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Empathy from infancy to adolescence: An attachment perspective on the development of individual differences

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Abstract

Empathy involves understanding and “feeling with” others’ emotions, and is an essential capacity underlying sensitive care in humans and other species. Evidence suggests that the roots of empathy appear early in ontogeny, and that individual differences in empathy bear meaningfully on children’s social behavior and relationships throughout development. Here we draw upon attachment theory to provide a conceptual model of how attachment may contribute to individual differences in empathic development, with a focus on mediating mechanisms and moderators at multiple levels of analysis. We then review the research on attachment-related differences in empathy from infancy through adolescence. Given the theoretical predictions, empirical findings are surprisingly mixed and appear to depend on contextual, methodological, and developmental factors. We discuss potential explanations for the equivocal findings and highlight key areas for further investigation, including the need for longitudinal designs and multimethod assessment that captures the multiple dimensions of empathy in childhood.

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Introduction

Empathy is the capacity to comprehend the minds of others, to feel emotions outside our own, and to respond with concern, kindness, and care to others’ suffering. It is a relational construct, an experience of self “feeling with” another that allows bonds to be woven from the fabric of shared pain. Its centrality in the formation and maintenance of social bonds is implicated in its phylogenetic history: Empathy is thought to have evolved out of the mammalian caregiving system to promote adaptive responses to the needs of kin, as well as to promote cooperation and resource sharing among group members (de Waal, 2008, 2012; Decety, Norman, Berntson, & Cacioppo, 2012; MacLean, 1985; Preston, 2013; Preston & de Waal, 2002; Taylor, 2002). Indeed, research in primates (Clay & de Waal, 2013; de Waal, 2008, 2012), rodents (Bartal, Decety, & Mason, 2011; Bartal, Rodgers, Sarria, Decety, & Mason, 2014; Mogil, 2012; Panksepp & Lahvis, 2011), and other mammals (e.g., Custance & Mayer, 2012) suggests that the capacity to understand others’ intentions and to resonate with others’ emotions underlies social interaction in a variety of animal species (Panksepp & Panksepp, 2013). In humans, this faculty has expanded beyond the immediate circle of one’s kinship group, allowing us to care for the well-being of strangers, out-group members, and even those we never encounter in person; stories of earthquake victims and displaced refugees move us, even in the absence of a face-to-face encounter (Stone, 2006).

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Although the broad capacity to empathize is considered nearly universal, individual differences in the ability and tendency to do so have significant implications for social functioning across development (Eisenberg, 2000; Eisenberg, Spinrad, & Knafo-Noam, 2015). In childhood, low empathy is associated with poor peer relationships, hostility, and bullying (e.g., Findlay, Girardi, & Coplan, 2006; Mayberry & Espelage, 2007; Miller & Eisenberg, 1988). In adolescence, low empathy manifests in aggression and antisocial behavior (e.g., Cohen & Strayer, 1996; Lovett & Sheffield, 2007). In adulthood, this deficit is associated with child abuse, violence, and psychopathy (e.g., Blair, 2005; Jolliffe & Farrington, 2004; Rodriguez, 2013). Conversely, greater empathy is associated with social competence and prosocial behavior across the lifespan; among children and adults alike, more empathic individuals are more likely to share resources, to provide help to those in need, and to care for others in distress (e.g., Barnett, 1987; Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Eisenberg & Miller, 1987; Maibom, 2012; Sze, Gyurak, Goodkind, & Levenson, 2012; see Williams, O’Driscoll, & Moore, 2014, for evidence of a causal link between empathy and prosocial behavior in children). More broadly, individual variation in empathy contributes significantly to the degree to which we can build a kind, safe, and compassionate society (de Waal, 2009; Greenberg & Turksma, 2015; Lobel, 2014; Nhat Hanh, 2014; Rifkin, 2009). As Greenberg and Turksma assert, “empathy and compassion are core dimensions of human nature that can be nurtured. Further, when nurtured they will enhance one’s personal growth and health as well as the health and wellbeing of others and the quality of the natural, physical environment” (2015, p. 280).

If empathy represents a “core dimension of human nature,” within which individual differences bear significantly on the aggressiveness or kindness of our society, then it is important to understand how these differences emerge across development. As with most developmental processes, individual differences in empathy result from the complex interweaving of a child’s biological predisposition and environment (Knafo, Zahn-Waxler, van Hulle, Robinson, & Rhee, 2008). Behavioral genetics studies estimate that empathy is moderately heritable, with the majority of variance accounted for by shared and nonshared environmental influences (e.g., Knafo et al., 2008; Zahn-Waxler, Schiro, Robinson, Emde, & Schmitz, 2001). In particular, theories of empathic development have emphasized the role of parenting (e.g., Hoffman, 1975, 2001). From a socialization perspective, children’s empathy may be seen as a product of specific parenting behaviors such as authoritativeness, gentle discipline, inductive reasoning, and sensitive responses to children’s distress (e.g., Hastings, Utendale, & Sullivan, 2007; Hoffman, 1963; Krevans & Gibbs, 1996; Taylor, Eisenberg, & Spinrad, 2015; Zahn-Waxler, Radke-Yarrow, & King, 1979).

One additional perspective that may be useful in understanding the role of parents in children's empathic development is attachment theory (Bowlby, 1969/1982, 1973, 1980). Attachment theory is an evolutionary-based theory that offers a rich relational framework for understanding the development of individual differences in social functioning and care for others, contextualizing the social behavior of humans as well as other species. In humans, the theory points to specific mechanisms by which the quality of a child's attachment might contribute to empathy; specifically, the theory predicts that secure attachment shapes children’s (a) cognitive models of relationships, (b) emotion regulation capacities, and (c) physiology in ways that support children’s capacity to care for others. Finally, attachment theory provides a framework for understanding parenting behaviors that underlie the development of healthy relationships: Like some models of socialization (e.g., Davdov & Grusec, 2006; Eisenberg, Fabes, & Murphy, 1996), it focuses parents’ sensitive responses to children’s distress as a key antecedent to children’s healthy social and emotional development.

The purpose of the present paper is to provide the first comprehensive theoretical and empirical review of the development of individual differences in empathy from an attachment perspective. We begin with brief overview of attachment theory to provide a foundation for exploring the relation between secure attachment and empathy, discuss potential mediating mechanisms, and present a theoretical model of empathic development. We then review the empirical literature on the link between attachment and empathy from infancy to adolescence. In light of the literature reviewed, we identify gaps in our current understanding of the attachment–empathy link and highlight key areas for further investigation.

Issues of definition and measurement

Before exploring the theoretical basis for this link, it is important to provide a scientific definition of empathy, which historically has been much debated (see Duan & Hill, 1996). The original German term Einfühlung is literally translated to mean “feeling into” (Wispé, 1986), reflecting the automatic resonance that occurs when we project ourselves into those we observe (Lipps, 1903). In addition to sharing in others’ affective states, social psychologists have conceptualized empathy as involving feelings of tenderness and concern for others’ welfare that arise in response to witnessing their suffering (Batson, Fultz, & Schoenrade, 1987). Developmentalists, too, have viewed empathy primarily as an emotional state (Hoffman, 1975; Eisenberg and Strayer (1990) define it as “an emotional response that stems from another’s emotional state or condition and that is congruent with the other’s emotional state or situation” (p. 5). In contrast, personality researchers conceive of empathy as a relatively stable, trait-like capacity, involving both emotional identification and cognitive perspective taking, and associated with other dispositional factors such as agreeableness (Costa et al., 2014; Davis, 1980, 1983; Graziano & Eisenberg, 1997; Leiberg & Anders, 2006). Recent perspectives clarify the three components of empathy that are common across these approaches and supported by evolutionary and neurodevelopmental theory: (a) emotion sharing, (b) cognitive understanding or perspective taking, and (c) empathic concern for other’s welfare (Decety, 2015; see Decety & Meyer, 2008).

Thus, empathy is a complex and multidimensional construct, involving cognitive, emotional, and motivational components (Davis, 1980; Decety, 2015). As with the study of any multidimensional internal state, the task of operationalization and measurement is complex. Different research traditions focus on different dimensions in their measurement of empathy.

in childhood, and there are pros and cons to each approach. Self-report measures of empathy, for example, have the advantage of directly tapping internal states and assessing distinct dimensions of empathy such as perspective taking. On the other hand, these measures suffer from potential reporter biases and are not feasible for use with young children. Parent-report measures may be used with younger children and provide a useful summary of children’s empathy across the parent’s multiple observations of the child in different contexts. Parent reporters, however, are not immune to reporter biases; further, parents do not have direct access or insight into their children’s internal empathic states.

Other researchers have employed physiological measures to assess empathy in children. These measures have the benefits of minimizing reporter biases and being applicable across age groups and with children of different verbal abilities. Importantly, however, physiological measures lack specificity (i.e., activity of a particular system or brain region does not necessarily indicate empathy, as opposed to other social processes). Vagal tone, for example, has been used both as an index of empathy and as an index of emotion regulation (Porges, 2011).

