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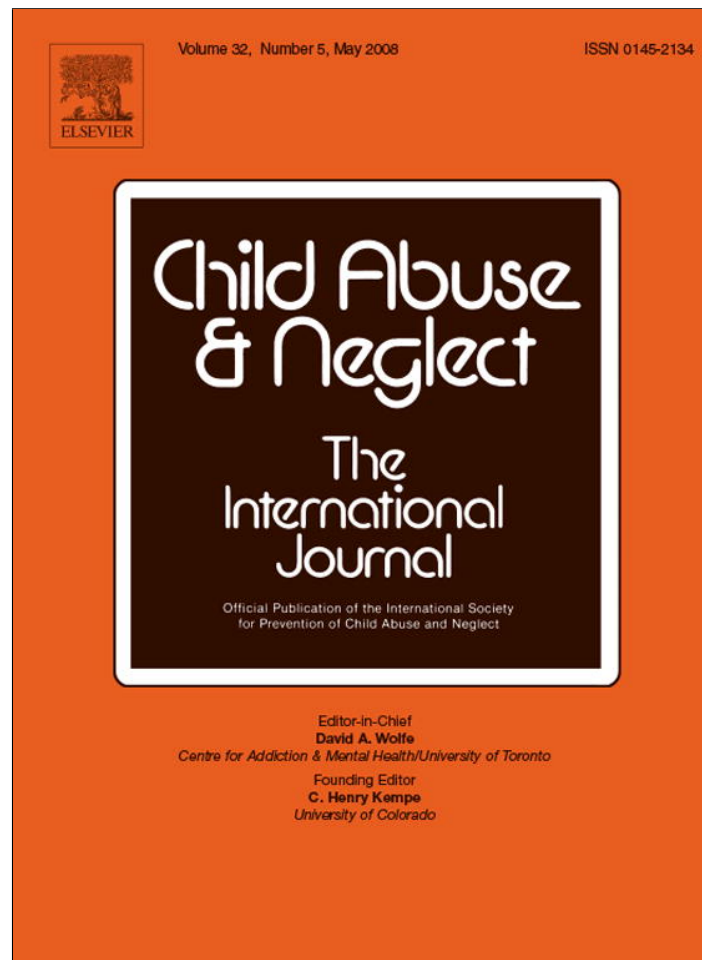
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Risk factors for the perpetration of child sexual abuse: A review and meta-analysis[☆]

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ABSTRACT

Objectives: Since the late 1980s, there has been a strong theoretical focus on psychological and social influences of perpetration of child sexual abuse. This paper presents the results of a review and meta-analysis of studies examining risk factors for perpetration of child sexual abuse published since 1990.

Method: Eighty-nine studies published between 1990 and April of 2003 were reviewed. Risk factors were classified into one of the following six broad categories: family factors, externalizing behaviors, internalizing behaviors, social deficits, sexual problems, and attitudes/beliefs. Sex offenders against children (SOC) were compared to three comparison groups identified within the 89 studies: sex offenders who perpetrated against adults (SOA), non-sex offenders, and non-offenders with no history of criminal or sexual behavior problems.

Results: Results for the six major categories showed that SOC were not different from SOA (all d between $-.02$ and $.14$) other than showing lower externalizing behaviors ($d = -.25$). Sex offenders against children were somewhat different from non-sex offenders, especially with regard to sexual problems and attitudes ($d = .83$ and $.51$). Sex offenders against children showed substantial differences from non-offenders with medium sized effects in all six major categories (d 's range from $.39$ to $.58$).

Conclusion: Child sex offenders are different from non-sex offenders and non-offenders but not from sex offenders against adults.

Practice implications: This study suggests that the presence of general risk factors may lead to a variety of negative behavioral outcomes, including the perpetration of child sexual offending. Family factors were strongly related to the perpetration of child sex offending (vs. non-sexual offending or non-offending) and may be valuable intervention points for interrupting the development of child sex offending, as well as other negative behaviors. Other potential points for intervention may focus on the development of appropriate social and emotional skills that contribute to sexual offending.

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Introduction

There is a growing recognition that the prevention of child sexual abuse is a critical public health concern (Daro, 1994; Hammond, 2003; McMahon & Puett, 1999; Mercy, 1999; Whitaker, Lutzker, & Shelley, 2005). State-based reports of child maltreatment collected by the Office on Child Abuse and Neglect found over 83,000 cases of child sexual abuse perpetrated in 2005 (U.S. Department of Health and Human Services [US DHHS], 2007). Most sexual abuse goes unreported (Hanson, Resnick, Saunders, Kilpatrick, & Best, 1999). A recent survey by Finkelhor, Ormrod, Turner, and Hamby's (2005) using a nationally representative sample of parents and children found that 82 per 1000 children and youth had experienced a sexual victimization in the year prior to the survey.

Being a victim of child sexual abuse has been associated with a variety of psychological, social, behavioral and physical problems. Psychological impacts include depression, somatization, PTSD, and personality disorders (Paolucci, Genuis, & Violato, 2001; Putnam, 2003). Social and behavioral consequences include sexualized behaviors (Nagy, Adcock, & Nagy, 1994), which may lead to early or unintended pregnancy (Dietz et al., 1999; Widom & Kuhns, 1996) or HIV-infection (Brown, Lourie, Zlotnick, & Cohn, 2000), substance abuse, and bulimia (Putnam, 2003). Physical consequences include neurobiological effects (Putnam, 2003) and long-term impact on health, such as heart disease, lung disease, and cancer, at least when experienced in combination with other adverse child experiences (Felitti et al., 1998).

Recently, attention has focused on understanding the development of perpetration of child sexual abuse. Such work is critically important for primary prevention. Most programs for the prevention of child sexual abuse have focused on potential victims, teaching them to avoid child molesters. Such programs can be important, but they are likely only part of a broad solution. Programs focusing on potential victims put much of the prevention burden on the child, who may have limited ability to engage in prevention behaviors. Moreover, most child sexual abuse is perpetrated by relatives and acquaintances (Finkelhor et al., 2005; US DHHS, 2007), which makes it particularly difficult for children to control these interactions. Consequently, broad prevention efforts for child sex offending must include addressing the perpetrator's behavior.

There has been considerable theory and research focused on those who perpetrate child sexual abuse. This work has developed methods to classify known sex offenders against children (e.g., Knight & Prentky, 1990), and evaluate their recidivism risk (e.g., Beech & Ward, 2004; Hanson & Morton-Bourgon, 2005). For primary prevention, however, it is necessary to understand the factors that lead to the development of the *initial* perpetration of child sex offending. Recently, a number of different theories have been developed that describes how a variety of biological, psychological, and interpersonal factors may lead to child sex offending. For example, Finkelhor's (1984) preconditions model points to four factors that, when combined, can lead to child sexual abuse perpetration: an emotional attachment or congruence with children, sexual arousal to children, "blockage" from normal sexual relationships, and a disinhibition to perpetrate child sexual abuse. Other theories (Hall & Hirschman, 1992; Marshall & Barbaree, 1990; Ryan, 1998; Ward & Seigert, 2002) also discuss biological, psychological, and social factors, and some theories highlight the need to consider the developmental and contextual environments when understanding the development of sexual offending (Marshall & Barbaree, 1990; Ryan, 1998). On the whole, it seems clear there are likely multiple factors and multiple pathways involved in the development of perpetration of child sexual abuse (Ward and Seigert (2002)). These theoretical advances have outpaced data collection, and there are little empirical data to indicate which risk factors are most important, and/or how they interact to produce child sexual abuse perpetration.

The purpose of this paper is to present the results of a meta-analysis of recent empirical studies of risk factors for the perpetration of child sexual abuse. We conceptualized this review and meta-analysis broadly to include the range of potential risk factors described by the major theories of child sexual abuse perpetration. Because the theoretical advancement that has occurred since the early 1990s has focused strongly on intra and interpersonal factors, we limited our review to studies published since 1990, and focused on several categories of risk factors most pertinent to recent theory. Those six categories included the following: family history variables (e.g., history of abuse, parent-child relationship, discipline, attachment); externalizing behaviors (e.g., violence, delinquency); internalizing behaviors (e.g., depression, low self-esteem, poor coping); maladaptive sexual behaviors (e.g., sexual interest in children, deviant sexual fantasies); problems in social deficits (e.g., social skills, empathy, loneliness); and attitudinal/cognitive variables (e.g., attitudes toward rape, rationalizations).

