

The Development of Empathy: How, When, and Why

Nicole M. McDonald

&

Daniel S. Messinger

University of Miami

Department of Psychology

5665 Ponce de Leon Dr.

Coral Gables, FL 33146, USA

Empathy is a potential psychological motivator for helping others in distress. Empathy can be defined as the ability to feel or imagine another person's emotional experience. The ability to empathize is an important part of social and emotional development, affecting an individual's behavior toward others and the quality of social relationships. In this chapter, we begin by describing the development of empathy in children as they move toward becoming empathic adults. We then discuss biological and environmental processes that facilitate the development of empathy. Next, we discuss important social outcomes associated with empathic ability. Finally, we describe atypical empathy development, exploring the disorders of autism and psychopathy in an attempt to learn about the consequences of not having an intact ability to empathize.

Development of Empathy in Children

Early theorists suggested that young children were too egocentric or otherwise not cognitively able to experience empathy (Freud 1958; Piaget 1965). However, a multitude of studies have provided evidence that very young children are, in fact, capable of displaying a variety of rather sophisticated empathy related behaviors (Zahn-Waxler *et al.* 1979; Zahn-Waxler *et al.* 1992a; Zahn-Waxler *et al.* 1992b). Measuring constructs such as empathy in very young children does involve special challenges because of their limited verbal expressiveness. Nevertheless, young children also present a special opportunity to measure constructs such as empathy behaviorally, with less interference from concepts such as social desirability or skepticism. One typical way of measuring empathy and its precursors in young children is to examine their responses to another's distress. Below we discuss the typical stages of empathy development, beginning with newborns' and infants' distress reactions to another's expressed

distress, to empathic concern and helping behavior in toddlers, to gains in cognitive empathy in preschoolers, and, finally, to the stability of empathy as a trait into early adulthood.

Reflexive Crying in Newborns

As early as 18 to 72 hours following birth, newborns who were exposed to the sound of another infant crying often displayed distress reactions, a phenomenon referred to as reflexive or reactive crying, or emotional contagion (Martin & Clark 1982; Sagi & Hoffman 1976; Simner 1971). Newborns responded more strongly to another infant's cry than to a variety of control stimuli, including silence, white noise, synthetic cry sounds, non-human cry sounds, and their own cry (Martin & Clark 1982; Sagi & Hoffman 1976; Simner 1971). This suggests that infant distress reactions to the cry of another infant are not simply a response to the aversive noise of the cry; rather, they may be a very early precursor to empathic responding. The specificity of reflexive crying to the sounds of other infants' cries supports the idea that there is a biological predisposition for interest in and responsiveness to the negative emotions of others.

Personal Distress in Infancy

Feelings of personal distress in response to others' negative emotional experiences during infancy are thought to be precursors to empathic concern (Hoffman 1975; Zahn-Waxler & Radke-Yarrow 1990). Young infants are thought to not fully differentiate the self from others and to have only basic emotion regulation capabilities. Young infants, in fact, tend to become overwhelmed with others' negative emotions and may engage in behaviors, such as self-comforting, to reduce their own distress. Along with the development of self-other differentiation, perspective taking, and emotion regulation during the second year of life, however, there appears to be a transformation from concern for the self to a capability for concern for the other (Knafo *et al.* 2008).