A large proportion of empathy research in children to date has employed observational measures. Because empathy is a salient proximal motivator of behavior intended to relieve others’ suffering (Batson et al., 1981; Decety, Bartal, Uzefovsky, & Knafo-Noam, 2016; Eisenberg & Miller, 1987), prosocial behaviors such as helping, sharing, and comforting are often assumed to reflect empathy and are sometimes used to assess it. These measures are useful because they provide an ecologically valid window into children’s observable responses to others’ distress. Importantly, however, empathy is an internal state that cannot be directly observed, and children’s prosocial behavior may be motivated by other, less altruistic factors, such as compliance with adult authority, a sense of obligation or fairness, desire for affiliation, egoistic desire for praise or fear of punishment, or deference to a peer’s social dominance (Eisenberg, VanSchyndel, & Spinrad, 2016; Hastings et al., 2007; Hepach, Vaish, & Tomasello, 2013a). To the extent possible, we focus on studies that tap empathy through methods that capture emotion sharing, cognitive understanding, and concern for others’ well-being, typically in response to others’ distress. Thus, we include studies that assess children’s prosocial overtures only when they clearly reflect concern for others’ welfare (such as comforting in response to distress), and omit discussion of non-care behaviors such as cooperation and instrumental helping. We acknowledge, however, that comforting behavior is an imperfect proxy for empathy, despite its wide use in the child empathy literature.

In addition, some researchers differentiate empathy from related constructs such as sympathy and personal distress in their operationalization and measurement. Most notably, Eisenberg and colleagues (e.g., Eisenberg et al., 1992, 2015) define empathy as strictly involving emotional resonance or congruence with others’ emotions, whereas sympathy involves the other-oriented sense of concern or care. Although this is an important distinction, research on empathy in childhood still often treats sympathy as part of the operationalization of empathy. Indeed, many questionnaire measures of empathy contain items tapping both empathy and sympathy, obscuring which construct is (or is not) related to attachment. (For example, widely used self-report measures for adolescents and adults often tap individuals’ “empathic concern” for others, with items blending empathy and sympathy.) For the purposes of this review, we use “empathy” as a multidimensional term inclusive of sympathy (i.e., other-oriented concern), in line with much of the adolescent and adult literature (e.g., Decety, 2015).

With regard to personal distress, there is widespread agreement that well regulated, other-oriented empathy should be distinguished from dysregulated, self-focused negative emotion in response to others’ suffering (e.g., Batson, 1991, 2010; Davis, 1980; Eisenberg et al., 2015). Research demonstrates that behavioral and physiological indicators of self-regulation are positively associated with children’s empathy and prosocial behavior, whereas personal distress is negatively related or unassociated with empathy and prosociality (Eisenberg, 2000; Eisenberg & Fabes, 1990, 1991, 1995; Fabes, Eisenberg, & Eisenbud, 1993). Following this work, we differentiate empathy from personal distress and propose different hypotheses linking attachment to each construct.

Attachment theory and the roots of empathy

Overview of attachment theory

Just as providing empathic care for others evolved from the mammalian caregiving system, so seeking care from others is thought to have its roots in the phylogenetically ancient attachment system. According to attachment theory (Bowlby, 1969/1982, 1973, 1980), these two biologically based behavioral systems evolved to work in concert to promote survival in humans and some other animals, with infants’ expression of need, distress, or bids for closeness (“attachment behaviors”) eliciting the proximity, protection, and comfort of their attachment figures (“caregiving behaviors”) in times of threat. The dynamic interplay between infants’ signals of distress and vulnerability, on the one hand, and caregivers’ attunement to those signals, on the other, achieves homeostasis for each party, resulting in the infant’s physiological regulation, a felt sense of safety, and the provision of a secure base from which the infant can explore the world (Bowlby, 1969/1982, 1984; Solomon & George, 1996). The theory states that all infants possess an adaptive, biologically based tendency to forge an attachment bond to a close caregiver, and that infants’ own social behavior will grow from the foundation of this primary relationship.

Within the universal tendency to form an attachment to a caregiver, infants demonstrate substantial individual differences in the organization of this attachment, according to the kind of care they have received (Ainsworth, 1967; Ainsworth, Blehar, Waters, & Wall, 1978). Infants who experience repeated interactions with a caregiver who is available, empathically attuned to the infant’s cues, and responsive to those cues form secure attachments, characterized in laboratory
assessments by confident exploration of the environment, open expression of need and distress, and swift return to calmness and exploration following reunion with the caregiver. Infants who experience the caregiver as inconsistently available, intrusive, or misattuned to the infant’s signals develop insecure-resistant attachment, characterized by diminished exploration, heightened expression of need and distress (“hyperactivating” strategies), and continued distress and anger even when contact with the caregiver is achieved. Infants who experience the caregiver as unresponsive to or rejecting of the infant’s needs develop insecure-avoidant attachment, characterized by inhibited expression of need and distress (“hypoactivating” strategies), and avoidance of the caregiver when contact is available (Ainsworth & Bell, 1970; Ainsworth et al., 1978). Finally, those infants who experience frightened or frightening caregiving demonstrate disorganized attachment, characterized by unusual behaviors such as freezing or disorientation in response to the caregiver’s approach (Main & Solomon, 1990). The central question on which the formation of each of these patterns turns is the extent to which the caregiver responds sensitively to the child’s distress.

These early patterns of interaction between infant and caregiver—particularly interactions around the management of infant distress—shape enduring mental representations of social relationships, what Bowlby (1969/1982) termed internal working models (IWMs). IWMs organize cognitive processing of social information, inform emotional and physiological responses to threat, and guide social behavior across development (Main, Kaplan, & Cassidy, 1985). These representations are thought to serve as a principal mechanism through which early attachment experiences influence later social functioning (Bowlby, 1969/1982; Bretherton & Munholland, 2016). Consistent experiences of available caregivers’ sensitive responses to distress shape secure models of relationships, involving a sense of self and others as worthy of love and care, confidence and trust in the availability of a secure base to turn to in times of need, and a view of negative emotion as capable of being genuinely expressed, accepted, joined, and regulated in the context of a responsive relationship. In contrast, painful experiences of caregivers’ inconsistent or rejecting responses to distress shape insecure models of relationships, involving a sense of self and others as unworthy of love and care, doubt in the availability of a secure base to turn to in times of need, and a view of negative emotion as overwhelming, unacceptable, or unable to be negotiated with a sensitive other. Secure and insecure IWMs differentially shape psychological functioning throughout childhood, with securely attached children consistently demonstrating greater social competence and better quality peer relationships than their insecure peers (Sroufe, Egeland, Carlson, & Collins, 2005; Thompson, 2016).

Mechanisms of influence

Cognitive models

Recently, attachment researchers have proposed that the secure IWM may be an important mediator of the link between attachment and empathy (Gross, Stern, Brett, & Cassidy, 2017; Mikulincer & Shaver, 2001, 2005, 2007; Shaver, Mikulincer, Gross, Stern, & Cassidy, 2016). Mikulincer and Shaver (2015) suggest that from a foundation of secure attachment arise positive models of others that support empathy. In infants, secure attachment in the Strange Situation has been shown to predict positive models that is, implicit expectations assessed via eye-tracking—that others respond sensitively to signals of distress (Johnson, Dweck, & Chen, 2007). By preschool age, children’s models can be observed in their play, with secure children enacting stories involving positive descriptions of story characters who are helpful in resolving distress (e.g., Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988; Main et al., 1985).

To better understand the specific components that make up the internal working model, attachment researchers have drawn upon the work of cognitive theorists (e.g., Nelson, 1986; Nelson & Gruendel, 1986; Schank, 1982, 1999) to examine the role of relational scripts in interpersonal functioning. Scripts are event schemas that organize behaviors in a specific temporal-causal sequence; for instance, in Schank and Abelson’s (1977) classic example, one’s repeated experiences of dining at various restaurants result in a “restaurant script” that organizes the events one expects to transpire in any restaurant (e.g., getting a table, reading the menu, ordering, receiving food, paying the check). Similarly, from consistent experiences of a responsive caregiver providing help and comfort in times of threat, children are thought to construct secure base scripts that involve (a) an event that precipitates distress and a bid for help, (b) a caregiver’s recognition of this bid and offer to help, and (c) effective resolution of the problem and regulation of distress that allows for a return to normalcy (Waters & Waters, 2006). Thus, secure base scripts reflect specific knowledge of how caregiving events typically proceed, and they make up one important component of secure IWMs (broader representations of the self, others, and the world; Bretherton, 1987, 1990, 1991; Main et al., 1985; Waters, Rodrigues, & Ridgeway, 1998; Waters & Waters, 2006). Empirically, secure base script knowledge is greater in children with secure attachment histories (Bretherton et al., 1990). Research in adults has linked secure base script knowledge to better-regulated, sensitive responses to others’ distress (Groh & Roisman, 2009), though data in children are lacking. Secure base scripts may thus constitute a mechanism by which attachment is linked to empathy; that is, secure attachment may provide a salient behavioral script, activated in times of threat, for how to recognize and respond empathically to others’ bids for help—a child’s implicit “how to” manual for providing comfort and aid to a distressed other.