Research on risk factors for child sex offending must be discussed in the context of the specific comparison groups appropriate for the research questions. For example, one current debate in the literature is the extent to which child sex offending is part of a broader pattern of antisocial behavior (Hunter, Figueredo, Malamuth, & Becker, 2003; Johnson & Knight, 2000; Lalumiere, Harris, Quinsey, & Rice, 2005). Becker (1988) suggested that some juvenile sex offenders are of the conduct disorder type, whereas others are primarily motivated by pedophilic interests. Such a hypothesis would be examined by comparing sex offenders against children (SOC) with offenders who have perpetrated non-sex offenses and with non-offenders. In this review, three major comparison groups emerged: offenders who perpetrated sex crimes against adult victims; offenders who perpetrated non-sexual offenses, and samples of individuals with no known history of criminal or sexual offending. Examining the patterns of differences across three different comparison groups is useful for identifying the risk factors that are common to broader groups of sex-offenders (i.e., sex offenders who perpetrate against children vs. adults) and the even broader group of offenders (sexual and non-sexual).

Method

Inclusion/exclusion criteria for articles

There were four primary criteria for inclusion of articles in this review:

- (1) Data must have been published in a peer-review journal, book chapter, government report, or dissertation with a publication date of 1990 or later (searching ended April 2003)
- (2) Studies must have been conducted in the U.S., Canada, Australia, or a Western European country (this was to eliminate differences in factors that predict sex offending in Western vs. non-Western countries). No studies were found that used non-Western samples.
- (3) Studies must have included a comparison between a group of sex offenders against children and a comparison group that did not perpetrate child sexual abuse. This criterion excluded recidivism studies in which sex offenders against children who re-perpetrated were compared with those who did not.
- (4) Articles must have been written in English.

To be included in the meta-analytic data set, articles had to provide sufficient information to compute effect sizes for at least one variable (e.g., means and standard deviations, test statistics, group sizes or degrees of freedom, odds ratios, etc.). If articles did not provide that information, they were included in the database used to describe the pool of articles, but their results were not included in the meta-analysis.

Article search strategy

The initial search strategy included the following methods. Several databases were searched (i.e., PsychLit, ERIC, Medline, Criminal Justice Index, NCJRS, Wilson Social Science index) using various combinations of a number of search terms: sex offender, molest (and all words beginning with molest), pedophile, paraphilia, child abuse, incest, and so forth. In addition to subject terms, databases searches were conducted on 25 specific authors known to work in the area. Electronic searches of various web sites were also conducted (e.g., National Crime Victims Research and Treatment Center, National Sexual Violence Resource Center, National Clearinghouse on Child Abuse). Finally, hand searches were conducted of 10 journals in which articles on risk factors for child sexual abuse were frequently published (e.g., *Sexual Abuse: A Journal of Research and Treatment*; *Child Abuse and Neglect: The International Journal*; *Child Maltreatment*; *Journal of Interpersonal Violence*; *Violence and Victims*). Titles and abstracts of relevant articles were reviewed and relevant articles were kept for inclusion. Judgments regarding whether an article met the inclusion criteria were made by two members of the review team, with any discrepancies resolved by a third member.

Once a preliminary list of articles was generated, the list was distributed to the listserv of the Association for the Treatment of Sex Abusers (ATSA), with a request for additional studies that would meet the inclusion criteria. A similar request was sent to approximately 50 researchers. Neither of these methods yielded additional articles. The final pool of articles that met inclusion criteria included 92 articles. Of those, seven did not contain enough information to compute effect sizes and were excluded, leaving 85 articles that included 89 studies (i.e., three articles had two or more distinct studies) that were included in the meta-analysis (Appendix A).

Data abstraction

Four Ph.D.-level coders performed all of the data abstraction. Prior to coding, all coders were trained to a reliability criterion of 90% agreement or greater. Information from each article was abstracted by one coder, and checked by a second coder. Disagreements between the coder and checker were resolved between the two coders whenever possible, and group decisions were made where agreements could not be reached. A subset of 15% of articles ($n = 14$) was randomly selected as a reliability sample and coded independently by two coders. The average reliability (i.e., overall percent agreement) between coders for this subset of articles was 96%, and ranged from 93% to 100% per article.

A variety of information was abstracted from each article. Study designs were categorized as cross-sectional, longitudinal, or case-control. The following sample characteristics for sex offenders against children were coded: recruitment venue (e.g., criminal justice system, sex offender treatment, general population); demographics (e.g., age, race, sex, marital status, education, and employment status); type of offense (contact vs. non-contact, or unspecified); and relationship between abuser and victim (related, extra-familial, mixed, unspecified). If data on more than one group of sex offenders against children were reported (as was the case in 25 studies), the data were abstracted for each group and combined to form a single group of sex offenders against children for that study (i.e., no subgroup analyses are presented here). For the comparison groups, the following characteristics were abstracted: comparison group type, and demographics (identical to child sex offender group). When reported, a variety of victim characteristics were coded including age, race, and sex of victims.

Abstracting of results included the variable measured, the specific measure used, the reported reliability and validity of the measure, and enough relevant information for each group included in the study to compute or estimate the chosen effect size statistic of Cohen's d (e.g., means and standard deviations, proportions and group sizes, test statistics and degrees of

freedom, odds ratios). When results were reported in articles as significant or non-significant without further information, they were not abstracted. The 89 studies yielded a total of 1080 findings for which effect sizes could be computed.

Categorization of results

Because a broad range of risk and protective factors have been studied and are theoretically implicated in child sex offending theory (Finkelhor, 1984; Marshall & Barbaree, 1990; Ryan, 1998; Ward & Seigert, 2002), we initially abstracted results for any variable for which an effect size could be computed. To categorize results, we used an iterative process to create a hierarchical classification scheme that would represent both key theoretical constructs and the scope of variables abstracted from the studies. We created several major categories of variables, several subcategories within each major category, and when needed, specific constructs within subcategories. For example, one major category was that of family risk factors. It included subcategories of Childhood Abuse, Poor Parenting Practices, Parental Instability, and Parental Loss. Further, within the Childhood Abuse subcategory, specific codes were created for physical abuse, neglect, sexual abuse, and witnessing family violence. This hierarchical classification scheme allowed us to examine effect sizes for specific constructs, and to aggregate the data into broader subcategories, and even broader major categories. All coding of abstracted results into the classification scheme was conducted by a group of three coders. Where consensus could not be reached by the three coders, the larger group of investigators was consulted. Of the 1080 findings abstracted, 161 or 14.9% were determined to be “not applicable” to the coding scheme and were not coded, and the remaining 919 were coded (some examples of not applicable constructs are: masculinity and femininity; body image; expectancies regarding alcohol consumption; various personality traits). It was common for multiple findings from a single study to receive an identical code. For example, a study that focused on abusive parent-child relationships might have several different measures of child physical abuse (e.g., self-reported abuse, history of CPS involvement). In such cases, we either chose the single variable that best represented the construct and had adequate reliability and validity, or we averaged the effect sizes if there was no obvious best measure of the construct and the measures had similar reliability and validity. Similarly, when we aggregated variables into subcategories and major categories, we allowed each study to contribute only one effect size to the results by averaging the effect sizes from the same study that represented different constructs. For example, if a single study provided results for child sexual abuse, physical abuse, and neglect, we averaged those effect sizes into a single effect size for the subcategory of Childhood Abuse.

The initial coding scheme contained 10 major categories, each with subcategories and specific constructs. Four of those major categories (demographics, cognitive impairment or intelligence, physiologic factors, negative peer influences) were dropped due to insufficient data. The variables final coding scheme contained six major categories of variables: family risk factors, externalizing behaviors, internalizing behaviors, social deficits, sexual problems, and attitudes/cognitions/beliefs. Of the 919 variables that were determined to be relevant to the coding scheme, 890 fell into the six major categories. The remaining variables fell into the four categories, but were dropped due to insufficient numbers of studies examining those variables. The full classification scheme is available from the first author.

To examine reliability of the classification of variables, a sub-sample of 20 articles were randomly selected for coding by an independent reliability coder. Reliability estimates were computed using only variables that were determined as relevant to the coding scheme by the original coders. Kappa for placing variables correctly into one of the six major categories was .89. Kappas within the six major categories at the subcategory level ranged from .65 to 1.0 with a mean kappa of .91.

