

# Emotional and behavioral sequelae of childhood maltreatment

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**Current Opinion in Pediatrics** 2010, 22:610–615

## Purpose of review

To summarize research on the emotional and behavioral consequences of childhood maltreatment published between January 2009 and April 2010.

## Recent findings

Many studies published during this time frame replicated prior research studies that have shown that childhood maltreatment is a nonspecific risk factor for a range of different emotional and behavioral problems. Two research groups highlighted the high revictimization rate among abused girls, with more than one in five abused girls found to have subsequent experiences of rape by young adulthood. The association between physical and sexual abuse and subsequent perpetration of violence toward self and other was also demonstrated, with one study noting the particular vulnerability of sexually abused boys to these negative outcomes. In this study, sexually abused boys had a 15-fold increased risk of making a suicide attempt, and a 45-fold increased risk of perpetrating domestic violence. A three-generation longitudinal study of the intergenerational transmission of abuse is also highlighted in the review, together with emerging findings on genetic and environmental risk and protective factors associated with variability in child outcomes.

## Summary

Maltreated children are at-risk for a host of negative outcomes. Although marked gains have been made in treating trauma-related psychopathology, these recent studies highlight the need to examine long-term outcomes of youths who have received state-of-the-art evidence-based interventions, and determine if there is a need for more comprehensive and sustained intervention approaches.

## Keywords

child abuse, childhood maltreatment, emotional and behavioral problems, sequelae

Curr Opin Pediatr 22:610–615  
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1040-8703

## Introduction

The battered child syndrome introduced into the professional literature in the early 1960s [1] began an era of scientific inquiry into the topic of early adversity and spawned countless studies on its behavioral and psychological sequelae. As reviewed elsewhere [2] and in two reviews [3,4] published this past year, a history of maltreatment is associated with deficits in numerous indices of adaptation across the lifecycle, including disturbances in attachment relations in infancy, deficits in frustration tolerance in toddlerhood, problems with self-esteem and peer relations in later childhood, and reduced educational and vocational attainment in adulthood. Victims of child maltreatment are also more likely to be involved in intimate partner violence, experience teen parenthood, and have difficulties parenting their children. Child maltreatment is also a nonspecific risk factor for multiple forms of psychopathology, including posttraumatic stress

disorder (PTSD), depression, reactive attachment disorder, suicidality, self-injurious behavior, sexually inappropriate behaviors, drug and alcohol problems, and conduct disorders. Although many maltreated children experience significant difficulties, not all maltreated children do, with the likelihood of adverse outcomes influenced by numerous genetic and environmental risk and protective factors.

Over this past year, numerous studies [5•,6•] have replicated these findings and extended our understanding of the emotional and behavioral sequelae of child maltreatment. For example, one of the largest studies to date, the national comorbidity survey ( $n = 9282$ ), also demonstrated that early childhood adversity is associated with anxiety, mood, and substance use disorders. It further showed that exposure to multiple adversities has strong subadditive associations with disorder onset and persistence. In this study, childhood adversities were

divided into those indicative of maladaptive family functioning (e.g., parental mental illness, criminality, violence, physical and sexual abuse and physical neglect) and other childhood adversities (e.g., parental death, divorce, economic adversity), with indicators of maladaptive family functioning the strongest predictors of psychological maladjustment.

This paper highlights key findings published in the past 15 months in this area. We searched two psychology and psychiatry databases, *PubMed* and *PsychInfo*, from January 2009 up to April 2010. The following terms were used: 'maltreatment', 'trauma', 'abuse', 'neglect', and combined with 'disorder', 'behavior problem', 'sequelae', 'emotional/affective disturbance' and 'dysregulation'. The criteria for inclusion of the articles were as follows: published in a scientific journal, included original data or meta-analysis, and examined behavioral or emotional consequences of childhood maltreatment. A total of 172 studies were identified and the most relevant and novel articles are highlighted in this review.

