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Preventive risk assessment in forensic child and youth care

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Publication date

2017

Document Version

Other version

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Citation for published version (APA):

Assink, M. (2017). *Preventive risk assessment in forensic child and youth care*.

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CHAPTER

4

Risk Factors for Sexual Victimization of Children: A Meta-Analytic Review

This chapter is adapted from:
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Oort, F. J., Stams, G. J. J. M., & Van der Put, C. E. (2016).
Risk Factors for Sexual Victimization of Children: A Meta-Analysis.
Manuscript in revision.

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Abstract

The present meta-analysis examined the association between risk factors and being a victim of child sexual abuse. We conducted a series of three-level meta-analyses to determine the overall mean effect of several domains of risk factors for child sexual abuse. In total, 89 studies reported on 1,038 effect sizes, which were classified into 27 risk domains. The results yielded a significant overall mean effect for 19 risk domains ranging from $r = .065$ to $r = .335$, and the largest effects ($r > .250$) were found for parental history of abuse, prior or concurrent forms of child abuse, a child's mental, physical, or behavioral problems, and the child being female. Moderator analyses revealed a stronger mean effect of mother-related risk factors relative to the mean effect of father-related risk factors. The findings demonstrate that multiple risk domains are associated with child sexual abuse. The implications of these findings for assessment procedures as well as intervention strategies are discussed.

Keywords: meta-analysis, child sexual abuse, child maltreatment, sexual victimization, risk factor

4.1 Introduction

In the past several decades, many scholars have provided meta-analytic evidence for the association between child sexual abuse victimization and a variety of mental, physical, and behavioral problems over the life course. These problems range from general symptoms of psychopathology (Neumann, Houskamp, Pollock, & Briere, 1996) to more specific problems, such as suicidal behavior (DeVries, Mak, Child, Falder, Bacchus, Astbury, & Watts, 2014; Neumann et al., 1996), depression and anxiety (Beitchman, Zucker, Hood, DaCosta, & Akman, 1991; Lindert, Von Ehrenstein, Grashow, Gal, Braehler, & Weisskopf, 2014; Neumann et al., 1996), eating disorders (Smolak & Murnen, 2002), substance abuse (Neumann et al., 1996), risky sexual behavior in adolescence (Homma, Wang, Saewuc, & Kishor, 2012), and committing sexual offenses against children (Whitaker, Le, Hanson, Baker, McMahon, Ryan, Klein, & Rice, 2008).

The detrimental effects for victims of child sexual abuse as well as the economic costs attributable to child sexual abuse (see, for instance, Hankivsky & Draker, 2003; Saied-Tessier, 2014), make it imperative to prevent children from becoming a sexual abuse victim. For prevention strategies to be effective, clinicians must be able to accurately assess the risk for sexual victimization of a child, so that prevention is offered to those children identified as the most likely to become a victim. In addition, clinicians must also determine what exactly should be addressed in these preventive efforts to reduce the risk of future child sexual abuse (i.e., assessment of changeable risk factors, that is, needs). In the assessment of risk and needs, knowledge about the effects of different risk factors for child sexual abuse victimization is necessary. Until today, many studies have identified different risk factors for child sexual abuse, but a systematic quantitative overview of these risk factors is not yet available. Hence, the aim of the present review was to meta-analytically summarize the associations between risk factors and child sexual abuse.

A theoretical model that greatly influenced our understanding of the etiology of child abuse was posed by Belsky (1980), who based his theory on Bronfenbrenner's (1979) ecological perspective on child development. Belsky emphasized that the risk for child abuse is influenced by the interplay of risk factors on four different levels: the history of abusive parents (ontogenetic development), characteristics of the child and family (microsystem), characteristics of parental employment, the community, and social support (exosystem), and characteristics of the society's attitude towards children and maltreatment (macrosystem). In Belsky's model, child abuse is determined by the balance between risk and protective factors. Since risk and protective factors come in many different forms, there are also many different pathways leading to child abuse. In his developmental-ecological viewpoint on the etiology of child abuse, Belsky only

considered physical abuse and neglect as child abuse and at some point, child sexual abuse was even explicitly excluded without argumentation (Belsky, 1993). However, we believe that child sexual abuse can also be studied using Belsky's theory, as it enables researchers to identify and examine risk and protective factors for child sexual abuse at multiple levels of analysis.

Throughout the years, a large number of antecedents of child sexual abuse victimization has been identified by many different scholars. These antecedents, which can be regarded as risk factors, are very different in nature. Some risk factors pertain to characteristics of the child (e.g., being female, having behavioral or physical health problems), others pertain to parental factors (e.g., substance abuse, being unemployed, and being violent), and still others pertain to characteristics of the community in which the child and the family are living (e.g., high rate of crime and violence in the neighborhood and poor social family support). Further, risk factors pertaining to interactions between the child and the environment (e.g., low rate of social interaction between child and parents) have also been examined in empirical research. All these different types of risk factors that have been subject of investigation reflect Belsky's (1980, 1993) idea that risks can be identified at different levels of analysis. However, to our knowledge, there is no clear overview of risk factors that are associated with child sexual abuse, together with an indication of the magnitude of these associations.

A quantitative review of risk factors for child sexual abuse victimization is not only relevant for enhancing our understanding of the etiology of child sexual abuse, it can also serve as an inducement for improving risk and needs assessment procedures. Risk assessment serves to identify those children who are at risk for sexual abuse victimization and who are in need of care, whereas needs assessment informs clinical practice about the dynamic (i.e., changeable) risk factors that are present in a child's life and contribute to the risk for sexual abuse victimization. Dynamic risk factors can consequently be addressed in (preventive) intervention strategies. On the other hand, static (i.e., unchangeable) risk factors, such as number of previous episodes of child abuse (Hindley, Ramchandani, & Jones, 2006), can be strong predictors of child abuse, and are therefore important for risk assessment procedures. To determine which factors should be measured in risk and needs assessment instruments, an overview of variables identified as significant risk factors for child sexual abuse victimization as described in scientific literature is needed. Furthermore, knowledge about the strength of the association between these risk factors and child sexual abuse is required, since this information is essential in properly weighing dynamic and static risk factors, so that both the risk a child is facing for becoming a victim of sexual abuse, as well as the needs of an at-risk child can best be determined.

The relevance of the present review is underlined by the risk-need-responsivity model (RNR; Andrews & Bonta, 2010; Bonta & Andrews 2007, 2010; Andrews, Bonta, & Hoge, 1990) in which the importance of proper risk and needs assessment is expressed in the risk and need principles. The RNR model was designed for the assessment and treatment of criminal offenders with the purpose of reducing recidivism and states that the intensity of an intervention should match the offender's risk of recidivism (risk principle), that interventions should target the criminogenic needs (i.e., the dynamic risk factors associated with recidivism) of offenders (need principle), and that interventions should be tailored to the motivation, learning style, and intellectual abilities of the offender (responsivity principle). Given these principles, the RNR model basically prescribes how a mere risk for a negative outcome, such as criminal recidivism, should be translated to clinical practice in order to successfully intervene when needed. The effectiveness of the RNR framework in reducing recidivism of juvenile and adult offenders has been demonstrated in several meta-analytic reviews (e.g., Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1990; Dowden & Andrews, 1999a, 1999b; Koehler, Lösel, Akoensi, & Humphreys, 2012), but we believe that the RNR framework may also be useful in the domain of care aimed at preventing (the recurrence of) different forms of child abuse and neglect. As for (juvenile) delinquency, child abuse and neglect are at least to a certain degree predictable, since many different risk factors for child sexual abuse have been identified in scientific literature (see, for instance, Black, Heyman, & Smith Slep, 2001; Butler, 2013; Meinck, Cluver, Boyes, & Mhlongo, 2015). In addition, ecological theory (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) can be used to explain the etiology of delinquency as well as different forms of child abuse and neglect, since both delinquent behavior (Loeber, Slot, & Stouthamer-Loeber, 2008) and child abuse (Belsky, 1993) are determined by the presence and absence of a variety of risk and protective factors in children and different environmental systems around children.

To summarize, the primary aim of the present review was to meta-analytically synthesize research on associations between different risk factors and child sexual abuse victimization. In the current review, we first classified each risk factor as described in the primary literature into one of a number of risk domains (i.e., groups of more or less similar risk factors), after which an overall mean effect for each risk domain was estimated in a meta-analysis. A second aim was to examine whether the effect of each risk domain was moderated by sample descriptors, risk factor characteristics, and/or sexual abuse characteristics. In pursuing both these research aims, the present review contributes to the literature on child sexual abuse in a number of ways. First, meta-analytically estimating the effects of different risk domains for child sexual abuse advances the fundamental knowledge of the risk factors that contribute most to child sexual abuse,

leading to a better understanding of the etiology of child sexual abuse. Second, current risk and needs assessment practices benefit from advanced knowledge of the effects of different risk factors, since instruments for assessing the risk for (recurrent) child sexual abuse as well as the needs encompassing this risk, can be developed or improved. Finally, the results of the present review are useful in developing and improving intervention strategies aimed at preventing (recurrent) child sexual abuse, since insight in effects of dynamic (i.e., changeable) risk factors leads to improved decision-making on what can best be addressed in interventions.

4.2 Methods

4.2.1 Inclusion and Exclusion Criteria

First, we selected studies examining children and/or adolescents who were sexually abused (i.e., victims of child sexual abuse as opposed to perpetrators of child sexual abuse), either as a main or secondary study purpose. As for the concept of sexual abuse, we used a rather broad definition, reflecting experiences of children (aged younger than 21 years) involving unlawful, unwanted, or inappropriate sexual exploitation either with or without force. We did not restrict study inclusion based on specific types of sexual abuse, as we included studies reporting on contact and/or non-contact sexual abuse (i.e., sexual abuse with or without physical body contact). In addition, we did not exclude studies based on a minimum age difference between the victim and the perpetrator of child sexual abuse. Second, primary studies had to report on at least one association between being a victim of child sexual abuse and a factor preceding the child sexual abuse or a factor of which could reasonably be assumed to precede the abuse based on information described in the primary study. This criterion ensured that we focused on antecedents (i.e., risk factors) rather than on consequents of child sexual abuse. As for risk factors, note that we did not focus on risk factors in specific risk domains, as we were interested in assessing the effect of the broadest possible range of risk domains. Third, we selected studies discriminating between subjects who were sexually abused during childhood (up to 21 years of age) and those who were not sexually abused (i.e., a control group was included in the study design), so that effects of risk factors for child sexual abuse could be determined relative to subjects who were not sexually abused. Primary studies not designed to include a control group were excluded. Finally, studies had to report on bivariate associations between risk factors and sexual abuse or provide sufficient statistical information to calculate the bivariate association.

4.2.2 Literature Search

In our search for relevant studies meeting the inclusion and exclusion criteria, our purpose was to be as exhaustive as possible, and therefore the first, second, and third author performed three complementary search strategies which were completed by the end of August, 2015. First, we searched for relevant studies in five electronic databases: PsycINFO, ERIC, Sociological Abstracts, ScienceDirect, and Google Scholar. In searching these databases, we used the following combination of four components (in which the asterisk represents one or more wildcard characters): ("abuse" OR "maltreatment" OR "victim*") AND ("child*" OR "youth" OR "adolescen*" OR "juvenile*") AND ("risk" OR "risk factor*" OR "predictor*") AND ("sex*"). In addition, we performed an extended search using the syntax: AND ("sexual abuse" OR "sexual maltreatment" OR "sexual victimization"). Since this electronic search produced a large amount of irrelevant studies (e.g., studies reporting on the consequences of child sexual abuse and studies in which a control group was not included), it seemed necessary to perform additional search strategies. Second, reference lists of several review articles addressing the topic of the present review were reviewed (e.g., Black et al., 2001; Jones et al., 2012; Maniglio, 2015; Meinck et al., 2015; Stith, et al., 2009) in order to find relevant studies that were not found in the database search. Third, we specifically searched the journals *Child Abuse & Neglect*, *Child Maltreatment*, and *Journal of Child Sexual Abuse* in which many of the initially identified studies were published. This last search strategy was performed using the electronic search function of each journal in which the keywords "sex*", "abuse", "maltreatment", "victim*" were entered in different combinations. In determining whether identified studies in each search strategy met the inclusion and exclusion criteria, we read titles, abstracts, and, if necessary, full article texts. In total, our literature search procedure resulted in 88 primary studies that were included in the present meta-analytic review.

4.2.3 Coding of Studies

In developing a coding frame for obtaining relevant information from the primary studies, it is common practice in meta-analytic research to retrieve a large amount of information from the studies (see for instance, Cooper, 2010; Lipsey & Wilson, 2001), after which a variety of study, sample, and research design descriptors are examined in moderator analyses. However, since the problem of multiple testing often dealt with in primary studies is equally present in meta-analytic research, we decided to code only a small number of relevant variables. The variable of most interest in the present review was the risk domain in which a risk factor for child sexual abuse could be classified. Coding this variable was needed in determining a mean effect for different risk domains for child sexual abuse. To classify each risk factor described in the primary studies into

one risk domain, we designed a classification scheme comprising 26 mutually exclusive risk domains and one rest category, resulting in a total of 27 risk domains. The rest category was coded for each risk factor that could not be classified into one of the other 26 risk domains. This classification scheme was based on (1) the classification of risk factors used by Stith et al. (2009) in their review of risk factors for child physical abuse and neglect, and (2) a screening of all risk factors described in the primary studies that were included in the present review. The minimum number of risk factors for creating a separate risk domain was set to five. An overview of all risk domains and examples of risk factors classified in each risk domain is presented in Table 4.1.

We also coded a number of sample descriptors, risk factor characteristics, and characteristics of the child sexual abuse. Since there were differences in gender and ethnicity composition of samples used in primary studies, we first coded the percentage of males and the percentage of Whites in the sample, so that possible differences in effects of risk domains between males and females as well as between White and non-White samples could be detected. As for risk factor characteristics, we coded a number of subdomains of risk factors if (more or less) conceptually similar risk factors within a primary risk domain could be further classified into a subdomain of risk factors. In this way, it would be possible to estimate the mean effect of subdomains within primary risk domains, which is informative when the purpose is to determine the effects of a group of risk factors that are conceptually similar (see Appendix 4 - A in which subdomains are listed within primary risk domains). Further, as a number of primary studies reported on parental risk factors associated with the father (-figure) and/or the mother (-figure), we were interested in examining differences in mean effect between father-related risk factors and mother-related risk factors. As for sexual abuse characteristics, we coded the type of sexual abuse experienced by the subjects in the sample, since we did not assume that effects of risk factors for more intrusive and severe types of sexual abuse (i.e., contact sexual abuse) are identical to effects of risk factors for less intrusive and less severe types of sexual abuse (i.e., non-contact sexual abuse). Lastly, and only for descriptive purposes, we coded publication year, the gender of the sample (coded as a categorical variable), mean age of the sample, the country in which the research was conducted, and the age cut-off used in a study to define child sexual abuse (see Appendix 4 - B).

