

## ARTICLE

# Social relationships and children's perceptions of adversity

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**Abstract**

Having sensitive, contingent, and supportive social relationships has been linked to more positive outcomes after experiences of early childhood adversity. Traditionally, social relationships are construed as moderators that buffer children from the effects of exposure to adverse events. However, recent data support an alternative view: that supportive social relationships influence children's later outcomes by shaping their perceptions of safety and stress, regardless of the particular events to which children are exposed. This perspective has implications for understanding vulnerability and resilience in children.

**KEY WORDS**

adversity, loneliness, social support, stress

High levels of childhood adversity are associated with a range of negative behavioral, learning, emotion-processing, psychological, and health outcomes across the lifespan. These long-term outcomes appear to be attenuated by the presence of sensitive and supportive relationships early in children's lives (Gunnar et al., 2015; Jaffee, 2017). Traditionally, scientists have construed early social relationships as a moderator between exposures to events and children's outcomes. This view suggests that sensitive and supportive relationships buffer the effects of adversity, thereby reducing negative developmental outcomes. These types of theories see the actual events in children's lives as causal and pathognomonic, or characteristic of disease, with social relationships lessening the effects of negative events on long-term outcomes.

An alternative conceptualization is that the presence of sensitive and supportive social relationships influences whether children experience or construe a particular event as being adverse (Smith & Pollak, 2020). In other words, events themselves are not pathognomonic, and biological and psychological responses to adversity do not occur until the child has interpreted their

circumstances as being adverse. According to this perspective, the presence of social support may decrease the likelihood that a child construes events as adverse.

In this article, we describe the ways in which dimensions of early social relationships, including social support, quality of caregiving relationships, and loneliness, contribute to children's perceptions of safety. Focusing on the extent to which children perceive themselves as safe, protected, or having the capacity to face a challenge reframes our understanding of how early life stress might affect children's biobehavioral development. This approach may also aid in elucidating the mechanisms underlying individual differences in children's developmental outcomes.

## MOVING BEYOND MEASURING EVENTS

Childhood adversity refers to chronic or extreme stress experienced early in life. Given the associations of adversity with a range of long-term developmental outcomes (Smith & Pollak, 2020), an extensive literature

**Abbreviations:** dACC, dorsal anterior cingulate cortex; vmPFC, ventromedial prefrontal cortex.

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has identified factors that appear to buffer or attenuate children from exposure to chronic or extreme stressful events (A. S. Masten, 2018). Supportive social relationships are one such factor (Jaffee, 2017). Support from teachers and peers is associated with more optimal academic, social, and emotional outcomes for children and adolescents after peer victimization and maltreatment (Rueger et al., 2016). For example, adolescents living in poverty demonstrate increased markers of allostatic load, including epigenetic aging and inflammation, but these markers are reduced among those who perceive that they have high levels of social support (Carroll et al., 2013). Additionally, although adolescents living in poverty show altered connectivity in prefrontal cortical networks involved in safety processing, those who perceive high levels of support from their caregivers do not show this effect (Brody et al., 2019). These studies provide evidence that social relationships influence developmental outcomes within high-risk contexts.

Research on childhood adversity generally relies on methods that identify and quantify exposure to events in children's lives that are predetermined by researchers to be *adverse*, such as abuse, neglect, living in poverty, or witnessing domestic violence. Yet, considering the presence of negative events alone has not elucidated the mechanisms linking these events to negative outcomes or adequately explained individual variability in these outcomes. Recent evidence suggests that how individual children perceive, interpret, or understand the events in their lives may hold the key to understanding these phenomena.

For example, in one study, across a range of different early environmental events associated with adversity, exposures to events demonstrated limited predictive utility for later outcomes (Salganik et al., 2020). In another study, a large-scale examination of both subjective experiences of maltreatment and court-reported maltreatment, objective records of the events that occurred were most likely to predict later psychopathology when individuals also self-reported maltreatment (Danese & Widom, 2020). While this research is still nascent and subject to alternative interpretations, it aligns with an extensive body of literature in adults and nonhuman animals indicating that variability in how individuals interpret and perceive events in their environments drives responses to psychological, behavioral, and physiological stress (Brosschot et al., 2017; McEwen & Akil, 2020).

