0.14), which are comparable.

Discussion

We identified 59 studies in our literature review that compared male adolescent sex offenders with other male adolescent offenders on general delinquency risk factors or factors identified in special explanations of adolescent sexual offending. Although there were many similarities between adolescent sex and non-sex offenders, the results of this meta-analysis indicate that the general delinquency explanation is not sufficient to understand adolescent sexual offending. There was support for some of the factors identified in the special explanations we reviewed. At the same time, we did not find support for other factors, such as exposure to nonsexual violence, family relationship problems, social incompetence, conventional sexual experiences, and antisocial attitudes and beliefs specifically about women or about sexual offending. Ranked by effect size, the largest group difference was obtained for atypical sexual interests, followed by sexual abuse history, and then criminal history, antisocial associations, and substance abuse.[6] These results have implications for theories of sexual offending and special explanations of adolescent sexual offending.

Theories of Sexual Offending

Our findings suggest several potential areas for modification in current theories of adolescent sexual offending. First, antisocial attitudes and beliefs about women or about sexual offending do not help explain why an adolescent specifically commits sexual rather than nonsexual offenses, although this factor is included in many theories (Hall & Hirschman, 1991, 1992; Malamuth et al., 1991;

[6] Differences in effect size magnitude across domains should be interpreted cautiously, because they are not based on studies that directly compared adolescent sex offenders and non-sex offenders using the same study methods. Effect sizes may be different across domains because of underlying differences in aspects of the studies contributing to those particular domains.

Table 12
Cognitive Abilities (28 Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
***K* = 19**	**General intelligence**			**1,228**	**2,572**	**−0.08**	**−0.20 to +0.04**	**35.5, $p < .01$**
Awad & Saunders (1991)	WISC-R FSIQ[c]	87.9	95.0	94	24	−0.48		
Caputo et al. (1999)	Wechsler IQ (some tests not specified)	79.6	83.0	23	46	−0.32		
Csercsevits (2000)	WISC-III or WAIS-R IQ	102.0	104.4	66	66	−0.14		
Davis-Rosanbalm (2003)	WISC FSIQ	83.7	79.5	21	24	0.23		
Epps (2000)	WISC-III or WAIS-R IQ	89.0	94.3	51	54	−0.56		
Flores (2003)	K-BIT FSIQ	94.9	89.0	30	34	0.52		
Franklin (2000)	Vocabulary IQ subtest of WISC-III or WAIS-R	5.8	5.9	30	29	−0.05		
Griggins (1990)	FSIQ (estimated)	92.4	95.6	26	26	−0.30		
Jacobs (1999); Jacobs et al. (1997)	WAIS-R FSIQ	83.5	83.5	78	78	0.00		
Krauth (1998)	Culture Fair Test, some WISC-III	96.7	95.7	218	200	0.08		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	WISC IQ	83.2	88.8	17	80	−0.37		
Mattingly (2000)	Wechsler FSIQ	82.2	83.0	120	145	−0.06		
Oliver et al. (1993)	FSIQ (not specified)[c]	86.8	89.3	50	100	−0.17		
Tarter et al. (1983)	Peabody Picture Vocabulary Test	95.7	89.6	14	59	0.04		
	WISC-R or WAIS FSIQ	89.7	92.7					
Valliant & Bergeron (1997)	TONI IQ	92.1	93.7	16	13	−0.17		
Van Wijk, Blokland, et al. (2007)	WISC/WAIS IQ[d]	84.2	87.5	268	1,339	−0.22		
Van Wijk, Vreugdenhil, et al. (2007)	GIT IQ	88.2	90.7	17	163	−0.19		
Veneziano et al. (2004)	FSIQ (not specified)	94.0	88.0	39	42	0.46		
Zakireh (2000); Zakireh et al. (2008)	Two subtests from WISC-III or WAIS-III	90.6	87.2	50	50	0.28		
***K* = 8**	**Verbal intelligence**			**365**	**583**	**−0.15**	**−0.36 to +0.07**	**15.4, $p < .05$**
Awad & Saunders (1991)	WISC-R verbal IQ[a]	84.4	92.0	94	24	−0.51		
Epps (2000)	WISC-III or WAIS-R verbal IQ	87.0	92.6	51	54	−0.64		
Flores (2003)	K-BIT verbal IQ	90.6	87.0	30	34	0.30		
Jacobs (1999); Jacobs et al. (1997)	WAIS-R verbal IQ	82.0	82.8	78	78	−0.06		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	WISC verbal IQ	79.6	84.9	17	80	−0.35		
Mattingly (2000)	Wechsler verbal IQ	81.5	81.9	120	145	−0.03		
Tarter et al. (1983)	Peabody Picture Vocabulary Test	95.7	89.6	14	59	0.09		
	WISC-R or WAIS verbal IQ	86.3	88.3					
Veneziano et al. (2004)	WISC-III verbal IQ	91.0	89.7	31	39	0.09		
***K* = 9**	**Performance intelligence**			**451**	**526**	**−0.04**	**−0.26 to +0.19**	**19.4, $p < .05$**
Awad & Saunders (1991)	WISC-R performance IQ[c]	93.8	100.0	94	24	−0.41		
Epps (2000)	WISC-III or WAIS-R performance IQ	93.8	98.0	51	54	−0.44		
Flores (2003)	K-BIT performance IQ	100.1	93.2	30	34	0.52		
Jacobs (1999); Jacobs et al. (1997)	WAIS-R performance IQ	88.3	87.1	78	78	0.08		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	WISC performance IQ	90.4	93.6	17	80	−0.21		
Mattingly (2000)	Wechsler performance IQ	85.6	86.2	120	145	−0.04		
Tarter et al. (1983)	WISC-R or WAIS performance IQ	95.6	97.1	14	59	−0.12		
Valliant & Bergeron (1997)	TONI IQ	92.1	93.7	16	13	−0.17		
Veneziano et al. (2004)	WISC-III performance IQ	97.0	89.8	31	39	0.54		
***K* = 15**	**Learning problems/disabilities**			**1,378**	**4,789**	**0.19**	**0.06 to 0.32**	**32.9, $p < .005$**
Awad & Saunders (1991)	Learning problems	55%	25%	94	24	0.46		
Barham (2001)	Special education	21%	25%	42	32	−0.02		
Chewning (1991)	In special education classes[sr]	60%	20%	20	20	0.76		