To determine inter-rater agreement, we randomly selected 10 primary studies (11.36% of the total number of included studies) reporting on 93 risk factors that were consequently coded by the first, second, and third authors. In assessing inter-rater reliability, percentages of agreement were calculated in which disagreement was defined as one or two authors disagreeing with the other author(s).

Table 4.1. Overview of all Risk Domains and Examples of Risk Factors Classified in each Risk Domain

| Risk domain | Examples of risk factors |
|--|---|
| Parental history of antisocial behavior/criminal offending | Parents have record of criminal offending; Father is in prison; Parental history of antisocial behavior; Criminal household member |
| Parental history of abuse | Parent was sexually abused during own childhood; Mother has history of child abuse; Mother was often hit by her own mother; Mother experienced neglect of her own mother |
| Prior or concurrent forms of child abuse | Child was exposed to emotional/physical abuse; Prior physical/emotional neglect; Prior psychological maltreatment; Prior sexual abuse |
| Child has mental, physical, or behavioral problems | Child has a developmental/learning disorder; child has ADD/ADHD; Child is deaf; Child has low IQ |
| Child is female | Child is female |
| Child has school-related problems | Child is not going to school; Child failed a class; Child was expelled from school; Low school performance |
| Problematic family system functioning | Low family cohesion; High level of family stress; High family anger; Poor family functioning |
| Physical violence in the child's home environment | Violence between parents; Father is violent towards child or mother; Mother is violent towards child or mother; Parents hit each other |
| Child (periodically) lived away from biological parents | Child lived in an institution; Child lives in a foster home; Child experienced at least one out-of-home placement; Child lives away from the family |
| Interparental problems (e.g., marital conflict) | Parents show little mutual affection; Trouble between parents; Parents had unhappy marriage; Extreme conflicts between parents |
| Parental mental or physical problems | Father/mother has a psychological disorder; Father/mother has poor mental or physical health; Parental psychiatric illness |
| Parental alcohol/drug use | Parental alcoholism/alcohol problems; Parental drug use; Mother is alcohol/drug dependent; Paternal substance use |
| Child is not living with two biological parents | Parents are not living together; Mother is a single parent; Presence of a stepfather/-mother; Child is living with grandparents |
| Parent-child relationship problems | Low parental attachment; Lack of physical affection from father; Mother is not emotionally close to the child; Child has poor relation with parents |
| Problems in child's social relationships | Child has two or fewer good friends; Child did not do well socially at school; Child is dissatisfied with social life; Child was a victim of peer assault/bullying |
| Inadequate parenting behavior | Over protective and over controlling father/mother; Father/mother has low sense of parenting competence; Father/mother is psychological cruel; Low quality of communication with children |
| Low family SES | Low SES; Low family income (< 20,000 US Dollars); Mother/father unemployed; Family is below poverty line |
| Parental age factors (child having young or old parents) | Mother was younger than 25 years at child's birth; Mother was older than 35 at child's birth; Child has a young father/mother |
| Low parental education | Mother/father did not complete high school; Mother/father is illiterate; Low parental education |
| Child's substance use | Child ever used hard drugs/marijuana/alcohol/inhalants (e.g., glue); Child ever smoked |
| Child or parent(s) has immigration status | Parent(s) were immigrated; Child was immigrated |

Table 4.1. *Overview of all Risk Domains and Examples of Risk Factors Classified in each Risk Domain (Continued)*

| Risk domain | Examples of risk factors |
|---|--|
| Religious involvement of the family | Religious upbringing; Family has religious background; Extreme degree of involvement in religious activities during childhood; Strong family religious affiliations |
| Community-related factors | Place of residence is rural; Child grew up in a small town; High violence community; High crime rate in community |
| Unhealthy attitudes, values, & beliefs of parents | Conservative family/sexual values of father/mother; Negative maternal pre-pregnancy attitude; Low parental expectations of the child's development; Mother believes in supremacy of men over women |
| Large family size (2 or more children) | Crowded home; Large household size; More than two children in family |
| Child is non-White | Child is non-European; Child is African-American/Hispanic/Asian/ Native-American |
| Other | See Appendix 4 - A |

The percentual agreement between the three coders was very good (at least 90% agreement) for the variables type of sexual abuse (90%), domain of risk factor (92.9%), subdomain of risk factor (96.9%), parent associated with risk factor (i.e., father or mother figure; 94.9%), and calculated effect size (93.9%). The percentual agreement was excellent (100%) for the variables percentage of males in the sample, percentage of Whites in the sample, mean age of the sample, country in which the research was conducted, and number of risk factors extracted from the primary study.

4.2.4 Calculating Effect Sizes

To quantify the effect of a (possible) risk factor for child sexual abuse (relative to control subjects who were not sexually abused), we calculated the Pearson product-moment correlation coefficient as the common effect size for each risk factor reported in each primary study. Because the reported associations between risk factors and child sexual abuse were expressed in different forms across primary studies (e.g., correlations, means and standard deviations, and odds-ratio's), it was often necessary to transform study-specific data into correlation coefficients. For these transformations, methods and formulas of Ferguson (1966), Lipsey and Wilson (2001), and Rosenthal (1994) were used. In addition, for a correct interpretation of the reported associations, it was necessary that each correlation coefficient reflected the association between risk factors and child sexual abuse in the same direction. Therefore, if higher levels of risk factors (e.g., higher levels of interparental problems, parental alcohol/drug use, or mental problems of children) were associated with higher levels of child sexual abuse, a positive sign was assigned to correlation coefficients, whereas a negative sign was

assigned to correlation coefficients if lower levels of factors were associated with higher levels of child sexual abuse. For a total of 46 non-significant factors, it was not possible to calculate a correlation coefficient because necessary statistical information was not provided in the primary studies. In these instances, we assigned the value of zero to the coefficient, which is a conservative estimate of the true association (see also, Mullen, 1989). We preferred this method above excluding primary studies due to insufficient reporting on non-significant risk factors.

To prevent that outlying effect sizes would disproportionally influence parameters estimated in the statistical analyses, we assessed the presence of outliers by searching for effect sizes with standardized z scores larger than 3.29 or smaller than -3.29 (Tabachnik & Fidell, 2013). In total, three effect sizes in two risk domains were identified as an outlier, since the corresponding z values exceeded 3.29. To reduce the influence of these outliers, the original correlation coefficients were substituted by a new coefficient that would fall just within the normal range. In this way, a disproportional influence of the outliers on the parameters to be estimated was reduced.

As recommended by several scholars (e.g., Cooper, 2010; Lipsey & Wilson, 2001), correlation coefficients should be transformed to their associated Fisher's z -scores in meta-analytic research, because correlations are not normally distributed whereas z -scores have a normal sampling distribution. Therefore, in the final step of calculating effect sizes, all correlations were transformed in Fisher's z -scores. After the statistical analyses were performed, the Fisher's z -scores were converted back into correlations to facilitate interpretability.

4.2.5 Analytical Strategy

As we considered the included primary studies to be a random sample of the population of studies, we used a random-effects approach in our analyses (see, for instance, Van den Noortgate & Onghena, 2003; Raudenbush, 2009). Most primary studies included in the present review reported on multiple risk factors that could be classified in different risk domains, and therefore multiple effect sizes were extracted from the same study (see Appendix 4 - B for the number of risk factors extracted from each study). It may be assumed that effect sizes extracted from the same study are more alike than effect sizes extracted from different studies, because the former may be based on the same participants, instruments, and/or circumstances in which the research was conducted (Houben, Van den Noortgate, & Kuppens, 2015). Because of this, it was necessary to account for interdependency of effect sizes extracted from the same study. This led us to analyze the effect sizes in a three-level meta-analytic model in which three sources of variance are considered: Variance between studies (level 3), variance between effect sizes extracted from the same study (level 2), and sampling variance of the extracted

effect sizes (level 1) (Cheung, 2014; Hox, 2002; Van den Noortgate, López-López, Martin-Martinez, & Sánchez-Meca, 2013, 2014). This model allowed us to calculate an overall effect size and, if significant variance was observed between effect sizes within studies (level 2) and/or between studies (level 3), to examine variables that may explain significant variance by extending the model with (possible) moderating variables. Note that the sampling variance of extracted effect sizes (level 1) is not estimated in this meta-analytic model, but is considered known, and we used the formula of Cheung (2014, pg. 2015) to estimate the parameter that is associated with this source of variance.

As can be seen in Table 4.1, each risk domain comprised qualitatively different types of risk factors for child sexual abuse. Therefore, we conducted a separate meta-analysis for each risk domain using the three-level meta-analytic models described above. In total, we conducted 27 meta-analyses and in each of these, an overall effect size was calculated and moderator analyses were performed in case of significant variance between effect sizes within studies (at level 2) and/or between studies (at level 3). All meta-analyses were conducted in the R environment (version 3.2.0; R Core Team, 2015) by using the function “*rma.mv*” of the *metafor* package (Viechtbauer, 2010). The R syntax was written so that the three-level structure as described by Cheung (2014) and Van den Noortgate et al. (2013, 2014) was applied to our meta-analytic models (Wibbelink & Assink, 2015). The significance of model coefficients was tested two-tailed using the Knapp-Hartung adjustment (Knapp & Hartung, 2003), meaning that individual coefficients were tested using a *t*-distribution and that the omnibus test of all model coefficients (excluding the intercept) was based on an *F*-distribution. To determine the significance of the variance at levels two and three, two separate one-tailed log-likelihood-ratio-tests were performed in which the deviance of the full model was compared to the deviance of the model excluding one of the variance parameters. In estimating all model parameters, the restricted maximum likelihood estimation method was used. Prior to conducting moderator analyses, we centered each continuous variable around its mean and created dummy variables for each discrete variable. In all analyses, a five percent significance level was used.

4.2.6 Missing Data and Sensitivity Analysis

Although we tried to be as exhaustive as possible in our search for primary studies meeting the inclusion and exclusion criteria, it is possible that relevant studies were missing in the present review due to limitations in our search strategy or due to different forms of bias such as publication bias or subjective reporting bias. In determining whether data was missing, we conducted the funnel-plot-based trim and fill method (Duval & Tweedie 2000a, 2000b), by using the function “*trimfill*” of the *metafor* package (Viechtbauer, 2010) in the R environment (Version 3.2.0; R Core Team, 2015). This

method was preferred over other methods for handling missing data in meta-analysis, mainly because the trim-and-fill method outperforms both Egger's linear regression test (Egger, Davey-Smith, Schneider, & Minder, 1997) and Begg and Mazumdar's Rank Correlation test (Begg & Mazumdar, 1994) (Nik Idris, 2012). In case of an asymmetrical distribution of effect sizes (i.e., an asymmetrical funnel plot), the trim-and fill method improves symmetry of the distribution by imputing estimated effect sizes representing effects from missing studies. Finally, as a sensitivity analysis, we imputed all missing effect sizes produced by the trim-and-fill method in our data and recalculated the overall effect. This procedure was carried out for each of the 27 risk domains.

4.3 Results

4.3.1 Primary Studies

The search procedure resulted in 88 eligible manuscripts describing 89 studies (k), which were published between 1980 and 2015 (median year of publication was 2003). Studies were conducted in USA ($k = 38$), Europe ($k = 11$), Australia or New Zealand ($k = 9$), Canada ($k = 6$), South Africa ($k = 6$), China ($k = 3$), Israel ($k = 2$), Taiwan ($k = 2$), and in a number of other countries in various parts of the world ($k = 12$). The mean age of the participants was 17.45 years ($SD = 9.27$) and may seem rather high, but most studies were retrospective in nature. In total, 1,038 effect sizes were retrieved from the primary studies, each reflecting the effect of a (possible) risk factor for child sexual abuse (relative to control subjects who were not sexually abused). The mean number of effect sizes per study was 11.66 ($SD = 14.45$). For detailed study characteristics, see Appendix 4 - B.

4.3.2 Overall Mean Effect of the Risk Domains and Heterogeneity in Effect Sizes

In Table 4.2 an overall mean effect for each of the 27 risk domains is presented in descending order. Each overall mean effect was estimated using an intercept-only three-level meta-analytic model and represents the effect of a risk domain for child sexual abuse (relative to control subjects who were not sexually abused). The overall mean effect of 19 risk domains was significant and ranged from $r = .335$ for the risk domain "Parental history of abuse" to $r = .065$ for the risk domain "Child's substance use". According to the conventions described by Cohen (1988) for interpreting effect sizes ($r = .1$, $r = .3$, $r = .5$ indicating small, medium, and large effects, respectively), a medium sized effect was found for one risk domain (i.e., "Parental history of abuse"), small effects were found for 17 risk domains, and a very small effect was found for one risk domain (i.e., "Child's substance use"). The overall effect of 8 domains did not significantly deviate

from zero, meaning that an effect of these domains on child sexual abuse may not be assumed.

Using the same intercept-only three-level models, we estimated the amount of level 2 variance (i.e., variance between effect sizes extracted from the same study) and level 3 variance (i.e., variance between studies) and we assessed the significance of these variance components by performing two one-tailed log-likelihood-ratio-tests. As can be seen in the right part of Table 4.2, significant variance within studies was observed in 23 risk domains and significant variance between studies was observed in 13 risk domains.

4.3.3 Missing Data and Sensitivity Analysis

We found asymmetric funnel plots for 16 risk domains, indicating that possible bias was present. For each of these 16 risk domains, trim and fill analyses yielded alternative estimates of the overall mean effect given in Table 4.3. The overall mean effect of 16 (out of 27) risk domains was significant, ranging from a moderate effect of $r = .335$ for the risk domain "Parental history of abuse" to a small effect of $r = -.076$ for the domain "Child is non-White". The effects of the risk domains "Problematic family system functioning", "Child (periodically) lived away from biological parents", "Parent-child relationship problems", and "Low family SES" were reduced to non-significant, whereas the effect of the domain "Child is non-White" became significant. The negative effect size of this last domain implies that it should not be regarded as a risk domain.

