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Childhood emotional maltreatment, anxiety, attachment, and mindfulness: Associations with facial emotion recognition

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ABSTRACT

The current study investigated factors thought to contribute to facial emotion processing. Female university students ($N = 126$) completed self-report measures of childhood emotional maltreatment, anxiety symptoms, attachment anxiety and avoidance, and trait mindfulness before completing a facial emotion recognition task, where they viewed sequences of faces that incorporated progressively more emotional content until they were able to correctly identify the emotion. They completed the task under low and high cognitive load conditions to distinguish between relatively effortful versus automatic processing abilities. Regression analyses revealed that under low cognitive load, attachment avoidance and mindfulness predicted quicker identification of fear (i.e., with less perceptual information), whereas anxiety predicted slower identification of fear (i.e., with more perceptual information). In the high cognitive load condition, emotional maltreatment and mindfulness predicted quicker identification of fear, and anxiety and mindfulness predicted faster identification of emotions overall. Although current findings are correlational, most of these effects were specific to fearful faces, suggesting that experiences of childhood emotional maltreatment and associated socio-emotional sequelae are related to heightened processing of threat-related information.

1. Introduction

Childhood emotional maltreatment is a psychologically damaging act that can adversely impact an individual's development and ongoing emotional functioning. Experiences of emotional maltreatment "convey to children that they are worthless, flawed, unloved, unwanted, endangered, or only of value in meeting another's needs" (American Professional Society on the Abuse of Children, 1995, p. 2). Early emotional maltreatment has been associated with a host of negative developmental outcomes, including anxiety, depression, low self-esteem (Briere & Runtz, 1988; Kim & Cicchetti, 2006; Wright, Crawford, & Del Castillo, 2009), poor health (Schafer, Morton, & Ferraro, 2014), and neurobiological sequelae associated with stress (see McCrory, De Brito, & Viding, 2010 for review). Given that emotional maltreatment is arguably the most pervasive and damaging form of maltreatment and constitutes a core element of diverse forms of abuse and neglect (Barnett, Miller-Perrin, & Perrin, 2005; Binggeli, Hart, & Brassard, 2001; Brassard & Donovan, 2006; Navarre, 1987), it is important to understand the processes that give rise to these deleterious outcomes.

The experience of emotional maltreatment has been associated with differences in how children process emotional cues (Gervai, 2009; Joseph, 1999). Such effects, however, are far from deterministic, as other exacerbating or ameliorating factors can lead to wide variability in outcomes (Cicchetti & Rogosch, 2009; Cicchetti, 2016). According to an organizational perspective on development

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(Cicchetti & Sroufe, 1978), children learn different socio-emotional abilities at each developmental stage; these serve as a foundation for the development of subsequent abilities, but may be reorganized as new stage-relevant skills are acquired. Thus, although children acquire the ability to perceive emotional cues in early childhood, this skill continues to be honed and to influence, and be influenced by, other relational and emotional abilities across development.

The focus of the current study was on perception of facial emotion cues, a subtype of emotional cue considered particularly important since many emotional cues are social in nature and the perception and understanding of facial emotions is critical for navigating social relationships (Buck, 1999; Ekman, 1992; Fridlund, 1992; Hampson, van Anders, & Mullin, 2006). Furthermore, deficits in this ability have been associated with negative mental health outcomes (Edwards, Jackson, & Pattison, 2002; Matthews & MacLeod, 2005). Since an organizational perspective would predict multiple indirect as well as direct effects of childhood emotional maltreatment on subsequent facial emotion perception, we also investigated associations involving socio-emotional sequelae of childhood maltreatment with theoretical and empirical ties to the processing of facial emotions: these included anxiety, insecure attachment, and (deficits in) mindfulness.

2. Emotional maltreatment and facial emotional processing

A sizable literature speaks to the influence of maltreatment on facial emotion processing; however, the majority of previous research has not systematically delineated the influence of emotional versus other forms of maltreatment. Furthermore, research has focused on examining children's responses to facial emotions, leaving the correlates in adulthood unclear. Research has found that children who experienced maltreatment were more sensitive to anger than other emotions. Maltreated children have displayed attentional biases including preferential attention (Pollak & Tolley-Schell, 2003), attentional avoidance (Pine et al., 2005; Pollak & Tolley-Schell, 2003; Pollak, 2003), and difficulty disengaging from angry facial cues (Pollak). At face value, these findings may seem contradictory, but they could be conceived as a heightened response to anger taking different forms.