(table continues)

Table 12 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Epps (2000)	Speech or language problems	24%	6%	54	54	0.48		
Ford & Linney (1995)	Special education	11%	0%	35	26	0.33		
Gregory (1998)	Learning problem in class	28%	25%	58	116	0.03		
Krauth (1998)	Special education	28%	35%	217	196	−0.13		
Lee (1994)	Special education	30%	18%	33	33	0.21		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Unable to subtract serial 7	85%	56%	13	64	0.40		
	Poor memory forward	45%	21%	11	57			
	Poor memory backward	82%	44%	11	55			
Milloy (1994, 1996)	Learning disability	46%	49%	59	197	−0.04		
Ness (2001)	Special education	21%	16%	47	90	0.04		
	Learning problems	34%	34%					
Tarter et al. (1983)	Digit span forward[b]	5.9	5.8	14	59	−0.04		
	Digit span backward[b]	4.3	4.2					
Van Wijk, Blokland, et al. (2007)	Diagnosed developmental delay	14%	8%	557	3,377	0.14		
van Wijk, van Horn, et al. (2005)	Special education	31%	9%	110	159	0.57		
Van Wijk, Vreugdenhil, et al. (2007)	Special education[a]	54%	39%	26	347	0.14		
K = 11	**Academic achievement problems**			**714**	**948**	**−0.12**	**−0.22 to −0.02**	**9.2, p = .51**
K = 7	**Reading and spelling**			**554**	**606**	**−0.06**	**−0.18 to +0.06**	**3.3, p = .77**
K = 6	**Mathematics**			**500**	**551**	**−0.07**	**−0.19 to +0.06**	**8.8, p = .12**
Chewning (1991)	Repeated grade[a]	35%	45%	20	20	−0.10		
Epps (2000)	No. correctly read words[a,b]	63.8	66.2	54	54	0.09		
	Reading age (months)[a,b]	129.1	130.8					
Etherington (1993)	TABE achievement[a,b]	6.4	6.7	20	20	−0.20		
	MAPI scholastic achievement (high score = problem)[a]	52.1	46.4					
Jacobs (1999); Jacobs et al. (1997)	WRAT reading[b]	88.2	87.9	78	78	0.00		
	WRAT spelling[b]	79.2	77.3					
	WRAT math[b]	77.4	80.2					
Krauth (1998)	WRAT reading[b]	87.7	85.4	218	200	−0.29		
	WRAT spelling[b]	86.4	83.7	218	219			
	WRAT math[b]	87.9	84.8	218	219			
	Repeated or failed a grade	40%	70%	218	219			
Lee (1994)	Failed a grade[a]	85%	80%	34	35	0.14		
Mattingly (2000)	WRAT reading[b]	86.5	88.5	120	145	0.04		
	WRAT spelling[b]	81.5	80.3					
	WRAT math[b]	81.3	82.6					
Milloy (1994, 1996)	Repeated two or more years	54%	60%	59	197	−0.09		
Ness (2001)	School problems	87%	98%	47	90	−0.37		
Tarter et al. (1983)	Peabody Individual Achievement Test[b]	89.0	87.0	14	59	−0.14		
Zakireh (2000); Zakireh et al. (2008)	WRAT reading[b]	92.2	90.0	50	50	−0.07		
	WRAT math[b]	86.8	87.2					
K = 5	**Neurological anomalies**			**216**	**258**	**−0.05**	**−0.23 to +0.14**	**0.3, p = .99**
Epps (2000)	Head injury	4%	7%	54	54	−0.04		
	Epilepsy or fit	4%	6%					
Ford & Linney (1995)	Borderline IQ or mental retardation	28%	39%	35	26	−0.16		
Lewis et al. (1979, 1981); Rubinstein et al. (1993)	Major neurological signs	29%	42%	17	65	0.04		
	Minor neurological signs	100%	90%	17	73			
	Abnormal EEG or grand mal seizure	24%	23%	17	65			
Miller (1997)	Seizure history	6%	10%	50	50	−0.04		
	Head injury	36%	38%					

Table 12 (*continued*)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
Veneziano et al. (2004)	COWA no. of words[b]	25.0	27.0	60	60	−0.04		
	Trail Making A	21.9	22.6					
	Trail Making B	52.8	63.1					
	Tower of London total move	36.3	34.5					
	Tower of London rule violations	0.4	0.6					
	Tower of London rule time violations	0.5	0.5					
	Tower of London initiation time	19.1	21.2					
	Tower of London total execution time	192.5	192.4					
	Tower of London total problem solving time	211.6	213.6					

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; COWA = Controlled Oral Word Association test; EEG = electroencephalogram; FSIQ = Full-Scale Intelligence Quotient; GIT = Groninger Intelligence Test; K-BIT = Kaufman Brief Intelligence Test; MAPI = Millon Adolescent Personality Inventory; TABE = Test of Adult Basic Education; TONI = Test of Nonverbal Intelligence; WAIS = Wechsler Adult Intelligence Scale; WISC = Wechsler Intelligence Scale for Children; WRAT = Wide Range Achievement Test. The sources for these scales are reported in the original articles.
[a] Based on self-report only. [b] Reverse scored. [c] Estimated standard deviations (15.0). [d] Mean scores estimated from category scores.