Indeed, most models of stress incorporate a role for variation in individuals' perceptions of their environment (Lazarus & Folkman, 1984; McEwen & Akil, 2020; Sapolsky, 2015). Additionally, most people have observed situations in which individuals who have encountered the same event have different perceptions of, interpretations of, and reactions to that event. However, the idea that stress responses are driven by individuals' perceptions of events, rather than the events themselves, has not been widely adopted in research on stress during

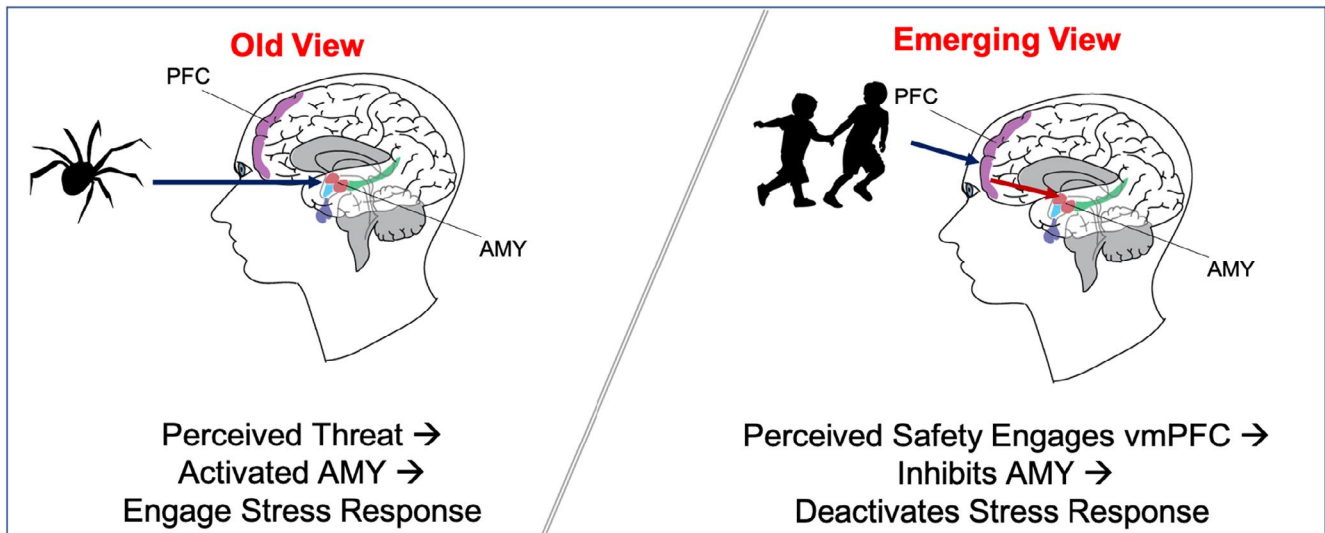
childhood. While self-report measures of childhood stress exist, the field continues to reify measures that tout "objective" identification of concrete events in a child's life, whether through coded interviews or records from courts and Child Protective Services (Scott et al., 2012; Smith & Pollak, 2020). Moving toward approaches that incorporate additional factors that shape children's interpretations of their environments can provide more insight into individual variation in responses to adversity than can considering exposures to events alone. Social relationships are one such factor.

## STRESS: THE ROLE OF PERCEIVED SAFETY

Stress is conceptualized classically as the presence of perceived threat (McEwen & Akil, 2020). However, an alternative view is that stress represents the absence of perceived safety (Brosschot et al., 2017; see Figure 1). This distinction is nuanced, but it has implications for understanding the underlying developmental mechanisms associated with childhood adversity. In the classic threat-oriented framework, perceiving oneself to be under threat activates or triggers hypothalamic–amygdala stress response circuits. In the safety-oriented framework (Figure 1), instead of threat activating neural stress response circuits, these circuits are thought to always be active. Cues of safety then inhibit hypothalamic–amygdala stress response circuits via engagement of the ventromedial prefrontal cortex (vmPFC). Removal of safety cues disinhibits these neural stress response circuits, which initiates cascading psychological, physiological, and behavioral stress responses.