A bias toward anger has also been found in tasks examining speed of recognition and amount of perceptual information required for recognition. Generally, abused children have been found to recognize anger more quickly than nonabused children, and with less perceptual information (Pollak & Sinha, 2002; Pollak, Messner, Kistler, & Cohn, 2009). As early as infancy, emotionally maltreated infants have been found to use fewer cognitive resources when looking at angry faces, leading Curtis and Cicchetti (2013) to speculate familiarity with facial displays of anger as the underlying mechanism. This possibility is supported by the finding that children's speed of recognition has also been associated with degree of anger and/or hostility reported by the child's parent, such that higher levels of anger and hostility yielded faster reaction times (Pollak et al., 2009). Such biases may constitute an adaptive response to frequent anger exposure, in that children who quickly and accurately identify angry expressions are more readily able to avoid abuse (Cicchetti, Toth, & Maughan, 2000; Pollak, 2003).

More broadly, however, maltreated children have evidenced reduced accuracy identifying a range of emotions (Curtis & Cicchetti, 2003). This is generally due to abused children over-identifying anger when presented with ambiguous facial expressions, likely due to the greater frequency of anger found in their home environment (Pollak & Kistler, 2002). Maltreated children have shown specific difficulty recognizing positive emotional states, potentially reflecting a lack of understanding or familiarity with shared positive experiences (Koizumi & Takagishi, 2014). In contrast, nonabused children have been found to be more accurate recognizing positively and negatively valenced facial expressions (During & McMahon, 1991), whether pure or masked (Camras et al., 1988).

Most previous research with children has tended to focus on anger and has not examined possible biases toward other negatively valenced emotions. As an exception, Masten et al. (2008) looked at responses to facial displays of fear, and found that abused children displayed faster reaction times when identifying fearful faces compared to happy and neutral faces. Children's responses to the negatively valenced emotions of fear and anger have rarely been compared within the same study (but see Camras et al., 1988). Masten et al. (2008) speculated that researchers saw fear and anger as too similar in that they elicit equal levels of distress and negative affectivity (Johnsen, Thayer, & Hugdahl, 1995). However, it has been well established that fear and anger serve different functions and elicit different behavioural responses. For example, research has found that when primed to fear, young adults demonstrated increased aversion to risk, whereas no such change was observed among those primed to anger (Lindquist & Barrett, 2008).

One study with adolescents juxtaposed perception of facial anger and fear. Contrary to research with younger children, Leist and Dadds (2009) found that maltreated adolescents were more accurate in recognizing fear and sadness, but not anger. Although findings must be replicated, increased perception of fear relative to anger may reflect an evolutionary bias that is particularly pronounced in individuals with adverse life experiences. Fear likely evolved as an important component of a human's defense system, signaling danger and eliciting distress and escape (Öhman, 2008). Consequently, the rapid detection of fearful faces would be automatic for most and enhanced for some. It may be that a heightened response to angry faces among maltreated children shifts toward reactivity to fearful expressions in adulthood, when maltreating caregivers are a less frequent or imminent threat. From an evolutionary perspective, an adult tendency to be overly cautious or attuned to fearful cues may benefit survival more than attunement to angry cues, given that in adulthood, fearful faces signal the presence of impending danger to a greater extent than angry faces (Casey, Jones, & Hare, 2008). According to the principle of heterotypic continuity (Kagan, 1971), a heightened perception of threat due to childhood emotional maltreatment could manifest differently at different developmental stages. Such discrepancies may be a function of the recency of maltreatment experiences: when the environmental risk for maltreatment lowers, individuals may demonstrate reduced preferential awareness for anger (Leist & Dadds, 2009).

In neurobiological research with adults, the amygdala typically has functioned centrally in the recognition of fearful faces (Adolphs, 2008). The amygdala network, one of a small number of neural networks thought to centrally support social interaction,