Empathic Responding in Toddlerhood

Zahn-Waxler and colleagues have conducted extensive longitudinal studies examining the development of empathy related behaviors over the second and third years of life. These studies examined typically developing children's responses to the simulated distress of a stranger and of their parent, at home and in the laboratory, between the ages of 14 and 36 months. They measured different manifestations of empathic responding, including concern (e.g., sad look, "I'm sorry"), hypothesis testing (e.g., "What happened?"), prosocial behavior (e.g., hugs, "Are you ok?"), as well as precursors to empathy such as personal distress and self-referential behaviors (i.e., "trying on" another's experience). Many of these behaviors underwent significant development over the second year of life, with age related increases in empathic concern, hypothesis testing, and prosocial behavior between 14 and 24 months of age (Knafo *et al.* 2008; Zahn-Waxler *et al.* 1992a). In fact, nearly all toddlers engaged in some helping behavior in response to real and simulated distress by two years of age. Furthermore, the quality of prosocial behavior developed over the second year of life. The youngest infants' responses were comprised of primarily physical actions, whereas by 18 to 20 months, toddlers were capable of a wide variety of helping behaviors, such as verbal comfort and advice, sharing, and distracting the person in distress (Zahn-Waxler *et al.* 1992a). By the third year of life, young children were capable of a variety of empathy related behaviors, including expressing verbal and facial concern and interest in another's distress, and continued to engage in a variety of helping behaviors.

Cognitive Empathy Gains in Early Childhood

Empathy typically has both emotional and cognitive components, although these components can be experienced separately. Emotional empathy is the vicarious experiencing of another's emotional state, which, as stated above, children may experience in some form as early

as infancy and toddlerhood. In contrast, cognitive empathy, which is also sometimes referred to as theory of mind or perspective taking, is the ability to accurately imagine another's experience. As children enter the preschool and elementary school years, there are significant gains particularly in the area of cognitive empathy. This is partially because the children's increased language capacities facilitate empathic reflection as well as the measurement of such empathic abilities.

By preschool age (4-5 years), children are generally capable of taking another's perspective in false belief tasks, which is a frequently used indicator of theory of mind development (Wellman *et al.* 2001). During false belief tasks, children are typically presented with a scenario with two characters, during which one of the characters places an item in a given location and leaves the room. Then, the second character arrives and moves the item to a new location. When the first character re-enters the room, the participating child is asked where the first character will look for the item. If the child has a theory of mind, she should respond with the original location rather than the true location, thereby indicating a capability to see the situation from the (limited) perspective of the character who left the room (Wellman *et al.* 2001). The developmental trajectory in regard to performance in this task is similar across cultures, although there is some discrepancy in the timing of development (Liu *et al.* 2008). The ability to understand others' perspectives is integral for fully and successfully identifying with another's experience. Theory of mind helps to transform the early developing affective experience of empathy to a more sympathetic, other focused experience by more fully attaching one's empathic feelings to a conceptualization of the other's experience rather than one's own. The increase in the ability to identify with another's experience also allows children to engage in more effective helping strategies, as they are presumably viewing the situation more accurately. For instance, if

a child sees his friend crying, emotional empathy may motivate the child to want to help, but cognitive empathy may elucidate the fact that the other child is sad and may need to be comforted. While these two aspects of empathy typically occur together once they are developed, they can also develop unequally. This unequal development may lead to social dysfunction, which we discuss further in the section on atypical empathy development.

Stability of Individual Differences in Empathy Related Behaviors

Children make impressive gains in empathy development from infancy to middle childhood, but are these gains consistent and do some children become more empathic than others? Eisenberg and colleagues (1999) conducted a longitudinal study on the stability and consistency of prosocial responding. In this study, multiple measures of prosocial behavior, empathic concern, and perspective taking were measured at various time points from approximately 4 to 20 years of age. Prosocial behavior was measured through observation at the children's preschool and at the laboratory, as well as self, parent, and/or friend report, depending on the time point. Empathy related responding (e.g., empathic concern and perspective taking) was measured through self and friend report at intermediate time points. Early prosocial behavior, specifically, observed spontaneous sharing, predicted later prosocial dispositions, with empathy related responding appearing to partially mediate this relation (Eisenberg *et al.* 1999). This suggests that empathy may be conceptualized as part of a larger prosocial personality trait that develops in children and motivates helping behaviors into young adulthood (Eisenberg *et al.* 1999). In addition, in Knafo and colleagues' study (2008) that investigated early empathy development (previously discussed), positive longitudinal correlations were found for both cognitive and affective components of empathy from 14 to 36 months of age in young children's responses to simulated distress in their parent and a stranger. These longitudinal correlations

suggest stable individual differences in empathy related behaviors during early childhood. However, there is a need for additional longitudinal studies investigating the stability of empathy, to determine whether empathy, in particular, shows stable individual differences from early childhood into adulthood, and whether it precedes the formation of a “prosocial disposition”.