Computation of effect sizes

We used Cohen's d as our measure of effect size. Cohen's d is the standardized difference between two means, with d expressed in standard deviation units. Thus, a d of .50 indicates a one-half standard deviation difference between two groups. The following formulas were used to create values of d for the various types of data reported. For means and standard deviations, formulas recommended by Shadish and Haddock (1994) were used. For cell frequencies or percentages, formulas presented by Hasselblad and Hedges (1995) were used. In cases where incomplete information was provided (e.g., means but no standard deviations, t or F values), estimates of d were generated using an Excel macro program written by David Wilson, referred to by Lipsey and Wilson (2001). The macro allows the user to input an incomplete set of information (e.g., t statistic and degrees of freedom) and estimates d using formulas included in Lipsey and Wilson (2001). All other computations and analyses were done using SAS 9.1.3

Effect sizes were computed initially using both fixed and random effects models, which carry different assumptions and allow for different types of inferences about observed average effect sizes (Hedges & Vevea, 1998). Fixed-effects models assume homogeneity of variance between studies, an assumption which is almost never met, whereas random effects models do not. Random effects models result in more conservative estimates relative to fixed effects because they have wider confidence intervals. We present random- rather than fixed-effects models because most Q statistic were significant, indicating considerable variability across studies for aggregated effect sizes, and we did not wish to model this between-study variation for this paper. Our focus was on the global differences between broadly defined groups on a large number of variables, and we believed the best strategy was the more conservative approach. However, in addition to the aggregated effect sizes for the random effects models, we also present the Q statistic from the fixed-effects models, and as suggested by Becker, Hedges, and Pigott (2004), the estimate of the variance component, which quantifies the between-study or unexplained heterogeneity that has been incorporated into the random effects models.

Results

Description of studies in the sample

A total of 89 studies from 85 articles were included in this review (Appendix A). Table 1 lists study characteristics and the characteristics of the samples of SOC and the comparison groups. Virtually all of the studies were peer-reviewed journal articles, and used case-control design, in which separate samples of SOC and comparison groups were specifically recruited for participation. Four studies used cross-sectional designs, in which SOC and comparison groups were identified *after* data were collected (case-control studies identify groups prior to data collection). Just over a quarter of studies included more than one group of SOC (e.g., incest offenders and non-incest offenders), and over three-quarters included multiple comparison groups. The median sample size per group was about 30, and on average 8.4 risk factors per study were included in the meta-analysis (i.e., after excluding risk factors that were not relevant to the coding scheme).

Sex offenders against children were most commonly recruited from prison settings, and many of those were in some treatment program as well. A majority of studies (74%) focused on only adult SOC (i.e., ages 18 and over), with a smaller percentage focusing on only juvenile SOC (ages under 18) or a combination of the two groups. Approximately one quarter (27%) of groups were clearly defined as extra-familial SOC only, about 12% were intra-familial SOC only, and the remainder either included both or did not describe the abuser-victim relationship (45%). Although our coding scheme addressed other characteristics, studies rarely reported additional information on specific offenses (e.g., contact vs. non-contact offenses), or about victims (e.g., only 24% of articles provided any information about victims). Similarly, there was little information about the demographics of the SOC, with the exception of gender (reported by 100% of studies) and age (reported by 80%).

Three primary types of comparison groups were included: individuals who had perpetrated a sexual offense against an adult, termed *sex offenders against adults (SOA)*; non-sex offenders who had committed an offense of a non-sexual nature termed *non-sex offenders*; and those who had not committed any offense (or for whom the expected rate of offending would be low, e.g., university students) termed *non-offenders*. As with sex offenders against children, both comparison groups of offenders were recruited primarily from prisons, with some also in treatment. Recruitment settings for non-offenders were most commonly universities, community settings or some combination of the two.

Presentation of results

All results are presented in a similar manner in the data tables (Tables 2–8). Each table contains comparisons between SOC and the three comparison groups. For each comparison, we present: (1) the *d* value and 95% confidence intervals for the three comparisons; (2) the *Q* statistic with corresponding *p*-value from the fixed-effect model, (3) the variance component from the random effects model and, (4) the number of studies (*k*) and the total sample sizes (*n*'s) for the SOC and comparison groups that contributed to that particular effect size. The goal of presenting this particular information is to present data on both the magnitude and reliability of the effect size. The *d* value provides information about magnitude of the effect size. By convention, *d* values of around .20 are considered small, .50 are medium, and .80 or larger are considered large effects (Cohen, 1988). Regarding effect size reliability, the 95% confidence intervals, *Q* statistic, and variance component are each indicators of the reliability of the effect size. The 95% confidence intervals indicate the range within which the true value would be expected to be found 19 times out of 20, and if the confidence interval does not include zero, the effect is statistically significant at the $p < .05$ level. The fixed-effect *Q* statistic and the random effects variance component indicate the degree of homogeneity of effect sizes across the studies that were aggregated. A significant *Q* indicates between-study variance is statistically different from zero, which suggests that additional modeling is needed to understand that variance. For example, where a significant fixed-effect *Q* was found, one might analyze whether study design or measurement methods among the studies contributing to the effect size accounted for that variation in effect size. Such analyses were not conducted here, but a significant *Q* value should alert the reader that there is unexplained variation among a given set of effect sizes.

We present aggregated effect sizes only where at least three studies contributed to that effect size (all results are available from the first author). All effect sizes were computed so that positive values indicate greater levels of the variable for SOC than the comparison. For example, a positive value of *d* for family problems would indicate the SOC experienced more family problems than the comparison group, whereas a negative value of *d* would indicate they had fewer family problems than the comparison group. Outliers were eliminated from the results as follows. First, we began with the specific construct level, and examined only effects sizes for which there were four or more studies contributing (because three was the fewest number of studies allowed), and there was a significant fixed-effect *Q*. We considered a study's effect size an outlier if the effect size: (1) was the most extreme value and (2) accounted for at least 50% of the fixed-effect *Q* value. Effect sizes that met these criteria were eliminated from the results for that comparison, but were included in the aggregation to higher levels of analysis for consideration. That process of examining outliers was repeated at the subcategory level, and then again at the major category level. At the specific construct level, 6 of the 30 comparison examined had outliers that were removed. At the subcategory level, 18 of the 65 comparisons had outliers that were removed. At the major category level, 2 of the 18 comparisons had outliers that were removed. All results tables indicate where outliers were removed, and results prior to the removal of outliers are presented in footnotes.

Table 1
Characteristics of studies and samples included in this review

| Variable | N and % or mean and SD |
|--|------------------------|
| Article/study characteristics | |
| Publication type ^a | |
| Peer review | 81 (95.3%) |
| Dissertation | 3 (3.5%) |
| Govt. report | 1 (1.2%) |
| Study design ^b | |
| Case-control | 85 (96%) |
| Cross-sectional | 4 (4%) |
| Number of SOC groups ^b | |
| 1 | 64 (72%) |
| 2 | 25 (28%) |
| Number of comparison groups ^b | |
| 1 | 20 (22%) |
| 2 | 53 (60%) |
| 3+ | 16 (18%) |
| Median sample size | |
| SOC groups | 34 |
| Comparison groups | 29 |
| # of risk factors reported | 12.1 (12.6) |
| # of risk factors included in meta-analysis | 8.43 (8.7) |
| Sample characteristics—sex offenders against children | |
| Recruitment setting for SOC ^c | |
| Prison only | 35 (30.7%) |
| Treatment only | 25 (21.9%) |
| Both prison and treatment | 49 (43.0%) |
| Not specified | 5 (4.4%) |
| Age of offenders | |
| Adults only | 66 (74.2%) |
| Adolescents only | 12 (13.5%) |
| Both | 7 (7.9%) |
| Not specified | 4 (4.5%) |
| Abuse-victim relationship | |
| Familial only | 14 (12.3%) |
| Extra-familial only | 31 (27.2%) |
| Both | 18 (15.8%) |
| Not specified | 51 (44.7%) |
| Sample characteristics—comparison groups | |
| Type of comparison groups | |
| Sex offenders against adults | 42 (29.0%) |
| Non-sex offenders | 54 (37.2%) |
| Non-offenders | 49 (33.8%) |
| Recruitment setting for sex offenders against adults and non-sex offenders | |
| Prison only | 62 (64.6%) |
| Treatment only | 9 (9.4%) |
| Both prison and treatment | 20 (20.8%) |
| Not specified | 5 (5.2%) |
| Recruitment setting for non-offenders | |
| University students | 12 (24.5%) |
| Community | 20 (40.8%) |
| Both university and community | 5 (10.2%) |
| Other/not specified | 12 (24.5%) |

Note: SOC, sex offenders against children.

^a *n* = 85 articles.

^b *n* = 89 studies.

^c *n* = 114 groups of sex offenders against children.