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### Revictimization among abused girls

Three papers [7<sup>••</sup>–9<sup>••</sup>] were published this past year documenting the significance of the problem of revictimization among abused girls. Koenen and Widom [8<sup>••</sup>] reported lifetime risk of PTSD and subsequent experiences of trauma in a cohort of 674 abused and neglected children grown up. In this, as in other studies [10], PTSD was twice as common in women as in men. Sex differences in rates of PTSD among adults have been attributed to hormonal factors and sexual dimorphism in brain regions implicated in the etiology of PTSD [11]. Koenen and Widom [8<sup>••</sup>] reported that the women in their sample had a 35-fold greater risk of rape after the age of petition for abuse and neglect than the men in the study (24 vs. 0.9%), although the two groups had comparable rates of subsequent physical assault (12 vs. 15%). In this study, female victims' revictimization experiences explained a substantial proportion (39%) of the sex differences in the risk for PTSD.

Putnam and coworkers [7<sup>••</sup>] reported revictimization experiences in a cohort of 89 substantiated childhood sexual abuse victims followed prospectively for 15 years. Revictimization rates were compared with victimization rates in a demographically matched nonabused cohort of controls. As adolescents and young adults, the childhood sexual abuse victims were two to three times more likely than controls to have experienced an episode of nonpeer sexual (22 vs. 10%) or physical (47 vs. 27%) assault. The victimization of the sexual abuse cohort was also more severe and likely to be characterized by physical injury.

Noll *et al.* [9<sup>••</sup>] examined internet-initiated victimization in a cohort of 104 adolescent girls who had experienced substantiated childhood sexual abuse and 69 demographically matched controls. Adolescents were surveyed about internet usage, parental supervision of internet use, and substance use. The adolescents were also asked to create avatars, a computer user's representation of herself used in computer games, with these figures quantified according to degree of sexually provocative features. Forty percent of the sample reported experiencing online sexual advances, and 26% reported meeting someone offline whom they first met online. Abused girls were more likely to have experienced online sexual advances and to have met someone offline. Having been abused and choosing a provocative avatar were significantly and independently associated with online sexual advances, which were in turn associated with offline encounters. Substance use and an absence of parental supervision also increased risk for online sexual advances.

Although revictimization prevention is a component of some sexual abuse treatment interventions [12], there is little research on the effects of PTSD or trauma treatment on risk for subsequent abuse. One small-scale study [13] examined the efficacy of a brief two-session revictimization prevention program, and reported that approximately one-third of the participants had a subsequent unwanted sexual encounter during the 2-month follow-up period, with no differences in rates of revictimization between the treatment and control conditions. It is important for clinicians to be aware of this risk, and there is a need to identify novel intervention approaches to minimize it.

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### Violence against self and other

Over the past 15 months, numerous studies [14–16,17<sup>••</sup>] have replicated previous findings documenting an association between childhood experiences of maltreatment and the perpetration of violence against self and other. Duke *et al.* [17<sup>••</sup>] collected an anonymous self-report survey from 136 549 6th, 9th, and 12th-grade students. The survey inquired about experiences of abuse (e.g., physical abuse by an adult in the home, sexual abuse by a family member, sexual abuse by a nonfamily member) and indices of household dysfunction (e.g., domestic violence, family alcohol problems, and family drug problems). Violence perpetration outcomes examined included bullying, physical fighting, dating violence, carrying a weapon on school property, self-harm behaviors, suicidal ideation, and suicide attempts. In terms of violence perpetrated against others, on average experiences of abuse and household dysfunction were associated with a two to three-fold increased risk for violence directed toward others in both sexes. A noteworthy exception was among males with a history of familial

sexual abuse. These youths had a 45-fold increased risk of perpetrating dating violence.

Wolfe *et al.* [18] developed a school-based intervention for adolescents that aims to reduce dating violence. The program consists of a 21-lesson curriculum delivered during 28 h by teachers with additional training in the dynamics of dating violence and healthy relationships. Dating violence prevention was integrated with core lessons about healthy relationships, sexual health, and substance use prevention using interactive exercises. Relationship skills to promote safer decision making with peers and dating partners were emphasized. Control schools targeted similar objectives without training or materials. The program was administered to 1722 14–15-year-old students followed for 2.5 years after the intervention. The intervention was associated with a significant reduction in dating violence, especially among boys that participated in the program (controls: 7.1% vs. intervention: 2.7%). This appears to be a promising strategy that warrants further examination in high-risk populations.