Contributors to Empathy Development

As is evident from the previous discussion, the ability to empathize typically develops early and rapidly. But what factors facilitate this development? The following section focuses on factors influencing the development of empathy in the young child. We discuss within-child contributions such as genetics, neural development, and temperament, as well as socialization factors including facial mimicry and imitation, parenting, and parent-child relationships (see Figure 1).

Genetic Factors

In a longitudinal study of twins (Zahn-Waxler *et al.* 1992b), both genetic and environmental components were implicated in the development of empathy. In this study, young children’s responses to simulated distress were measured in monozygotic (“identical”) and dizygotic (“fraternal”) twins at 14 and 20 months of age. The premise of this study design is that the degree to which the correlation in empathy levels is greater among monozygotic than dizygotic twins reflects the impact of heredity. Significant heritability estimates were found at 14 months for different types of empathic responses, including prosocial behavior, empathic concern, hypothesis testing, and unresponsive-indifferent behavior (Zahn-Waxler *et al.* 1992b). At 20 months, empathic concern and unresponsive-indifferent behavior continued to have a greater correlation between monozygotic than dizygotic twins. This means that a proportion of

individual differences in the tendency to empathize are likely associated with genetic differences. As well, the finding that significant heritability estimates are more stable for empathic concern (i.e., the affective or emotional component of empathy) and the unresponsive-indifferent component, in comparison to other empathy dimensions, suggests that these aspects of empathy may signify a child's innate responsiveness to others, which may be less malleable through socialization, along with presenting earlier in development.

Knafo and colleagues (2008) later expanded on this study with a larger twin sample and the addition of 24 and 36 month time points. The focus of this follow up study was to investigate the relative contributions of genetics and shared environment to the development of empathy. The researchers found that the proportion of variance in empathy (defined by the combination of empathic concern, hypothesis testing, and prosocial behavior) associated with heritability effects increased with age, and the proportion associated with shared environmental effects (a common home environment) decreased with age (Knafo *et al.* 2008). By 24 and 36 months of age, heritability was associated with one third to almost one half of the variation in children's empathy. These studies demonstrate the importance of genetic influences, in concert with environmental factors, on the development of empathy.

Neurodevelopmental Factors

There are several areas of the brain implicated in empathic behavior and empathy development. Studies of macaque monkeys have revealed a special class of motor neurons, referred to as mirror neurons, that respond similarly to the perception of actions in others and the production of actions in oneself (Gallese *et al.* 2009; Iacoboni & Dapretto 2006). There is evidence, albeit less direct, that the human brain contains a similar mirror neuron system, which lies in premotor and surrounding areas of the frontal and parietal lobes (Iacoboni 2008). On their

own, mirror neurons and the mirror neuron system are not responsible for empathic feelings; rather, they are thought to provide a neural basis for connecting our own and others' experiences.

The importance of the function of mirror neurons in the development of empathy is highlighted in the Perception-Action Model of empathy proposed by the theorist de Waal. According to this theory, viewing another's emotional state automatically and unconsciously activates one's personal associations with that state, causing, in the absence of inhibition, one to react to another's experience as one would to one's own (Preston & de Waal 2002). This automatic state matching is thought to form the basis for higher levels of empathy, with de Waal (2008) noting that the emotional engagement induced by state matching is integral for prosocial outcomes of perspective taking. The mirror neuron system may explain how this automatic state matching occurs in the brain.