4.3.4 Moderator Analyses

In a total of 26 risk domains, the variance within and/or between studies was significant and therefore we proceeded to moderator analyses in these risk domains in order to find variables that can explain differences in observed effect sizes within and/or between studies. In these moderator analyses, the three-level models were extended by including a potential moderator as covariate in the model. Since no significant variation was observed within or between studies in the risk domain "Child's substance use", we did not perform moderator analyses in this risk domain. Both significant and non-significant results of all moderator analyses are presented in Appendix 4 - A, in which the examined variables are classified into sample descriptors, risk factor characteristics, and sexual abuse characteristics. To save space, only the significant results are presented in Table 4.4 and described below.

Table 4.2. Results for the Overall Mean Effect Sizes of the 27 Risk Domains

| Domain of risk factors | # Studies | # ES | Fisher's Z (SE) | 95% CI | Sig. Mean Z (p) | r | % Var. at level 1 | Level 2 variance | % Var. at level 2 | Level 3 variance | % Var. at level 3 |
|--|-----------|------|-----------------|---------------|-----------------|------|-------------------|------------------|-------------------|------------------|-------------------|
| (1) Parental history of antisocial behavior/criminal offending | 4 | 9 | 0.349 (0.213) | -0.143, 0.840 | .141 | .335 | 0.26 | .092*** | 44.34 | .115 | 55.40 |
| (2) Parental history of abuse | 6 | 11 | 0.348 (0.065) | 0.203, 0.492 | <.001*** | .335 | 9.35 | .033*** | 90.65 | .000 | 0.00 |
| (3) Prior or concurrent forms of child abuse | 18 | 65 | 0.278 (0.026) | 0.226, 0.331 | <.001*** | .271 | 1.15 | .008*** | 51.18 | .007*** | 47.67 |
| (4) Child has mental, physical, or behavioral problems | 22 | 83 | 0.266 (0.054) | 0.159, 0.373 | <.001*** | .260 | 0.24 | .011*** | 16.33 | .057*** | 83.43 |
| (5) Child is female | 43 | 116 | 0.262 (0.035) | 0.192, 0.332 | <.001*** | .256 | 0.57 | .024*** | 41.27 | .034*** | 58.16 |
| (6) Child has school-related problems | 4 | 15 | 0.244 (0.049) | 0.139, 0.349 | <.001*** | .239 | 30.91 | .003 | 19.79 | .007 | 49.30 |
| (7) Problematic family system functioning | 14 | 49 | 0.240 (0.062) | 0.116, 0.364 | <.001*** | .235 | 3.70 | .020*** | 33.64 | .038*** | 62.66 |
| (8) Physical violence in the child's home environment | 14 | 15 | 0.224 (0.034) | 0.152, 0.296 | <.001*** | .220 | 10.29 | .000 | 0.00 | .012* | 89.71 |
| (9) Child (periodically) lived away from biological parents | 5 | 6 | 0.211 (0.065) | 0.044, 0.378 | .023* | .208 | 7.39 | .021** | 92.61 | .000 | 0.00 |
| (10) Other | 12 | 23 | 0.204 (0.048) | 0.106, 0.303 | <.001*** | .201 | 2.97 | .021*** | 61.18 | .012* | 35.85 |
| (11) Interparental problems (e.g., marital conflict) | 5 | 17 | 0.203 (0.046) | 0.105, 0.300 | <.001*** | .200 | 10.35 | .011*** | 53.20 | .008 | 36.44 |
| (12) Parental mental or physical problems | 22 | 71 | 0.179 (0.041) | 0.098, 0.260 | <.001*** | .177 | 1.47 | .023*** | 49.66 | .023*** | 48.88 |
| (13) Parent-child relationship problems | 8 | 23 | 0.168 (0.060) | 0.044, 0.292 | .010* | .166 | 3.26 | .006*** | 19.98 | .024*** | 76.76 |
| (14) Parental alcohol/drug use | 18 | 60 | 0.163 (0.033) | 0.097, 0.228 | <.001*** | .162 | 1.39 | .011*** | 47.52 | .012*** | 51.09 |
| (15) Child is not living with two biological parents | 34 | 123 | 0.158 (0.021) | 0.117, 0.198 | <.001*** | .157 | 2.48 | .012*** | 61.28 | .007*** | 36.24 |
| (16) Inadequate parenting behavior | 11 | 55 | 0.132 (0.032) | 0.068, 0.195 | <.001*** | .131 | 3.94 | .030*** | 88.157 | .003 | 7.907 |

Table 4.2. Results for the Overall Mean Effect Sizes of the 27 Risk Domains (Continued)

| Domain of risk factors | # Studies | # ES | Fisher's Z (SE) | 95% CI | Sig. Mean Z (p) | r | % Var. at level 1 | Level 2 variance | % Var. at level 2 | Level 3 variance | % Var. at level 3 |
|---|-----------|------|-----------------|---------------|-----------------|--------|-------------------|------------------|-------------------|------------------|-------------------|
| (17) Low family SES | 29 | 53 | 0.127 (0.043) | 0.040, 0.214 | .005** | .126 | 2.00 | .031*** | 49.68 | .030* | 48.32 |
| (18) Parental age factors (child having young or old parents) | 5 | 11 | 0.119 (0.046) | 0.017, 0.220 | .026* | .118 | 5.06 | .012*** | 73.65 | .003 | 21.29 |
| (19) Low parental education | 23 | 61 | 0.104 (0.026) | 0.053, 0.156 | <.001*** | .104 | 2.43 | .013*** | 58.79 | .008** | 38.87 |
| (20) Problems in child's social relationships | 5 | 11 | 0.103 (0.068) | -0.049, 0.255 | .161 | .103 | 4.53 | .000 | 0.00 | .022*** | 95.47 |
| (21) Child's substance use | 1 | 5 | 0.065 (0.005) | 0.050, 0.079 | <.001*** | .065 | 100.00 | .000 | 0.00 | .000 | 0.00 |
| (22) Child or parent(s) has immigration status | 1 | 12 | 0.062 (0.043) | -0.033, 0.157 | .179 | .062 | 2.96 | .022*** | 97.04 | .000 | 0.00 |
| (23) Religious involvement of the family | 5 | 6 | 0.050 (0.099) | -0.204, 0.304 | .636 | .050 | 2.24 | .057*** | 97.76 | .000 | 0.00 |
| (24) Community-related factors | 9 | 14 | 0.038 (0.061) | -0.095, 0.170 | .550 | .038 | 1.03 | .007*** | 20.78 | .027+ | 78.19 |
| (25) Unhealthy attitudes, values, & beliefs of parents | 4 | 17 | 0.034 (0.033) | -0.037, 0.105 | .325 | .034 | 6.10 | .007*** | 77.44 | .002 | 16.47 |
| (26) Large family size (2 or more children) | 9 | 14 | 0.008 (0.020) | -0.036, 0.052 | .707 | .008 | 24.49 | .004* | 75.51 | .000 | 0.00 |
| (27) Child is non-White | 19 | 93 | -0.013 (0.015) | -0.043, 0.018 | .413 | -0.013 | 1.40 | .020*** | 98.60 | .000 | 0.00 |

Note. # Studies = number of studies; # ES = number of effect sizes; SE = standard error; CI = confidence interval of Fisher's Z; Sig = Significance; Mean Z = Mean effect size (Fisher's Z); r = Mean effect size (Pearson's correlation); % Var = percentage of variance explained; Level 2 variance = variance between effect sizes from the same study; Level 3 variance = variance between studies.
 + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4.3. Results for the Overall Mean Effect Sizes of the 26 Risk Domains after Conducting Trim and Fill Analyses

| Domain of risk factors | # Studies | # ES | Fisher's Z (SE) | 95% CI | Sig. Mean Z (p) | r |
|--|-----------|------|-----------------|----------------|-----------------|-------|
| (1) Parental history of antisocial behavior/criminal offending | - | - | - | - | - | - |
| (2) Parental history of abuse | 9 | 16 | 0.192 (0.085) | 0.010, 0.374 | .040* | .190 |
| (3) Prior or concurrent forms of child abuse | 25 | 75 | 0.318 (0.025) | 0.268, 0.369 | <.001*** | .309 |
| (4) Child has mental, physical, or behavioral problems | 28 | 97 | 0.316 (0.047) | 0.223, 0.409 | <.001*** | .306 |
| (5) Child is female | 53 | 128 | 0.177 (0.039) | 0.101, 0.254 | <.001*** | .175 |
| (6) Child has school-related problems | 5 | 18 | 0.197 (0.061) | 0.068, 0.326 | .005** | .194 |
| (7) Problematic family system functioning | 18 | 59 | 0.111 (0.074) | -0.036, 0.259 | .136 | .111 |
| (8) Physical violence in the child's home environment | - | - | - | - | - | - |
| (9) Child (periodically) lived away from biological parents | 7 | 8 | 0.150 (0.067) | -0.008, 0.308 | .059+ | .149 |
| (10) Other | 13 | 24 | 0.219 (0.050) | 0.115, 0.324 | <.001*** | .216 |
| (11) Interparental problems (e.g., marital conflict) | - | - | - | - | - | - |
| (12) Parental mental or physical problems | 25 | 77 | 0.140 (0.044) | 0.052, 0.229 | .002** | .139 |
| (13) Parent-child relationship problems | 9 | 25 | 0.133 (0.065) | 0.000, 0.268 | .050 | .134 |
| (14) Parental alcohol/drug use | 26 | 74 | 0.261 (0.038) | 0.185, 0.337 | <.001*** | .255 |
| (15) Child is not living with two biological parents | 42 | 140 | 0.107 (0.024) | 0.060, 0.154 | <.001*** | .107 |
| (16) Inadequate parenting behavior | - | - | - | - | - | - |
| (17) Low family SES | 41 | 68 | -0.008 (0.050) | -0.108, 0.093 | .877 | -.008 |
| (18) Parental age factors (child having young or old parents) | - | - | - | - | - | - |
| (19) Low parental education | 28 | 68 | 0.145 (0.028) | 0.089, 0.202 | <.001*** | .144 |
| (20) Problems in child's social relationships | - | - | - | - | - | - |
| (21) Child's substance use | - | - | - | - | - | - |
| (22) Child or parent(s) has immigration status | 2 | 15 | 0.191 (0.138) | -0.105, 0.487 | .188 | .189 |
| (23) Religious involvement of the family | - | - | - | - | - | - |
| (24) Community-related factors | - | - | - | - | - | - |
| (25) Unhealthy attitudes, values, & beliefs of parents | - | - | - | - | - | - |
| (26) Large family size (2 or more children) | - | - | - | - | - | - |
| (27) Child is non-White | 25 | 104 | -0.076 | -0.139, -0.014 | .017* | -.076 |

Note. # Studies = number of studies; # ES = number of effect sizes; Fisher's Z = Mean effect size (Fisher's Z); SE = standard error; CI = confidence interval; Sig = significance; r = Mean effect size (Pearson's correlation).

Dashes indicate a symmetrical distribution of effect sizes in a risk domain, meaning that trimming and filling of effect sizes were not necessary.

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4.4. Significant Results for Continuous and Categorical Moderators (Bivariate Models)

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|---------------------------------------|----------------------------------|-----------------------|------------------|-------------------|
| (1) Parental history of antisocial behavior/criminal offending | | | | | | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 6) = 11.941 | .008** | .044*** | .000 |
| Contact sexual abuse (RC) | 3 | 6 | 0.206 (-0.007, 0.419) ⁺ | .203 | | | | | |
| Non-contact sexual abuse | 1 | 2 | -0.296 (-0.666, 0.073) ⁺ | -.288 | -0.503 (-0.929, -0.076) [*] | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 1 | 1 | 0.961 (0.448, 1.475) ^{**} | .745 | 0.755 (0.199, 1.311) [*] | | | | |
| (2) Parental history of abuse | | | | | | | | | |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | <i>F</i> (1, 7) = 25.008 | .002** | .000 | .058 ⁺ |
| Mother-related risk factors (RC) | 4 | 8 | 0.411 (0.109, 0.714) [*] | | | | | | |
| Father-related risk factors | 1 | 1 | -0.113 (-0.483, 0.257) | | -0.524 (-0.772, -0.276) ^{**} | | | | |
| (4) Child has mental, physical, or behavioral problems | | | | | | | | | |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | | | | | | <i>F</i> (3, 52) = 2.925 | .042 [*] | .011*** | .032*** |
| Physical disability/problems (RC) | 8 | 28 | 0.180 (0.059, 0.300) ^{**} | .178 | | | | | |
| Externalizing problems | 8 | 10 | 0.356 (0.231, 0.482) ^{***} | .342 | 0.177 (0.052, 0.302) ^{**} | | | | |
| Internalizing problems | 7 | 9 | 0.227 (0.096, 0.358) ^{**} | .223 | 0.048 (-0.082, 0.177) | | | | |
| Cognitive problems | 7 | 9 | 0.234 (0.097, 0.372) ^{**} | .230 | 0.055 (-0.093, 0.202) | | | | |

Table 4.4. Significant Results for Continuous and Categorical Moderators (Bivariate Models) (Continued)

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean r | β (95% CI) | F (df1, df2) ^a | p^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|--------|----------------------------|---------------------------|----------|------------------|------------------|
| (5) Child is female | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of Whites | 30 | 67 | 0.183 (0.102, 0.265)** | - | 0.003 (0.001, 0.005)** | F(1, 65) = 10.599 | .002** | .031*** | .020* |
| (11) Interparental problems (e.g., marital conflict) | | | | | | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | F(2, 14) = 5.817 | .015* | .004** | .008* |
| Contact sexual abuse (RC) | 4 | 10 | 0.156 (0.031, 0.280)* | .155 | | | | | |
| Non-contact sexual abuse | 1 | 2 | -0.033 (-0.208, 0.142) | -.033 | -0.189 (-0.330, -0.047)* | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 4 | 5 | 0.284 (0.160, 0.407)*** | .277 | 0.128 (-0.047, 0.303) | | | | |
| (12) Parental mental or physical problems | | | | | | | | | |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | F(1, 47) = 12.975 | <.001*** | .014*** | .033*** |
| Mother-related risk factors (RC) | 13 | 33 | 0.219 (0.102, 0.337)*** | .216 | | | | | |
| Father-related risk factors | 6 | 16 | 0.045 (-0.091, 0.181) | .045 | -0.174 (-0.271, -0.077)*** | | | | |
| (14) Parental alcohol/drug use | | | | | | | | | |
| Parent associated with risk factor | | | | | | F(1, 24) = 6.984 | .014** | .007*** | .022*** |
| Mother-related risk factors (RC) | 7 | 19 | 0.197 (0.069, 0.325)** | .194 | | | | | |
| Father-related risk factors | 5 | 7 | 0.064 (-0.077, 0.204) | .064 | -0.134 (-0.238, -0.029)* | | | | |