Marshall & Barbaree, 1990; Ward & Beech, 2005). Second, the results of this meta-analysis suggest that social isolation may play a bigger role than social skills per se. Third, emotional problems may play a role as well, but the results suggest the differences mostly concern anxiety and low self-esteem rather than other forms of psychopathology, such as depression or neuroticism. Finally, the results suggest that atypical sexual interests should be given more prominence in theories of adolescent sexual offending.

Demonstrating significant differences in particular domains, however, is not a sufficient test of theoretically derived models because these models typically posit both direct and indirect "causal" relationships between the various variables. Structural modeling is the most suitable statistical approach to testing these complex relationships given that experimental assignment to groups is restricted to intervention studies. To illustrate this approach, Knight and Sims-Knight (2003) found that a three-path model provided a good fit in the prediction of sexual coercion by adolescent males directed towards female peers or adult women. The first path linked physical or verbal abuse history with antisocial and aggressive behavior and then sexual coercion. The second path linked physical and verbal abuse to a callous, unemotional personality, which was then linked to antisocial and aggressive behavior as well as aggressive sexual fantasies; aggressive sexual fantasies were then linked to sexual coercion. The third path linked sexual abuse history to sexual preoccupation, drive, and compulsivity, which, in turn, was linked to aggressive sexual fantasies.

Nevertheless, we believe that the current meta-analysis contributes to theory building by identifying the most promising factors to be examined in future research on adolescent sexual offending. Testing complex models is best suited for individual studies, at

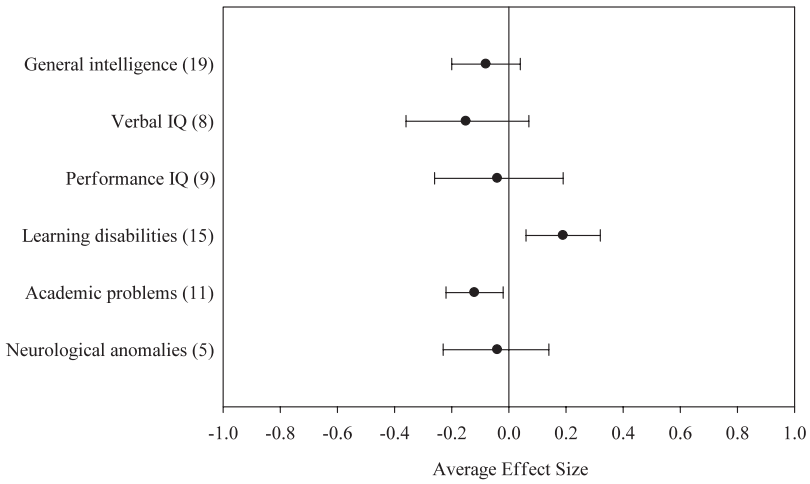

Figure 7. Cognitive abilities. Number of effect sizes are indicated in parentheses. More positive effect sizes indicate that adolescent sex offenders scored higher than adolescent non-sex offenders. Bars indicate 95% confidence intervals.

Table 13
Impression Management (Six Studies)

Study	Domain/variable	*M* or %		*N*		*d*	95% *CI*	Heterogeneity (*Q*)
		ASOs	NSOs	ASOs	NSOs			
$K = 6$	**Impression management**			**266**	**252**	**−0.07**	**−0.25 to +0.12**	**5.6, $p = .35$**
Flores (2003)	JI denial[a]	47.5	45.6	30	34	0.19		
Jacobs (1999); Jacobs et al. (1997)	MMPI lie[a]	52.3	51.7	78	78	0.08		
Katz (1990)	JI denial[a]	10.2	10.6	31	34	−0.12		
Leguizamo (2000)	BIDR impression management[a]	3.4	4.2	75	53	−0.28		
Valliant & Bergeron (1997)	MMPI lie[a]	49.8	47.8	16	13	0.29		
Zakireh (2000); Zakireh et al. (2008)	MASA Marlowe–Crowne[a]	1.8	2.1	49	47	−0.33		

Note. ASOs = Adolescent sex offenders; NSOs = adolescent non–sex offenders; *CI* = confidence interval; BIDR = Balanced Inventory of Desirable Responding; JI = Jesness Inventory; MASA = Multidimensional Assessment of Sex and Aggression; MMPI = Minnesota Multiphasic Personality Inventory.
[a] Based on self-report only.

least until there are sufficient studies to conduct multivariate meta-analyses. We expect that Knight and Sims-Knight's (2003) model could provide an even better fit to observed data if it included measures of social isolation, anxiety, low self-esteem, exposure to sex or pornography, and learning disabilities.

Special Explanation: Sexually Abused Sexual Abuser

We discuss the findings for childhood sexual abuse in detail because of the attention this special explanation has received in the literature (31 of the 59 studies in our review reported on this variable, more than any other variable examined in this meta-analysis) and because it produced the second largest effect size found in this meta-analysis. Moreover, childhood sexual abuse may be an early correlate or a cause of an atypical developmental trajectory with regard to peer relationships and subsequent sexual behavior, and therefore the group difference in childhood sexual abuse may help explain other significant group differences found in this meta-analysis, including social relations problems and atypical sexual interests.

Although the prevalence of sexual abuse was lower when focusing on estimates based on other sources of information, the group difference was found whether we focused on self-report or other sources. It is possible that focusing on other sources of information does not improve on the use of self-report, because other sources of information might reflect a selective attention effect. For example, clinicians may be more likely to inquire about sexual abuse for adolescent sex offenders, because of an a priori belief in an association between sexual abuse history and sexual offending. The one study that relied on a retrospective search of child welfare records also found that adolescent sex offenders (9%) were much more likely than non-sex offenders (1%) to have been sexually abused (Fagan & Wexler, 1988). Further bolstering our confidence in this finding, we found similar results in a meta-analysis of 17 studies comparing adult male sex offenders with other kinds of adult offenders on their abuse histories (Jespersen, Lalumière, & Seto, 2009). Again, adult sex offenders were substantially more likely to have histories of sexual abuse than were adult non-sex offenders, but the two groups did not significantly differ in their histories of physical abuse.