In order to induce empathy, mirror neurons must communicate with many other areas of the brain. The insular cortex has been shown to connect premotor mirror neurons to the limbic system, which processes the emotional aspects of empathy inducing situations (Carr *et al.* 2003; Iacoboni & Dapretto 2006; Preston & de Waal 2002). The limbic system is an evolutionarily older area of the brain involved in the experiencing of emotions. Different areas of the limbic system may process different types of emotional stimuli associated with empathy. For example, the anterior insula and anterior cingulate cortex are activated when viewing disgust expressions, while the amygdala is activated when observing faces displaying fear or distress (Decety & Jackson 2006).

In order to experience empathy and not become overwhelmed with personal distress, neural mechanisms involved in emotion regulation must be activated. The prefrontal cortex appears to be important for reducing the personal distress that is activated in response to

another's distress; this allows the observer to connect on a more cognitive level with the other's experience and aids in helping behavior (Decety & Jackson 2006). Also involved in distinguishing personal distress from empathy are areas of the brain responsible for self other differentiation, namely the right temporo-parietal junction, the posterior cingulate, and the precuneus (Decety & Jackson 2006). In order to engage in perspective taking, which is integral for cognitive empathy, areas of the frontal and parietal lobes involved in executive functioning need to be activated, including the frontopolar cortex, the ventromedial prefrontal cortex, the medial prefrontal cortex, and the right inferior parietal lobe (Decety & Jackson 2006). During this process, areas of the temporal lobe are also activated, providing access to long term memories that may be relevant to the situation (Preston & de Waal 2002). While there has been a recent surge of interest in the neural mechanisms involved in empathy, there is still much research needed in this area.

Temperament

Temperament is comprised of a variety of attributes that form the early basis for personality development. As temperament is thought to be present from birth and thus have biological foundations, individual differences in empathy based on temperament may, in part, reflect genetic influences on empathy development. Rothbart and colleagues (1994) found that fearfulness in infants predicted parent reported empathic concern when the children reached school age. Similarly, behaviorally inhibited, or shy, preschool aged children were rated by their parents as higher in empathy and guilt than other children (Cornell & Frick 2007); however, behaviorally inhibited toddlers were found to be less likely to engage in empathic and helping behaviors with a stranger (Young *et al.* 1999). These divergent findings suggest that behaviorally inhibited children may display higher levels of empathic behavior in familiar contexts, which is

captured in the parent reports; they may, however, be less likely to respond to another's distress in an anxiety inducing unfamiliar situation. Other temperamental factors, such as reactivity, or the degree to which one physiologically responds to stimuli in their environment, has also been associated with empathy. For example, infants who showed relatively low levels of motor and affective responses to novel sensory stimuli at four months, were found to respond less empathically to a stranger simulating distress at age two (Young *et al.* 1999). The association between low reactivity to sensory stimuli in infancy and others' distress in toddlerhood may be an early sign of underarousal that may lead to later callousness and antisocial behavior. Alternatively, this finding may reflect a more general lack of reactivity to social and nonsocial stimuli that may or may not have an effect on later antisocial behavior (Young *et al.* 1999).

Facial Mimicry and Imitation

As alluded to above, environmental experiences, in addition to within-child factors, contribute to the development of empathy. An important mechanism for engaging with and learning about the experiences of others is through motor mimicry, particularly the imitation of facial expressions. When we interact with others, we often unconsciously subtly imitate motor mannerisms, including facial expressions (Hess & Bourgeois 2009; Sato & Yoshikawa 2006). There is evidence that being prevented from mimicking may impair emotion recognition in some contexts (Oberman *et al.* 2007; Stel & van Knippenberg 2008). In addition, individuals with high trait empathy have been found to engage in more facial mimicry than those with low trait empathy (Sonnyby-Borgstrom *et al.* 2003). Mimicry, then, may be essential in the development of empathy.