Table 4.4. Significant Results for Continuous and Categorical Moderators (Bivariate Models) (Continued)

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|--|----------------------------------|-----------------------|---------------------|---------------------|
| (15) Child is not living with two biological parents | | | | | | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| Contact sexual abuse (RC) | 16 | 56 | 0.195 (0.139, 0.251) ^{***} | .193 | | <i>F</i> (2, 117) = 4.574 | .012 [*] | .011 ^{***} | .008 ^{***} |
| Non-contact sexual abuse | 4 | 13 | 0.095 (0.012, 0.177) [*] | .095 | -0.100 (-0.171, -0.029) ^{**} | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 19 | 51 | 0.141 (0.088, 0.194) ^{***} | .140 | -0.054 (-0.121, 0.014) | | | | |
| (17) Low family SES | | | | | | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| Contact sexual abuse (RC) | 15 | 28 | 0.098 (-0.022, 0.218) | .098 | | <i>F</i> (2, 48) = 7.532 | .001 ^{**} | .020 ^{***} | .040 ^{**} |
| Non-contact sexual abuse | 2 | 4 | -0.222 (-0.425, -0.171) [*] | -.218 | -0.319 (-0.494, -0.145) ^{***} | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 14 | 19 | 0.186 (0.060, 0.313) ^{**} | .184 | 0.088 (-0.080, 0.256) | | | | |
| (19) Low parental education | | | | | | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| Contact sexual abuse (RC) | 12 | 26 | 0.149 (0.075, 0.222) ^{***} | .148 | | <i>F</i> (2, 58) = 6.047 | .004 ^{**} | .010 ^{***} | 0.011 ^{**} |
| Non-contact sexual abuse | 2 | 5 | -0.026 (-0.150, 0.098) | -.026 | -0.175 (-0.283, -0.067) ^{**} | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 12 | 30 | 0.076 (0.005, 0.146) [*] | .076 | -0.073 (-0.169, 0.024) | | | | |

Table 4.4. Significant Results for Continuous and Categorical Moderators (Bivariate Models) (Continued)

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|-------------------------------------|----------------------------------|-----------------------|---------------------|--------------------|
| (22) Child or parent(s) has immigration status | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 1 | 12 | 0.062 (-0.010, 0.133) ⁺ | - | 0.002 (0.001, 0.004) [*] | <i>F</i> (1, 10) = 9.796 | .011 [*] | .012 ^{***} | .000 |
| (24) Community-related factors | | | | | | | | | |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | 8 | 11 | -0.007 (-0.182, 0.168) | -0.007 | | <i>F</i> (1, 12) = 54.046 | <.001 ^{***} | .000 | .056 ^{**} |
| Child living in a rural environment (RC) | 3 | 3 | 0.185 (0.005, 0.365) | .183 | 0.192 (0.135, 0.249) ^{***} | | | | |
| High violence / crime rate in community | | | | | | | | | |

Note: # Studies = number of studies; # ES = number of effect sizes; Mean Z = Mean effect size (Fisher's Z); CI = confidence interval; Mean *r* = Mean effect size (Pearson's correlation); β = estimated regression coefficient; Level 2 variance = residual variance between effect sizes from the same study; Level 3 variance = residual variance between studies.

^aOmnibus test of all regression coefficients in the model.

^b*P*-value of the omnibus test.

⁺ *p* < .05; ^{*} *p* < .01; ^{**} *p* < .001; ^{***} *p* < .001.

Sample descriptors

In the risk domain “Child is female”, we found that the effect of this domain for child sexual abuse increased as the percentage of Whites in samples increased. Further, we found that the effect of the risk domain “Child or parent(s) has immigration status” increased as the percentage of males in samples increased.

Risk factor characteristics

In the risk domains “Parental history of abuse”, “Parental mental or physical problems”, and “Parental alcohol/drug use”, we found a moderating effect of the parent associated with risk factors. In these three risk domains, the results revealed not only a larger mean effect of mother-related risk factors relative to father-related risk factors, but also that the mean effects of the father-related risk factors were not significant (i.e., did not significantly deviate from zero). As for the subdomain of risk factors, we found a moderating effect in the primary domains “Child has mental, physical, or behavioral problems” and “Community-related factors”. In the former, the mean effect of externalizing problems was larger than the mean effect of physical disabilities/problems. In the latter, the mean effect of risk factors reflecting a high violence/crime rate in the community was larger than the non-significant mean effect of factors reflecting the rural environment in which the child is living.

Sexual abuse characteristics

A moderating effect of the type of child sexual abuse was found in several risk domains. First, in the domain “Parental history of antisocial behavior/criminal offending”, we found a larger mean effect of the mixed category of sexual abuse (comprising risk factors associated with contact and/or non-contact sexual abuse) relative to the mean effect of contact sexual abuse, which did not significantly deviate from zero. The mean effect of non-contact sexual abuse was also not significant in this domain. Second, in the domain “Interparental problems”, we found that the non-significant mean effect of non-contact sexual abuse was smaller than the mean effect of contact sexual abuse. Third, a smaller mean effect of non-contact sexual abuse relative to the mean effect of contact sexual abuse was found in the domain “Child is not living with two biological parents”. Fourth, in the domain “Low family SES”, a smaller (and even a significant negative) mean effect was found for non-contact sexual abuse relative to the non-significant mean effect of contact sexual abuse. Lastly, a smaller (and nonsignificant) mean effect of non-contact sexual abuse relative to the mean effect of contact sexual abuse was found in the domain “Low parental education”.

4.4 Discussion

Over the past decades, an increasing amount of research has been directed to determining risk factors for child sexual abuse victimization, with important implications for the knowledge we have about the etiology of child sexual abuse victimization as well as the development and improvement of risk assessment procedures and intervention strategies aimed at preventing (the recurrence of) child sexual abuse. The present meta-analytic review was aimed at determining the mean effect sizes of a number of different risk domains (i.e., groups of more or less similar risk factors) for child sexual abuse, and at identifying moderators of each overall effect. We extracted 1,038 effects of possible risk factors from 89 studies and classified each risk factor into one of 27 risk domains. In addition, we coded several sample descriptors, risk factor characteristics, and sexual abuse characteristics. Three-level meta-analytic models were used to estimate the overall mean effect of each risk domain and to identify moderating variables of this effect. In total, we conducted 27 separate meta-analyses.

4.4.1 Overall Mean Effect of Risk Domains

A significant overall mean effect was found for 19 of the 27 risk domains, ranging from $r = .065$ (for the risk domain "Child's substance use") to $r = .335$ (for the risk domain "Parental history of abuse"). The largest overall effects ($r > .250$) were found for the risk domains "Parental history of abuse", "Prior or concurrent forms of child abuse", "Child has mental, physical, or behavioral problems", and "Child is female". The overall mean effect of eight risk domains (i.e., "Parental history of antisocial behavior/criminal offending", "Child or parent(s) has immigration status", "Religious involvement of the family", "Community-related factors", "Unhealthy attitudes, values, & beliefs of parents", "Large family size (2 or more children)", and "Child is non-White") were not significant, suggesting that these domains should not be considered as risk domains for child sexual abuse. In general, these results reveal that risk factors in different domains contribute to the occurrence (or recurrence) of child sexual abuse, implying that multiple risk domains are involved in child sexual abuse. These results are in line with Stith et al. (2009) who meta-analytically reviewed the literature on effects of risk factors for two other forms of child maltreatment (child physical abuse and child neglect), and concluded that child maltreatment should be examined in a multi-factorial perspective, since risk factors at different levels contribute to child maltreatment. Our results also support Belsky's (1993) developmental-ecological perspective on the etiology of physical child abuse and neglect in which he argued that these two forms of abuse are determined by different risk factors operating at multiple levels of analysis.

When taking a closer look at the overall mean effects of the risk domains, it becomes clear that both child-related as well as parent- and family-related risk factors contribute importantly to child sexual abuse. The largest effect ($r = .335$) was found for the risk domain "Parental history of abuse", indicating that children of parents who themselves were exposed to child abuse or neglect during their own childhood are at significant risk to become a victim of sexual abuse. This may be explained by intergenerational transmission of maltreatment, as Widom, Czaja, and DuMont (2015) recently showed in their prospective 30-year follow-up study that children of parents with histories of childhood abuse and neglect are more likely to report being neglected and sexually abused than matched comparisons. However, as noted by Widom et al., theories and empirical research on intergenerational transmission of child maltreatment have largely focused on the transmission of specifically physical abuse, and much remains unclear about the mechanisms underlying the transmission of sexual abuse. This lack of knowledge is also due to serious methodological limitations that many studies on the intergenerational transmission of general child maltreatment suffer from (e.g., Ertem, Leventhal, & Dobbs, 2000). Therefore, more studies are needed to further unravel the transmission of sexual abuse. Further, it must be noted that the perpetrator of child sexual abuse maybe someone else than the parent(s) of the juvenile, as the risk factors in this particular risk domain do not refer to a specific type of perpetrator.

Interesting is also the effect ($r = .271$) of the risk domain "Prior or concurrent forms of child abuse", confirming that sexual abuse is often accompanied by other forms of child abuse, such as physical abuse and neglect. The comorbidity of child sexual abuse with other types of abuse has also been found by other scholars (e.g., Dong, Anda, Dube, Giles, & Felitti, 2003; Kinard, 1994) and was referred to by Higgins and McCabe (2000) as multi-type maltreatment. The next strongest effects were found in risk domains comprising risk factors associated with children reflecting different types of child problems (i.e., mental, physical, behavioral, and school problems). It is easy to imagine that different kinds of child problems make children more dependent upon help from others (mostly adults), thereby increasing the child's vulnerability to victimization. What may be encouraging is that some child-related problems are dynamic in nature and can therefore be addressed in interventions to reduce these problems and, consequently, reduce the risk for future victimization of sexual abuse. However, one should acknowledge that not all child-related problems are readily changeable. For instance, a child's mental disability may be the underlying cause of a number of child-related problems (e.g., low school grades or other mental problems) and if at all possible, difficult to address in interventions. In contrast to these child-related problems, the risk domain regarding the female gender of the child is static and unchangeable in interventions, but because of the rather strong effect, it is an important factor that should be assessed in risk assessment instruments.

Although the current results confirm that the prevalence of child sexual abuse is significantly higher in females than in males (see also the reviews of Barth, Bermetz, Heim, Trelle, & Tonia, 2013; Pereda, Guilera, Forns, & Gomez-Benito, 2009; Stoltenbergh, Van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011), it must be acknowledged that a considerable number of male children becomes the victim of sexual abuse as well. However, many primary studies on risk factors for child sexual abuse have focused predominantly on females, and therefore, future research on risk factors for male child sexual abuse is required.

Continuing down the list of overall mean effects of the risk domains, we see risks associated with the child, parent(s), family system, home environment, or interaction between these systems. This supports the notion of Belsky (1993) that risks in children and parents as well as risks in the broader context in which child development and parenting is embedded influence child maltreatment, making it necessary that child sexual abuse is examined from a multi-factorial perspective. The results of the present review revealed that most risks are associated with parent(s) or the interactions with parents, such as marital conflict, mental or physical problems, substance use, and inadequate parenting behavior. This may not be surprising since parents form one of the social structures most proximal to the child (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) and thus play an important role in whether or not a child will be a victim of sexual abuse. After all, it is the primary role of parents or other caretakers to foster and maintain a caring environment in which a child can achieve its full developmental potential without the child being harmed by any form of abuse or neglect.

In comparing the effects of the risk domains observed in the present review to effects of risk factors for other forms of child abuse, differences can be observed. Stith and colleagues (2009) conducted a series of meta-analyses of the effects of risk factors for child physical abuse and child neglect and found that the parent's perception of the child as a problem as well as parental anger/hyper-reactivity are among the strongest risk factors for both forms of abuse. The other strongest risk factors for neglect (i.e., high parental stress, low parental self-esteem, poor parent-child relationship) and physical abuse (i.e., high family conflict, low family cohesion, parental anxiety) are parent- or family-related, or concern the parent-child relationship. In contrast, we found that a number of child-related risk domains are among the domains most strongly associated with child sexual abuse (i.e., "Child has mental, physical, or behavioral problems"; "Child is female"; "Child has school-related problems"), next to the risk domains "Parental history of abuse" and "Prior or concurrent forms of child abuse". Although our risk domains conceptually differ from the risk factors described by Stith et al., it is clear that there are differences in the risk factors (or risk domains) most strongly related to child sexual abuse, neglect, and child physical abuse.

Despite these differences, our results underline the importance of an ecological perspective on the etiology of child sexual abuse, similar to Belsky's (1980) ecological perspective on the broader concept of child maltreatment. In particular, the importance of both the ontogenetic system and the microsystem as formulated by Belsky are reflected in the risk domains with the strongest effects as estimated in the present review. This may not be surprising since most primary studies on risk factors for child sexual abuse are directed on studying the risks most proximal to children, for which the largest effects can be expected. These risks comprise fundamental characteristics of the child (the ontogenetic system) and characteristics of relationships and interactions between children and their immediate surroundings (the microsystem). We found a (non-significant) smaller overall effect of community-related factors (the exosystem) and this may be not surprising since these factors are more distal to children and are therefore assumed to be less influential in the abuse process. However, since there is a scarcity of primary studies examining the effect of both community-specific characteristics (the exosystem) and characteristics of the culture and society in which children and their families are embedded (the macrosystem), we cannot draw firm conclusions on these aspects of Belsky's ecological model.