In the adult literature, empirical work demonstrates that secure adult attachment is associated with positive IWMs of self and others in ways relevant to empathy. For example, securely attached adults tend to view others with greater esteem and acceptance (e.g., Luke, Maio, & Carnelley, 2004), to trust others and attribute positive intentions to their behavior (e.g., Collins & Read, 1990), and to hold less hostile attitudes toward out-group members (e.g., Mikulincer & Shaver, 2001); they also view themselves as competent in giving effective care to others (Kunce & Shaver, 1994). These positive IWMs of others
and the self are thought to explain, in part, why adult attachment security has been repeatedly associated with greater empathy and lower personal distress (Mikulincer & Shaver, 2001; Mikulincer, Shaver, Gillath, & Nitzberg, 2005; Mikulincer et al., 2001). Moreover, building on this evidence of a link between “dispositional” security (similar to what is typically assessed in childhood) and adults’ empathy, researchers have developed creative ways of boosting the felt sense of attachment security through priming that activates secure attachment representations (e.g., by presenting a picture of a parent holding a calm infant). Consistent with studies of dispositional attachment security, these studies of experimental activation of secure IWMs find evidence of links between security priming and empathy toward both romantic partners (Mikulincer, Shaver, Sadhira, & Bar-On, 2013) and strangers in distress (Mikulincer et al., 2001, 2005). Thus, accumulating evidence from the adult literature suggests the confidence in the self and others associated with secure IWMs—whether established from a childhood history of responsive caregiving or experimentally induced in a laboratory setting—permits increased empathy to others’ distress (for reviews see Mikulincer & Shaver, 2015, and Shaver et al., 2016).

Language

Alongside cognitive models, language may function as an additional mechanism linking attachment to empathic development. A growing body of work suggests that securely attached children engage in more elaborative, organized discourse about emotions with parents (e.g., Gini, Oppenheim, & Sagi-Schwartz, 2007; Laible, 2004a; Oppenheim, Koren-Karie, & Sagi-Schwartz, 2007). Parents’ and children’s use of emotion-focused language, in turn, has been linked to children’s empathy and concern for others (Garner, 2003), as well as other dimensions of conscience development (Laible, 2004b). Thus, secure attachment may provide a foundation for shared discourse on emotion-related topics that foster children’s empathic attunement to others’ emotions. In one study, for example, preschool children’s attachment security predicted mothers’ and children’s references to emotions during conversations about children’s behavior, and mothers’ references to emotions during these conversations were also related to aspects of children’s conscience development (Laible & Thompson, 2000).

Emotional and self-regulatory capacities

Dimensions of emotional functioning are also thought to play a key role in understanding the link between attachment and empathy (e.g., Shaver et al., 2016). Substantial research has shown that emotional competencies such as emotion recognition and understanding, affective resonance, effortful control, and self-regulation are central to empathic responding across development, allowing children to see, interpret, and feel others’ emotions without becoming overly distressed themselves (e.g., Batson, 1991; Decety & Jackson, 2004; Decety & Meyer, 2008; Eggum et al., 2011; Eisenberg, 2000; Eisenberg et al., 1996; Geangu, Benga, Stahl, & Striano, 2011; Hastings & Miller, 2014; Hoffman, 2000). Children’s attachment histories have been empirically linked to many of these competencies; for example, compared to insecure children, secure children demonstrate better emotion recognition (i.e., the ability to recognize others’ emotions from behavioral cues; Steele, Steele, & Croft, 2008), emotion understanding (i.e., knowledge of the causes and consequences of emotions; Denham, Blair, Schmidt, & DeMulder, 2002; Laible & Thompson, 1998), and effortful control (i.e., the ability to suppress a dominant behavioral response to enact another response; Viddal et al., 2015; see also Bernier, Carlson, & Whipple, 2010; Kochanska, 2001; Velling, McElwain, Notaro, & Herrera, 2002). Indeed, a recent meta-analysis of child attachment and emotion understanding found a medium and significant overall effect size for the association across 10 studies, with no significant moderators (Cooke, Stuart-Parrigon, Movahed-Abtahi, Koenh, & Kerns, 2016).

Most importantly, attachment theory proposes that security lays the foundation for children’s capacity to regulate emotion (i.e., to monitor and modulate emotional reactions to accomplish one’s goal; Bowlby, 1973, 1980, 1988; Thompson, 1994). Over time, infants’ experience of caregivers’ attuned co-regulation of distress is thought to become internalized as self-regulation—a capacity to acknowledge, accept, and cope effectively with negative emotion oneself, as was once done by one’s caregiver (Bowlby, 1973, 1980, 1988). Decades of well-replicated research have shown that securely attached children are better able to regulate emotion, as assessed via physiological, behavioral, and questionnaire measures (e.g., Calkins & Leerkes, 2011; Cassidy, 1994; Hofer, 1994; Kerns, Abraham, Schlegelmilch, & Morgan, 2007; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Mikulincer, Shaver, & Perey, 2003; Stroufe, 2000). In turn, emotion regulation has been repeatedly linked to empathy in children and adolescents (e.g., Bandura, Caprara, Barbaraneli, Gerbino, & Pastorelli, 2003; Eisenberg, 2000; Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Eisenberg et al., 1994, 1996; Padilla-Walker & Christensen, 2011). One study to date has documented the full mediation model in children, with securely attached preschoolers demonstrating better emotion regulation abilities, which in turn predicted mother-reported empathy (Panfile & Laible, 2012). Thus, for the securely attached child, witnessing another’s distress is neither trivial nor overwhelming; a history of sensitive care allows her to respond with appropriate emotional arousal and regulation, so that personal distress does not get in empathy’s way.

In contrast, attachment avoidance has been linked to “hypoactivating” emotion regulation strategies, characterized by suppression, minimization, and underreporting of negative emotion despite evidence of physiological dysregulation in response to stress (infants: Spangler & Grossmann, 1993; Spangler & Schieche, 1998; school-aged children: Borelli, West Weekes, & Crowley, 2014; adolescents: Spangler & Zimmermann, 1999; White et al., 2012; adults: Dozier & Kobak, 1992). Thus, one might hypothesize that avoidant children may respond to others’ distress with high physiological arousal while betraying little behavioral evidence of concern, suppressing feelings of empathy, and generally attempting to ignore or escape others’ pain. Attachment anxiety, on the other hand, has been linked to “hyperactivating” emotion regulation strategies, characterized by high emotionality, sensitivity to social acceptance/rejection, and outward anxiety in response to stressors (Kobak & Sceery, 1988; Kobak et al., 1993; see also Cassidy & Berlin, 1994). Thus, one would expect that

anxious/resistant children may respond to others’ distress with personal distress, moderate levels of empathy (especially toward a target from whom the child seeks acceptance and closeness), and displays of care that blend self-focused and other-focused motives.

Neurobiological programming

Because attachment is an ethological theory, Bowlby (1969/1982) emphasized that evolutionarily conserved, non-representational (i.e., biological) mechanisms must also play a role in the attachment system. As suggested in the previous section on self-regulation, a growing body of literature demonstrates that attachment experiences shape biological responses to threat, with secure attachment generally predicting less neuroendocrine and physiological reactivity to stressors (e.g., Borelli et al., 2010; see Cassidy, Ehrlich, & Sherman, 2013; and Hane & Fox, 2016). Most relevant, a small body of research suggests that child attachment insecurity—particularly avoidance and disorganization—predict lower vagal regulation, as indexed by respiratory sinus arrhythmia (RSA; Burgess, Marshall, Rubin, & Fox, 2003; Hill-Soderlund et al., 2008; Oosterman, De Schipper, Fisher, Dozier, & Schuengel, 2010). RSA, in turn, has been repeatedly linked to empathic behavior and is often used as a physiological index of empathy (e.g., Côté et al., 2011; Fabes, Eisenberg, Karbon, Troyer, & Switzer, 1994; Fabes et al., 1993; Stellar, Cohen, Oveis, & Keltner, 2015). This is in keeping with Porges’s (2011) polyvagal theory, which implicates vagal activity as important both to the attachment system and to empathy and caregiving behavior.

In addition to vagal regulation, epigenetic programming of hypothalamic–pituitary–adrenocortical (HPA) axis and oxytocin system appears to link early caregiving experiences to later social behavior. Data from the rodent and primate literature suggest that, over time, attachment-related experiences become “biologically embedded” by programming HPA-axis reactivity (see Polan & Hofer, 2016). Specifically, sensitive parental care appears to promote down-regulation of offspring’s stress response and to buffer against fear and avoidance learning in a variety of species (Bisaz & Sullivan, 2012; Cameron et al., 2005; McCormack, Newman, Higley, Maestripieri, & Sanchez, 2009; Meaney & Aitken, 1985; Suomi, 1997); reduced fear and avoidance, in turn, may allow attention and other resources to turn toward helping others. Moreover, these effects on the fear system can be transmitted intergenerationally via epigenetic mechanisms, with sensitive caregiving experiences decreasing hippocampal glucocorticoid receptor (GR) expression and altering methylation of genes involved in oxytocin receptor binding that influence the caregiving behavior of the next generation (Champagne et al., 2006; Liu et al., 1997; see Meaney, 2001; and Roth & David Sweatt, 2011). In humans, oxytocin receptor genetic variation has in turn been associated with empathy (e.g., Rodrigues, Saslow, Garcia, John, & Keltner, 2009; Wu, Li, & Su, 2012), and experimental administration of oxytocin has been shown to improve empathic accuracy in adults (Bartz et al., 2010; Domes, Heinrichs, Michel, Berger, & Herpertz, 2007) and in children with social impairments (Guastella, Howard, Dadds, Mitchell, & Carson, 2009). Thus, neurobiological mechanisms related to stress regulation and oxytocin activity may be important in explaining how attachment-related experiences get “under the skin” to influence empathic development (see also Feldman, 2016; and Rosenblatt, 1994, 2003).