Victim age. Sexual victim age might be a moderator of sexual abuse history. Although the proportion of adolescent sex offenders who targeted children was unrelated to the effect size for sexual abuse, the seven studies that directly compared adolescent sex offenders against child victims and those who sexually offended against only peer or adult victims found that the former group had significantly higher rates of sexual abuse. Jespersen et al. (2009) obtained the same results in a comparison of adult sex offenders against children and adult sex offenders against adults across 15 studies. Victim sex may be an additional moderator of the relationship between sexual abuse history and sexual offending: Worling (1995b) found that adolescents who sexually offended against any boys were more likely to have been sexually abused than those who offended against only girls or against peers or adults. We were not able to examine victim sex as a potential moderator because too few studies reported data separately for sex offenders with male victims and those with female victims.

There is evidence from other research that sexual abuse may have a specific association with sexual offending. Adolescent sex offenders who have been sexually abused show relatively greater sexual arousal to children or coercive sex than those who have not been sexually abused (Becker, Hunter, Stein, & Kaplan, 1989; Becker, Kaplan, & Tenke, 1992; Hunter, Goodwin, & Becker, 1994). Seto et al. (in press) found that experiencing sexual coercion was significantly related to the later likelihood of engaging in sexually coercive behavior in two large representative samples of Swedish and Norwegian students, respectively. This association continued to be statistically significant even after controlling for the effects of antisocial behavior and conventional sexual experiences.

Possible mechanisms. The mechanisms underlying the association between sexual abuse and adolescent sexual offending are not known. A number of investigators have suggested that aspects of the sexual abuse such as the victim–perpetrator relationship, nature of sexual abuse, duration, and timing of the sexual abuse are important (Burton, 2003; Finkelhor, 1979; Hunter, Figueredo,

Malamuth, & Becker, 2003; Knight & Prentky, 1993). Burton et al. (2002) examined a group of adolescent offenders and found that sexually abused male youths were more likely to be in the sex offender group if they had been abused by both men and women, the perpetrator was related or used violence, the abuse took place over several years, or the abuse involved penetrative acts.

There are probably individual characteristics that increase both vulnerability to childhood sexual abuse and the likelihood of adolescent sexual offending. For example, a sexually precocious child may be more vulnerable to sexual abuse, thereby explaining the link between sexual abuse and earlier onset of puberty, and there appears to be a link between early puberty and sexual offending such that male sex offenders undergo puberty at an earlier age than do other males (Blanchard & Dickey, 1998). We expect an interaction between these individual characteristics and the experience of sexual abuse, because many sexually abused children do not go on to sexually offend.

One characteristic that is clearly involved is sex. Female children are more likely to be sexually abused than are male children (e.g., Finkelhor & Ormrod, 2001), yet the large majority of sex offenders are male. The link between sexual abuse and sexual offending may be specific to males or, at the very least, the effect is much stronger among males. This does not mean that childhood sexual abuse is not related to later sexual behavior among women, because there is evidence for a significant association between childhood sexual abuse and greater sexual preoccupation, earlier onset of intercourse, and earlier pregnancy among women (e.g., Noll, Trickett, & Putnam, 2003).

If there is a causal relationship between childhood sexual abuse and adolescent sexual offending, the existing data suggest it has to do with the onset rather than maintenance of sexual offending, given meta-analytic evidence that sexual abuse history is unrelated to sexual recidivism in follow-up studies of offenders (Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005). In other words, sexual abuse is associated with the likelihood that someone commits a sexual offense for the first time, but it does not predict who is more likely to sexually reoffend once identified. Thus, interrupting the link between childhood sexual abuse and onset of adolescent sexual offending may be an important goal of prevention campaigns, whereas treatment addressing sexual abuse issues is unlikely to reduce reoffending among identified sex offenders.

Other Special Explanations

Poor childhood attachment. Contrary to the expectations of Marshall and Barbaree's (1990) integrated theory and other special explanations of adolescent sexual offending emphasizing poor childhood attachment, adolescent sex offenders did not appear to have more family relationship problems than non-sex offenders. The test of this prediction, however, was weak because only two studies examined attachment specifically, and only one of these assessed parent–child attachment. Future research with validated measures of parent–child attachment is needed to further test the role of parent–child attachment in adolescent sexual offending.

Social incompetence. Contrary to predictions that social incompetence plays a role in adolescent sexual offending (Finkelhor, 1984; Marshall & Barbaree, 1990; Ward & Siegert, 2002), we found no significant difference between the two groups of adolescents on measures of heterosocial or general social skills. The two groups did differ, however, on measures of social isolation, suggesting social problems do play a role, but not because of social incompetence.

Sexual development. There was no significant difference between groups on conventional sexual experiences, but adolescent sex offenders were significantly more likely to have had early exposure to sex or pornography, consistent with Marshall and Barbaree (1990).