The results of the trim and fill analyses indicated that there may have been missing studies in 16 of the 27 meta-analyses, implying that the true overall mean effects of 16 risk domains may be different than the effects estimated in our meta-analyses. After performing trim and fill analyses and re-estimating overall mean effects, we found a higher overall mean effect of six risk domains (i.e., large effect sizes seemed underrepresented in the data) and a lower overall mean effect of ten risk domains (i.e., small effect sizes seemed underrepresented in the data; see Table 4.3). For 8 of the 16 risk domains, the difference between the re-estimated overall mean effect and the original effect was rather small (smaller than 0.05), whereas this difference was more considerable for the other eight risk domains (larger than 0.05). Although the re-estimated effects should not be interpreted as true mean effects because of limitations of the trim and fill analysis (see, for instance, Egger, Davey-Smith, & Altman, 2001; Nakagawa & Santos, 2012; Peters, Sutton, Jones, Abrams, & Rushton, 2007; Terrin, Schmid, Lau, & Olkin, 2013), we should acknowledge that there may be a bias in the estimated overall mean effects of several risk domains. Therefore, in interpreting the effects of risk domains relative to effects of other risk domains, this bias should be born in mind.

4.4.2 Variables Moderating the Overall Mean Effect of Risk Domains

First, we found that subgroups of (more or less) similar risk factors within two primary risk domains do not share the same mean effect. In the primary risk domain “Child has mental, physical, or behavioral problems”, we found a larger mean effect of risk factors related to externalizing problems relative to the mean effect of risk factors related to physical disabilities/problems. In the primary risk domain “Community-related factors”, we found a larger mean effect of risk factors related to high violence/crime rate in the community relative to the non-significant mean effect of risk factors related to growing up in a rural environment. This implies that the estimated overall mean effects of these two primary risk domains do not represent all risk factors categorized in these domains equally well, and this should be accounted for in interpreting the overall mean effects. Further, we found a moderating effect of the type of parent in the risk domains “Parental history of abuse”, “Parental mental or physical problems”, and “Parental alcohol/drug use”. In these three risk domains, the results showed that mother-related risk factors were more strongly associated with victimization of child sexual abuse than father-related risk factors of which the mean effect was not even significant. These findings imply that a child’s safety in the context of child sexual abuse is especially affected by problems related to the mother. It seems not only that mothers play an important role in protecting their children against sexual victimization, but also that this protection is negatively affected by a number of different maternal problems.

As for sexual abuse characteristics, we found a moderating effect of the type of sexual abuse in five risk domains. In these domains, we consistently found a lower mean effect of risk factors associated with non-contact sexual abuse relative to the mean effect of risk factors associated with contact sexual abuse. In the risk domain “Low family SES”, we even found a significant negative mean effect of risk factors associated with non-contact sexual abuse, but this effect was only based on four effect sizes (extracted from two studies), and therefore concluding that a low family SES is associated with less non-contact child sexual abuse may be unwarranted. Furthermore, in the domain “Parental history of antisocial behavior/criminal offending”, we found a significantly stronger effect of risk factors associated with the mixed category of sexual abuse (i.e., contact and/or non-contact sexual abuse) relative to risk factors associated with contact sexual abuse, but this effect was only based on one effect size extracted from one study. In sum, a number of risk domains proved to be more predictive of contact sexual abuse relative to non-contact sexual abuse. The former is often more severe than the latter, and most perpetrators may rather proceed to non-contact relative to contact sexual abuse, making forms of non-contact sexual abuse less specific phenomena that are more difficult to predict. On the other hand, Pereda et al. (2009) did not find a difference in worldwide prevalence between contact and non-contact sexual abuse and this, in

combination with the rather small number of effect sizes in most moderator analyses, warrants future research on differences in risk factors between contact and non-contact sexual abuse.

Finally, we found an increasing effect of the risk domain “Child is female” as percentages of Whites in samples increased, and that the effect of the risk domain “Child or parent(s) has immigration status” increased as percentages of males in samples increased. On the other hand, and just as important, we did not find a moderating effect of gender and ethnicity in most risk domains, suggesting that the effect of most risk domains is equally strong for males, females, and different ethnic groups.

4.4.3 Study Limitations

An important limitation of the present review is that we cannot be sure that our sample of included studies is fully representative of all studies on risk factors for child sexual abuse that have been carried out until today. In our search strategy, we tried to be as exhaustive as possible, but, as already mentioned by Stith et al. (2009), a vast volume on the subject of child maltreatment is available and this also accounts for child sexual abuse in specific. In our key-words based search of a number of electronic databases, one of the search components of the syntax specifically referred to the concept of risk (see the Methods section), because the present review was directed on the effect of risk factors. However, a substantial number of relevant primary studies is not indexed using a keyword directly related to the concept of risk factors, making it more difficult to identify these relevant studies. This may be due to the fact that a theoretical model like the risk-need-responsivity model (Andrews & Bonta, 2010; Bonta & Andrews, 2007, 2010; Andrews, Bonta, & Hoge 1990) has not yet been widely introduced in research on child maltreatment. To overcome this problem, we used three complementary search strategies (see Methods section), but we may have missed relevant studies. Consequently, our results may be biased, as trim and fill analyses indeed indicated that bias may have played a role in estimating the overall effects of 16 risk domains.

A second limitation is that the within and/or between study variance in each of the 27 meta-analyses could not be fully explained by the moderating variables we chose to examine. As we chose to examine only a select number of variables as possible moderators of the overall mean effect of each risk domain, it is possible that we missed other risk factor, sample, research design, or sexual abuse characteristics that are important in explaining within and/or between study variance.

Third, many of the primary studies assessed the participant’s history of sexual abuse by using self-report and thus, only participants willing to disclose their history of being sexually abused were identified in these studies. In addition, it may be difficult for participants to recall (details of) the moment of abuse because of the traumatic

nature of the experience or simply because of the time elapsed between the moment of abuse and the self-report of it. This may have resulted in an underestimate of the true prevalence of child sexual abuse in the primary studies, which in turn may have influenced the magnitude of effect sizes. Besides the method of assessment, different definitions of child sexual abuse are used in primary studies. Although we distinguished contact from non-contact sexual abuse, these are rather broad categories which both comprised different forms of sexual abuse. As a result, the present results do not reveal which form of sexual abuse is best predicted by different domains of risk factors, and this is a challenge for future research.

Fourth, the present review does not permit conclusions about (the direction of) causality, because of the non-experimental nature of the present review. In extracting effect sizes from primary studies we focused on antecedents of child sexual abuse, but we cannot assure that, for instance mental, physical, or behavioral problems are risk factors rather than outcomes of sexual abuse (see also the inclusion and exclusion criteria in the Methods section). Furthermore, in the present review, we only estimated overall mean associations between separate domains of risk factors and child sexual abuse, but there may be specific combinations of two or more risk domains that are especially predictive of child sexual abuse, and determining this is an important direction for future research. Finally, as can be seen in Table 4.2, the estimated overall mean effect of a number of risk domains was based on a rather small number of effect sizes and this hampers the ability to draw firm conclusions about the significance and magnitude of the effects of these domains. Furthermore, as can be seen in Table 4.4 and Appendix 4 - A, a substantial number of (categories of) variables examined in the moderator analyses was also based on a small number of effect sizes, limiting the statistical power in the analyses to detect moderating influences. Consequently, we decided not to examine multiple moderators in one meta-analytic model.

4.4.4 Clinical Implications

A number of suggestions for clinical practice can be derived from the present review. First, the results showed that child sexual abuse, just like other forms of child abuse (e.g., Belsky, 1993; Stith et al., 2009) is associated with risk factors in different domains. It is therefore important that a multifactorial approach be used in risk as well as needs assessment instruments to not only properly estimate a juvenile's risk for becoming a victim of sexual abuse, but also to assess which dynamic risk factors need to be addressed in (preventive) interventions. Consequently, for interventions to be most effective in preventing (recurrent) victimization of child sexual abuse, a multifactorial approach in interventions is warranted in which all determined needs are properly addressed. In this way, the risk and need principles of the RNR model (Andrews & Bonta, 2010; Bonta &

Andrews, 2007, 2010; Andrews, Bonta, & Hoge 1990) that has proven its success in the field of criminal justice (e.g., Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1990; Dowden & Andrews, 1999a, 1999b; Koehler, Lösel, Akoensi, & Humphreys, 2012), can be applied to the practice of child protection.

Second, as child sexual abuse often comes with other forms of child abuse (Dong, Anda, Dube, Giles, & Felitti, 2003; Higgins & McCabe, 2000; Kinard, 1994), and because there are differences in (effects of) risk factors for child sexual abuse and (effects of) risk factors for other forms of child abuse, it is important that the different child abuse forms are assessed and treated separately, using proper risk and needs assessment instruments for each type. In addition, in assessment instruments as well as in interventions or prevention strategies, mental and/or physical problems of especially the mother should get attention. Our results suggest that in risk assessment, clinicians should rather pay attention to a mother's history of child abuse relative to a father's history of child abuse, since we only found a significant association of the former with child sexual abuse. However, this last finding was based on a small number of effect sizes and in general, the role of the father in a child's victimization of sexual abuse has not been extensively examined, and therefore more research is needed on this issue.

Third, clinicians should pay attention to risk factors related to the child, the parents, the family, and the community, instead of focusing merely on risk factors related to the child or one of the social structures influencing the child's environment. As for community-related risk factors, the overall mean effect was close to zero and not significant, but the results of the moderator analyses showed that a high rate of violence and crime in communities increases the chance of child sexual abuse. This finding indicates the need for future research on the influence of communities, and suggests that policy and community interventions aimed at reducing violence and crime in communities might reduce the risk of children to become victims of sexual abuse (see also Van Dijken, Stams, & De Winter, 2016).

As a final implication for clinical practice, our results suggest that rather general risk and needs assessment instruments in which risk factors are equally weighed can be used for different groups of juveniles (i.e., boys, girls, and juveniles with different ethnic backgrounds). However, because we found moderating effects of gender and ethnicity in two risk domains (i.e., "Child is female" and "Child or parent(s) has immigration status"), it is to be expected that the weighing of (at least) two risk domains in estimating the risk for sexual abuse should not be the same across different groups of juveniles. Therefore, implementing one general assessment strategy for different groups of juveniles does not seem the optimal approach to risk and needs assessment. In addition, and as stressed by other scholars (e.g., Assink, Van der Put, Hoeve, De Vries, Stams, & Oort, 2015; Van der Put, Deković, Stams, Van der Laan, Hoeve, & Amelsfort; 2011; Van der Put,

Deković, Hoeve, Stams, Van der Laan, & Langewouters, 2014), it is still most important to validate assessment instruments in different populations, so that in each population, risk factors are properly weighed in assessment strategies to produce the optimal risk estimate.

4.5 Conclusion

To our knowledge, this is the first meta-analytic review in which the overall effect of multiple domains of risk factors for child sexual abuse is estimated. Our results revealed an association with child sexual abuse of 19 risk domains, indicating that multiple risk domains have a more or less important role in victimization of child sexual abuse. The largest overall effects ($r > .250$) were found for the risk domains "Parental history of abuse", "Prior or concurrent forms of child abuse", "Child has mental, physical, or behavioral problems", and "Child is female". These results indicate that a multifactorial approach is needed in both risk and needs assessment as well as in interventions to prevent (recurrent) victimization of child sexual abuse. The results also showed that mental or physical problems of mothers, as opposed to mental or physical problems of fathers, are associated with child sexual abuse. A similar effect was found for parental history of abuse, but because this risk domain comprised a small number of effect sizes, we cannot be firm on this point yet. Further, in most risk domains, the results did not reveal evidence of a moderating effect of gender and ethnicity, implying that the effects of most risk domains are the same for different groups of juveniles. The results of the current review provide valuable insights for the development and improvement of both assessment procedures and intervention strategies.

Appendix 4 – A: Significant and Non-Significant Results for Continuous and Categorical Moderators (Bivariate Models)