The idea that stress responses are driven by a lack of perceived safety rather than the presence of threat helps explain why factors such as novelty, withholding of reward, and anticipation of punishment all activate stress response systems (Mason, 1975). This is further supported by evidence implicating the vmPFC, along with other prefrontal-cortical areas, in tracking cues of safety and fear extinction learning (Meyer et al., 2019; Milad & Quirk, 2012). While perceptions of both safety and threat likely influence neurobiological stress responses, this view raises new questions about the critical role of perceptions of safety in children's responses to adversity.

Social relationships are central to perceptions of safety. For humans, stable, supportive relationships are critical for survival, facilitating the collaboration necessary for securing resources and protection (Decety et al., 2012). Social relationships are commonly characterized in terms of *social support* (the presence of or perceived support from others; Eisenberger, 2013) or *loneliness* (perceptions of the self as lacking sufficient social connections to meet one's social needs; Hawkey & Capitanio, 2015). (See Table 1 for more descriptions of the similarities and differences in how these constructs are



**FIGURE 1** Traditional and emerging views of stress. Stress has traditionally been conceptualized in terms of the presence of perceived threat. According to this view, perceptions of threat activate the amygdala (AMY), which then initiates a range of psychological, physical, and behavioral responses aimed at addressing the perceived threat. An emerging view proposes that stress may be more accurately conceptualized as a lack of perceived safety. In this model, rather than perceptions of threat activating the amygdala and associated stress response circuits, these circuits are always active. Perceiving oneself to be safe engages prefrontal circuits, particularly the ventromedial prefrontal cortex (vmPFC), which inhibits the amygdala and associated stress responses. Conversely, a lack of perceived safety results in disinhibition of the amygdala by the vmPFC, leading to stress responses aimed at addressing the loss of environmental safety

**TABLE 1** Constructs used to characterize children's social relationships

	Social support	Loneliness
Definition	The <i>presence</i> of supportive relationships (Eisenberger, 2013)	The perceived <i>absence</i> of sufficient social connections (Hawley & Capitano, 2015)
Key differences	<ul style="list-style-type: none"> <li>Refers to whether individuals are receiving support from others</li> <li>Focuses on the <i>presence</i> of relationships</li> <li>Uses measures that assess whether a supportive individual is actually present and individuals' perceptions of that presence</li> </ul>	<ul style="list-style-type: none"> <li>Refers generally to the quality of individuals' relationships</li> <li>Focuses on the <i>absence</i> of relationships</li> <li>Defined specifically in terms of individuals' <i>perceptions</i> of their relationships rather than the actual presence of social partners</li> </ul>

*Note:* Individuals' social relationships have been characterized in a variety of ways; two of the most prevalent methods are social support and loneliness. While both constructs focus on aspects of social relationships, they also differ in key ways and have generated independent effects (particularly on mental health outcomes).

operationalized.) Individuals who perceive their social connections as stable and supportive have more optimal mental and physical health, and reduced psychological and physiological responses to stress (Eisenberger, 2013). In contrast, the absence of these perceptions is associated with stress and hypervigilance to threat (Hawley & Capitano, 2015). In this manner, supportive relationships appear to engage prefrontal circuits in processing safety, particularly the vmPFC, which in turn inhibits amygdala–hypothalamic responses (Coan et al., 2017). Together, this suggests that social relationships play a meaningful role in shaping whether an individual perceives the environment as stressful by signaling environmental safety.

## SAFETY CUES AND NEURAL DEVELOPMENT

Safety cues, especially the presence of sensitive and supportive relationships, have played a prominent role in the socioemotional development literature. As a component of attachment theory, cues of safety shape children's expectations regarding their caregivers which, in turn, has long-term implications for social behaviors into adulthood (Kobak & Bosmans, 2019). Nearly all accounts of socioemotional and personality development incorporate in some way the idea of caregivers conveying cues of safety through sensitivity and responsiveness or, the opposite, failing to provide safety through isolation/

separation, neglect, or abusive parenting (Gunnar et al., 2015; Jaffee, 2017). In this manner, ideas about children's perceptions of safety are not new, but they are simply used slightly differently across studies.

The role of sensitive early relationships in development is supported by findings suggesting that cues of safety regulate the development of prefrontal inhibitory circuits involved in threat processing (Gunnar et al., 2015). Similarly, evidence from nonhuman primates and rodents indicates that parental presence inhibits neurobiological threat response systems. Both rodent pups and infant primates demonstrate reduced glucocorticoid release and decreased amygdala activation to stress in the presence of the mother (Sanchez et al., 2015). Yet, when early maternal–infant rodent and primate relationships are disrupted, such as in abusive maternal rearing, maternal presence does not buffer against stress (Wisner Fries et al., 2005); under these circumstances, rodent pups and primate infants demonstrate enhanced glucocorticoid responses to stress, and alterations in both the structure and function of the amygdala and PFC (Sullivan & Opendak, 2018).