In terms of violence perpetrated against self, on average experiences of household dysfunction were associated with a two to three-fold increased risk of self-harm, suicidal ideation, and suicide attempt in both sexes. Physically and sexually abused girls reported a three to five-fold increased risk of these behaviors. Risk of suicide attempt was greatest among sexually abused boys, with a history of sexual abuse by a nonfamily member associated with an 11-fold increased risk of an attempt, and sexual abuse by a family member associated with a 15-fold increased risk of a suicide attempt [17\*\*].

Most of the research on the association between childhood maltreatment and suicidality and/or nonsuicidal self-harm has been conducted with adolescent and adult samples, although these problems and other borderline traits have been reported in preadolescent cohorts as well [19]. Dialectical behavior therapy (DBT) is an evidence-based treatment for these symptoms that has been validated in adult and adolescent populations [20]. Our group [21] is currently working to adapt DBT for affected children of 7–12 years of age. Suicidal behaviors predict future suicide risk, with suicidal behaviors associated with a six to nine-fold increase in the rate of future suicide attempts [22]. As the death rates from suicide completion for youths of 5–14 years of age have doubled in the past 20 years [23], there is an urgent need for clinicians to be aware of this risk and for more research in this area.

### Intergenerational transmission of abuse

Although approximately 80–90% of abusive parents have a history of child maltreatment, and being abused puts

one at risk of experiencing parenting problems, prior research suggests that only approximately one in three individuals who were abused as children repeat the cycle in the next generation [24,25]. With the exception of the study conducted by Egeland *et al.* [26], most studies of the intergenerational transmission of child abuse have utilized cross-sectional and retrospective designs. Noll *et al.* [27\*\*] recently published a prospective study that incorporated data from three generations: sexually abused and comparison females comprising the original sample recruited for a longitudinal study (G2), the caregivers of these females (G1), and their offspring (G3). The original cohort was assessed at six time-points spanning 18 years. At the conclusion of the final assessment, there were 135 known offspring of the original cohort: 78 offspring of abused mothers, and 57 offspring of comparison mothers. The offspring ranged in age from 5 months to 11 years 10 months, with the mean age of offspring similar for the two groups.

Among the caregivers (G1) of the original cohort, caregivers of the sexually abused cohort had significantly higher rates of sexual abuse in their own childhoods than the caregivers of the controls (49 vs. 16%). The offspring of the sexually abused cohort (G3) also had elevated rates of maltreatment, with 18% of the offspring of the sexually abused cohort involved with child protective services due to substantiated reports of maltreatment compared with fewer than 2% of the offspring of the controls. Although this rate is somewhat lower than the rate reported previously in the literature, the children were still young and were not through the period of risk when last assessed.

In addition to higher rates of verified maltreatment, the offspring of the sexually abused cohort experienced numerous other risks. When compared with the offspring of controls, the offspring of the sexually abused cohort were statistically more likely to have been born premature (19 vs. 10%) and to a teen mother (37 vs. 20%), more likely to have been exposed to domestic violence (53 vs. 24%), and more likely to have a mother who was a high-school drop out (15 vs. 6%), met criteria for substance dependence (19 vs. 5%), alcohol dependence (13 vs. 3%), or one or more psychiatric diagnoses (30 vs. 14%). The cumulative risk to the offspring is daunting, and highlights the need to study long-term outcomes of youth who have received state-of-the-art evidence-based interventions, and examine the need for more comprehensive and sustained intervention approaches that target relevant symptoms and multiple domains of functioning.