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|---------------------------|----------------------------------|-----------------------|------------------|-------------------|
| (1) Parental history of antisocial behavior/criminal offending | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 4 | 9 | 0.292 (-0.149, 0.733) | - | 0.007 (-0.004, 0.018) | <i>F</i> (1, 7) = 2.213 | .180 | .088*** | .076 |
| Percentage of Whites | 3 | 5 | 0.214 (0.075, 0.354)* | - | -0.003 (-0.008, 0.001) | <i>F</i> (1, 3) = 5.290 | .105 | .008*** | .000 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 6) = 11.941 | .008** | .044*** | .000 |
| Contact sexual abuse (RC) | 3 | 6 | 0.206 (-0.007, 0.419) [†] | .203 | | | | | |
| Non-contact sexual abuse | 1 | 2 | -0.296 (-0.666, 0.073) [†] | -.288 | -0.503 (-0.929, -0.076)* | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 1 | 1 | 0.961 (0.448, 1.475)** | .745 | 0.755 (0.199, 1.311)* | | | | |
| (2) Parental history of abuse | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 5 | 10 | 0.389 (0.232, 0.545)** | - | -0.001 (-0.007, 0.006) | <i>F</i> (1, 8) = 0.112 | .747 | .029*** | .000 |
| Percentage of Whites | 5 | 10 | 0.326 (0.148, 0.504)** | - | -0.001 (-0.006, 0.005) | <i>F</i> (1, 8) = 0.045 | .838 | .034*** | .004 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | <i>F</i> (1, 7) = 25.008 | .002** | .000 | .058 [†] |
| <i>Mother-related risk factors (RC)</i> | | | | | | | | | |
| Father-related risk factors | 1 | 1 | -0.113 (-0.483, 0.257) | | -0.524 (-0.772, -0.276)** | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (1, 8) = 2.394 | .160 | .031*** | .000 |
| Contact sexual abuse (RC) | 3 | 7 | 0.446 (0.243, 0.649)** | | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 2 | 3 | 0.230 (-0.019, 0.480) [†] | | -0.216 (-0.537, 0.106) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|------------------------------------|----------------------------------|-----------------------|---------------------|---------------------|
| (3) Prior or concurrent forms of child abuse | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 18 | 65 | 0.278 (0.224, 0.332) ^{***} | - | 0.001 (-0.001, 0.003) | <i>F</i> (1, 63) = 0.833 | .365 | .008 ^{***} | .008 ^{***} |
| Percentage of Whites | 11 | 30 | 0.273 (0.219, 0.328) ^{***} | - | 0.000 (-0.002, 0.001) | <i>F</i> (1, 28) = 0.262 | .613 | .019 ^{***} | .000 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | 14 | 22 | 0.250 (0.194, 0.306) ^{***} | .245 | | <i>F</i> (4, 48) = 1.968 | .115 | .007 ^{***} | .004 ^{**} |
| Physical abuse (RC) | 6 | 11 | 0.287 (0.215, 0.360) ^{***} | .279 | 0.037 (-0.036, 0.110) | | | | |
| Emotional/Psychological abuse | 6 | 10 | 0.323 (0.248, 0.398) ^{***} | .312 | 0.073 (-0.003, 0.148) ⁺ | | | | |
| Emotional neglect | 4 | 8 | 0.266 (0.184, 0.348) ^{***} | .260 | 0.016 (-0.066, 0.097) | | | | |
| Sexual abuse | 1 | 2 | 0.408 (0.255, 0.561) ^{***} | .387 | 0.157 (0.005, 0.310) [*] | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 11 | 37 | 0.287 (0.222, 0.351) ^{***} | .279 | | <i>F</i> (2, 58) = 0.496 | .612 | .008 ^{***} | .008 ^{**} |
| Contact sexual abuse (RC) | 2 | 5 | 0.246 (0.141, 0.352) ^{***} | .242 | -0.040 (-0.136, 0.055) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 7 | 19 | 0.260 (0.185, 0.335) ^{***} | .254 | -0.027 (-0.106, 0.052) | | | | |
| (4) Child has mental, physical, or behavioral problems | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 20 | 78 | 0.259 (0.138, 0.380) ^{***} | - | 0.001 (0.000, 0.001) ⁺ | <i>F</i> (1, 76) = 3.275 | .074 ⁺ | .007 ^{***} | .069 ^{***} |
| Percentage of Whites | 12 | 43 | 0.303 (0.092, 0.514) ^{**} | - | 0.001 (-0.006, 0.008) | <i>F</i> (1, 41) = 0.026 | .873 | .002 ^{***} | .124 ^{***} |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | | | | | | <i>F</i> (3, 52) = 2.925 | .042 [*] | .011 ^{***} | .032 ^{***} |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|------------------------|----------------------------------|-----------------------|------------------|------------------|
| Physical disability/problems (RC) | 8 | 28 | 0.180 (0.059, 0.300)** | .178 | | | | | |
| Externalizing problems | 8 | 10 | 0.356 (0.231, 0.482)*** | .342 | 0.177 (0.052, 0.302)** | | | | |
| Internalizing problems | 7 | 9 | 0.227 (0.096, 0.358)** | .223 | 0.048 (-0.082, 0.177) | | | | |
| Cognitive problems | 7 | 9 | 0.234 (0.097, 0.372)** | .230 | 0.055 (-0.093, 0.202) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 61) = 1.453 | .242 | .008*** | .044*** |
| Contact sexual abuse (RC) | 13 | 37 | 0.259 (0.141, 0.376)*** | .253 | | | | | |
| Non-contact sexual abuse | 2 | 13 | 0.179 (0.037, 0.321)* | .177 | -0.080 (-0.177, 0.017) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 6 | 14 | 0.199 (0.043, 0.354)* | .196 | -0.060 (-0.226, 0.106) | | | | |
| (5) Child is female | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 43 | 116 | 0.261 (0.189, 0.333)*** | - | -0.001 (-0.007, 0.006) | <i>F</i> (1, 114) = 0.031 | .861 | .025*** | .036*** |
| Percentage of Whites | 30 | 67 | 0.183 (0.102, 0.265)*** | - | 0.003 (0.001, 0.005)** | <i>F</i> (1, 65) = 10.599 | .002** | .031*** | .020* |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 112) = 0.159 | .853 | .025*** | .035*** |
| Contact sexual abuse (RC) | 28 | 68 | 0.265 (0.184, 0.346)*** | .259 | | | | | |
| Non-contact sexual abuse | 10 | 26 | 0.243 (0.141, 0.345)*** | .238 | -0.022 (-0.100, 0.057) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 18 | 21 | 0.251 (0.147, 0.356)*** | .246 | -0.013 (-0.129, 0.102) | | | | |
| (6) Child has school-related problems | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 4 | 15 | 0.257 (0.166, 0.347)*** | - | 0.002 (-0.001, 0.005) | <i>F</i> (1, 13) = 2.301 | .153 | .003+ | .004+ |
| Percentage of Whites | 3 | 14 | 0.261 (0.175, 0.348)*** | - | -0.002 (-0.004, 0.000) | <i>F</i> (1, 12) = 3.545 | .084+ | .003+ | .003 |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean r | β (95% CI) | F (df1, df2) ^a | p ^b | Level 2 variance | Level 3 variance |
|--|-----------|------|--------------------------------------|--------|---------------------------|---------------------------|----------------|------------------|------------------|
| Sexual abuse characteristics | | | | | | | | | |
| Type of sexual abuse | | | | | | $F(1, 13) = 14.455$ | .002** | .002 | .000 |
| Contact sexual abuse (RC) | 2 | 9 | 0.320 (0.252, 0.389)** | .310 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 2 | 6 | 0.160 (0.099, 0.220)** | .159 | -0.161 (-0.252, -0.070)** | | | | |
| (7) Problematic family system functioning | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 13 | 47 | 0.274 (0.157, 0.391)** | - | 0.000 (-0.003, 0.003) | $F(1, 45) = 0.001$ | .980 | .022*** | .026** |
| Percentage of Whites | 12 | 45 | 0.319 (0.192, 0.447)** | - | 0.003 (0.000, 0.006)* | $F(1, 43) = 3.576$ | .065+ | .021*** | .024** |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | $F(1, 38) = 0.546$ | .465 | .022*** | .043** |
| Contact sexual abuse (RC) | 8 | 17 | 0.270 (0.091, 0.448)** | .264 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 5 | 23 | 0.168 (-0.047, 0.383) | .166 | -0.102 (-0.381, 0.178) | | | | |
| (8) Physical violence in the child's home environment | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 14 | 15 | 0.222 (0.149, 0.296)** | - | 0.001 (-0.002, 0.005) | $F(1, 13) = 0.609$ | .449 | .000 | .013* |
| Percentage of Whites | 9 | 9 | 0.227 (0.127, 0.327)** | - | -0.001 (-0.003, 0.002) | $F(1, 7) = 0.420$ | .537 | .006 | .006 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | $F(1, 1) = 0.119$ | .789 | .030 | .030 |
| Mother-related risk factors (RC) | 2 | 2 | 0.159 (-2.285, 2.604) | .158 | | | | | |
| Father-related risk factors | 1 | 1 | 0.076 (-2.948, 3.100) | .076 | -0.083 (-3.151, 2.985) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | $F(1, 12) = 1.355$ | .267 | .000 | .011* |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|--|-----------|------|--------------------------------------|---------------|------------------------|----------------------------------|-----------------------|------------------|------------------|
| Contact sexual abuse (RC) | 4 | 4 | 0.297 (0.161, 0.432)** | .289 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 9 | 10 | 0.211 (0.125, 0.297)** | .208 | -0.086 (-0.246, 0.075) | | | | |
| (9) Child (periodically) lived away from biological parents | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 5 | 6 | 0.212 (0.009, 0.415)* | - | 0.001 (-0.007, 0.009) | <i>F</i> (1, 4) = 0.101 | .077 ⁺ | .027*** | .000 |
| Percentage of Whites | 4 | 5 | 0.221 (-0.089, 0.007) | - | -0.001 (-0.009, 0.007) | <i>F</i> (1, 3) = 0.209 | .679 | .039*** | .002 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 3 | 3 | 0.314 (-0.004, 0.631)* | .304 | | <i>F</i> (2, 3) = 1.169 | .421 | .023*** | .000 |
| Contact sexual abuse (RC) | 1 | 1 | 0.204 (-0.278, 0.686) | .201 | -0.110 (-0.687, 0.468) | | | | |
| Non-contact sexual abuse | 1 | 2 | 0.082 (-0.283, 0.447) | .082 | -0.232 (-0.716, 0.252) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 1 | 2 | | | | | | | |
| (10) Other | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 11 | 20 | 0.233 (0.120, 0.346)** | - | 0.002 (-0.001, 0.006) | <i>F</i> (1, 18) = 1.713 | .207 | .033*** | .007 |
| Percentage of Whites | 7 | 12 | 0.158 (0.020, 0.296)* | - | -0.001 (-0.005, 0.003) | <i>F</i> (1, 10) = 0.371 | .556 | .015*** | .012 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | 2 | 4 | 0.124 (-0.140, 0.387) | .123 | | <i>F</i> (1, 11) = 1.791 | .174 | .017*** | .017 |
| Sibling-related problems (RC) | 3 | 3 | 0.116 (-0.220, 0.453) | .115 | -0.008 (-0.435, 0.420) | | | | |
| Child's early onset of menarche | 2 | 3 | 0.266 (-0.035, 0.567)* | .260 | 0.143 (-0.258, 0.543) | | | | |
| Poor social support of parents | 1 | 2 | 0.730 (0.256, 1.204)** | .623 | 0.606 (0.0639, 1.148)* | | | | |
| Unhealthy sexual behavior of child | 1 | 1 | 1.075 (0.454, 1.695)** | .791 | 0.951 (0.276, 1.625)* | | | | |
| Child has history of cross-dressing | 1 | 1 | | | | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|--------------------------|----------------------------------|-----------------------|------------------|------------------|
| Family moving-related factors | 1 | 2 | 0.159 (-0.132, 0.450) | .158 | 0.035 (-0.357, 0.428) | | | | |
| Parents live together but are not married | 1 | 2 | 0.133 (-0.220, 0.486) | .132 | 0.009 (-0.432, 0.449) | | | | |
| No exclusively male children in family | 1 | 2 | 0.098 (-0.225, 0.422) | .098 | -0.026 (-0.443, 0.391) | | | | |
| Child not being aware of contraception | 1 | 1 | 0.316 (-0.121, 0.753) | .306 | 0.192 (-0.318, 0.702) | | | | |
| Child was ever victim of a property crime | 1 | 1 | 0.161 (-0.247, 0.570) | .160 | 0.038 (-0.448, 0.523) | | | | |
| Victim experienced occurrences of parental death | 1 | 1 | 0.000 (-0.510, 0.510) | .000 | -0.124 (-0.698, 0.450) | | | | |
| Victimization of a family member | 1 | 1 | 0.291 (-0.455, 1.038) | .283 | 0.168 (-0.624, 0.959) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 6 | 11 | 0.295 (0.159, 0.432)** | .288 | | <i>F</i> (2, 20) = 2.371 | .119 | .023*** | .006 |
| Contact sexual abuse (RC) | | | | | | | | | |
| Non-contact sexual abuse | 1 | 1 | 0.087 (-0.275, 0.448) | .087 | -0.208 (-0.577, 0.162) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 7 | 11 | 0.119 (-0.006, 0.244) ⁺ | .118 | -0.176 (-0.358, 0.006) | | | | |
| (11) Interparental problems (e.g., marital conflict) | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 7 | 15 | 0.210 (0.139, 0.281)** | - | -0.002 (-0.005, 0.001) | <i>F</i> (1, 13) = 2.033 | .178 | .013*** | .000 |
| Percentage of Whites | 3 | 7 | 0.207 (-0.126, 0.540) | - | -0.001 (-0.009, 0.007) | <i>F</i> (1, 5) = 0.0477 | .836 | .018*** | .037 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 4 | 10 | 0.156 (0.031, 0.280)* | .155 | | <i>F</i> (2, 14) = 5.817 | .015* | .004** | .008* |
| Contact sexual abuse (RC) | | | | | | | | | |
| Non-contact sexual abuse | 1 | 2 | -0.033 (-0.208, 0.142) | -0.033 | -0.189 (-0.330, -0.047)* | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 4 | 5 | 0.284 (0.160, 0.407)** | .277 | 0.128 (-0.047, 0.303) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|--|-----------|------|--------------------------------------|---------------|--|----------------------------------|-----------------------|---------------------|---------------------|
| (12) Parental mental or physical problems | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 21 | 51 | 0.160 (0.081, 0.239) ^{***} | - | 0.000 (-0.002, 0.003) | <i>F</i> (1, 49) = 0.058 | .810 | .024 ^{***} | .018 [*] |
| Percentage of Whites | 16 | 31 | 0.156 (0.038, 0.274) [*] | - | 0.000 (-0.003, 0.003) | <i>F</i> (1, 29) = 0.007 | .935 | .004 ^{***} | .047 ^{***} |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | | | | |
| Mother-related risk factors (RC) | 13 | 33 | 0.219 (0.102, 0.337) ^{***} | .216 | | <i>F</i> (1, 47) = 12.975 | <.001 ^{***} | .014 ^{***} | .033 ^{***} |
| Father-related risk factors | 6 | 16 | 0.045 (-0.091, 0.181) | .045 | -0.174 (-0.271, -0.077) ^{***} | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| Contact sexual abuse (RC) | 12 | 47 | 0.252 (0.151, 0.353) ^{***} | .247 | | <i>F</i> (2, 68) = 2.913 | .061 ⁺ | .022 ^{***} | .021 ^{***} |
| Non-contact sexual abuse | 1 | 2 | 0.291 (0.025, 0.557) [*] | .283 | 0.039 (-0.216, 0.293) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 11 | 22 | 0.091 (-0.017, 0.198) ⁺ | .091 | -0.162 (-0.298, -0.026) [*] | | | | |
| (13) Parent-child relationship problems | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 7 | 21 | 0.185 (0.039, 0.331) [*] | - | 0.000 (-0.003, 0.003) | <i>F</i> (1, 19) = 0.099 | .757 | .008 ^{***} | .028 ^{***} |
| Percentage of Whites | 6 | 14 | 0.184 (0.005, 0.362) [*] | - | 0.001 (-0.004, 0.005) | <i>F</i> (1, 12) = 0.074 | .791 | .004 ^{**} | .036 ^{**} |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | | | | |
| Mother-related risk factors (RC) | 3 | 10 | 0.181 (-0.052, 0.414) | .179 | | <i>F</i> (1, 11) = 1.092 | .319 | .000 | .042 ^{***} |
| Father-related risk factors | 2 | 3 | 0.128 (-0.117, 0.374) | .127 | -0.053 (-0.165, 0.059) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| | | | | | | <i>F</i> (2, 20) = 3.046 | .070 ⁺ | .004 ^{***} | .027 ^{***} |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|--------------------------|----------------------------------|-----------------------|------------------|------------------|
| Contact sexual abuse (RC) | 4 | 12 | 0.190 (0.040, 0.339)* | .188 | | | | | |
| Non-contact sexual abuse | 1 | 2 | 0.028 (-0.169, 0.226) | .028 | -0.161 (-0.299, -0.024)* | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 5 | 9 | 0.164 (0.023, 0.305)* | .163 | -0.026 (-0.154, 0.103) | | | | |
| (14) Parental alcohol/drug use | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 18 | 60 | 0.165 (0.100, 0.231)*** | - | 0.001 (-0.001, 0.002) | <i>F</i> (1, 58) = 0.697 | .407 | .011*** | .012*** |
| Percentage of Whites | 12 | 22 | 0.168 (0.117, 0.220)*** | - | 0.000 (-0.002, 0.001) | <i>F</i> (1, 20) = 0.089 | .769 | .007*** | .002 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | | | | | | <i>F</i> (3, 56) = 2.163 | .103 | .010*** | .011*** |
| Substance use in general (RC) | 8 | 24 | 0.197 (0.099, 0.295)*** | .194 | | | | | |
| Drug use | 4 | 10 | 0.208 (0.097, 0.318)*** | .205 | 0.011 (-0.137, 0.158) | | | | |
| Alcohol use | 9 | 22 | 0.109 (0.022, 0.195)* | .109 | -0.088 (-0.219, 0.043) | | | | |
| Tobacco use | 1 | 4 | 0.196 (0.045, 0.346)* | .194 | -0.001 (-0.181, 0.178) | | | | |
| Parent associated with risk factor | | | | | | <i>F</i> (1, 24) = 6.984 | .014** | .007*** | .022*** |
| Mother-related risk factors (RC) | 7 | 19 | 0.197 (0.069, 0.325)** | .194 | | | | | |
| Father-related risk factors | 5 | 7 | 0.064 (-0.077, 0.204) | .064 | -0.134 (-0.238, -0.029)* | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 56) = 0.565 | .572 | .011*** | .012*** |
| Contact sexual abuse (RC) | 10 | 24 | 0.173 (0.092, 0.254)*** | .171 | | | | | |
| Non-contact sexual abuse | 2 | 5 | 0.110 (-0.025, 0.246) | .110 | -0.063 (-0.181, 0.055) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 9 | 30 | 0.168 (0.086, 0.251)*** | .166 | -0.005 (-0.097, 0.088) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|---|---------------|---------------------------------------|----------------------------------|-----------------------|---------------------|---------------------|
| (15) Child is not living with two biological parents | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 30 | 119 | 0.160 (0.117, 0.203) ^{***} | - | 0.000 (-0.001, 0.000) | <i>F</i> (1, 117) = 0.702 | .404 | .012 ^{***} | .008 ^{***} |
| Percentage of Whites | 22 | 47 | 0.139 (0.077, 0.201) ^{***} | - | 0.000 (-0.001, 0.002) | <i>F</i> (1, 45) = 0.233 | .632 | .019 ^{***} | .008 [*] |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | | | | | | <i>F</i> (5, 67) = 1.527 | .193 | .013 ^{***} | .008 [*] |
| Single parent household (RC) | 13 | 26 | 0.143 (0.070, 0.217) ^{***} | .142 | | | | | |
| Having a stepparent (stepfather or -mother) | 5 | 10 | 0.248 (0.129, 0.368) ^{***} | .243 | 0.105 (-0.033, 0.242) | | | | |
| Having a stepfather | 9 | 10 | 0.094 (-0.005, 0.193) [†] | .094 | -0.050 (-0.160, 0.061) | | | | |
| Having a stepmother | 5 | 6 | 0.054 (-0.069, 0.178) | .054 | -0.089 (-0.218, 0.039) | | | | |
| Absence of biological mother | 1 | 10 | 0.244 (0.081, 0.408) ^{***} | .239 | 0.101 (-0.077, 0.279) | | | | |
| Absence of biological father | 1 | 10 | 0.263 (0.091, 0.434) ^{**} | .257 | 0.119 (-0.067, 0.305) | | | | |
| Parent associated with risk factor | | | | | | <i>F</i> (1, 54) = 0.015 | .903 | .008 ^{***} | .011 ^{***} |
| Mother-related risk factors (RC) | 9 | 28 | 0.147 (0.068, 0.227) ^{***} | .146 | | | | | |
| Father-related risk factors | 12 | 28 | 0.144 (0.066, 0.221) ^{***} | .143 | -0.004 (-0.060, 0.053) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 117) = 4.574 | .012 [*] | .011 ^{***} | .008 ^{***} |
| Contact sexual abuse (RC) | 16 | 56 | 0.195 (0.139, 0.251) ^{***} | .193 | | | | | |
| Non-contact sexual abuse | 4 | 13 | 0.095 (0.012, 0.177) [*] | .095 | -0.100 (-0.171, -0.029) ^{**} | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 19 | 51 | 0.141 (0.088, 0.194) ^{***} | .140 | -0.054 (-0.121, 0.014) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean r | β (95% CI) | F (df1, df2) ^a | p ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|--------|-------------------------------------|---------------------------|---------------------|---------------------|--------------------|
| (16) Inadequate parenting behavior | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 9 | 50 | 0.136 (0.067, 0.204) ^{***} | - | -0.001 (-0.003, 0.001) | F(1, 49) = 0.854 | .360 | .028 ^{***} | .003 |
| Percentage of Whites | 5 | 20 | 0.168 (0.080, 0.256) ^{***} | - | 0.001 (-0.001, 0.004) | F(1, 18) = 1.410 | .251 | .034 ^{***} | .000 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | F(1, 46) = 0.493 | .486 | .031 ^{***} | .003 |
| Mother-related risk factors (RC) | 7 | 29 | 0.148 (0.066, 0.231) ^{***} | .147 | | | | | |
| Father-related risk factors | 5 | 19 | 0.110 (0.013, 0.207) [*] | .110 | -0.039 (-0.149, 0.072) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | F(2, 50) = 1.665 | .200 | .028 ^{***} | .006 [*] |
| Contact sexual abuse (RC) | 5 | 25 | 0.147 (0.040, 0.255) ^{**} | .146 | | | | | |
| Non-contact sexual abuse | 1 | 6 | -0.003 (-0.184, 0.178) | -0.003 | -0.150 (-0.317, 0.016) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 6 | 22 | 0.117 (0.011, 0.222) [*] | .116 | -0.031 (-0.178, 0.117) | | | | |
| (17) Low family SES | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 25 | 46 | 0.068 (0.001, 0.135) [*] | - | 0.000 (-0.002, 0.002) | F(1, 44) = 0.096 | .758 | .031 ^{***} | .006 |
| Percentage of Whites | 22 | 33 | 0.101 (-0.003, 0.206) ⁺ | - | -0.003 (-0.005, 0.000) ⁺ | F(1, 31) = 3.298 | .079 ⁺ | .040 ^{***} | .026 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | F(1, 11) = 0.068 | .799 | .000 | .025 [*] |
| Mother-related risk factors (RC) | 8 | 8 | 0.077 (-0.048, 0.202) | .077 | | | | | |
| Father-related risk factors | 5 | 5 | 0.064 (-0.073, 0.201) | .064 | -0.013 (-0.122, 0.096) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | F(2, 48) = 7.532 | .001 ^{***} | .020 ^{***} | .040 ^{**} |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|--|-----------|------|--------------------------------------|---------------|----------------------------|----------------------------------|-----------------------|------------------|------------------|
| Contact sexual abuse (RC) | 15 | 28 | 0.098 (-0.022, 0.218) | .098 | | | | | |
| Non-contact sexual abuse | 2 | 4 | -0.222 (-0.425, -0.171)* | -.218 | -0.319 (-0.494, -0.145)*** | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 14 | 19 | 0.186 (0.060, 0.313)** | .184 | 0.088 (-0.080, 0.256) | | | | |
| (18) Parental age factors (child having young or old parents) | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 3 | 8 | 0.090 (-0.007, 0.186) ⁺ | - | -0.002 (-0.007, 0.002) | <i>F</i> (1, 6) = 1.939 | .213 | .011*** | .000 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | 5 | 10 | 0.107 (0.012, 0.202)* | .107 | | <i>F</i> (1, 9) = 0.649 | .441 | .014*** | .001 |
| Mother-related risk factors (RC) | 1 | 1 | 0.236 (-0.116, 0.588) | .232 | 0.129 (-0.234, 0.493) | | | | |
| Father-related risk factors | 1 | 1 | 0.236 (-0.116, 0.588) | .232 | 0.129 (-0.234, 0.493) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 4 | 7 | 0.159 (0.034, 0.285)* | .158 | | <i>F</i> (2, 8) = 1.178 | .356 | .012*** | .004 |
| Contact sexual abuse (RC) | 1 | 1 | -0.006 (-0.302, 0.290) | -.006 | -0.165 (-0.469, 0.139) | | | | |
| Non-contact sexual abuse | 2 | 3 | 0.072 (-0.101, 0.244) | .072 | -0.088 (-0.281, 0.106) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 19 | 53 | 0.082 (0.037, 0.128)*** | - | -0.001 (-0.003, 0.001) | <i>F</i> (1, 51) = 0.761 | .387 | .007*** | .006*** |
| (19) Low parental education | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 17 | 35 | 0.079 (0.036, 0.123)*** | - | 0.001 (0.000, 0.002) | <i>F</i> (1, 33) = 2.366 | .134 | .014*** | .000 |
| Percentage of Whites | 19 | 38 | 0.107 (0.046, 0.167)*** | .107 | | <i>F</i> (1, 54) = 0.028 | .868 | .014*** | .009** |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | 19 | 38 | 0.107 (0.046, 0.167)*** | .107 | | | | | |
| Mother-related risk factors (RC) | 19 | 38 | 0.107 (0.046, 0.167)*** | .107 | | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|---------------------------|----------------------------------|-----------------------|------------------|------------------|
| Father-related risk factors | 12 | 18 | 0.113 (0.037, 0.190)** | .113 | 0.007 (-0.072, 0.085) | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (2, 58) = 6.047 | .004** | .010*** | 0.011** |
| Contact sexual abuse (RC) | 12 | 26 | 0.149 (0.075, 0.222)** | .148 | | | | | |
| Non-contact sexual abuse | 2 | 5 | -0.026 (-0.150, 0.098) | -.026 | -0.175 (-0.283, -0.067)** | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 12 | 30 | 0.076 (0.005, 0.146)* | .076 | -0.073 (-0.169, 0.024) | | | | |
| (20) Problems in child's social relationships | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 5 | 11 | 0.103 (-0.052, 0.258) | - | 0.000 (-0.001, 0.001) | <i>F</i> (1, 9) = 0.000 | .994 | .000 | .022*** |
| Percentage of Whites | 3 | 3 | 0.074 (-1.359, 1.506) | - | -0.002 (-0.050, 0.047) | <i>F</i> (1, 1) = 0.210 | .727 | .018 | .018 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (1, 9) = 0.008 | .929 | .000 | .029*** |
| Contact sexual abuse (RC) | 1 | 1 | 0.088 (-0.316, 0.492) | .088 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 4 | 10 | 0.106 (-0.091, 0.303)* | .106 | 0.018 (-0.431, 0.468) | | | | |
| (22) Child or parent(s) has immigration status | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 1 | 12 | 0.062 (-0.010, 0.133) ⁺ | - | 0.002 (0.001, 0.004)* | <i>F</i> (1, 10) = 9.796 | .011* | .012*** | .000 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (1, 10) = 1.673 | .225 | .021*** | .000 |
| Contact sexual abuse (RC) | 1 | 8 | 0.100 (-0.014, 0.215) | .100 | | | | | |
| Non-contact sexual abuse | 1 | 4 | -0.015 (-0.178, 0.148) | -.015 | -0.116 (-0.315, 0.084) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|-------------------------|----------------------------------|-----------------------|------------------|------------------|
| (23) Religious involvement of the family | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 5 | 6 | 0.048 (-0.179, 0.275) | - | 0.007 (-0.004, 0.018) | <i>F</i> (1, 4) = 3.284 | .144 | .038*** | .000 |
| Percentage of Whites | 2 | 3 | 0.178 (-2.278, 2.634) | - | 0.000 (-0.065, 0.065) | <i>F</i> (1, 1) = 0.001 | .983 | .091*** | .011 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 2 | 3 | 0.178 (-0.232, 0.589) | .176 | | <i>F</i> (2, 3) = 1.475 | .358 | .047*** | .000 |
| Contact sexual abuse (RC) | 2 | 3 | 0.178 (-0.232, 0.589) | .176 | | | | | |
| Non-contact sexual abuse | 1 | 1 | 0.097 (-0.596, 0.790) | .097 | -0.081 (-0.886, 0.724) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 2 | 2 | -0.266 (-1.122, 0.591) | -.260 | -0.347 (-0.996, 0.302) | | | | |
| (24) Community-related factors | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 9 | 14 | 0.037 (-0.109, 0.183) | - | 0.000 (-0.004, 0.004) | <i>F</i> (1, 12) = 0.001 | .982 | .007*** | .033* |
| Percentage of Whites | 1 | 8 | 0.009 (-0.172, 0.190) | - | 0.000 (-0.005, 0.004) | <i>F</i> (1, 8) = 0.045 | .838 | .013*** | .032 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Subdomain of risk factors | 8 | 11 | -0.007 (-0.182, 0.168) | -.007 | | <i>F</i> (1, 12) = 54.046 | <.001*** | .000 | .056** |
| Child living in a rural environment (RC) | 3 | 3 | 0.185 (0.005, 0.365) | .183 | 0.192 (0.135, 0.249)*** | | | | |
| High violence / crime rate in community | 3 | 3 | 0.185 (0.005, 0.365) | .183 | 0.192 (0.135, 0.249)*** | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | 2 | 3 | 0.059 (-0.143, 0.262) | .059 | | <i>F</i> (2, 10) = 0.067 | .936 | .009*** | .010 |
| Contact sexual abuse (RC) | 2 | 3 | 0.059 (-0.143, 0.262) | .059 | | | | | |
| Non-contact sexual abuse | 1 | 1 | 0.042 (-0.239, 0.322) | .042 | -0.018 (-0.268, 0.232) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 6 | 9 | 0.090 (-0.031, 0.211) | .090 | 0.031 (-0.205, 0.267) | | | | |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|---|---------------|------------------------------------|----------------------------------|-----------------------|---------------------|---------------------|
| (25) Unhealthy attitudes, values, & beliefs of parents | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 3 | 15 | 0.028 (-0.108, 0.163) | - | -0.002 (-0.008, 0.004) | <i>F</i> (1, 13) = 0.602 | .452 | .008*** | .006 |
| Percentage of Whites | 2 | 3 | 0.140 (-0.859, 1.138) | - | 0.003 (-0.031, 0.036) | <i>F</i> (1, 1) = 1.025 | .496 | .002* | .001 |
| <i>Risk factor characteristics</i> | | | | | | | | | |
| Parent associated with risk factor | | | | | | <i>F</i> (1, 14) = 4.035 | .064 ⁺ | .007*** | .000 |
| Mother-related risk factors (RC) | 3 | 14 | 0.000 (-0.049, 0.049) | .000 | | | | | |
| Father-related risk factors | 1 | 2 | 0.145 (-0.002, 0.293) ⁺ | .144 | 0.145 (-0.009, 0.301) ⁺ | | | | |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (1, 15) = 0.105 | .750 | .008*** | .001 |
| Contact sexual abuse (RC) | 2 | 7 | 0.021 (-0.080, 0.121) | .021 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 3 | 10 | 0.037 (-0.041, 0.115) | .037 | 0.017 (-0.092, 0.125) | | | | |
| (26) Large family size (2 or more children) | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 8 | 13 | 0.000 (-0.059, 0.058) | - | -0.001 (-0.003, 0.002) | <i>F</i> (1, 11) = 0.588 | .459 | .003* | .002 |
| Percentage of Whites | 7 | 10 | 0.010 (-0.062, 0.082) | - | 0.001 (-0.001, 0.004) | <i>F</i> (1, 8) = 2.324 | .166 | .001 | .004 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | <i>F</i> (1, 12) = 0.230 | .640 | .004* | .000 |
| Contact sexual abuse (RC) | 2 | 3 | 0.030 (-0.078, 0.138) | .030 | | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 7 | 11 | 0.003 (-0.047, 0.054) | .003 | -0.026 (-0.145, 0.093) | | | | |
| (27) Child is non-White | | | | | | | | | |
| <i>Sample descriptors</i> | | | | | | | | | |
| Percentage of males | 19 | 93 | -0.013 (-0.043, 0.018) | - | 0.001 (-0.001, 0.003) | <i>F</i> (1, 91) = 0.870 | .353 | .020*** | .000 |