Atypical sexual interests. As noted earlier, the largest effect size we observed was for atypical sexual interests. The group comparison was not ideal because adolescent sex offenders who simply admitted to their criminal sexual behavior could score higher on many (although not all) of these variables. Variables that would not include sexual offending behavior, such as admitting a sexual interest in children or cross-dressing, also showed a consistent trend in the same direction, suggesting that this result is not tautological (higher scores on measures of atypical sexual interests are a result of sex offenders admitting to sexual offenses). More studies with measures of atypical sexual interests that exclude sexual offenses would help clarify this group difference. Such measures might include self-reported thoughts, fantasies, or urges about paraphilic targets or activities, variables reflecting noncriminal paraphilic behavior, such as masochism or fetishism, and psychophysiological measures of sexual arousal to atypical targets or activities, such as prepubescent children or coercive sex (Lalumière et al., 2005; Seto, 2008). Comparisons of adolescent sexual and nonsexual offenders with objective psychophysiological measures would be particularly helpful, because past studies using these measures have not included a same-aged non-sex offender comparison group (Robinson et al., 1997; Seto et al., 2000).

Psychopathology. Partially consistent with theories suggesting that affective dysregulation and other emotional problems play a role in adolescent sexual offending (Hall & Hirschman, 1991, 1992; Ward & Siegert, 2002), sex offenders scored higher in anxiety and low self-esteem; they did not, however, in other forms of psychopathology, such as depression or neuroticism. The timing of psychopathology symptoms was not clearly distinguished in the studies that we examined. The symptoms could have preceded the index sexual offenses, which would be consistent with a causal role, but they could also be a consequence of being identified as a sex offender (e.g., becoming more anxious and having lower self-esteem after being arrested and charged for a sexual offense, which currently carries much more social stigma than do most nonsexual offenses), which would not be consistent with a causal role. Research that clarifies timing would help elucidate the relationship between psychopathology and adolescent sexual offending (e.g., by examining records of psychiatric diagnoses or mental health treatments that precede the index sexual offenses). Van Wijk, Vreugdenhil, et al. (2007) did ask adolescents about the presence of psychopathology in the six or 12 months prior to their index arrest and found no significant differences between sex and non-sex offenders, but their statistical power to detect a difference was quite low because psychopathology data were available for only 16 adolescent sex offenders.

Mental health problems are negatively associated with future offending among adolescent offenders (Katsiyannis, Zhang, Barrett, & Flaska, 2004; Vermeiren, Schwab-Stone, Ruchkin, De Clippele, & Deboutte, 2002), which suggests that psychopathology

would not contribute to the maintenance of sexual offending. Indeed, mood problems may have a protective effect. Mood problems could still play a role in onset of offending, for example, if it led to the use of sex as a coping strategy, and if using sex as a coping strategy is then associated with a greater likelihood of sexual offending (Cortoni & Marshall, 2001).

Another consideration in interpreting the results of the psychopathology domain is that all of the comparisons are based on self-report. Adolescent sex offenders may tend to report more problems or non-sex offenders may tend to report fewer problems. The two groups did not significantly differ on measures of impression management, however, suggesting that youths may differ in their perceptions of problems rather than in any tendency to deliberately misrepresent themselves.

Cognitive abilities. The results did not support the idea that low cognitive abilities specifically increase the likelihood of adolescent sexual offending. Both offending groups scored about 10 IQ points below the population average of 100. This finding is consistent with the general delinquency explanation, as numerous studies have shown that IQ is associated with juvenile delinquency, such that delinquents score lower on measures of intelligence than nondelinquent peers (e.g., Moffitt & Silva, 1988). In the small number of studies that compared sex offenders against children with sex offenders against peers, there was no difference in general intelligence scores, in contrast to research showing that adult sex offenders with child victims score lower on intelligence than do sex offenders with adult victims or non-sex offenders (Cantor et al., 2005).

General Delinquency Explanation

The results described in the previous section suggest that general delinquency risk factors are not sufficient to explain why an adolescent commits a sexual rather than a nonsexual crime, because there were a number of differences between sex and non-sex offenders across theoretically meaningful domains. In addition, adolescent sex offenders scored lower than non-sex offenders on measures of criminal involvement, antisocial associations, and substance use. The only published comparison of female adolescent sex and non-sex offenders we found (not included in the meta-analysis) yielded the same pattern of results, with the female adolescent sex offenders scoring lower than female adolescent non-sex offenders on criminal history, school behavioral problems, and fighting (Kubik, Hecker, & Righthand, 2002).

This pattern of results does not mean that general delinquency risk factors do not play a role in adolescent sexual offending. Adolescent sex offenders in this meta-analysis still had extensive criminal histories and showed evidence of a variety of conduct problems and antisocial tendencies to a greater extent than was found among nonoffenders (e.g., school suspensions). Adolescent sex offenders scored higher in antisocial tendencies than did nonoffenders in the eight studies that included these data for nonoffenders (Chewning, 1991; Etherington, 1993; Franklin, 2000; Katz, 1990; Lincoln, 1993; Lindsey, Carlozzi, & Eells, 2001; Ness, 2001; Valliant & Bergeron, 1997), and general delinquency risk factors also predict recidivism among adolescent sex offenders (e.g., Gretton, Hare, & Catchpole, 2004; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001). Additionally, consistent with the general delinquency explanation, adolescent sex and non-sex offenders were, as groups, similar to each other in terms of self-reported conduct problems, antisocial personality traits, family problems (parental separation or divorce, familial substance abuse, familial criminality), and IQ scores.

A surprising finding was that adolescent sex offenders were not significantly different from non-sex offenders on measures of antisocial personality traits, yet were lower on measures of antisocial or criminal behavior. This finding cannot be explained as a self-report bias because the same result was obtained when we examined the five studies that relied on other sources of information (i.e., observer ratings of antisocial personality traits). One possibility is that adolescent sex offenders and non-sex offenders do not differ in their self-report of antisocial personality traits but do differ in how these traits are expressed and detected by others as behaviors. This might explain why adolescent sex offenders did not differ from other adolescent offenders on measures of conduct problems that relied on self-report but scored lower when the measures used other sources of information. Further research is needed to determine whether the expression of antisocial tendencies by adolescent sex offenders is, in fact, less likely to be detected and what factors might account for lesser detection.