As with studies on nonhuman animals, evidence in humans suggests that parental presence affects the development of neural safety circuits. Children and adolescents (ages 4–17-years-old) who have their parent present while undergoing laboratory stressors respond less to stress as measured by cortisol (Hostinar et al., 2015b; Seltzer et al., 2010) and amygdala reactivity (Gee et al., 2014). Additionally, the effects of caregivers' presence on infants and young children's responses to laboratory stress are most apparent for children whose parents demonstrate high levels of sensitivity (S. M. Brown et al., 2020). Disruptions in the parent–child relationship are also associated with altered hormonal functioning and prefrontal–amygdala connectivity (Gunnar et al., 2015). Together, this evidence suggests that early social relationships influence the development of neural systems critical to both processing potential threats and facilitating stress responses.

## EARLY SOCIAL RELATIONSHIPS AND PERCEPTIONS OF STRESS

In adults, social relationships have been directly linked to differences in whether people perceive events and their environment as adverse, along with alterations in neural and physiological responses to stress. Having a supportive individual present while receiving electric shocks is associated with reduced intensity ratings of the painful stimuli in adults. These reduced intensity ratings are in turn linked to dampened activity in central circuits involved in threat processing (Coan et al., 2006) and increased activity in prefrontal regions involved in safety processing (Eisenberger et al., 2011). While findings conflict on whether social support is linked to increased

or dampened activity in prefrontal regions (Coan et al., 2017; Eisenberger et al., 2011), this does suggest that the presence of a supportive individual reduces perceptions of stress. These changes in stress perceptions are associated with altered neural processing of the stressor. Furthermore, loneliness is associated with exacerbated perceptions of stress, increased sensitivity to negative environmental information, and dysregulation of physiological stress response systems, even in the absence of a specific stressful event (E. G. Brown et al., 2017; Smith et al., 2020). Together, these findings suggest that social relationships modulate how individuals interpret and perceive potential stressors in their environment, possibly by shifting neural responses to those stressors.

Some evidence suggests similar effects of social relationships on children's perceptions of stress and adversity. Preschool children who undergo threat conditioning, a paradigm in which neutral cues are paired with threatening stimuli (typically an aversive noise), with a parent present are more likely to demonstrate behavioral approach responses than avoidance to the conditioned threat stimuli (Tottenham et al., 2019). This suggests that parental presence in the context of threat decreases the threat associated with the conditioned stimulus. Additionally, support from peers and parents alters neural activity in prefrontal–amygdala circuits, and these changes in neural responding are associated with early adolescents' reported symptoms of anxiety and depression (Casement et al., 2014; Jarcho et al., 2019). While anxiety and depression are not direct measures of children's perceptions of stress, both have been associated with increased levels of stress and sensitivity to threat in the environment (Shankman et al., 2013). Thus, these effects suggest that social relationships, particularly the presence of supportive others, change perceptions of threat in the environment through alterations in neural activity in circuits associated with threat and safety responding.

The absence of social relationships, such as in impoverished social networks, is also linked to increased perceptions of stress. For example, compared to children with stable peer relationships, children who experienced chronic rejection from ages 6 to 12, measured using peer ratings of likeability, demonstrated increased activity in the dorsal anterior cingulate cortex (dACC) and anterior PFC when being socially excluded in the laboratory (Will et al., 2016). Adolescents who spent less time with their friends outside school demonstrated increased activation in the dACC and anterior insula in response to peer rejection (C. L. Masten et al., 2012). Activity in these regions, particularly the dACC, has been linked to increased exclusion-related distress (Rotge et al., 2015), indicating that children and adolescents who lack supportive peer relationships may be more sensitive to social threat and any associated distress. Directly supporting a link between perceptions of social relationships and adversity, adolescents who reported high levels

of loneliness also reported increased levels of perceived stress and sensitivity to negative information (Vanhalst et al., 2013, 2017). These effects are apparent in the absence of events that would be identified as adverse or stressful using traditional methods. In summary, early social relationships influence the extent to which children perceive their environment as stressful, regardless of whether that environment is one that would typically be classified as adverse.