| Moderator variables | # Studies | # ES | Intercept (95% CI) / Mean Z (95% CI) | Mean <i>r</i> | β (95% CI) | <i>F</i> (df1, df2) ^a | <i>p</i> ^b | Level 2 variance | Level 3 variance |
|---|-----------|------|--------------------------------------|---------------|-----------------------|----------------------------------|-----------------------|------------------|------------------|
| Percentage of Whites | 17 | 86 | -0.019 (-0.051, 0.012) | - | 0.001 (-0.001, 0.002) | <i>F</i> (1, 84) = 0.637 | .427 | .020*** | .000 |
| <i>Sexual abuse characteristics</i> | | | | | | | | | |
| Type of sexual abuse | | | | | | | | | |
| Contact sexual abuse (RC) | 13 | 54 | -0.017 (-0.057, 0.024) | -0.17 | | <i>F</i> (2, 90) = 0.107 | .899 | .021*** | .000 |
| Non-contact sexual abuse | 4 | 28 | -0.012 (-0.067, 0.043) | -0.12 | 0.004 (-0.064, 0.073) | | | | |
| Mixed (contact and/or non-contact sexual abuse) | 6 | 11 | 0.007 (-0.084, 0.097) | .007 | 0.023 (-0.076, 0.122) | | | | |