The pattern of findings observed in general delinquency risk factors might be obscured by a difference between adolescent sex offenders who target peers or adults and those who target children. Among studies that directly compared sex offenders, distinguished according to victim age, on the same measures of delinquency risk factors, those who sexually offended against any children scored significantly lower than those who sexually offended against peers or adults. There were too few studies to examine victim sex or relationship to victim as a potential moderator of effect size. We hope these results will encourage investigators to record and examine the effects of victim gender, victim age, and perpetrator relationship to victim in future research on adolescent sex offenders, as is typically done with adult sex offenders.

Meta-Analysis Limitations

In addition to the specific issues identified in our discussion of the special explanations for adolescent sexual offending, and in Davis and Leitenberg's (1987) and van Wijk et al.'s (2006) reviews of the adolescent sex offender literature (predominance of adolescent samples in custody, absence of matching of sex and non-sex offender groups on potentially important demographic variables such as age, reliance on self-report, the common use of unstandardized measures, and the combination of different types of adolescent sex and non-sex offenders), there are other limitations to keep in mind when interpreting the results of this meta-analysis.

First, it is possible that there is an ascertainment bias such that adolescent sex offenders are more likely to be referred for treatment or placed in custody than are adolescent non-sex offenders, simply because their misconduct was sexual in nature, whereas only the most antisocial non-sex offenders are admitted to a clinical or correctional setting. For example, van Wijk, van Horn, Bullens, Bijleveld, and Doreleijers (2005) compared 109 adolescent sex offenders with 51 non-sex offenders on personality traits (and other individual characteristics) and found that the sex offenders scored significantly lower on measures of impulsivity and lack of conscience. However, these authors noted in their discussion that some referrals were made by prosecutors on the basis of the seriousness of the alleged offense or

characteristics of the adolescent suspect. Consistent with the idea of an ascertainment bias, van Wijk, Vreugdenhil, et al. (2007) found that adolescent sex offenders were more than twice as likely to be court-ordered into treatment than adolescent non-sex offenders and Lincoln (1993) found that sex offenders had more experience in treatment than non-sex offenders. On the other hand, Ness (2001) found that non-sex offenders had more experience in treatment, and Maring (1998) found that adolescent sex offenders still scored significantly lower than non-sex offenders (all participants were diagnosed with conduct disorder) on scales assessing antisocial personality traits.

An ascertainment bias could contribute to the significant differences obtained in general delinquency risk factors, even when examining data collected in the same setting for both groups. This problem is exacerbated by the fact that the majority of studies drew samples from equivalent rather than the same settings. Nonetheless, an ascertainment bias would not explain the significant differences we obtained in other domains in which adolescent sex offenders scored higher than non-sex offenders—such as childhood sexual abuse, exposure to sexual violence, or atypical sexual interests—unless it could be convincingly argued or demonstrated that such differences contributed to the bias or that these domains are negatively correlated with delinquency. For example, Maxfield and Widom (1996) found that abused and neglected children were more likely to engage in antisocial behavior as they grew up, as compared to controls. This kind of bias could not explain, however, why the adolescent sex offenders scored lower on measures of delinquency but higher on measures of sexual or emotional abuse history than did other offenders.

Another potential group comparison bias is the differential treatment that adolescent sex offenders and non-sex offenders may receive if they participate in clinical or correctional programs. Both sex and non-sex offender treatment programs are likely to focus on goals such as acceptance of responsibility, problem-solving, and skills training, but the adolescent sex offenders are also likely to participate in treatment sessions that focus on disclosure of their sexual offenses and discussions of sexuality, including their sexual experiences and interests. Thus, adolescent sex offenders may be more willing than non-sex offenders to disclose sexual abuse, exposure to sexual violence, and atypical sexual interests. This does not explain, however, why adolescent sex offenders did not differ on conventional sexual experiences, or why the difference in sexual abuse histories was found when we focused on sources of information other than adolescent self-report. Also, Krauth (1998) found that non-sex offenders were more likely than sex offenders to have missing information about whether they were sexually active, consistent with the idea of a bias, but there was a much smaller difference in missing information for sexual abuse history and for whether there was a sex offender in the family.

A related potential group comparison bias is that adolescent sex offenders might spend more time in residential treatment as a result of their offenses and thus do not have as much opportunity to engage in antisocial or criminal behavior than do non-sex offenders. At the same time, non-sex offenders had a more extensive criminal history and thus were probably more likely to have been incarcerated. Although any incarcerations they incurred may have been brief, these times in custody add up and can also reduce opportunity to engage in further antisocial or criminal behavior. The studies we examined did not control for amount of opportunity by matching or statistically controlling for this variable. To examine this issue, we conducted a post hoc comparison of the six studies that used community samples of adolescents to determine whether these studies produced similar effect sizes in the domain of general delinquency risk factors. Five studies contributed to this domain, producing an average effect size of −0.45 (95% CI −0.65 to −0.25, no heterogeneity). This result suggests that adolescent sex offenders are still less antisocial than adolescent non-sex offenders even when recruited from the community, where ascertainment bias might be lessened. We would have liked to pursue this analysis for other variables, but there were insufficient studies of community samples.

Another potential group comparison bias is that some adolescent non-sex offenders may have committed sexual offenses that were not known to the investigators and thus were incorrectly assigned to their study group. Fleming et al. (2002) found that 20% of their sample of adolescent offenders admitted sexual offenses for which they were not adjudicated, whereas Spaccarelli et al. (1997) reported that 14% of their ostensibly nonsexually offending group admitted they had committed a sexual offense in their history. To the extent that undetected sex offenders were present in the non-sex offender group, we would expect the group differences found in this meta-analysis to be conservative estimates of the true differences.