Parenting antecedents

In addition to exploring the mechanisms mediating the link between attachment and empathy, it may be useful to consider the common developmental antecedents that both secure attachment and empathy share. In particular, both secure attachment and empathy are thought to be products of sensitive caregiving. Decades of empirical work have provided support for Bowlby’s (1969/1982) original thesis that parents’ sensitive responsiveness to children’s distress is a key building block of secure attachment (Ainsworth, 1969; Ainsworth et al., 1978; De Wolff & van IJzendoorn, 1997; Isabella, 1993; Laranjo, Bernier, & Meins, 2008; Moss et al., 2011; van den Boom, 1994). Related evidence shows that parents’ own empathy predicts secure child attachment (Leerkes, Parade, & Gudmundson, 2011; Oppenheim, Koren-Karie, & Sag, 2001; Stern, Borelli, & Smiley, 2015). Likewise, following Hoffman’s (1977, 2001) theory of empathic development, parents’ empathy and sensitivity to their children’s distress has been shown to predict children’s empathy across multiple stages of development (Davidov & Grusec, 2006; Eisenberg et al., 1992, 1993, 1996; Fabes, Eisenberg, & Miller, 1990; Garner, 2006; Hastings et al., 2007; Hawk et al., 2013; Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013; Trommsdorff, 1991). Conversely, children of abusive parents (who are, by definition, highly insensitive, and often unempathic; Perez-Albeniz & de Paul, 2003) are both more likely to be insecurely attached (e.g., Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010) and more likely to show deficits in empathy (e.g., Straker & Jacobson, 1981). Thus, sensitive, empathic parenting appears to provide a common foundation from which both security and empathy can grow.

The idea that sensitive parenting contributes to children’s empathy is similar in some ways to social learning theory, which states that children witness, internalize, and imitate the empathic (or unempathic) behavior that adults model (e.g., Staub, 1978). Crucially, however, the attachment perspective emphasizes that children’s empathy arises not merely from witnessing parents’ empathic care or from receiving instruction about empathic care but from being the recipient of such care themselves (Mikulincer & Shaver, 2015; Shaver et al., 2016; for similar arguments, see Zahn-Waxler et al., 1979). More broadly, the attachment perspective holds that social competencies such as empathy develop out of experiences in a mutually responsive relationship, without requiring active socialization efforts (Ainsworth, Bell, & Stayton, 1974); rather, the role of socialization in children’s empathic development may be better understood as building upon a foundation of attachment security that enables positive influences by parents, teachers, and peers to be integrated into the child’s
developing empathy. Thus, attachment and socialization likely interact to predict aspects of moral development, such that securely attached children are more open to parents’ socialization influences (Kochanska, Aksan, Knaack, & Rhines, 2004).

**Moderators**

In addition to socialization, attachment likely interacts with other moderating factors at multiple levels of analysis. At the individual level, child gender, genetics, and temperament may influence the degree to which attachment contributes to empathic development. For example, some research suggests that both parenting and attachment interact with dopamine-system genes to predict children’s prosocial behavior (Bakermans-Kranenburg & van Ijzendoorn, 2011; Knafo, Israel, & Ebstein, 2011), and a similar story of differential susceptibility may be true for empathy. At the dyadic level, characteristics of the target such as familiarity and relationship to the child may interact with attachment to predict child empathy. Two alternative hypotheses are possible here: It may be that attachment is linked to empathy more strongly for kin and familiar peers, because attachment is thought to be most influential in social contexts involving close relationships (Bowlby, 1969/1982). On the other hand, because empathy evolved to promote caring behavior toward kin, perhaps most children show empathy toward family members and close friends (at normative developmental levels independent of attachment), whereas individual differences emerge for empathy for unfamiliar peers (a more demanding social context), with secure children being more likely to have the psychological resources to empathize with a stranger (for findings showing that attachment security predicts sharing only in more costly or emotionally demanding situations, see Paulus, Becker, Scheub, & König, 2016).

At the group level, gender and group norms for empathic responding, as well as the group membership of the target, may moderate the link between attachment and empathy. For example, evidence from the adult literature suggests that attachment security may enhance individuals’ empathy for out-group members by reducing perceptions of threat from the out-group (Mikulincer & Shaver, 2001); however, the authors note that attachment security alone may be insufficient to counteract systemic cultural factors that reduce empathy toward particular groups (Mikulincer & Shaver, 2007), indicating that additional socialization is needed to promote empathy in out-group contexts. In children, too, it is likely that socialization efforts beyond secure attachment may be necessary for promoting empathy toward out-group members.

Finally, at the societal level, cultural factors likely moderate the degree to which attachment is influential in children’s empathic development. Because attachment theory has always been concerned with the adaptive function of behavior in context (e.g., Ainsworth, 1984, 1985), it is important to bear in mind that the development of both attachment and empathy occurs within a broader biocultural context (see McGinley, Opal, Richaud, & Mesurado, 2014), and that the results of empirical studies may depend in part upon these and other contextual variables.

**Integration and theoretical model**

Thus, from an attachment perspective, we view empathy as arising out of the experience of relational security, in complex interaction with moderators at multiple levels of analysis. Specifically, we join others in proposing that attachment security promotes empathic responding through (a) cognitive models (i.e., components of IWMs, including secure base scripts) that guide social cognition, affect, and behavior; (b) self-regulation capacities that enable emotional identification with the pain of others’ suffering without personal distress; (c) shared emotional discourse between parents and children; and (d) neurobiological processes that “program” biological and behavioral responses to others’ distress. In addition, we draw attention to the role of sensitive parenting behaviors that underlie the development of individual differences in both attachment and empathy. The proposed theoretical model is illustrated in Fig. 1.

**Developmental considerations**

Importantly, each of the mediating and moderating processes described above occur in the context of the developing child, and it is likely that the relation between attachment and empathy is developmentally constructed. That is, secure attachment may set into motion a “developmental cascade” (Masten & Cicchetti, 2010), in which, for example, early attachment security fosters the development of self-regulatory capacities in preschool, which in turn set the stage for positive peer interactions in middle childhood; these interactions with peers may provide greater opportunities to practice emotion understanding and empathy, contributing to increasing empathic capacities during the course of adolescence. As they gain greater control over their social lives, secure adolescents may actively self-select into more empathic, emotionally competent peer groups, reinforcing their empathic tendencies over time (see Cassidy, Aikins, & Chernoff, 2003, for a link between attachment and peer selection).

Given these developmental considerations, one might hypothesize that the proposed link between attachment and empathy (a) may be indirect, working through multiple mediating mechanisms in a cascade of influences over time; and (b) may take time to consolidate, and therefore may be weakest in infancy, when children’s capacity for emotion regulation and cognitive representation are primitive. Similarly, the importance of specific mediators and moderators likely changes over development, such that cognitive mechanisms like IWMs may become increasingly important as children develop greater representational capacities, and that moderators such as gender and group norms may exert greater influence over time.
as children's awareness of these norms increases. In the following section, we review the empirical evidence to date at different stages of development.

Research examining attachment and empathy from childhood to adolescence

Infants and toddlers

Children's initial attachment representations are thought to form in the first year of life, as observed in their behavior in the Strange Situation at 12 months (Ainsworth et al., 1978). Early precursors to empathy such as affect mirroring and emotion contagion are evident from birth (Dondi, Simion, & Caltran, 1999; Hoffman, 2000; Sagi & Hoffman, 1976). More differentiated concern for others' welfare is observable by 10 months of age, with attempts to help and soothe others in distress emerging in the second year (Radke-Yarrow & Zahn-Waxler, 1984; Roth-Hanania, Davidov, & Zahn-Waxler, 2011; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Although significant change in many aspects of social functioning is possible throughout development, arguably, the foundations for both secure relationships and empathic tendencies are constructed in infancy.

Despite putative difficulties in the operationalization and measurement of empathy in young children, studies in this period are methodologically rigorous, often utilizing gold standard observational measures of both attachment and empathy. In one such study, van der Mark, van IJzendoorn, and Bakermans-Kranenburg (2002) employed naturalistic observational methods to assess 125 female infants' empathy across two contexts at ages 16 and 22 months. At both time points, attachment was assessed in the Strange Situation, and empathy was coded from infants' responses to mothers' and strangers' simulations of pain and sadness in both home and laboratory settings. Higher empathy scores were awarded to children who displayed clear concern and attempts to help or soothe the victim. Results indicated that attachment security at 22 months was associated with concurrent empathic concern for the stranger only, controlling for temperamental factors; however, models using 16-month assessments or empathy toward the mother were not significant. Similarly, Bischof-Köhler (2000) reported that secure attachment in the Strange Situation in infancy prospectively predicted more empathic and prosocial responses to a distressed experimenter among 39 2-year-old Swiss children.