There is evidence to suggest that the tendency to imitate facial gestures (i.e., mouth opening and tongue protrusion) begins early in infancy in both humans (Meltzoff & Moore 1983)

and monkeys (Ferrari *et al.* 2006). There has also been a single report indicating that newborn expressions can be recognized—presumably based on imitation—when they are observing facial expressions of emotion such as fear, sadness, and surprise (Field *et al.* 1982). More generally, individual differences in behavioral imitation abilities during toddlerhood have been found to predict conscience in early childhood (Forman *et al.* 2004). Through imitating facial expressions associated with certain emotions, infants may begin to internalize the emotional experience of the other (Atkinson 2007). For example, when an infant smiles in response to a social partner's smile, he may feel happy because he is smiling, and therefore shares the other's emotions. With increased experiences, this feeling of shared emotion may become more automatic, and more like emotional empathy. Similarly, imitation of others' actions may facilitate the development of cognitive empathy, or theory of mind. For instance, a toddler may cover his eye and say "My eye hurts" when viewing his mother engaging in similar distress behaviors, which may help him internalize, and therefore better understand, his mother's situation. The tendency to imitate and mimic others' experiences is likely an integral factor in the internalization of others' emotions and experiences that is essential for developing the ability to empathize.

Parenting

Since parents and caregivers have a significant socializing influence on infants and toddlers, it follows that parenting would influence the early development of empathy. One aspect of parent-child interactions that is particularly relevant to the study of empathy development is the level of synchrony between parent and child. Synchrony is the temporal matching of behavior between relationship partners. In a longitudinal study of synchrony and the development of morality, Feldman (2007) found that mother-infant synchrony measured in the first year of life (3 and 9 months) was directly associated with empathy level in childhood and

adolescence (6 and 13 years). Specifically, the more mothers and infants matched and influenced each others' behaviors during face-to-face play in infancy, the more empathy was expressed by the child during mother-child conversations that occurred during middle childhood and adolescence. They did not, however, measure empathy outside of the mother-child dyad. Interestingly, in this study synchrony was associated with later empathy, but not moral cognition, suggesting that it may be more important for the emotional, rather than cognitive, aspects of empathy.

The findings regarding the longitudinal relation between early mother-infant synchrony and later empathy enriches and extends the previous discussion of the role of imitation in early interactions as a facilitator of empathy development. We noted that children may, to some degree, internalize others' feelings and experiences through the simulation of others' emotional expressions and actions during imitation. In addition, parents match their infants' affect (i.e., affective synchrony) during interaction. This may provide children with two important experiences. On the one hand, it may lead children to feel that another, the parent, can feel what they feel. On the other hand, it may provide children with an understanding that their own emotionally motivated actions can influence another, which may promote the feelings of efficacy necessary for acting on a desire to help others.

In general, maternal warmth has been found to be an important factor in promoting empathy development. Toddlers and children who had parents who were observed to display more warmth toward them during a variety of interactions in their home and in a laboratory setting tended to be more empathic (Robinson *et al.* 1994; Zhou *et al.* 2002). The way that parents talk to their children about emotions also appears to affect empathy development. The degree to which parents direct their children to label emotions is associated with children's

emotional concern for others; the degree to which parents provide explanations concerning the causes and consequences of emotions is associated with more attempts by the child to understand others' emotions (Garner 2003). Taken together, it seems that parents who provide a warm, positive environment for their children, and who provide a model for being sensitive to others' needs and emotions through synchronous interactions with their child and talking about emotions with their child are most likely to have more empathic children.

Parent-Child Relationship Quality

The previously discussed parenting factors that appear to influence empathy development are indices of the quality of the parent-child relationship. Another measure of relationship quality is the security of a child's attachment to their parent. Attachment security is typically measured with the Strange Situation procedure, during which the children's reactions to a series of separations from and reunions with their parent are assessed (Ainsworth *et al.* 1978). Securely attached children display behaviors consistent with a trusting, loving relationship with their parent. These typically include being upset by the parent's absence and being calmed by the parent's presence, and feeling comfortable enough to explore their surroundings (Ainsworth *et al.* 1978). Insecurely attached children may ignore their parent upon their return, remain upset and clingy, or not exhibit an organized strategy of re-engaging with the parent. Some studies have found that attachment security promotes empathy development for all children. Kestenbaum and Sroufe (1989), for example, found that securely attached preschoolers engaged in more empathic responding than insecurely attached children (i.e., anxious-avoidant). Likewise, in a social psychological study, priming of attachment security strengthened empathic reactions and inhibited personal distress (Mikulincer *et al.* 2001).