Another limitation of this meta-analysis is that there were too few studies to examine either sexual victim age or source of information as moderators of group differences on variables relevant to the special explanations emphasizing parent-child attachment, heterosocial skills deficits, conventional sexual experiences, and atypical sexual interests. Even fewer studies directly compared groups of adolescent sex offenders distinguished according to their victims' ages, or directly compared data obtained from self-report with other sources of information. The apparent differences in effect sizes based on self-report or other sources of information reported here may actually reflect differences in study sampling or methodology.

We also did not have the data to examine non-sex offender characteristics as moderators of group differences on variables relevant to the special explanations. For example, it may be the case that the patterns of results differ when comparing sex offenders with life-course-persistent offenders versus adolescence-limited offenders or when comparing sex offenders with violent versus nonviolent offenders. Future research could explore these possibilities. A mixed sample of non-sex offenders was helpful in this meta-analysis because Garber and Hollon (1991) suggested that a heterogeneous comparison group is appropriate when examining broad specificity, that is, whether adolescent sex offenders differ from offenders in general on theoretically meaningful factors.

Another limitation of this meta-analysis is the impact of combining variables representing different operationalizations for calculation of effect sizes. For example, we combined variables concerning direct exposure to sexual violence in the family ("witness sexual abuse" in Frazier, 1999, and "exposure to adults forcing sex on other adults" in Leguizamo, 2000) and variables concerning indirect exposure ("family member involved in sexual offense" in Griggins, 1990, and "sex offender in family" in Krauth, 1998). It is possible that there is an effect of exposure to sexual violence only when it is directly witnessed, but there were too few studies to explore this possibility.

Testing Causality

Despite all of these limitations, we believe that the results of this quantitative review make a useful contribution to the development of a comprehensive theory of adolescent sexual offending. The results of this meta-analysis did not allow us to determine whether the links between aspects of sexual development and adolescent sexual offending are *causal*—sexual abuse, exposure to sexual violence, and earlier exposure to sex or pornography cause the youth to deviate from typical sexual development in ways that increase their likelihood of committing sexual offenses—or simply *correlational*—youths who differ in their sexual development in these ways also differ in other ways that render them more vulnerable to sexual abuse, more likely to develop atypical sexual interests, and more likely to commit sexual offenses later in life. We believe the field will progress in understanding the onset of adolescent sexual offending when the causal nature of these links is further explored through longitudinal, multivariate, and experimental research.

Our speculation is that an atypical sexual interest (an interest in prepubescent children, or in coercive sex involving peers or adults, or in exposing one's genitals to unsuspecting strangers, etc.) is an important motivation for some adolescents who commit sexual offenses, whereas antisocial tendencies influence an adolescent's willingness to act upon this motivation. We base this speculation on adult sex offender research suggesting that atypical sexual interests, such as pedophilia, are neurodevelopmental disorders that involve prenatal factors (e.g., Cantor et al., 2004), retrospective studies in which some adult sex offenders have admitted that their atypical sexual interests emerged early in life, usually before the emergence of any atypical sexual behaviors (e.g., Freund & Kuban, 1993), follow-up studies demonstrating that phallometrically assessed sexual arousal to children can predict future sexual offending among men with no known history of sexual offenses involving contact with a child (Rabinowitz, Firestone, Bradford, & Greenberg, 2002), and research showing that the interaction between atypical sexual interests and antisocial tendencies is a significant predictor of sexual recidivism among both adolescent and adult sex offenders (Gretton et al., 2004; Rice & Harris, 1997; Seto et al., 2004).

We also speculate that atypical sexual interests may help explain many of the other group differences observed in this meta-analysis. This does not mean that all adolescent sex offenders have atypical sexual interests, as phallometric studies find that only some adolescent sex offenders produce atypical sexual arousal patterns in the laboratory (Seto et al., 2000, 2003). More studies with good measures of atypical sexual interests are needed to determine the proportion of adolescent sex offenders who have such interests; research on adult sex offenders suggests a slight majority of adult sex offenders show these interests (see Lalumière et al., 2005; Seto, 2008). This minority of adolescents would contribute to the pattern of observed differences between sex and non-sex offenders. For example, some adolescent sex offenders may score higher on social isolation because they are less interested in relationships with opposite-sex peers. Some adolescent sex offenders may score higher on psychopathology because of their social isolation or distress about their atypical sexual interests. Kafka (1997) and others have suggested that paraphilias are often comorbid with other forms of psychopathology, so some of the group difference on psychopathology measures could be attributed to the greater prevalence of paraphilic interests among adolescent sex offenders. Another possibility is that the neurodevelopmental factors that disrupt sexual preferences could also be responsible for disruptions to other brain systems that contribute to mental health (Blanchard et al., 2002, 2003).

We believe a parsimonious and testable theory of adolescent sexual offending would contain two primary dimensions: general delinquency risk factors and atypical sexual interests. Research examining other potential factors would need to demonstrate that any group differences are not by-products of these two dimensions, as suggested earlier. The developmental emergence and progression of delinquency has been well-studied (e.g., Elliott, 1994; Gottfredson & Hirschi, 1990; Loeber & Farrington, 1998; Moffitt, 1993), but developmental work on atypical sexual interests is only beginning, and work is needed on how to integrate these two dimensions (Lalumière et al., 2005; Seto, 2008; Seto & Barbaree, 1997).