## IMPLICATIONS FOR RESEARCH

In this review, we focused on how social relationships contribute to an individual's perceptions of adversity. New methods and more data can help us understand the mechanisms through which social relationships change how children interpret their life circumstances. Approaches that focus on variability in children's perceptions of their circumstances and environment, rather than solely on their exposures to events, can further illuminate our understanding of individual variability in children's outcomes following adversity. In particular, assessing both children's perceptions of social relationships and "objective" measures, such as the number of relationships and outsider observed support, can aid in understanding the extent to which perceptions of social relationships contribute to children's experiences of adversity. In turn, this can help in the development of more effective and targeted interventions that might focus on children's construals of their circumstances in addition to helping to strengthen caregivers' support (Dozier et al., 2014; Smith & Pollak, 2021).

Additionally, we examined evidence about the quality of relationships, including social support, loneliness, and parental sensitivity. These all reflect different aspects of social relationships that might each have unique effects on development. For example, social support and loneliness among adults each have different effects on mental health outcomes (Cacioppo et al., 2010). Assessing more systematically how different features of children's social relationships affect development can aid in disentangling what in particular may influence their perceptions of stress and adversity. Investigating different aspects of social relationships in parallel can also aid in illuminating where interventions related to increasing family support for children at high risk for adversity may be most effective.

Questions remain about how social relationships contribute to children's perceptions of stress at different developmental stages and in children of varying socioeconomic and racial backgrounds. Here, we focused on broad trends across development, but different types of support may have different effects on stress perceptions and reactivity at different stages of development. In particular, evidence suggests that support from parents may have larger effects in early childhood, while support

from peers is more influential during late childhood and adolescence (Tottenham, 2015). Moreover, many of the studies we reviewed were of majority-White and Western participants, and few examined differences based on race or socioeconomic status. However, several of the studies focused on elucidating these relationships in more diverse and understudied populations (see Brody et al., 2019; S. M. Brown et al., 2020; Carroll et al., 2013; Casement et al., 2014). Additionally, recent evidence suggests that having high levels of support from parents ameliorates some of the negative effects of perceived discrimination on epigenetic aging in adolescents (Brody et al., 2016), and high levels of peer support in Latino adolescents are associated with increased life satisfaction and reduced symptoms of depression (Duprey et al., 2020). Researchers can build on these findings and explore how social relationships influence perceptions of safety and stress in individuals of different ethnic, cultural, and socioeconomic backgrounds.

Finally, we presented data that children's perceptions of social support and availability of those relationships are associated with decreased perceptions of stress. This association may be accounted for by factors that increase children's feelings of safety. However, perceptions of stress are influenced by many factors acting in concert, including perceived control, predictability, and other environmental factors (McEwen & Akil, 2020; Sapolsky, 2015). This may explain conflicting reports suggesting that the presence of a supportive individual, as a single factor, is not necessarily associated with reduced perceptions of stress (Hostinar et al., 2015a; Uchino et al., 2012). The main point is the promise of shifting the focus of research to understanding which aspects of the early environment meaningfully shape children's perceptions of stress, rather than focusing exclusively on measuring events that have been predetermined by researchers to be "stressful."

## CONCLUSION

Social relationships represent an important influence on development, scaffolding neural development and shaping how children respond to and interpret their environment later in life. The evidence we have reviewed suggests that one way supportive and sensitive relationships act as a protective factor is by influencing children's perceptions of stress. Indeed, evidence linking perceived support with differences in perceived stress in the absence of exposure to any specific event supports a role for early social relationships independently influencing perceptions of adversity. More research is needed to understand more fully how social relationships change children's perceptions of their environment. Events themselves are unlikely to be pathognomonic; they are adverse or stressful until the child interprets them as such. The evidence we have

reviewed suggests that social context is likely to affect those interpretations. We see tremendous promise in the development of new approaches that de-emphasize eliciting events, and instead place new emphasis on both measuring how children construe their experiences and understanding the dimensions of children's circumstances that are likely to influence how children perceive, comprehend, and interpret the world around them.

## CONFLICT OF INTEREST

The authors have no conflicts of interests to declare.

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