Other empirical work has employed adult report questionnaires to assess child empathy. In a study of 91 12-month-olds, for example, maternal reports of child empathy were highest among infants classified as secure in a modified Strange Situation procedure, followed by avoidant infants, with resistant and disorganized infants receiving the lowest scores (Carter, Little, Briggs-Gowan, & Kogan, 1999). Although the three-way comparison (A/B/C) was only marginally significant.
(p < .10) due to small cell sizes, a follow-up pairwise comparison found that secure infants were significantly more empathic than insecure infants as a group. A second study employing adult-report measures examined associations among mother’s reports on the Attachment Q-Sort (AQS; Waters & Deane, 1985), the Emotion Regulation Checklist (Shields & Cicchetti, 1997), and two questionnaire measures of empathy in a sample of 64 toddlers (age 36 months). Attachment security contributed to children’s empathy indirectly via emotion regulation; that is, toddlers who were more secure were rated by their mothers as better able to regulate their emotions, which in turn predicted greater empathy. Further, the validity of mothers’ reports was supported by the fact that mother-reported empathy in turn predicted toddlers’ observed attempts to help an experimenter soothe a crying baby (Panfile & Laible, 2012).

Related work examining parental sensitivity (a key precursor to secure attachment) has demonstrated positive longitudinal associations between early parental sensitivity and toddlers’ observed empathic behavior in response to distress expressed by their caregiver as well as by an experimenter (e.g., Kiang, Moreno, & Robinson, 2004; Zahn-Waxler et al., 1979). Conversely, in a study of toddlers in a daycare setting that compared the behavior of non-abused and abused children (who tend to be insecurely attached; Cyr et al., 2010), Main and George (1985) observed that abused toddlers were much less likely to respond with empathy and comfort to peers’ distress; indeed, they often responded with fear, anger, or physical attacks.

Thus, the research on attachment and empathy in infants and toddlers to date is sparse, providing only preliminary evidence for a link between security and empathy in young children. Two studies have found direct associations between attachment and empathy in infants and toddlers, and one additional study supports the proposed theoretical model of emotional regulation as a mediator of this link. However, the equivocal findings reported by van der Mark et al. (2002) merit consideration. One explanation is that, as predicted, the link between attachment and empathy is weakest in infancy, when representations and self-regulatory abilities are still consolidating, such that the link emerges only when assessed closer to the second year of life. A second explanation may relate to potential moderators; if, for instance, further research indicates that attachment’s influence on empathy is stronger in boys than girls, then effects may fail to emerge in all-female samples like that of van der Mark et al. (2002). In addition to gender, contextual variables such as the target of children’s empathy may moderate the association with attachment in this period; specifically, the more consistent evidence suggests that infants and toddlers who are securely attached (or, in related literature, have experienced more sensitive caregiving) demonstrate increased empathy toward other children or an adult experimenter. Less clear is whether attachment contributes to young children’s empathy toward their mothers. Notably, van der Mark et al. (2002) reported that toddlers’ empathy for their mothers was high, on average, at both time points (and significantly higher than empathy for the stranger at 22 months), supporting the hypothesis that relatively high empathy for kin may be developmentally normative, and that attachment-related differences may be more likely to emerge in more demanding contexts (e.g., with a stranger in distress). On the other hand, we cannot altogether rule out the possibility that attachment also informs empathy toward mothers, though it may do so later in development. It is likely that most infants’ and toddlers’ experiences with their mothers involve clearly differentiated roles (i.e., mother serving as caregiver when the child is distressed but not vice versa), leaving limited opportunities for young children to extend caregiving toward their mothers, as is appropriate for their stage of development; indeed, “role-reversal” of the caregiver–child dynamic is often viewed as problematic, and role-reversing behavior of preschoolers in the Strange Situation is coded as an indicator of disorganization (D—controlling/caregiving; see, e.g., Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004). Thus, we might expect that security is unrelated to empathy toward attachment figures in early childhood, but that a link emerges later in childhood, as children gain more experience witnessing their own caregivers’ distress and develop greater competence in the skills needed for empathic responsiveness. In addition to developmental considerations, empathy toward the mother may represent a special case in which maternal characteristics interact with attachment to shape child responses, a possibility explored further in research with preschoolers.

Preschoolers

As children enter the preschool years, their empathic capacities become increasingly selective, reflecting greater understanding of display rules, gender norms, and contextual factors such as group membership and the proximal causes for others’ distress (Eisenberg et al., 2015; Hay & Cook, 2007). For example, 3-year-olds are more likely to display empathic concern when others’ distress is clearly justified (i.e., appropriate to the harm that caused it) than when it is not (Hepach, Vaish, & Tomasello, 2013b). Preschoolers’ emerging verbal ability and wider repertoire of emotion regulation strategies also set the stage for more mature emotion understanding and perspective taking (e.g., Denham, Caverly et al., 2002; Denham et al., 2003; Strayer, 1980). At the same time, children’s attachment increasingly shapes their interactions with social partners beyond parents, including siblings, teachers, and peers (Booth-LaForce & Kerns, 2009).

Among the first evidence for attachment-related differences in social functioning, including empathy, were data from the Minnesota Longitudinal Study, which traced children’s social development from infancy to adulthood (see Sroufe, 2005). Waters, Wippman, and Sroufe (1979) first reported on 32 preschoolers’ (age 3½) social behavior—coded from classroom observations over a 5-week period—in relation to their attachment history, as previously assessed in the Strange Situation at 15 months. Among other dimensions of social competence, children who were securely attached in infancy displayed greater empathy toward their preschool peers compared to insecure infants. To complement the observational findings, further analyses of 40 children at age 4 revealed that teacher-reported empathic behavior was most characteristic of secure children and least characteristic of avoidant children, with resistant children falling in between (Sroufe, 1983). In a
follow-up study of 24 preschoolers, empathy was coded from children’s observed reactions to naturalistic situations in which a peer became distressed in the classroom (Kestenbaum, Farber, & Sroufe, 1989). Children who had been identified as securely attached as infants displayed significantly more empathy (i.e., concerned facial expressions, attempts to comfort the distressed peer, low personal distress) compared to avoidant children; resistant children, however, did not differ significantly from secure children.

More recent investigations of the association between attachment and empathy in preschool have yielded mixed results. Murphy and Laible (2013) found that mother-reported security on the AQs when children were 42 months positively predicted children’s observed empathic responses to a laboratory simulated baby cry at 48 months, even after controlling for empathic concern at 42 months; however, attachment security was not significantly related to empathic concern when the two constructs were measured concurrently. In a study of 62 preschoolers using the observer-rated AQs, children’s secure attachment to their mothers was unrelated to their observed concern and comforting responses to peers’ distress; instead, the quality of children’s relationship to their teachers predicted comforting behavior in the classroom, suggesting that teachers’ influence may be more salient in a classroom context (Mitchell-Copeland, Denham, & DeMulder, 1997). Finally, Iannotti, Cummings, Pierehumbert, Milano, and Zahn-Waxler (1992) reported that children’s secure attachment assessed in the Strange Situation at age 2 positively predicted their observed prosocial behavior toward peers at age 5, which included behaviors linked to empathy such as helping and compassionate responses to peers’ emotional distress. On the other hand, attachment was not significantly related to other indicators of empathy, such as children’s understanding of, and affective responses to, pictures of others’ emotions (Iannotti et al., 1992). Importantly, the authors report results for security vs. insecurity in the Strange Situation but do not explore distinct insecure classifications, obscuring potential differences between the specific groups.

Research on children’s empathy toward a sibling has yielded additional equivocal findings. Teti and Ablard (1989) found that children (M age = 4 years) who were securely attached—as assessed on the mother–reported AQs—were more likely to offer empathic care (i.e., verbal reassurance, physical comfort, and sensitive redirection) to their younger siblings when they became distressed during a separation from the parent; conversely, the number of children who aggressed against their distressed sibling was significantly greater among insecure children. In a subsequent longitudinal investigation, however, infant attachment in the Strange Situation (assessed for both mothers and fathers) did not significantly predict individual differences in empathy toward a sibling in distress when children were 4 years old; however, resistant children were more likely than secure children to exhibit unempathic behaviors such as hostility and conflict toward the younger sibling (Volling, 2001), pointing to the importance of examining how specific types of insecure attachment relate to children’s emerging empathy.