There is also evidence that a secure attachment may be more important for empathy development among some children than among others, which demonstrates that empathy is likely influenced by an interaction between within-child and relationship factors. In a study that examined the influence of temperament and attachment on empathic responding in young girls, it was only among temperamentally fearful girls that an insecure attachment style predicted less empathic concern for a stranger (van der Mark *et al.* 2002). Temperamentally shy or fearful children are quick to engage with others' distress, but tend to become overwhelmed with their own personal distress (van der Mark *et al.* 2002). It may be that when temperamentally shy children grow up in a secure environment, they are less likely to become overwhelmed with their own distress, and better able to use their natural tendency to engage with others' distress to respond empathically, even in a potentially anxiety provoking, unfamiliar situation.

Kochanska has explored a specific quality of parent-child relationship, termed mutually responsive orientation (MRO), which is associated with the development of child conscience, including empathy. MRO is defined by maternal responsiveness and shared positive affect between parent and child. Responsiveness and shared positive affect were measured in lengthy, naturalistic interactions between mother and child at home and in the laboratory (Kochanska 2002). MRO was found to have a direct effect on moral emotions, with maternal responsiveness during infancy predicting higher empathic distress in toddlers at 22 months of age (Kochanska *et al.* 1999) and MRO predicting later guilt reactions in children at 45 months of age (Kochanska *et al.* 2005). In other words, young children with more responsive parents were more likely to respond empathically to a person in distress. It is theorized that children whose early development is embedded within these warm and responsive dyads will more eagerly embrace

their parents' values and be more likely to develop a strong conscience, which is thought to be due to a shared working model of a cooperative relationship (Kochanska 2002).

Social Outcomes Associated with Empathy Development

Thus far we have discussed the typical stages of empathy development, as well as multiple factors that play a role in this development. We now describe various outcomes in the social domain that are related to, and possibly facilitated by, the development of empathy. Below we discuss empathy's part in promoting the internalization of rules, prosocial and altruistic behavior, social competence, and relationship quality (see Figure 1).

Internalization of Rules

The ability to empathize with others' distress may be an important factor in learning right from wrong. Kochanska and colleagues undertook a set of seminal studies of the development of conscience and moral behavior (Aksan & Kochanska 2005). They examined the precursors to and relation between moral emotions (i.e., empathic distress and guilt) and rule-compatible conduct in typically developing young children (33 and 45 months). Moral emotions and rule-compatible conduct were both conceptualized to be indices of developing conscience. Empathic distress was measured by children's responses to a stranger's simulated distress (i.e., negative response by a stranger after dropping a large box on her foot), while guilt was measured by children's responses to a stranger's distress due to a personally caused mishap (i.e., the child was led to believe he or she damaged a special possession). Children who displayed more guilt in response to wrongdoing and empathic distress in response to another's distress were also more likely to follow given rules (e.g., clean up toys) in the absence of supervision (Aksan & Kochanska 2005). So, from a very early age, there appears to be an association between the

experience of other focused emotions and the internalization of rules. This suggests that empathy, in concert with guilt, may play a part in children's learning of right and wrong.