Table 2

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for the six broad categories of variables

| | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|--------------------------------|-------------------------------|------------------------------|-----------------------|
| Family risk factors | | | |
| <i>d</i> (95% CI) | -.020 (-.27, .23) | .329 (.09, .57) | .513 (.31, .72) |
| <i>Q</i> (<i>p</i> -value) | 10.4 (.16) | 26.1 (.006) | 94.3 (.000) |
| Variance comp. | .025 | .093 | .129 |
| <i>k</i> (<i>n</i> : cm/comp) | 9 (917/984) | 12 (787/470) | 20 (2394/32924) |
| Externalizing behaviors | | | |
| <i>d</i> (95% CI) | -.248 (-.45, -.05) | -.181 (-.33, -.04) | .448 (.36, .54) |
| <i>Q</i> (<i>p</i> -value) | 50.0 (.000) | 34.7 (.010) | 19.9 (.281) |
| Variance comp. | .106 | .044 | .004 |
| <i>k</i> (<i>n</i> : cm/comp) | 16 (1086/768) | 19 (973/1133) | 18 (2338/33638) |
| Internalizing behaviors | | | |
| <i>d</i> (95% CI) | .141 (-.02, .30) | .126 (-.05, .31) | .394 (.24, .55) |
| <i>Q</i> (<i>p</i> -value) | 19.9 (.069) | 63.1 (.000) | 81.5 (.000) |
| Variance comp. | .031 | .108 | .083 |
| <i>k</i> (<i>n</i> : cm/comp) | 13 (807/578) | 21 (1023/911) | 23 (2253/33466) |
| Social deficits | | | |
| <i>d</i> (95% CI) | -.005 (-.17, .16) | .266 (.07, .47) | .580 (.36, .80) |
| <i>Q</i> (<i>p</i> -value) | 23.5 (.053) | 67.6 (.000) | 127.4 (.000) |
| Variance comp. | .044 | .148 | .225 |
| <i>k</i> (<i>n</i> : cm/comp) | 15 (677/433) | 21 (957/825) | 24 (1159/1725) |
| Sexual problems | | | |
| <i>d</i> (95% CI) | .031 (-.14, .21) ^a | .826 (.32, 1.34) | .451 (.06, .84) |
| <i>Q</i> (<i>p</i> -value) | 3.4 (.491) | 62.3 (.000) | 97.5 (.000) |
| Variance comp. | .000 | .443 | .379 |
| <i>k</i> (<i>n</i> : cm/comp) | 5 (526/186) | 8 (540/777) | 11 (821/1042) |
| Cognitions | | | |
| <i>d</i> (95% CI) | .144 (-.29, .58) | .507 (.16, .85) ^b | .544 (.37, .72) |
| <i>Q</i> (<i>p</i> -value) | 25.6 (.000) | 20.6 (.002) | 3.0 (.703) |
| Variance comp. | .236 | .363 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 6 (300/218) | 7 (285/300) | 6 (320/223) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the sex offenders against children and comparison groups that were used to generate the effect size.

^a Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = .143 (-.16, .45); (b) *d* = .324 (-.13, .78).

Results for major categories

Table 2 presents the effect sizes comparing SOC to the three comparison groups (SOA, non-sex offenders and non-offenders) for the six major categories. Considering the six comparisons of SOC to SOA, all were small in magnitude and only one was statistically significant: SOC had fewer externalizing problems than SOA (*d* = -.25). Compared to non-sexual offenders, SOC had more family risk factors (*d* = .33), fewer externalizing problems (*d* = -.18), greater social deficits (*d* = .27), greater sexual problems (*d* = .83), and cognitions more supportive of sexual crime (*d* = .51). All the comparisons between SOC and non-offenders were positive and in the medium range (*d*'s range from .39 for internalizing behaviors to .58 to social deficits). Most of the analyses of the major categories showed significant variability across studies. To examine the specific variables within the broad categories more closely, Tables 3–8 present effect sizes for the subcategories and specific constructs. Blank cells indicate insufficient data to present an effect size (i.e., the number of studies, *k* < 3).

Family risk factors

Table 3 shows effect sizes for subcategories and specific constructs for family risk factors. Sufficient data were available for only three comparisons between SOC and SOA, and none of these comparisons was statistically significant (history of abuse, poor family functioning, and poor attachment/bonding). In comparison to non-sex offenders, SOC were more likely to have a history of abuse (*d* = .44), including physical (*d* = .49) and sexual abuse (*d* = .70). In comparison to non-offenders, SOC were more likely to have a history of abuse (*d* = .59), including physical abuse (*d* = .44) and sexual abuse (*d* = .75). Sex offenders against children also had poorer histories of family functioning, including more harsh discipline (*d* = 1.0), poorer attachment or bonding (*d* = .47), and generally worse functioning of their family of origin (*d* = .52).

Externalizing behaviors

Table 4 shows effect sizes for subcategories of externalizing behaviors. All the effect sizes for comparisons of SOC to SOA were small and negative, meaning that the SOC had nominally, but not statistically, fewer problems in these areas than SOA.

Table 3

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for subcategories and specific constructs of family risk factors

| | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|---------------------------------------|------------------|-------------------------------|-------------------------------|
| History of abuse | | | |
| <i>d</i> (95% CI) | -.18 (-.49, .14) | .44 (.21, .67) | .59 (.32, .86) |
| <i>Q</i> (<i>p</i> -value) | 5.8 (.122) | 19.0 (.025) | 73.9 (.000) |
| Variance comp. | .049 | .066 | .170 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (336/121) | 10 (701/440) | 14 (2110/32654) |
| Physical abuse | | | |
| <i>d</i> (95% CI) | | .49 (.11, .87) | .44 (.16, .71) |
| <i>Q</i> (<i>p</i> -value) | | 13.6 (.018) | 8.5 (.076) |
| Variance comp. | | .135 | .045 |
| <i>k</i> (<i>n</i> : cm/comp) | | 6 (309/284) | 5 (1732/32318) |
| Sexual abuse | | | |
| <i>d</i> (95% CI) | | .70 (.44, .96) | .75 (.43, 1.07) |
| <i>Q</i> (<i>p</i> -value) | | 14.9 (.038) | 73.8 (.000) |
| Variance comp. | | .067 | .208 |
| <i>k</i> (<i>n</i> : cm/comp) | | 8 (555/401) | 11 (2038/32567) |
| Poor family functioning | | | |
| <i>d</i> (95% CI) | .02 (-.24, .27) | -.05 (-.31, .20) ^a | .52 (.31, .74) |
| <i>Q</i> (<i>p</i> -value) | 3.6 (.465) | 1.7 (.623) | 57.1 (.000) |
| Variance comp. | .000 | .000 | .104 |
| <i>k</i> (<i>n</i> : cm/comp) | 5 (224/100) | 4 (171/116) | 14 (2121/32591) |
| Poor attachment or bonding | | | |
| <i>d</i> (95% CI) | .05 (-.22, .32) | .08 (-.20, .35) | .47 (.28, .66) |
| <i>Q</i> (<i>p</i> -value) | 3.0 (.386) | .04 (.978) | 28.7 (.001) |
| Variance comp. | .001 | .000 | .051 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (170/87) | 3 (117/102) | 11 (2026/32489) |
| Controlling coercive parenting | | | |
| <i>d</i> (95% CI) | | | -.11 (-.59, .37) ^b |
| <i>Q</i> (<i>p</i> -value) | | | 16.5 (.001) |
| Variance comp. | | | .189 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 4 (218/212) |
| Harsh discipline | | | |
| <i>d</i> (95% CI) | | | 1.00 (.50, 1.51) |
| <i>Q</i> (<i>p</i> -value) | | | 3.549 (.170) |
| Variance comp. | | | .088 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (84/68) |
| Parental instability | | | |
| <i>d</i> (95% CI) | | | .02 (-.33, .38) |
| <i>Q</i> (<i>p</i> -value) | | | 5.2 (.073) |
| Variance comp. | | | .061 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (1710/32249) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the SOC and comparison groups that were used to generate the effect size.

^a Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = .151 (-.30, .60); (b) *d* = .408 (-.12, .94).

Only one category, however, was statistically significant (anger/hostility, *d* = -.27). Comparing SOC to non-sex offenders, effect sizes were also mostly small and negative. Only two were statistically different from zero: SOC had less lifestyle instability (*d* = -.24), and less antisocial personality disorder (*d* = -.16) than non-sex offenders. When SOC were compared to non-offenders, however, the effect sizes were all positive, and most were in the medium and large range. Compared to non-offenders, SOC showed greater aggression and violence (*d* = .46), non-violent criminality (*d* = .29), anger/hostility (*d* = .30), substance abuse (*d* = .40), paranoia/mistrust (*d* = .49), antisocial personality disorder (*d* = .76), and other Cluster B personality disorders (*d* = .44). It should be noted that 5 of the 11 comparisons of SOC to non-offenders for externalizing behaviors contained outliers, suggesting there was considerable variation for this set of results.