Maternal characteristics introduce further complexity into the picture: Some data suggest that young children of depressed mothers demonstrate unusually high levels of empathy and comforting behavior toward the mother (but less empathy toward an experimenter; Apter-Levy, Feldman, Vakart, Ebstein, & Feldman, 2013), presumably reflecting children’s adaptation to an environment in which a parent requires additional emotional care (e.g., Radke-Yarrow, Zahn-Waxler, Richardson, Susman, & Martinez, 1994; Rehberg & Richman, 1989; see Rehberg & Richman, 1989 for null results). In a study of 52 depressed and 38 non-depressed mothers and their preschool-aged children, Radke-Yarrow et al. (1994) observed the highest levels of empathic behavior toward mothers’ simulations of sadness among children who (a) were securely attached in the preschool Strange Situation, (b) demonstrated problems with affective reactivity, and (c) had mothers with severe depression. None of these characteristics alone was a strong predictor of child empathy; rather, the interaction among child- and family-level characteristics shaped children’s behavior. One interpretation of these findings is that children with an underlying predisposition to affective reactivity may be more susceptible both to the negative impacts of maternal depression on affect regulation and to the positive impacts of secure attachment on social development (i.e., a differential susceptibility model; see Belsky & Pluess, 2009). These results point to the importance of considering maternal characteristics, including mental health, when examining children’s empathy toward the mother.

A parallel body of work has examined capacities related to cognitive empathy, or the ability to identify and understand others’ emotional states and to take others’ perspectives (e.g., Davis, 1980; Decety, 2015). For example, Laible and Thompson (1998) found that preschool children who were more secure on the mother-reported AQs were more accurate in identifying others’ negative emotions in a structured puppet story task and during interviews about peers’ emotions in naturalistic situations. Similarly, Laible (2004b) reported that attachment security on the mother-reported AQs was strongly positively associated with 3- to 5-year-old children’s accurate recognition of others’ facial expressions and identification of others’ emotions in a story task. These findings offer a counterpoint to the null findings reported by Iannotti et al. (1992) and suggest that securely attached preschoolers may be better able to recognize others’ negative emotions and take others’ perspectives when tasks are presented in the context of a story or a real-world situation with peers.

Finally, preliminary data from our lab showed that 4-year-olds’ internal working models of attachment—assessed using a play-based stem task—were concurrently associated with their empathic responding to a distressed experimenter; however, IWMs were unrelated to mother-reported and child-reported empathy (Stern, 2016). Findings suggest that preschoolers’ attachment representations relate only to specific dimensions of empathy and highlight the importance of employing multimethod assessment in the study of empathy.

Thus, the evidence on attachment-related differences in empathy in preschool children is particularly mixed, and appears to depend upon study design and methodology: Longitudinal studies employing observational measures of children’s empathy have generally found that preschoolers with secure attachment histories are more likely to respond empathically to
strangers and peers in distress. In contrast, mixed and null results have emerged from cross-sectional studies and studies assessing preschoolers’ empathy toward their mothers or siblings. The evidence from this developmental period suggests that attachment-related differences in empathy may indeed be developmentally constructed, with differences emerging principally from longitudinal investigations. Data also point to the importance of contextual and methodological moderators, given evidence that a child’s relationship to the target—as well characteristics of the target such as maternal mental health—represent important moderators of the link between attachment and empathy.

School-aged children

In early and middle childhood, the focus of children’s social world begins to shift toward peers, yet attachment to parents continues to influence children’s everyday interactions (Booth-LaForce & Kerns, 2009; Kerns & Brumaru, 2016; Schneider, Atkinson, & Tardif, 2001). For example, children who were securely attached as infants and preschoolers demonstrate better social adjustment and higher quality peer interactions at age 8 (Bohlin, Hakegull, & Rydell, 2000; Booth, Rose-Krasnor, McKinnon, & Rubin, 1994). Along with other social faculties, empathy appears to increase over the course of the school years, particularly in girls, and is a robust predictor of prosocial behavior (e.g., Eisenberg et al., 1987; Litvack-Miller, McDougall, & Romney, 1997). Consistent with the theory outlined above, emotion regulation appears to be a key mechanism linking attachment with social functioning in middle childhood (e.g., Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000).

Despite insightful research on the development of empathy across middle childhood (e.g., Eisenberg et al., 1987), its relation to attachment remains unclear. To our knowledge, no studies have specifically examined the association between attachment and empathy in school-aged children. Two related bodies of literature, however, provide indirect evidence of an attachment–empathy link in this period. First, in the bullying literature, middle school students’ self-reports of attachment and empathy together were found to predict their role in bullying situations; that is, children who were more secure and empathic were more likely to report that they would intervene on behalf of a victim being bullied (Nickerson, Mele, & Princotta, 2008). Although the association between security and empathy was not reported, the findings suggest that security and empathy may function together in promoting caring behavior toward vulnerable individuals. Second, in the clinical literature, insecure IWMs of attachment in early and middle childhood (assessed using a play-based story-stem task) have been associated with increased risk for callous-unemotional traits, foremost among which are lack of empathy and poor attunement to others’ emotions; notably, children with disorganized IWMs showed particularly elevated callous-unemotional traits (Pasalich, Dadds, Hawes, & Brennan, 2012). Similarly, lower parental sensitivity and negative representations of the family (measured using the attachment-based Family Drawing Paradigm; Kaplan & Main, 1986) were associated with greater callous-unemotional traits in a large longitudinal study of children (Wagner et al., 2015). This is in line with Bowlby’s early observations that youth with disrupted attachment bonds showed a troubling disregard for others’ suffering (Bowlby, 1944). What is most clear, however, is that research on attachment-related differences in empathy during this developmental period is sorely needed.

Adolescents

In adolescence, children increasingly explore their autonomy within the relatedness of their attachment relationships (Allen & Hauser, 1996). This period is marked by the increasing importance of peers, who may at times provide a secure base for the adolescent or call upon the adolescent to provide a secure base for them in times of distress (Allen & Tan, 2016; Furman & Buhrmester, 1992). In addition, the sociocognitive advances of adolescence—including improvements in theory of mind, emotion understanding and regulation, and self-awareness—enable greater capacities for empathy (Eisenberg, 2000; Hart & Fegley, 1995), as well as adolescents’ ability to report on their own internal states and attachments.

Research on attachment and empathy in adolescence has yielded the most consistent results. A study of 2,665 Italian adolescents (age 14–19 years) found that self-reported secure attachment to parents on the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) was associated with greater self-reported empathic concern and perspective taking on the Interpersonal Reactivity Index (IRI; Davis, 1980), with a medium effect size (Laghi, D’Alessio, Pallini, & Baiocco, 2009). In one of the largest studies on this topic to date, Li et al. (2015) investigated associations among attachment, empathy, and aggressive behavior in a sample of 6,301 Chinese early adolescents (age 11–14 years). Children’s self-reported attachment security with both mothers and fathers on the IPPA was positively associated with their empathic concern and perspective taking on the IRI. Effect sizes were small, with stronger associations for maternal (than paternal) attachment. Further, attachment security and perspective taking each were negatively associated with adolescents’ self-reported aggression (Li et al., 2015). This pattern of results has been observed in older adolescents as well: Laible, Carlo, and Raffaelli (2000) reported that security on the IPPA was positively related to 16-year-olds’ empathy on the IRI, and both constructs were inversely related to aggression (Laible et al., 2000). Similarly, in a socioeconomically diverse sample of 756 Korean 7th- to 9th-graders, secure maternal attachment on the IPPA was positively related to students’ self-reported empathy (a small effect size), which in turn predicted lower rates of self-reported bullying behavior (You, Lee, Lee, & Kim, 2015).

As a counterpoint to the findings related to aggression and bullying, Thompson and Gullone (2008) found that security on the IPPA was positively associated with Australian 12- to 18-year-olds’ self-reported empathy, which in turn predicted their prosocial behavior and humane treatment of animals. Similarly, in a sample of 69 Canadian high school students, attachment
security was positively related to adolescents’ self-reported “helpful, empathic behavior,” which included their provision of comfort and sympathy toward others in distress (Markiewicz, Doyle, & Brendgen, 2001).

Just one study to date has illustrated the mediating role of emotion regulation in the attachment–empathy link in adolescence. Among 148 middle adolescents, parental attachment on the IPPA positively predicted teens’ self-reported helpful, empathic behavior, which included their provision of comfort and sympathy toward others in distress (Markiewicz, Doyle, & Brendgen, 2001).

In one of the few adolescent studies integrating a biological perspective, Diamond, Fagundes, and Butterworth (2012) examined 14-year-olds’ attachment (i.e., self-reported anxiety and avoidance on the Adolescent Attachment Scale; Miller & Hoicowitz, 2004), resting vagal tone, and empathy, as indexed via observed behavior toward their mothers during conflict-related discussions. Adolescents’ observed empathic sensitivity toward their mothers was predicted by their attachment style, such that attachment-anxious adolescents showed reduced empathy for their mothers’ negative emotions (but not positive emotions), whereas attachment-avoidant adolescents showed reduced empathy for their mothers’ positive emotions (but not negative emotions), each with small effect sizes. Although resting vagal tone was not directly related to adolescent attachment or empathic sensitivity, an interaction emerged such that empathic sensitivity was highest among adolescents with low attachment anxiety and high vagal tone (Diamond et al., 2012). Vagal tone reflects the activity of the vagus nerve—part of the parasympathetic branch of the autonomic nervous system involved in down-regulating the heart (Beauchaine, 2001)—and is thought to index affect regulation and empathy (see Hastings & Miller, 2014; Porges, 2011).