### Genetic moderators of child maltreatment

In 2002, Caspi *et al.* [28] were the first to examine the role of genetic factors in moderating the outcome of maltreated children. They studied a large sample of

1037 males from birth to adulthood. The sample was well characterized on indices of environmental adversity, and between the ages of 3 to 11 years 8% of the children were severely maltreated and 28% had experiences rated as 'probable maltreatment.' Although maltreatment significantly increases the risk for later criminality, most maltreated children do not become delinquents or adult criminals. Caspi *et al.* examined differences in a functional polymorphism in the promoter of the monoamine oxidase A (MAOA) gene to determine why some children who are maltreated grow up to develop antisocial behavior, and others do not. The functional polymorphism in the MAOA gene was found to moderate the relationship between maltreatment and later sociopathy. Only maltreated males with the low MAOA activity gene were at increased risk for antisocial outcomes. Maltreated males with the gene associated with high MAOA activity were approximately half as likely as maltreated males with the low MAOA activity gene to be convicted of a violent offense, and not statistically more likely than nonmaltreated peers with the same genotype to have a history of violent behavior.

In the intervening 8 years, there has been an explosion of studies examining gene–environment interactions (GxE) to understand variability in the outcome of maltreated children. The second paper in this area published by Caspi *et al.* [29] examined the effect of the serotonin transporter gene (5-HTTLPR) in moderating risk for depression subsequent to maltreatment experiences or multiple recent stressful life events. This past year Risch *et al.* [30] published a highly publicized meta-analysis of studies in *JAMA* examining the association between 5-HTTLPR, stressful life events, and depression. They concluded that '...This meta-analysis yielded no evidence that the serotonin transporter genotype alone or in interaction with stressful life events is associated with an elevated risk of depression in men alone, women alone, or in both sexes combined'. These conclusions, however, were influenced by a bias in sampling strategy that calls into question the authors' conclusions [31]. Contrary to the results of the *JAMA* meta-analyses, a larger, much more comprehensive, yet to be published meta-analysis found strong evidence that the studies published to date support the hypothesis that 5-HTTLPR moderates the relationship between stress and/or maltreatment and depression (Sen S, personal communication, February 17, 2010).

In the past 15 months, multiple studies have been published that examine genetic and environmental factors associated with various outcomes in maltreated cohorts. Studies [32,33\*] using twin designs have highlighted further the importance of both genetic and environmental factors in the cause of antisocial behavior and other

stress-related psychiatric disorders. Studies using candidate gene approaches have reported further on the moderating role of MAOA [34,35] and 5-HTTLPR [36,37], as well as other candidate genes involved in regulating stress reactivity [38,39]. Importantly, however, prior GxE studies have shown that neither high-risk experiences (e.g., maltreatment, other traumas) nor high-risk genes (e.g., 5-HTTLPR) guarantee deleterious outcomes [40–42]. Positive factors in the environment, such as the availability of a stable, loving adult caregiver or other available social supports, can ameliorate risk and help promote optimal outcomes. Understandings of the neurobiology of early stress and resiliency [43,44\*], cognitive, behavioral, and psychosocial factors that modify the impact of maltreatment [45\*,46\*], and mechanisms that sustain or reverse the effects of early adversity are becoming increasingly elucidated [43,47\*]. In addition, as discussed in the other papers included in this special issue [48], advances in treatment for PTSD and other stress-related conditions further support the position that the negative effects associated with maltreatment need not be permanent.

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## Conclusion

Maltreated children are at risk for a host of deleterious outcomes. Several key studies published over the past 15 months highlighted the high rate of revictimization among abused girls, further elucidated factors associated with the intergenerational transmission of abuse, and documented the prevalence of violence against self and other perpetrated by victims of abuse – especially sexually abused boys. These recent studies highlight the need to examine long-term outcomes of youths who have received state-of-the-art evidence-based interventions, and determine if there is a need for more comprehensive and sustained intervention approaches.

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## Acknowledgements

J.K. has served as a consultant for Bristol-Myers Squibb, Pfizer, Wyeth-Ayerst, Forest Laboratories, Johnson & Johnson Research Pharmaceutical Institute, Shire, Otsuka Pharmaceutical, and the Cognition Group. F.P. reports no biomedical financial or potential conflicts of interest. This research was funded by the National Institute of Mental Health (NIMH): RO1 MH077087 (J.K.) and T32 MH062994 (F.P., postdoctorate fellow, Morris Bell, PhD, training director) and the National Center for PTSD, VA, CT.

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## References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (pp. 680–681).

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