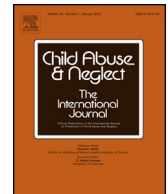




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## Child Abuse & Neglect



# Long-term effects of child abuse and neglect on emotion processing in adulthood<sup>☆</sup>

Joanna Cahall Young\*, Cathy Spatz Widom

Psychology Department, John Jay College of Criminal Justice/CUNY Graduate Center, USA

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### ABSTRACT

To determine whether child maltreatment has a long-term impact on emotion processing abilities in adulthood and whether IQ, psychopathology, or psychopathy mediate the relationship between childhood maltreatment and emotion processing in adulthood. Using a prospective cohort design, children (ages 0–11) with documented cases of abuse and neglect during 1967–1971 were matched with non-maltreated children and followed up into adulthood. Potential mediators (IQ, Post-Traumatic Stress [PTSD], Generalized Anxiety [GAD], Dysthymia, and Major Depressive [MDD] Disorders, and psychopathy) were assessed in young adulthood with standardized assessment techniques. In middle adulthood ( $M_{age} = 47$ ), the International Affective Picture System was used to measure emotion processing. Structural equation modeling was used to test mediation models. Individuals with a history of childhood maltreatment were less accurate in emotion processing overall and in processing positive and neutral pictures than matched controls. Childhood physical abuse predicted less accuracy in neutral pictures and childhood sexual abuse and neglect predicted less accuracy in recognizing positive pictures. MDD, GAD, and IQ predicted overall picture recognition accuracy. However, of the mediators examined, only IQ acted to mediate the relationship between child maltreatment and emotion processing deficits. Although research has focused on emotion processing in maltreated children, these new findings show an impact child abuse and neglect on emotion processing in middle adulthood. Research and interventions aimed at improving emotional processing deficiencies in abused and neglected children should consider the role of IQ.

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A key component of social competence is emotion processing, which includes emotion perception, communication, interpretation, and regulation of emotion (Halberstadt, Denham, & Dunsmore, 2001). Emotions function to provide information about the environment and prepare for a behavioral response, triggering the appetitive or defensive systems, depending on the situation (Bradley, Codispoti, Cuthbert, & Lang, 2001). Theories of emotion suggest that behavioral responses to emotions are directly related to emotion processing (Halberstadt et al., 2001). This paper brings together research on child maltreatment, emotional development, and psychopathology to examine the consequences of child abuse and neglect for emotion processing in adulthood.

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\* Corresponding author.

## Childhood maltreatment and emotion processing

In general, child maltreatment has been found to disrupt the normal process of emotional development. First, studies of maltreating parents suggest that they show less positive emotion and more negative emotion than non-abusive parents (Bugental, Blue, & Lewis, 1990; Kavanagh, Youngblade, Reid, & Fagot, 1988). It is also believed that maltreating parents tend to be isolated themselves and to isolate their children from interaction with others, providing fewer nonparental models of emotional communication (Salzinger, Feldman, Hammer, & Rosario, 1993).

Second, a child who receives inconsistent or harsh caregiving has difficulty predicting the consequences of his/her behavior (Dadds & Salmon, 2003) and this may be manifest in deficits in processing emotional information. For example, maltreated children have been found to show specific deficits in understanding (Shipman & Zeman, 1999), recognizing (Pollak, Cicchetti, Hornug, & Reed, 2000), and expressing emotion (Gaensbauer, 1982) and are at risk for exhibiting social delays (Kim & Cicchetti, 2010), deficits in empathy (Beeghly & Cicchetti, 1994), and decreased engagement in prosocial behavior (Koenig, Cicchetti, & Rogosch, 2004). These findings reveal general deficits in emotion processing in maltreated children, but the question remains about whether these deficits would persist into adulthood.