Thus, the adolescent research has consistently demonstrated a positive association between secure attachment and empathy. The majority of studies to date, however, have employed cross-sectional designs and self-report assessments of attachment and empathy, raising concerns regarding shared method variance and highlighting the need for more longitudinal, observational work in this developmental period. Nevertheless, this body of work helps to build a bridge linking earlier studies of attachment and empathy in childhood with the robust findings on security and empathy in adulthood. Across numerous studies utilizing a variety of methodological approaches—excluding experimental induction of attachment security via priming—adult attachment researchers have repeatedly demonstrated an association between security and empathy for others in distress (e.g., Britton & Fuendeling, 2005; Gillath, Shaver, & Mikulincer, 2005; Joireman, Needham, & Cummings, 2002; Mikulincer et al., 2001, 2003, 2005; see Mikulincer & Shaver, 2005, 2015; and Shaver et al., 2016, for reviews). The strong evidence in adulthood, coupled with the promising research in adolescence, suggest that studying the developmental roots of empathy from an attachment perspective is indeed a worthwhile pursuit.

Discussion and future research

Since Bowlby and Ainsworth’s initial observations in the 1960s and 70s, researchers have demonstrated the downstream effects of early attachment on a variety of social outcomes, including social competence, peer relationships, aggression, and psychopathology (for reviews see Weinfield, Struve, Egeland, & Carlson, 2008; and Thompson, 2016). Among the most important of these social outcomes, in our view, is empathy—the capacity to feel others’ emotions, to take their perspective, and to respond to their expressions of need and distress with concern and care. In this paper, we have provided an attachment theoretical framework for understanding and predicting the development of individual differences in empathy from infancy through adolescence. The model also provides a means of interpreting the empirical literature, which we discuss below.

As our review indicates, however, the body of work examining attachment and empathy in childhood is surprisingly small, and the evidence is mixed: A slight majority of the studies reviewed demonstrate positive associations between attachment and empathy, and no studies report negative associations between attachment security and empathy, but importantly, many show null effects or conditional effects. Speaking broadly, the evidence is weakest in infancy, generally positive in the toddler years, contextually dependent in preschool, lacking in middle childhood, and consistently positive in adolescence. Throughout development, effect sizes are small, suggesting that, in general, the magnitude of any direct link between attachment and empathy remains relatively consistent, even as important dimensions of children’s attachment relationships and capacity to care for others change with age.

There are multiple possible explanations for these mixed findings. First, as discussed previously, the proposed link between attachment and empathy may be developmentally constructed. That is, associations may emerge consistently only later in development, as children gain greater representational and regulatory skills. From a neurobiological perspective, the influence of secure attachment on biological systems may take time to canalize (see, e.g., Blair & Raver, 2012; Gottlieb, 1991); for example, epigenetic programming of the HPA-axis may require repeated exposure to sensitive care or continued reinforcement of relational security over time. Alternately, attachment-related individual differences in empathy may emerge alongside developmentally normative maturation of the caregiving system in adolescence, including changes in oxytocin and vasopressin function. This perspective would help explain why results are weakest in infancy and seemingly more consistent in adolescence.

Second, in a similar vein, it is likely that any influence attachment may exert on empathy would be indirect, operating through multiple mediating mechanisms in a developmental cascade (Masten & Cicchetti, 2010). The study by Panfile and Laible (2012), for example, demonstrated that emotion regulation fully mediated the link between preschoolers’ secure...
attachment and empathy, and that the direct path from attachment to empathy was not necessary for the good fit of the path model. Thus, the theorized influence of attachment on empathic development may operate via multiple intermediary pathways (including those presented in Fig. 1), such that studies that test only for a direct effect may miss the fuller developmental picture of how these constructs are (or are not) related.

Third, the methodology used to measure both attachment and empathy varies widely across development, with observational measures most common in the first years of life, use of adult-report increasing in preschool, and self-report dominating in adolescence. Studies employing longitudinal designs with observational methods generally show positive associations between security and empathy in childhood (e.g., Bischof-Köhler, 2000; Kestenbaum et al., 1989), whereas picture-based and emotion-labeling measures of empathy often yield null results, perhaps due to the cognitive and verbal demands of the task (e.g., Iannotti et al., 1992). Studies that rely on adolescent self-report also tend to show positive results, though, as mentioned previously, this approach introduces the problem of shared method variance. In addition, the most frequently used attachment measure in studies of adolescents has been the IPPA, a measure that was not originally designed to assess adolescent–parent attachment; future research should rely on more well validated measures of adolescent attachment (discussed in further detail below). A final consideration is the context of the empathy task: The higher levels of empathy observed in secure children are more apparent when the target is a peer or a stranger, and less so when the target is the mother or a sibling, suggesting that the child’s relationship to the target is indeed an important contextual moderator of the proposed link between attachment and empathy. It may be that the more consistent results observed in adolescence are in part attributable to the use of empathy questionnaires that assess general tendencies and are therefore noncontextual.

Fourth, beyond target characteristics, attachment may interact with additional moderators outlined in Fig. 1 in the prediction of empathy. In particular, evidence suggests that children with specific temperamental traits (i.e., high reactivity) or genes (particularly serotonin transporter 5-HTTLPR and dopamine-related genes such as DRD4) are differentially susceptible to their caregiving environment (Belsky & Pluess, 2009); that is, children may be more or less influenced by the quality of their environments, “for better and for worse.” Research has shown, for example, that positive parenting predicts prosocial behavior only among children carrying the dopamine receptor D4 7-repeat allele (Knafo et al., 2011); similarly, in a study of school-aged children, those who were securely attached gave more in a donating task only if they had less efficient dopamine-related genes (Bakermans-Kraenburg & van Ijzendoorn, 2011). Extending these results from the prosocial literature, it may also be reasonable to hypothesize that attachment is relevant to empathic development only among children who are more temperamentally or genetically susceptible to caregiving influences, and not for children without these traits.

Finally, we must bear in mind the possibility that attachment is in fact unrelated to children’s empathy, and that the positive results to date can be explained by a third variable or by measurement error. For example, it is possible that children who are generally more socially competent are both more likely to be viewed by their mothers as secure on measures like the mother–reported AQOS and more likely to offer comfort in observational tasks due to their more advanced knowledge of socially desirable behavior (and not necessarily empathy). As Sroufe (2016) notes in the most recent edition of the Handbook of Attachment, we must be mindful of the fallacy that “all good things go together” in development and look closely at the evidence for which specific aspects of development relate or do not relate to attachment.

What is most apparent from the literature reviewed is that additional investigation is needed to better understand the association between attachment security and empathic development, particularly in infancy and middle childhood. Next we outline a research agenda for future work to bring this complex and equivocal picture into focus.

Directions for future research

Developmental approaches

First, understanding empathy in childhood from any perspective requires taking a developmental approach. Longitudinal studies employing measures of attachment and empathy at multiple time points may clarify how attachment does or does not shape pathways to empathy at specific ages. Moreover, assessing potential mediators at different stages of development could be useful in understanding the cascade of influences that contribute to children's empathy over time. Such approaches could also shed light on the stability and change of empathy over development (e.g., perhaps empathy-related responding is less stable among anxious-resistant children; or perhaps secure attachment buffers against age-typical decreases in empathy during adolescence). Research in this vein requires attention to measurement issues such as task demands (i.e., ensuring that young children’s performance on an empathy task is not unduly limited by verbal or cognitive demands), consistency of measurements across ages, and the developmental appropriateness of attachment and empathy assessments, which we discuss further below.

Assessing attachment

Perhaps most importantly, future examination of attachment and empathy requires appropriate and careful measurement of each construct, particularly given the wide variation in methodologies used to study both attachment and empathy in children. With regard to attachment, researchers should rely on gold-standard measures such as the Strange Situation and other observational separation–reunion procedures that have been validated for use with children through age 6 (see Solomon & George, 2016). Other well validated measures for young children include the Attachment Story Completion Task (Bretherton et al., 1990) and the AQOS (Waters & Deane, 1985). In adolescence, the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) is considered a valid measure of attachment that, like the aforementioned observational measures of
young children, has been empirically linked to early caregiving experiences (see Hesse, 2016). The Child Attachment Interview (Shmueli-Goetz, Target, Datta, & Fonagy, 2004) is a more recently developed measure of attachment in middle childhood, informed by both the Strange Situation and the AAI, and the preliminary data on its validity has been promising (Shmueli-Goetz, Target, Fonagy, & Datta, 2008; Venta, Shmueli-Goetz, & Sharp, 2014). Many of these measures have the benefit of distinguishing among specific attachment classifications, which is particularly important for testing hypotheses that, for instance, avoidant individuals may show the most impairment in empathy (e.g., Kestenbaum et al., 1989; Sroufe, 1983), or that anxious/resistant individuals may show a blend of empathy and personal distress.