Internalizing behaviors

Comparisons of SOC to SOA on internalizing behaviors revealed effect sizes that were generally in the positive direction, but small (Table 5). Sex offenders against children had significantly more anxiety, more depression, and lower self-esteem than SOA (*d*'s = .29–.36). There were few differences between SOC and non-sex offenders. Compared to non-sex offenders, SOC were more likely to have a history of mental illness (*d* = .29), anxiety (*d* = .28), and low self-esteem (*d* = .24). All other effect sizes did not differ from zero (*d*'s range from -.25 to .21). The effect sizes comparing SOC to non-offenders were all positive and most were statistically significant. In comparison to non-offenders, SOC were more likely to show anxiety

Table 4

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for subcategories and specific constructs of externalizing behaviors

| Variable | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|--|--------------------------------|-------------------------------|------------------------------|
| Aggression/violence | | | |
| <i>d</i> (95% CI) | | -.14 (-.45, .17) | .46 (.25, .67) |
| <i>Q</i> (<i>p</i> -value) | | 1.2 (.555) | 4.8 (.440) |
| Variance comp. | | .000 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (71/233) | 6 (224/276) |
| Non-violent delinquency/criminality | | | |
| <i>d</i> (95% CI) | | | .29 (.04, .54) ^d |
| <i>Q</i> (<i>p</i> -value) | | | 1.2 (.554) |
| Variance comp. | | | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (157/168) |
| Non-criminal externalizing problem | | | |
| <i>d</i> (95% CI) | | | 1.64 (-.31, 3.58) |
| <i>Q</i> (<i>p</i> -value) | | | 37.7 (.000) |
| Variance comp. | | | 2.773 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (161/159) |
| Anger/hostility | | | |
| <i>d</i> (95% CI) | -.27 (-.51, -.04) ^a | -.16 (-.39, .07) | .30 (.05, .55) ^e |
| <i>Q</i> (<i>p</i> -value) | 1.1 (.787) | 11.0 (.088) | 1.2 (.880) |
| Variance comp. | .000 | .042 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (159/135) | 7 (297/306) | 5 (122/129) |
| Substance abuse | | | |
| <i>d</i> (95% CI) | -.31 (-.62, .00) | -.03 (-.20, .14) ^c | .40 (.29, .51) |
| <i>Q</i> (<i>p</i> -value) | 8.1 (.089) | 1.8 (.624) | 5.7 (.335) |
| Variance comp. | .057 | .159 | .004 |
| <i>k</i> (<i>n</i> : cm/comp) | 5 (307/370) | 4 (272/262) | 6 (1832/32415) |
| Alcohol abuse | | | |
| <i>d</i> (95% CI) | -.13 (-.36, .09) ^b | .22 (-.07, .51) | .31 (.26, .36) |
| <i>Q</i> (<i>p</i> -value) | 3.8 (.279) | 3.0 (.224) | 2.7 (.615) |
| Variance comp. | .014 | .026 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (262/318) | 3 (256/249) | 5 (1792/32059) |
| Drug abuse | | | |
| <i>d</i> (95% CI) | -.21 (-.45, .04) | | |
| <i>Q</i> (<i>p</i> -value) | 2.7 (.264) | | |
| Variance comp. | .014 | | |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (281/319) | | |
| Paranoia/mistrust | | | |
| <i>d</i> (95% CI) | | | .49 (.28, .70) ^f |
| <i>Q</i> (<i>p</i> -value) | | | 4.8 (.31) |
| Variance comp. | | | .010 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 5 (239/225) |
| Cluster B personality disorder | | | |
| <i>d</i> (95% CI) | -.25 (-.57, .08) | -.04 (-.21, .13) | .50 (.29, .70) ^g |
| <i>Q</i> (<i>p</i> -value) | 42.6 (.000) | 13.8 (.087) | 8.0 (.159) |
| Variance comp. | .168 | .026 | .023 |
| <i>k</i> (<i>n</i> : cm/comp) | 8 (815/526) | 9 (564/616) | 6 (277/956) |
| Lifestyle instability/impulsivity | | | |
| <i>d</i> (95% CI) | | -.24 (-.45, -.04) | 1.01 (-.28, 2.31) |
| <i>Q</i> (<i>p</i> -value) | | 1.9 (.387) | 24.5 (.000) |
| Variance comp. | | .000 | 1.196 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (167/236) | 3 (67/73) |
| Antisocial PD | | | |
| <i>d</i> (95% CI) | -.04 (-.40, .32) | -.16 (-.31, -.01) | .76 (.49, 1.02) ^h |
| <i>Q</i> (<i>p</i> -value) | 16.3 (.003) | 3.9 (.558) | .7 (.699) |
| Variance comp. | .118 | .000 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 5 (406/350) | 6 (365/374) | 3 (120/117) |
| Other Cluster B PD | | | |
| <i>d</i> (95% CI) | -.28 (-.59, .04) | .07 (-.18, .33) | .44 (.19, .70) |
| <i>Q</i> (<i>p</i> -value) | 4.4 (.109) | 4.2 (.123) | 6.8 (.077) |
| Variance comp. | .041 | .026 | .037 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (308/314) | 3 (332/309) | 4 (234/914) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the SOC and comparison groups that were used to generate the effect size.

^a Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = -.096 (-.44, .24); (b) *d* = -.481 (-.99, .03); (c) *d* = -.304 (-.73, .12); (d) *d* = 1.27 (.08, 2.47); (e) *d* = .453 (.13, .78); (f) *d* = .238 (-.19, .67); (g) *d* = .726 (.35, 1.10); (h) *d* = 1.017 (.47, 1.58).

Table 5

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults, non-sex offenders, and non-offenders for subcategories and specific constructs of internalizing behaviors

| Variable | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|---------------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Major mental illness | | | |
| <i>d</i> (95% CI) | .17 (–.02, .35) | .30 (.00, .59) ^b | |
| <i>Q</i> (<i>p</i> -value) | 2.3 (.318) | 5.5 (.140) | |
| Variance comp. | .004 | .036 | |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (338/262) | 4 (316/316) | |
| Poor coping strategies | | | |
| <i>d</i> (95% CI) | | –.25 (–.51, .02) | .25 (–.30, .80) |
| <i>Q</i> (<i>p</i> -value) | | .1 (.937) | 11.0 (.012) |
| Variance comp. | | .000 | .228 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (115/110) | 4 (105/101) |
| Anxiety | | | |
| <i>d</i> (95% CI) | .32 (.18, .46) | .28 (.15, .42) | .29 (.10, .49) |
| <i>Q</i> (<i>p</i> -value) | 3.1 (.798) | 5.1 (.646) | 5.6 (.585) |
| Variance comp. | .000 | .000 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 7 (490/395) | 8 (473/433) | 8 (213/245) |
| Depression | | | |
| <i>d</i> (95% CI) | .29 (.14, .44) | .11 (–.13, .34) | .46 (.13, .80) |
| <i>Q</i> (<i>p</i> -value) | 1.7 (.782) | 11.5 (.073) | 6.0 (.197) |
| Variance comp. | .000 | .044 | .049 |
| <i>k</i> (<i>n</i> : cm/comp) | 5 (437/327) | 7 (427/390) | 5 (106/156) |
| Low self-esteem | | | |
| <i>d</i> (95% CI) | .36 (.13, .59) ^a | .25 (.00, .49) | .49 (.44, .53) ^c |
| <i>Q</i> (<i>p</i> -value) | 1.5 (.693) | 26.0 (.004) | 12.1 (.595) |
| Variance comp. | .000 | .100 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (241/110) | 11 (440/342) | 15 (2010/33510) |
| Mood disorder (bi-polar) 3B7 | | | |
| <i>d</i> (95% CI) | –.09 (–.25, .07) | –.08 (–.30, .14) | |
| <i>Q</i> (<i>p</i> -value) | .3 (.862) | 6.9 (.232) | |
| Variance comp. | .000 | .019 | |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (338/262) | 6 (370/377) | |
| External locus of control | | | |
| <i>d</i> (95% CI) | | | .59 (.27, .91) |
| <i>Q</i> (<i>p</i> -value) | | | 2.6 (.277) |
| Variance comp. | | | .018 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (87/130) |
| Cluster A personality disorder | | | |
| <i>d</i> (95% CI) | .15 (–.03, .33) | .21 (–.08, .51) | .59 (.33, .85) |
| <i>Q</i> (<i>p</i> -value) | 2.2 (.335) | 4.4 (.111) | .4 (.816) |
| Variance comp. | .003 | .036 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (338/262) | 3 (296/296) | 3 (120/117) |
| Paranoid | | | |
| <i>d</i> (95% CI) | .10 (–.37, .56) | –.01 (–.54, .51) | |
| <i>Q</i> (<i>p</i> -value) | 11.0 (.004) | 13.2 (.001) | |
| Variance comp. | .134 | .169 | |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (338/262) | 3 (296/296) | |
| Somatization/hypochondriasis | | | |
| <i>d</i> (95% CI) | | .14 (–.05, .32) | .19 (–.05, .42) |
| <i>Q</i> (<i>p</i> -value) | | 3.9 (.270) | .4 (.947) |
| Variance comp. | | .009 | .000 |
| <i>k</i> (<i>n</i> : cm/comp) | | 4 (365/340) | 4 (124/175) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the child sex offender and comparison groups that were used to generate the effect size.