Future Directions

More comparisons of adolescent sex offenders with both non-sex offenders and nonoffending adolescents on variables hypothesized to be specific to adolescent sexual offending would contribute greatly to theory building. The most informative study design would include at least three groups: sex offenders, non-sex offenders, and nonoffenders. Differences between sex offenders and the other two groups would suggest which variables might play a role in explaining the onset of adolescent sexual offending, whereas differences between sex offenders and non-sex offenders could help identify those variables that have a specific role to play in explaining why an adolescent commits sexual offenses rather than nonsexual offenses. For example, in some of the studies included in this meta-analysis, both sex offenders and non-sex offenders differed from nonoffenders in antisocial tendencies, but these factors cannot adequately explain why an adolescent commits a sexual offense rather than a nonsexual offense because sex offenders score significantly lower on many measures of antisocial tendencies than do non-sex offenders. Group comparison studies could further distinguish between types of sex offenders on the basis of theoretical and empirical grounds, for example, sex offenders with child victims in comprison with those with peer or adult victims. Once the key factors have been identified in comparative research, the relationships between the most promising factors can be explored with structural modeling, as demonstrated by Knight and Sims-Knight (2003).

The results of group comparison and structural modeling studies could greatly inform assessment, treatment, and prevention efforts. For assessment, the results of this meta-analysis and other theoretically informed research highlight which variables may be the most productive in developing measures to identify individuals at greater risk of first committing a sexual offense as an adolescent. These variables are not necessarily the same as those that predict recidivism among adolescent sex offenders. For example, sexual abuse history distinguishes sex offenders from other offenders, but it is not related to recidivism among adult sex offenders (Hanson & Morton-Bourgon, 2005). In contrast, variables in the delinquency risk domain—age of first contact with the criminal justice system, criminal history, conduct problems, and so forth—are

related to the likelihood of future offenses among both adolescent and adult sex offenders. There is an established empirical literature on risk measures for juvenile delinquents, and these measures would likely be valid for adolescent sex offenders as well (e.g., Catchpole & Gretton, 2003; Schmidt, Hoge, & Gomes, 2005).

With regard to treatment, our results support the notion that treatments designed for general delinquency can also benefit adolescent sex offenders. Further, the results identify additional treatment targets that are not addressed in these general delinquency treatments. Two small randomized clinical trials have shown that multisystemic therapy can significantly improve outcomes among adolescent sexual offenders in comparison with treatment as usual (Borduin, Schaeffer, & Heiblum, 2009; Letourneau et al., 2009). Multisystemic therapy is an individualized, intense, and empirically supported treatment that addresses individual, family, and social–contextual risk factors associated with general delinquency. Mediational analysis suggests that improvement on clinical measures is mediated by caregiver consistency in discipline and monitoring of negative peer relationships (Henggeler et al., 2009). Perhaps reflecting a tendency of researchers to focus on special explanations for adolescent sexual offending, only two of the studies we examined in this meta-analysis assessed parental supervision or discipline practices (Chewning, 1991; Krauth, 1998), even though these are well-established correlates of general delinquency (Loeber & Farrington, 1998). Future research on the treatment of adolescent sexual offending could benefit from a closer look at the general delinquency literature.

Letourneau et al. (2009) modified the multisystemic therapy protocol by also addressing adolescent and caregiver denial about the sexual offense, safety planning (e.g., reducing opportunities to be alone with younger children if younger children were victims of sexual offenses), and promotion of age-appropriate and healthy peer relationships. Our results suggest that specifically addressing atypical sexual interests could further improve short-term outcomes and possibly lead to a reduction in recidivism in the longer-term. The results of more and larger randomized clinical trials and mechanism of change studies could also add to our theoretical understanding of adolescent sexual offending.

For prevention, the results of this meta-analysis and further theoretically informed research could help identify causal factors that are amenable to intervention. Many of the variables examined in this meta-analysis are potentially amenable to intervention. If childhood sexual abuse is a causal factor, school-based sexual abuse prevention programs might lower the incidence of childhood sexual abuse and thereby reduce the incidence of sexual offending when those children grow up and become adolescents (Gibson & Leitenberg, 2000; Rispens, Aleman, & Goudena, 1997). Research on the characteristics of child victims of sexual abuse could help identify at-risk individuals who might benefit from efforts to prevent sexual abuse or any subsequent perturbation of their sexual development if sexual abuse does occur.

The presence or absence of significant group differences in this meta-analysis was moderated by sexual victim age in some of our analyses. Relatively few studies, however, directly compared adolescent sex offenders who victimized peers or adults with those who victimized children, preventing us from examining this potentially important moderator in greater detail. Studies that have directly compared adolescent sex offenders distinguished according to victim age (but without including a non-sex offender comparison group) have reported similar differences on variables that we examined in this meta-analysis (e.g., Carpenter, Peed, & Eastman, 1995; Hunter et al., 2003; Hsu & Starzynski, 1990; Worling, 1995a, 1995b). Future studies should distinguish adolescent sex offenders according to sexual victim age, to clarify the nature and size of differences between adolescent sex offenders, non-sex offenders, and nonoffenders. Other potential moderators—such as victim sex, relationship to victim, and whether the adolescent is on a life-course-persistent or adolescence-limited developmental trajectory with regard to antisocial behavior—should also be examined. The relative importance of general delinquency risk factors and atypical sexual interests may vary across these different groups of adolescent sex offenders, with implications for risk assessment and intervention.

Future studies should also examine variables having to do with sexuality. It is surprising to us that research on adolescent sexual offending has paid relatively little attention to other aspects of sexual development. For example, nine of 59 studies examined conventional sexual experiences, whereas 10 studies examined depression. Only seven studies examined paraphilic (atypical) sexual interests. Researchers in the adolescent sex offender field have focused on sexual abuse history (more than half of the studies we reviewed reported data on this variable) but have paid relatively little attention to other aspects of sexuality, focusing instead on nonsexual factors (e.g., parent–child attachment, social skills deficits, psychopathology). Our results suggest promising directions for research on the roles of exposure to sexual violence, exposure to sex or pornography more generally, and atypical sexual interests (see Seto, Maric, & Barbaree, 2001). Sexual offending, after all, is a sexual as well as an antisocial behavior.

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