For older adolescents, the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998) is a self-report measure of attachment style with subscales for both avoidance and anxiety; use of this measure—particularly in conjunction with observational measures of attachment obtained earlier in life—may be useful in examining continuity (or discontinuity) with the adult literature, which typically employs the ECR in studies of attachment and empathy (e.g., Mikulincer et al., 2001, 2005). Bringing these measures together in longitudinal studies of attachment and empathy (i.e., by assessing attachment at multiple time points) could help to disentangle longitudinal effects that unfold over development from concurrent effects at specific ages (see van der Mark et al., 2002, for an example of this approach).

Assessing empathy

In the case of empathy, integrating behavioral and biological indices of children’s responses to naturalistic displays of distress may be optimal for capturing empathy for multiple reasons: (1) naturalistic distress presents an ecologically valid stimulus, representing others’ stride in ways that reflect everyday encounters with social partners (as when a stranger stubs her toe or a peer has his feelings hurt); (2) a naturalistic distress stimulus is highly salient and likely to elicit immediate, automatic emotional reactions that may better capture individual differences in empathy and personal distress; (3) behavioral and biological responses to others’ distress involve fewer cognitive and verbal demands than story-based, emotion-labeling, or self-report measures; and (4) as a consequence, these measures can be applied more consistently across age groups, as well as across languages and cultures. To extend the adolescent literature in particular, it will be important to introduce more objective measures to reduce problems of reporter bias and shared method variance that result from the exclusive use of self-report. Naturalistic empathy tasks simulating others’ distress could readily be adapted from established paradigms used with younger children, as well as those used with adults (e.g., experimenter simulating pain or “live” video feed of an adolescent peer in distress). These paradigms could be strengthened in future studies by adopting behavioral coding systems that differentiate sympathy (e.g., a child saying, “I’m sorry that happened”) from empathy (e.g., a child saying, “I know you’re sad”), and by clarifying criteria for what constitutes regulated empathy vs. personal distress.

This is not to say that researchers should do away with questionnaire measures of empathy; rather, because empathy is a complex and multidimensional construct, researchers should employ multimethod approaches to its study; that is, researchers could draw upon a combination of questionnaires from multiple reporters (e.g., mother, father, teacher, peer, self), coded behavioral responses to naturalistic displays of distress, as well as biological indices (e.g., heart rate deceleration, RSA suppression, pupil dilation, eye tracking; for examples of biological methods used to study normative prosocial development, see Decety, Michalska, & Kinzler, 2012; Fabes et al., 1993; Hepach, Vaish, & Tomasello, 2012; see also Hastings & Miller, 2014; Porges, 2011). Such an approach would help researchers (a) to examine specific dimensions of empathy, (b) to establish convergent validity among multiple metrics, (c) to distinguish empathy from prosocial behavior motivated by other factors; and (d) to test new hypotheses regarding the origins of individual differences. For example, do avoidant children show typical physiological reactions to others’ distress but subsequently suppress their response, reporting low empathy and failing to act appropriately to care for others? Or do avoidant children also show differences in early, low-level perceptual and physiological processing of others’ distress? Research in this vein could probe empathy from a developmental systems perspective, examining potential attachment-related differences at multiple levels of analysis (see, e.g., Cicchetti & Dawson, 2002; Marshall, 2013).

Perhaps most importantly, we encourage researchers to be clear in their operationalization of empathy, to be mindful of the language used to specify its dimensions, and to tailor measurement of empathy in line with these considerations.

Investigating mediators

Future research should go beyond simple direct effects to examine potential indirect pathways and mediating mechanisms linking attachment and empathy, drawing on the model outlined in Fig. 1. Of the mediators proposed here, emotion regulation has received the most empirical support for its association with both attachment and empathy across age groups (e.g., Calkins & Leerkes, 2011; Cassidy, 1994; Eisenberg, 2000), whereas the roles of IWMs, scripts, language, and neurobiological programming merit further examination. Researchers could test developmental models focusing on the roles of specific mediators at different ages, examining, for instance, whether attachment in infancy shapes a rudimentary behavioral script for caring for others in preschool; but perhaps this script becomes less relevant over time, as children grow increasingly aware of the complexities of their social environment, and instead, attachment-related differences in parent–child emotion-focused dialogue become more relevant to empathic abilities in middle childhood. Thus, investigating potential mediating mechanisms and indirect pathways is particularly important for clarifying the developmental story of empathy.

Investigating moderators

Alongside the exploration of mediating mechanisms, it will be important to examine potential moderators of the link between attachment and empathy, and to examine attachment itself as a moderator of other influences on children's
empathy, such as socialization (Hastings et al., 2007; for a similar model of children’s conscience development, see Fowles & Korchanska, 2000, and Korchanska et al., 2004). One hypothesis is that secure attachment and socialization independently yield only weak influences on empathic development (i.e., perhaps each is necessary but not sufficient for empathy), but that their combined influence (as when a securely attached child’s empathic behavior is reinforced by a sensitive caregiver) is stronger. Further, as discussed above, examination of child-level moderators such as genetics and temperament could shed light on whether attachment-related experiences have differential effects on children depending on their plasticity or susceptibility to environmental influences (e.g., Bakermans-Kranenburg & van IJzendoorn, 2007, 2011). It is possible, for example, that only children with greater susceptibility to rearing influences experience empathy-enhancing effects of secure attachment and empathy-inhibiting effects of insecure attachment.

In addition to parent- and child-level moderators, research may benefit from greater sensitivity to the role of context and culture in shaping children’s relationships to their caregivers, as well as their empathic development. Ainsworth’s first writings emphasized the role of context in understanding children’s attachment behavior (Ainsworth, 1979), and empathy research has shown that factors such as in-group identity (Mikulincer & Shaver, 2007), perceptions of status and power (Côté et al., 2011), the presence or absence of emotional distress cues (Vaish, Carpenter, & Tomasello, 2009), and rules for displaying distress in different contexts (Hepach et al., 2013b) influence empathy in both children and adults. It seems likely that these and other contextual variables may moderate any influence of children’s attachment on their empathic responding. With respect to culture, Ainsworth’s (1969) cross-cultural approach to studying attachment in Uganda and Baltimore has been carried forward in recent work examining culture-specific dimensions of attachment and sensitive parenting (Mesman, van IJzendoorn, & Sagi-Schwartz, 2016). Culture has also been shown to modulate adults’ empathic responses to others’ emotions (e.g., Cassels, Chan, & Chung, 2010; de Greck et al., 2012). It may be that cultural norms regarding appropriate and effective responses to others’ distress shape whether and how parenting influences children’s empathy. For example, perhaps secure attachment does not predict empathy in cultures that encourage empathy, because the norms of the group compensate for or buffer against negative individual-level effects of insecure attachment. Although the studies of attachment and empathy reviewed here found similar evidence across multiple countries (e.g., Australia, Switzerland, US), most studies to date have drawn on racially homogenous samples and have not examined cultural differences. Thus, enhancing diversity in both the populations studied and the contexts in which studies occur represents an important next step toward understanding the association between attachment and empathy in childhood and investigating “what is predictive for whom” in empathic development.

Experimental designs

In order to test potential causal links between attachment and empathy, researchers could employ experimental designs, adapting tasks from both the adult attachment literature (e.g., Mikulincer et al., 2001) and studies of prosocial development in infants (e.g., Vaish et al., 2009). For example, research could examine whether experimental priming of attachment security (e.g., via presentation of pictures of close, smiling parent–child dyads) would enhance empathy as it does in adults (Mikulincer et al., 2001). In addition, experimental manipulations of potential contextual factors affecting empathy, such as characteristics of the target (e.g., familiar vs. unfamiliar, in-group vs. out-group, peer vs. sibling), could be useful in examining the role of contextual moderators, as discussed above.

Intervention research

Finally, future research should examine potential implications of the model proposed here for intervention. A first important step is to examine whether interventions to promote secure attachment also benefit children’s empathy (and whether increases in security track with improvements in empathy from pre- to post-intervention). If such effects are observed, additional work could examine whether existing programs to enhance empathy and curb aggression and bullying in childhood (e.g., Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Greenberg et al., 2003) could benefit from integrating an attachment theoretical approach—for example, through training teachers to provide a secure base for children in the classroom and to respond sensitively to students’ emotions (Al-Yagon & Mikulincer, 2006; Mitchell-Copeland et al., 1997). One promising intervention, the Roots of Empathy program (ROE: Gordon, 2005), brings parent–infant dyads into school classrooms to model sensitive parenting and to facilitate children’s empathic understanding of infants’ needs as a model for understanding the needs of others. Fourth- to seventh-grade children who participated in the program showed significant improvements in empathic responses to infant crying and peer nominations of prosocial behavior, as well as reductions in teacher-reported aggression (Schonert-Reichl, Smith, Zaidman-Zait, & Hertzman, 2012). The ROE intervention offers a creative example of how attachment theoretical perspectives might be integrated into educational programs to foster children’s empathy.

Conclusions

In sum, the evidence to date offers a complex and equivocal picture of the role of attachment in children’s empathic development. Although there is evidence that secure attachment predicts greater empathy in some studies, the mixed findings highlight the need for further research that examines attachment and empathy with mindfulness of context,
measurement, and developmental factors. Here we have offered a theoretical model of attachment and empathy to guide this important endeavor to further understand the relational roots of empathy in childhood.

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