^a Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = .197 (–.17, .56); (b) *d* = .009 (–.58, .59); (c) *d* = .551 (.38, .72).

(*d* = .29), depression (*d* = .46), low self-esteem (*d* = .48), external locus of control (*d* = .59), and Cluster A personality disorders (*d* = .59).

Social deficits

Comparing SOC and SOA on measures of social deficits produced effect sizes that were all small to null and non-significant, with no consistent direction (Table 6). Compared to non-sex offenders, however, SOC show greater social deficits on several

Table 6

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for subcategories and specific constructs of social deficits

| | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|--|------------------|-------------------------------|--------------------------------|
| Social skills/competence deficit | | | |
| <i>d</i> (95% CI) | -.15 (-.50, .21) | .42 (.17, .66) | .28 (.02, .54) ^{*c} |
| <i>Q</i> (<i>p</i> -value) | 2.7 (.268) | 2 (.977) | 19.0 (.008) |
| Variance comp. | .024 | .000 | .083 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (87/84) | 4 (143/130) | 8 (552/403) |
| Loneliness | | | |
| <i>d</i> (95% CI) | .19 (-.04, .41) | .44 (.15, .73) ^{*a} | 1.02 (.49, 1.55) |
| <i>Q</i> (<i>p</i> -value) | 8.8 (.183) | 30.9 (.000) | 169.6 (.000) |
| Variance comp. | .029 | .146 | .732 |
| <i>k</i> (<i>n</i> : cm/comp) | 6 (289/215) | 10 (484/385) | 11 (602/1260) |
| General empathy deficits | | | |
| <i>d</i> (95% CI) | -.14 (-.44, .16) | .18 (-.21, .57) | .30 (-.085, .69) ^{*d} |
| <i>Q</i> (<i>p</i> -value) | 2.4 (.294) | 6.3 (.100) | 27.0 (.000) |
| Variance comp. | .013 | .083 | .207 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (126/95) | 4 (124/98) | 7 (321/234) |
| Deficits in cognitive empathy | | | |
| <i>d</i> (95% CI) | | .05 (-.32, .41) | .36 (-.05, .78) ^{*e} |
| <i>Q</i> (<i>p</i> -value) | | 3.0 (.227) | 16.5 (.002) |
| Variance comp. | | .033 | .165 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (104/78) | 5 (273/191) |
| Deficits in emotional empathy | | | |
| <i>d</i> (95% CI) | -.24 (-.62, .14) | .27 (-.42, .95) | .01 (-.40, .41) |
| <i>Q</i> (<i>p</i> -value) | 4.0 (.137) | 10.4 (.005) | 31.1 (.000) |
| Variance comp. | .057 | .298 | .235 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (126/95) | 3 (104/78) | 7 (329/243) |
| Difficulty w/intimate relationships | | | |
| <i>d</i> (95% CI) | -.02 (-.29, .25) | .42 (.15, .70) | .84 (.63, 1.05) |
| <i>Q</i> (<i>p</i> -value) | 10.6 (.103) | 22.8 (.007) | 15.7 (.072) |
| Variance comp. | .056 | .117 | .046 |
| <i>k</i> (<i>n</i> : cm/comp) | 7 (261/181) | 10 (350/361) | 10 (452/375) |
| Lack of secure attachment | | | |
| <i>d</i> (95% CI) | .25 (-.18, .68) | .10 (-.16, .37) ^{*b} | .79 (.57, 1.01) |
| <i>Q</i> (<i>p</i> -value) | 7.8 (.051) | 4.9 (.295) | 11.6 (.116) |
| Variance comp. | .116 | .018 | .037 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (175/103) | 5 (211/210) | 8 (402/322) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the child sex offender and comparison groups that were used to generate the effect size.

* Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = .656 (.23, 1.08); (b) *d* = .088 (-.27, .45); (c) *d* = .402 (.04, .76); (d) *d* = .614 (.04, 1.19); (e) *d* = 1.078 (.20, 1.96).

measures: low social skills/competence (*d* = .42), loneliness (*d* = .44), and difficulties with intimate relationships (*d* = .42). Sex offenders against children also showed greater social deficits than the non-offenders on all the measures, with statistically significant effects found for low social skill/competence (*d* = .28), loneliness (*d* = 1.02), difficulties with intimate relationships (*d* = .84), and lack of secure attachment (*d* = .79).

Sexual behaviors

Despite its theoretical importance in the development of child molesting, there were relatively little data for comparing subcategories of sexual problems (Table 7). Only one subcategory had sufficient data for a comparison of SOC to SOA (deviant sexual interest) and that yielded a null effect (*d* = .03). In comparison to non-sex offenders, however, SOC looked worse on all measures, with significantly greater sexual externalizing problems (*d* = .68), higher sex drive and preoccupations (*d* = .25), more deviant sexual interests (*d* = .30), and greater sexualized coping (*d* = .97). The estimate for sexual interest in children, was also in medium/large range (*d* = .70), but was not different from zero due to very wide confidence intervals. Comparisons of SOC to non-offenders showed only one significant effect: sex offenders against children had more deviant sexual interests than non-offenders (*d* = .38). The other three effects were in the small and medium range but were not different from zero.

Attitudes/cognitions

There were few data points for comparisons of attitudes and cognitions supporting sex crimes. The two comparisons between SOC and SOA were both not significant. The only comparison of SOC and non-sex offenders, revealed a medium sized effect for attitudes that minimize perpetrator culpability (*d* = .63) with SOC expressing significantly stronger attitudes

Table 7

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for subcategories and specific constructs of sexual problems

| Variable | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|--------------------------------------|------------------------------|------------------------------|--------------------------------|
| Sexual externalizing problems | | | |
| <i>d</i> (95% CI) | | .68 (.16, 1.20) | -.27 (-1.02, .48) ^d |
| <i>Q</i> (<i>p</i> -value) | | 30.6 (.000) | 32.6 (.000) |
| Variance comp. | | .293 | .409 |
| <i>k</i> (<i>n</i> : cm/comp) | | 5 (440/401) | 3 (486/289) |
| High sex drive | | | |
| <i>d</i> (95% CI) | | .25 (.07, .42) ^b | -.27 (-1.02, .48) ^e |
| <i>Q</i> (<i>p</i> -value) | | 1.2 (.556) | 32.66 (.000) |
| Variance comp. | | .000 | .409 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (396/195) | 3 (506/309) |
| Any deviant sexual interest | | | |
| <i>d</i> (95% CI) | .03 (-.16, .22) ^a | .30 (.12, .469) ^c | .38 (.18, .58) ^f |
| <i>Q</i> (<i>p</i> -value) | 3.1 (.370) | 1.3 (.510) | 3.6 (.308) |
| Variance comp. | .002 | .000 | .008 |
| <i>k</i> (<i>n</i> : cm/comp) | 4 (499/161) | 3 (396/195) | 4 (450/743) |
| Sexual interest in children | | | |
| <i>d</i> (95% CI) | | .70 (-.21, 1.61) | .61 (-.17, 1.40) |
| <i>Q</i> (<i>p</i> -value) | | 22.1 (.000) | 15.8 (.000) |
| Variance comp. | | .502 | .410 |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (416/265) | 3 (352/174) |
| Deviant sexual fantasy | | | |
| <i>d</i> (95% CI) | | .23 (-.12, .57) | |
| <i>Q</i> (<i>p</i> -value) | | 5.5 (.064) | |
| Variance comp. | | .059 | |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (396/195) | |
| Sexualized coping | | | |
| <i>d</i> (95% CI) | | .97 (.05, 1.88) | |
| <i>Q</i> (<i>p</i> -value) | | 16.3 (.000) | |
| Variance comp. | | .570 | |
| <i>k</i> (<i>n</i> : cm/comp) | | 3 (80/106) | |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the SOC and comparison groups that were used to generate the effect size.