Using tests of facial emotion recognition (FER), Pollak and Sinha (2002) found that children with physical abuse histories were better able to identify facial displays of anger compared to controls. Several other studies using event-related potentials and behavioral evidence have found a sensitivity bias to perceive anger in physically abused children (Pollak & Sinha, 2002; Pollak, Vardi, Pultzer-Bechner, & Curtin, 2005; Shackman, Shackman, & Pollak, 2007) and, more generally, in a sample of maltreated children (Curtis & Cicchetti, 2011, 2013; Leist & Dadds, 2009; Masten et al., 2008; Pollak, Klorman, Brumaghim, & Cicchetti, 2001). In an attempt to explain these findings, Pollak et al. (2005) suggested that in abusive home environments children learn to associate anger with threat of harm and therefore, they are hypervigilant to anger in their environment. Masten et al. (2008) elaborated on this theory to suggest that maltreated children become better prepared to identify threatening situations through hypervigilance of emotions. For example, these children may be more sensitive to anger in their abuser and fear of those around them because both sensitivities could help them identify threat quickly and potentially avoid additional abuse (Masten et al., 2008). Consistent with these theories, Shackman et al. (2007) have shown that maltreated children show enhanced selective attention to angry facial expressions posed by their mothers. Thus, this body of research would suggest that individuals with histories of childhood physical abuse might be less likely to show deficits in processing negative emotional pictures and more likely to show deficits for pictures with positive or neutral valence.

Very little research has examined emotion recognition in neglected children. In earlier research, Bousha and Twentyman (1984) found that neglecting parents were less expressive and engaged with little exchange of affective information in interactions with their children and, thus, provided less support in learning to understand emotions more generally. Impoverished social and emotional environments, which are often present in cases of neglect, prevent the development of normal emotional skills (Pollak et al., 2000) and may cause a blunted pattern of emotional reactivity (Gilles, Berntson, Zipf, & Gunnar, 2000; van der Vegt, van der Ende, Kirschbaum, Verhulst, & Tiemeier, 2009). Pollak et al. (2000) reported that neglected children had more difficulty in recognizing emotional expressions in a vignette than a control group or physically abused children. When rating the similarity between facial expressions of different emotions, neglected children saw fewer distinctions between emotions compared to the other two groups (Pollak et al., 2000). However, this is the only study to investigate emotion perception deficits specific to neglected children. Most studies have included only physically abused children or maltreated children (i.e. physically abused and/or neglected children). To our knowledge, no studies have focused on sexually abused children, and the existing literature is based almost exclusively on studies of children, with no research investigating the long-term effects of childhood abuse and neglect on adult emotion processing ability.

## Potential mechanisms linking childhood maltreatment and emotion processing

If the impact of child abuse and neglect on emotion processing extends into adulthood, what might be some of mechanisms that lead to these outcomes? Research has increasingly shown that childhood abuse and neglect can result in a cascade of negative consequences across multiple domains of functioning (Gilbert et al., 2009; Widom, 2000) that might explain an increased risk for deficits in emotion processing abilities for individuals with histories of child abuse and/or neglect. Specifically, child abuse and neglect has been associated with cognitive deficits in general and various forms of psychopathology that may lead to emotion processing deficits.

First, several studies have reported that abused and neglected children are at increased risk for lower academic performance and intelligence in childhood (Eckenrode, Laird, & Doris, 1993; Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004; Lansford et al., 2002) and that these effects of childhood maltreatment extend into young adulthood (Perez & Widom, 1994). Thus, it is possible that deficits in intelligence lead to general deficits in performance on processing tasks, particularly those that involve memory, and this finding may help explain why maltreated children perform worse on these tasks.

It is also possible that some of the psychological consequences that have been associated with child abuse and neglect have a negative impact on performance on emotion processing tasks in adulthood. For example, individuals with histories of abuse have been found to exhibit more symptoms of anxiety disorders (Springer, Sheridan, Kuo, & Carnes, 2007). A separate body of research reveals that individuals with higher levels of anxiety symptoms show deficits in emotion perception (Mogg & Bradley, 1999) and emotion regulation (Suveg, Morelen, Brewer, & Thomassin, 2010), and individuals with PTSD have shown an attentional bias to trauma-related stimuli (Buckley, Blanchard, & Neill, 2000). In work by Pollak et al. (2001),

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