Note. # Studies = number of studies; # ES = number of effect sizes; Mean Z = Mean effect size (Fisher's Z); CI = confidence interval; Mean *r* = Mean effect size (Pearson's *r*); β = estimated regression coefficient; Level 2 variance = residual variance between effect sizes from the same study; Level 3 variance = residual variance between studies.

^a Omnibus test of all regression coefficients in the model.
^b *P*-value of the omnibus test.
 * *p* < .05; ** *p* < .01; *** *p* < .001.

Appendix 4 – B: Characteristics of Included Studies

| Reference | Year | Gender of sample | Mean age of sample | Location of research | Age cut-off | # Risk factors |
|-------------------------------|------|-------------------------|--------------------|----------------------------|-------------|----------------|
| Affi et al. | 2003 | Mixed | 15.60 | Egypt | < 19 | 25 |
| Alriksson-Schmidt et al. | 2010 | Female | N/A | USA | < 19 | 10 |
| Amodeo et al. | 2006 | Female | 38.50 | USA | < 17 | 1 |
| Andersson & Ho-Foster | 2008 | Male | 15.00 | South Africa | < 21 | 3 |
| Audu et al. | 2009 | Female | 14.90 | Nigeria | < 18 | 12 |
| Avery et al. | 2002 | Mixed | 7.90 | USA | < 18 | 1 |
| Berard & Boormeester | 1999 | Mixed | N/A | South Africa | < 21 | 3 |
| Bergner et al. | 1994 | Female | 19.30 | USA | < 17 | 8 |
| Boney-McCoy & Finkelhor | 1995 | Mixed | 12.87 | USA | < 17 | 15 |
| Bouvier et al. | 1999 | Mixed | N/A | Switzerland | < 17 | 3 |
| Briscoe-Smith & Hinshaw | 2006 | Female | 9.58 | USA | < 13 | 1 |
| Brunnberg et al. | 2012 | Female Male | N/A | Sweden | < 19 | 2 2 |
| Buckle et al. | 2005 | Mixed | 16.02 | Australia | < 19 | 6 |
| Carey et al. | 2008 | Mixed | 14.25 | South Africa | < 17 | 8 |
| Chen et al. | 2004 | Mixed | 17.20 | China | < 16 | 22 |
| Chen et al. | 2006 | Female | 17.60 | China | < 16 | 4 |
| Cohen et al. | 2001 | Mixed | N/A | USA | < 18 | 4 |
| Cuevas et al. | 2009 | Mixed | 9.50 | USA | < 18 | 7 |
| Dong et al. | 2004 | Mixed | 56.00 | USA | < 19 | 9 |
| Edmond et al. | 2003 | Female | 16.00 | USA | < 20 | 5 |
| Feng et al. | 2015 | Mixed | 14.50 | Taiwan | < 19 | 1 |
| Fergusson et al. ^b | 1996 | Mixed | 18.00 | New Zealand | < 16 | 48 |
| Fergusson et al. ^b | 1997 | Female | 18.00 | New Zealand | < 16 | 48 |
| Finkelhor | 1980 | Female | N/A | USA | < 17 | 38 |
| Finkelhor et al. | 1990 | Mixed Female Male | N/A | USA | < 19 | 2 10 10 |
| Finkelhor et al. | 1996 | Mixed | N/A | USA | < 18 | 14 |
| Fleming et al. | 1996 | Female | N/A | Australia | < 16 | 27 |
| Goldman & Padayachi | 1997 | Mixed | 21.40 | Australia | < 17 | 1 |
| Grella & Joshi | 2003 | Mixed | N/A | USA | < 13 | 1 |
| Gwirayi | 2012 | Mixed | 15.42 | Zimbabwe | < 20 | 3 |
| Han et al. | 2011 | Male | 36.30 | South Korea | < 18 | 7 |
| Higgins & McCabe | 2000 | Mixed | 31.46 | Australia / New Zealand | < 13 | 4 |
| Howes et al. | 2000 | Mixed | N/A | USA | < 6 | 9 |

| Reference | Year | Gender of sample | Mean age of sample | Location of research | Age cut-off | # Risk factors |
|---------------------------|------|-------------------------|--------------------|----------------------------|-------------|----------------|
| Ibrahim et al. | 2008 | Female | N/A | Saudi Arabia | < 18 | 6 |
| Kanamüller et al. | 2014 | Female | N/A | Finland | < 18 | 20 |
| Kenny & McEachern | 2000 | Female | 37.00 | USA | < 18 | 3 |
| Kvam | 2004 | Female Male | N/A | Norway | < 18 | 1 1 |
| Laaksonen et al. | 2011 | Mixed Female Male | 29.31 | Finland | < 16 | 25 10 10 |
| Lacelle et al. | 2012 | Female | 21.20 | Canada | < 18 | 5 |
| Langeland et al. | 2015 | Mixed | N/A | the Netherlands | < 18 | 3 |
| Lanktree et al. | 1991 | Mixed | 12.10 | USA | < 17 | 5 |
| Lynch & Cicchetti | 1998 | Mixed | 8.79 | USA | < 13 | 4 |
| MacMillan et al. | 2013 | Mixed | N/A | Canada | < 16 | 2 |
| Madu | 2003 | Mixed | 23.80 | South Africa | < 17 | 2 |
| Madu & Peltzer | 2000 | Mixed | 18.50 | South Africa | < 17 | 15 |
| Madu et al. | 2002 | Mixed | 17.40 | South Africa | < 17 | 5 |
| Maikovich-Fong & Jaffee | 2010 | Mixed | 11.14 | USA | < 16 | 2 |
| Maker et al. | 1999 | Female | 22.20 | USA | < 16 | 5 |
| Manion et al. | 1996 | Mixed | 10.21 | Canada | < 16 | 37 |
| Mansbach-Kleinfeld et al. | 2015 | Mixed | N/A | Israel | < 18 | 9 |
| Martin et al. | 2011 | Mixed | 21.00 | Australia | < 16 | 52 |
| Martinez | 2009 | Mixed | 7.44 | USA | < 10 | 14 |
| McClellan et al. | 1995 | Mixed | 13.50 | USA | < 19 | 16 |
| McCloskey & Bailey | 2000 | Female | 9.20 | USA | < 13 | 13 |
| McCran et al. | 2006 | Mixed | 29.00 | Tanzania | < 18 | 7 |
| Mohler-Kuo et al. | 2014 | Mixed | 15.50 | Switzerland | < 21 | 38 |
| Moore et al. | 2010 | Mixed | 24.00 | Australia | < 16 | 10 |
| Mueller-Johnson et al. | 2014 | Female Male | 15.41 | Sweden | < 18 | 16 |
| Mullen et al. | 1996 | Female | N/A | Australia / New Zealand | < 16 | 12 |
| Okur et al. | 2015 | Mixed | 19.99 | the Netherlands | < 18 | 49 |
| Olsson et al. | 2000 | Mixed | N/A | Nicaragua | < 19 | 1 |
| Paradise et al. | 1994 | Mixed | 7.30 | USA | 4 < 13 | 17 |
| Pérez-Fuentes et al. | 2013 | Mixed | N/A | USA | < 18 | 9 |
| Pineda-Lucatero et al. | 2008 | Mixed | 13.40 | Mexico | < 13 | 9 |
| Priebe & Svedin | 2009 | Mixed Female Male | 18.19 | Sweden | < 21 | 3 15 15 |

| Reference | Year | Gender of sample | Mean age of sample | Location of research | Age cut-off | # Risk factors |
|---------------------------|------|-------------------------|--------------------|----------------------|------------------|----------------|
| Ramírez et al. | 2011 | Mixed | N/A | Colombia | < 18 | 16 |
| Ray et al. | 1991 | Female | 18.90 | USA | < 17 | 16 |
| Reiter et al. | 2007 | Mixed | 16.34 | Israel | < 21 | 3 |
| Robin et al. | 1997 | Mixed | 36.60 | USA | < 16 | 1 |
| Sansonnet-Hayden, et al. | 1987 | Mixed Female Male | 14.60 | Canada | < 18 | 5 2 3 |
| Schechter et al. | 2002 | Female | 4.00 | USA | < 9 | 16 |
| Shipman et al. | 2003 | Female | 8.96 | USA | < 13 | 6 |
| Singh et al. | 1996 | Mixed | N/A | Malaysia | < 18 | 1 |
| Sledjeski et al., | 2009 | Mixed | 9.40 | USA & Puerto Rico | < 14 | 8 |
| Sobsey et al. | 1997 | Female Male | 7.96 | USA | < 18 | 3 3 |
| Spencer et al. | 2005 | Mixed | N/A | United Kingdom | < 21 | 4 |
| Stout-Miller et al. | 1998 | Mixed | N/A | USA | < 18 | 10 |
| Suris et al. | 1996 | Mixed Female Male | 15.00 | USA | < 19 | 2 2 2 |
| Tang | 2002 | Mixed | 21.00 | China | < 17 | 10 |
| Turner et al. | 2011 | Mixed | 9.60 | USA | < 18 | 19 |
| Usta & Farver | 2010 | Mixed | 11.89 | Lebanon | < 18 | 15 |
| Walsh et al. ^c | 2002 | Mixed | N/A | Canada | N/A ^a | 5 |
| Walsh et al. ^c | 2003 | Mixed Female Male | N/A | Canada | N/A ^a | 14 |
| Wellman | 1993 | Mixed | 20.00 | USA | < 20 | 1 |
| Williamson et al. | 1991 | Mixed | 14.18 | USA | 12 < 18 | 22 |
| Wyatt | 1985 | Female | N/A | USA | < 18 | 2 |
| Yama et al. | 1996 | Female | 20.20 | USA | < 17 | 1 |
| Yen et al. | 2008 | Mixed | 14.40 | Taiwan | < 13 | 6 |

Note. Year = publication year; Age cut-off = The age below which sexual abuse was determined; # risk factors = number of risk factors extracted from each primary study; N/A = not available (i.e., mean age of participants could not be calculated based on the primary study's full text); Mixed = sample comprised both males and females; USA = United States of America.

^a No specific age was mentioned in this study, as experiences of child sexual abuse were measured when respondents were "growing up".

^b The studies of Fergusson et al. (1996, 1997) were assigned the same study ID in the dataset, since the sample used in both studies comprised participants of the Christchurch Health and Development Study.

^c The studies of Walsh et al. (2002, 2003) were assigned the same study ID in the dataset, since the sample used in both studies comprised participants of the Ontario Mental Health Supplement.

Appendix 4 - C: References of Included Studies

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Authors' Contributions

Mark Assink participated in the design of the study, searched for primary studies, coded all primary studies, conducted all statistical analyses, and drafted the manuscript. Nynke M. de Jong and Mandy W. C. M. Meeuwssen searched for primary studies and participated in determining the interrater agreement. Machteld Hoeve, Frans J. Oort, and Claudia E. van der Put critically reviewed the manuscript. Geert Jan J. M. Stams participated in the design of the study and critically reviewed the manuscript.