^a Outlier removed for this entry. *d* and 95% CI before removing outliers as follows: (a) *d* = .173 (-.20, .55); (b) *d* = .529 (.03, 1.03); (c) *d* = .506 (.08, .93); (d) *d* = .323 (-.59, 1.23); (e) *d* = .314 (-.53, 1.16); (f) *d* = .574 (.25, .90).

than non-sex offenders. Similarly, SOC showed more attitudes tolerant of adult-child sex (*d* = .49) and more cognitions that minimize the perpetrators culpability (*d* = .54) than non-offenders.

To provide a view of the largest effects across categories for each of the three comparisons, we have re-ordered the effect sizes by magnitude in Table 9. Table 9 includes subcategories only rather than specific constructs when results were consistent among specific constructs within a subcategory, and major categories are listed in bold. Table 9 shows clearly that SOC were most different from non-offenders, and least different from SOA. The differences between SOC and non-sex offenders mainly concerned sexual problems and relationship deficits.

Discussion

The results from 89 studies comparing sex offenders against children and sex offenders against adults, non-sex offenders, and non-offenders are summarized succinctly in Table 2 (though there are clearly nuanced differences within major categories for each comparison group). There were very few differences between SOC and SOA, except that SOA predictably displayed higher levels of externalizing behaviors. Large differences between SOC and non-sex offenders were found for sexual problems and attitudinal/cognitions, and more modest differences were found for family problems and social deficits. Finally, substantial differences between SOC and non-offenders were found for all six major categories with effect sizes in the medium range (*d* = .39–.58). Within the major categories, several large and significant effects (*d* = .70 or greater) were found including history of sexual abuse, antisocial personality, difficulty with intimate relationships, experiencing harsh discipline as a child, and loneliness.

The results from this meta-analysis are consistent with many of the theoretical assertions regarding the development of child sex offending, but are silent on others. Theories advanced by Ryan (1998), Finkelhor (1984), Marshall and Barbaree (1990), are what Ward and Seigert (2002) call “Level I” theories in that they are comprehensive, multifactorial descriptions of the development of sexual offending behaviors. Each describes a number of individual, developmental, and/or contextual

Table 8

Effect sizes for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders for subcategories and specific constructs of attitudes/cognitions

| | SOC vs. SOA | SOC vs. non-sex offenders | SOC vs. non-offenders |
|---|------------------|---------------------------|-----------------------|
| Cognitions tolerant of sex crime/rape attitudes | | | |
| <i>d</i> (95% CI) | .02 (–.50, .54) | | |
| <i>Q</i> (<i>p</i> -value) | 8.5 (.014) | | |
| Variance comp. | .161 | | |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (177/100) | | |
| Cognitions tolerant of adult-child sex | | | |
| <i>d</i> (95% CI) | | | .49 (.10, .89) |
| <i>Q</i> (<i>p</i> -value) | | | 5.3 (.070) |
| Variance comp. | | | .077 |
| <i>k</i> (<i>n</i> : cm/comp) | | | 3 (224/134) |
| Cognitions that minimize perpetrators culpability | | | |
| <i>d</i> (95% CI) | .17 (–.66, 1.00) | .63 (.25, 1.01) | .54 (.17, .92) |
| <i>Q</i> (<i>p</i> -value) | 15.7 (.000) | 7.4 (.060) | 4.7 (.094) |
| Variance comp. | .471 | .090 | .062 |
| <i>k</i> (<i>n</i> : cm/comp) | 3 (129/113) | 4 (177/201) | 3 (217/135) |

Note: *Q* (*p*-value) are *Q* statistic and *p*-values from fixed-effects models. Variance comp. is the variance component from the random effects model. *k* (*n*: cm/comp) is the number of studies and total sample sizes for the SOC and comparison groups that were used to generate the effect size.

variables that may lead to the development of sexual offending. The present findings are consistent with many of the statements from these theorists on which risk factors may lead to child sex offending. Our results do not address the questions of how risk factors combine or interact to lead to the behavior of child sex offending, nor do they address the question of multiple pathways leading to child sex offending (Hall & Hirschman, 1992; Ward & Seigert, 2002).

The findings that sex offenders of children and sex offenders of adults were similar on most risk factors must be incorporated into theory to address the question, what risk factors lead an individual to perpetrate against a child versus an adult. These findings suggest the importance of general risk factors that can lead to various forms of offending (sexual and non-sexual). This notion of general or shared risk factors suggests that certain environments and qualities can lead to a variety of risk behaviors, including sexual offending against adults or children, and general criminal offending. This idea has been discussed in the context of sexual offending (e.g., Marshall & Barbaree, 1990) and more general criminal offending including sexual offending (e.g., Seto & Lalumière, 2006). There is substantial empirical evidence of the existence of general risk factors for various types of sexual offending (e.g., Lalumière et al., 2005), for various types of criminal behavior (Thornberry & Krohn, 2003), and for non-criminal risk behaviors that tends to emerge in adolescence (e.g., Jessor & Jessor, 1977).

Another finding worthy of comment is the strong relationship between being a victim of sexual abuse and perpetration of child sexual abuse; SOC were much more likely to have been victims of child sexual abuse than either non-sex offenders and non-offenders (there were insufficient data to make comparisons to SOA). The “cycle of sexual violence” has been discussed at length in the literature (Ryan, 1999; Widom, 1989b), but there has been limited empirical support for this popular notion. Despite our findings of a large difference, looking at the data differently shows that most sex offenders against children have not been sexually abused as a child (e.g., Marshall & Mazzucco, 1995), and most individuals who are sexually abused as children do not become perpetrators of child sexual abuse (Paolucci et al., 2001; Salter et al., 2003). Meta-analyses such as this one do not show the absolute risks attributable to a given risk factor (i.e., the absolute proportion of abused children that become sex offenders), only the relative risk between two groups. Being a victim of child sexual abuse is strong risk factor, but is by no means the only important risk factor.

Research gaps

A number of research gaps are apparent from both the results of the meta-analysis, and from the pool of studies included in this review. Perhaps the most obvious gap is that no longitudinal studies were found. Cross-sectional studies allow for the possibility that observed differences between groups developed after (and/or because of) the identification of the variables used to classify individuals (i.e., child sex offending), and the heavy reliance on self-report data compounds this problem. Longitudinal research is obviously needed, but would be extremely difficult; very large samples would need to be followed over very long periods of time to identify sufficient numbers of individuals who would eventually perpetrate child sexual abuse (one possibility may be to use ongoing, large, longitudinal cohort studies; Thornberry & Krohn, 2003). For example, one well-known longitudinal study conducted by Salter and colleagues (Salter et al., 2003) followed abused boys over time for between 7 and 19 years to examine sexual abuse perpetration. (That study was not included in this review because but it did not distinguish between those who abused children vs. those who abused other adults. This was true for many studies, and in fact, perpetrators of sex offenses against children may also perpetrate sexual offenses against adults.) In the absence of longitudinal studies, researchers may wish to focus on collecting data about variables that may more clearly relate to the initiation of child sex offending and may be distinguished from variables that may be affected by being identified as a child sex offender.

Table 9

Summary of effect sizes by magnitude for sex offenders against children (SOC) vs. sex offenders against adults (SOA), non-sex offenders, and non-offenders

| SOC vs. SOA | SOC vs. non-sex offenders | | SOC vs. non-offenders | |
|----------------------------------|--|----------------------------|--|--------------------------------|
| Large effects ($d > .70$) | Large effects ($d > .70$) | | Large effects ($d > .70$) | |
| | Sexualized coping | .97* | Non-criminal externalizing problem | 1.64 |
| | Sexual problems | .83* | Loneliness | 1.02* |
| | History of sexual abuse | .70* | Lifestyle instability/impulsivity | 1.01 |
| | | | Harsh discipline as child | 1.00* |
| | | | Difficulty with intimate relationships | .84* |
| | | | Antisocial PD | .76* |
| | | | History of sexual abuse | .75* |
| SOC vs. SOA | SOC vs. non-sex offenders | | SOC vs. non-offenders | |
| Medium effects ($d = .40-.69$) | Medium effects ($d = .40-.69$) | | Medium effects ($d = .40-.69$) | |
| | Sexual interest in children | .70 | Sexual interest in children | .61* |
| | Sexual externalizing problems | .68* | Social deficits | .58* |
| | Cognitions minimizing culpability | .63* | Cluster A PD | .59* |
| | Cognitions supporting sex crime | .51* | External locus of control | .59* |
| | History of physical abuse | .49* | Cognitions supporting sex crime | .54* |
| | Paranoia/mistrust | .45 | Cognitions minimizing culpability | .54* |
| | Loneliness | .44* | Family risk factors | .51* |
| | Difficulty with intimate relationship | .42* | Cognitions tolerant of adult-child sex | .49* |
| | Social skills deficit | .41* | Paranoia/mistrust | .49* |
| | | | Low self-esteem | .49* |
| | | | Poor attachment/bonding | .47* |
| | | | Depression | .46* |
| | | | Aggression/violence | .46* |
| | | | Externalizing behaviors | .45* |
| | | | Sexual problems | .45* |
| | | | History of physical abuse | .44* |
| | | | Other Cluster B PD | .44* |
| | | | Substance abuse | .40* |
| SOC vs. SOA | SOC vs. non-sex offenders | | SOC vs. non-offenders | |
| Small effects ($d = .20-.39$) | Small effects ($d = .20-.39$) | | Small effects ($d = .20-.39$) | |
| Low self-esteem | .36* | Family risk factors | .33* | Internalizing behaviors |
| Anxiety | .32* | Substance abuse | -.30 | Anger/hostility |
| Substance abuse | -.31 | Major mental illness | .29* | General Empathy deficits |
| Depression | .29* | Anxiety | .28* | Anxiety |
| Anger/hostility | -.27* | Social deficits | .27* | Non-violent delinquency |
| Externalizing behaviors | -.25* | Emotional empathy deficit | .26 | Social skills deficit |
| Lack of secure attachment | .25 | Poor coping | -.25 | Sexual externalizing |
| Deficits in emotional empathy | -.24 | Lifestyle instability | -.24* | Poor coping |
| Cluster B PD | -.24 | Low self-esteem | .24* | |
| | | Deviant sexual fantasy | .23 | |
| | | Alcohol abuse | .22 | |
| | | Cluster A PD | .21 | |

Note: * indicates effect was statistically significant at $p < .05$.
 Bolded entries were meant to indicate any of the six major categories.

A second research gap is for more work on the description and distinction among offender types, victim types, and situational aspects of child sex offending. Theory again appears to be ahead of the data, with theoretical descriptions of typologies having focused on factors such as the degree of fixation of one's pedophilic interests and the level of social competence (Knight, Carter, & Prentky, 1989) antisocial tendencies versus pedophilic interests (Becker, 1988), and victim factors such as relatedness and/or victim age (Hunter, Hazelwood, & Sleslinger, 2000; Kaufman et al., 1998; Williams & Finkelhor, 1990). Though we abstracted these variables, little information was available (empirical studies that focused only on differences between types of child sex offenders would not have been included in this review). For example, about half of the studies included here did not differentiate between perpetrators who offended against family members versus non-family members. There was very little additional information provided about victim characteristics, such as age or gender, or about the types of offenses committed (non-contact, contact with vs. without penetration, etc.) This is clearly a need for future investigation, though in many cases, sex offenders against children may have multiple victims or types of offenses, so neat categorization may not be possible.

A final gap worthy of note is that there were no studies that examined how broad social factors may relate to child sex offending. Social-ecological models of risk behaviors (Jessor & Jessor, 1977) and child abuse (Belsky, 1993) suggest that behavior is a function of individual, family, peer, and broader social-level influences. Most studies have focused on the

individual and interpersonal levels, specifically family and intimate relationships. More work is needed at other social-ecological levels, and a greater focus on protective factors is also needed (e.g., Salter et al., 2003).

Prevention implications

How does one prevent the onset of child sex offending? We have already noted that the findings suggest the presence of general risk factors. One likely set of important general risk factors are family/parenting factors. Family risk factors have been identified as playing an important role in the development of various deviant behaviors, including sexual offending (Marshall & Barbaree, 1990; Ryan, 1998), general delinquency/criminality (Farrington, 2003), and non-criminal risk behaviors such as aggression, sexual risk behavior, and substance abuse (Dittus, Miller, Kotchick, & Forehand, 2003; Kumpfer, 2002; Lipsey & Derzon, 1998; Thornberry, 1994). Longitudinal studies have linked specific family risk factors such as child maltreatment (e.g., Widom, 1989a; Widom & Hiler-Sturmhofel, 2001; Widom & Kuhns, 1996; Widom & White, 1997) and parenting processes like harsh discipline and parental monitoring to various negative outcomes (e.g., Andrews, Foster, Capaldi, & Hops, 2000; Ehrensaft et al., 2003; Li, Feigelman, & Stanton, 2000; Miller, Forehand, & Kotchick, 1999; Stirpe & Stermac, 2003). Family factors have appeal not only because they have been shown to relate to so many undesirable outcomes, but because there are many empirically supported interventions available for prevention efforts. Programs such as the Positive Parenting Program (Sanders, Turner, & Markie-Dadds, 2002), parent-child interaction therapy or PCIT (Eyberg & Robinson, 1982), and others (Lutzker & Bigelow, 2000; Webster-Stratton, 1992) have been shown to change the behavior of parents who have been abusive or neglectful and to reduce child behavior problems (Gershater-Molko, Lutzker, & Wesch, 2002; Timmer, Urquiza, Zebell, & McGrath, 2005). Family-based strategies can also have a primary prevention effect on the prevention of child abuse and neglect (Olds et al., 1997).

Other potential points for intervention may focus on the development of appropriate social and emotional skills that contribute to sexual offending (Malamuth, 2003; Ward & Seigert, 2002). Interventions for children and teens have been shown to improve social skills and can lead to reduced risk behavior (e.g., Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999). Strategies that seek to promote general social skills in children and youth are growing in popularity as efficient means for preventing a range of negative behaviors that tend to emerge in adolescence (Catalano, Berglund, Ryan, Longczak, & Hawkins, 2004). The use of such approaches for the prevention of child sex offending warrants further attention.

Limitations of this review

There are several limitations of this meta-analysis worthy of mention. A first limitation is that the review included only studies published 1990–2003. The cutoff date of 1990 was chosen for practical purposes and to focus on the work that is most relevant to recent theory. However, to the extent that there has been a shift in the focus of that work since the 1990s, the results may not be representative of the entire body of work on sex offenders against children. Such a shift may reveal itself in the number of studies on a particular topic. For example, we were surprised to see that there were relatively few studies examining the sexual behaviors and preference of sex offenders against children relative to other groups. There is a body of literature indicating that sexual arousal to deviant stimuli reliably distinguishes sexual offenders from non-offenders (Earls & Quinsey, 1985; Quinsey, 1986), and many studies were conducted prior to the 1990 cutoff date for inclusion in this review. Another example is the large body of literature on the relationship between intelligence and sexual offending (Cantor, Blanchard, Robichaud, & Christensen, 2005). Consequently, it is important for the reader to keep in mind that findings established prior to 1990 or after 2003 may have insufficient representation in this review.

A second limitation is that the data were presented as a very broad summary of the literature on child sexual offenders, and that breadth of presentation limited the extent to which we could present more detailed analyses. Many meta-analyses focus on fewer dependent variables and conduct more in-depth analyses of those variables. More detailed analyses are likely to uncover moderating influences of the findings here. Because of the number of studies available and data available in this review, our future analyses will likely focus on the six major categories only, and even that may not be possible to the extent the variables within those major categories are heterogeneous (which many appear to be).

Finally, it is important to note that the current review focused on the behavior of child sex offending, rather than on pedophilia. Pedophilia focuses on sexual interest in children along with distress and/or impairment from that interest. Few studies reviewed here examined the intersection between child sex offending and pedophilia; that is, do child sex offenders who are pedophiles differ than those who are not with regard to risk and protective factors. Studies that include only pedophiles may or may not yield similar results.

Conclusion

This review found several classes of risk factors that reliably differentiated sex offenders against children from non-offenders, but fewer that differentiated sex offenders against children from non-sex offenders or sex offenders against adults. Future work must continue to examine distinctions between both types of sex offenders, and between sex offenders and non-offenders to build effective and efficient prevention strategies. Such work will require both researchers and providers

to collect data on family and childhood variables that are present prior to initiation of sexual offending in order to inform primary prevention strategies.

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Appendix A. Articles included in the meta-analysis (may not have been cited in the text).

Note: References with single asterisk were included in the meta-analysis, but were not included in the calculation of effect sizes.

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