Prosocial and Altruistic Behavior

Empathy is thought to be an important precursor to and motivator for prosocial, or helping, behavior. The primatologist and theorist de Waal (2008) proposed that empathy is an evolved mechanism that promotes altruistic behavior. If a person sees someone in distress, for example, he may himself begin to feel distressed; this would provide a strong internal signal that the other person needs help. At that point, the feeling of distress may lead the person to think of what might make him feel better in similar situations, which may then promote helping behavior. Many studies have examined how a person's tendency and ability to empathize predicts prosocial behavior toward others. In fact, in an extensive review and meta-analysis of relevant literature, Eisenberg and Miller (1987) found that empathy generally had moderate positive correlations with prosocial behavior. Moreover, Zahn-Waxler and colleagues have consistently found associations between empathic concern and prosocial behavior in their studies on early empathy development (Knafo *et al.* 2008; Zahn-Waxler *et al.* 1992a).

As suggested above, de Waal (2008) argued that empathy is the evolutionary mechanism that motivates altruistic behavior and similar prosocial behavior. There are two prominent lines of thinking that may explain this association. First, empathy may motivate altruistic, other focused helping behavior that occurs despite its cost to the self. Alternately, prosocial or altruistic behavior may be motivated by a desire to reduce the negative arousal induced by viewing another's distress. Social psychological research has focused on distinguishing between these alternate motivations by assessing individuals helping behaviors when they are placed as witnesses to a person in distress, where an easy escape from the distressing situation is or is not

possible (Batson *et al.* 1988; Dovidio *et al.* 1990; Stocks *et al.* 2009). Participants in these situations tended to help regardless of ease of escape, supporting the idea that it is empathy that promotes a desire to help rather than a desire to reduce one's own negative feeling, which presumably could have been more easily accomplished by leaving these situations (Batson *et al.* 1988; Dovidio *et al.* 1990; Stocks *et al.* 2009). So, along with empathy being associated with prosocial behavior, there is experimental evidence that further supports de Waal's argument that empathy, in some situations, may, in fact, be a direct mechanism for motivating prosocial behavior.

Social Competence

In addition to being associated with helping and moral behavior toward others, the ability to empathize is also associated with social skills. Social skills index the ability to function optimally with others. In their review, Eisenberg and Miller (1987) found that higher levels of empathy in children were associated with more cooperative and socially competent behavior. Other researchers have also found that children with higher empathy for positive and negative emotions are more social competent (Saliquist *et al.* 2009; Zhou *et al.* 2002). In these studies, social competence was measured by parent and teacher ratings of socially appropriate behaviors and popularity.

Relationship Quality

The ability to empathize also seems to be important for relationship quality, in part, by facilitating the maintenance of meaningful relationships. More specifically, empathic concern and perspective taking were associated with the attachment dimensions of trust and of comfort with interpersonal closeness, in regard to adult romantic relationships (Joireman *et al.* 2002). In a relevant study, when children reported greater empathy in response to a story, they placed

characters from the story physically closer to themselves; this suggests empathy may motivate a desire for increased interpersonal closeness (Strayer & Roberts 1997). As well, empathy for one's partner, perspective taking, and dispositional empathy have been associated with romantic relationship satisfaction in adults, which is important for relationship maintenance (Cramer 2003; Davis & Oathout 1987). Dispositional empathy has also been associated with higher levels of conflict resolution skills in adolescents, which is another important factor in maintaining meaningful relationships (de Wied *et al.* 2007).

In summary, the ability to empathize is important for promoting positive behaviors toward others and facilitating social interactions and relationships. Empathy is involved in the internalization of rules that can play a part in protecting others, and, significantly, it may be the mechanism that motivates the desire to help others, even at a cost to oneself. In addition, empathy plays an important role in becoming a socially competent person with meaningful social relationships.

Atypical Empathy Development: Autism and Psychopathy

Another way to learn about the development of empathy is to investigate its development and presentation in atypical situations. Two prototypical "disorders of empathy" are autism and psychopathy. Pervasive developmental disorders, commonly referred to as autism spectrum disorders (ASDs), are a set of developmental disorders, which are present by age three, and characterized by impairments in social interaction, reciprocal social communication, as well as the presence of restricted interests and repetitive behaviors (DSM-IV-TR 2000). While psychopathy is not an official diagnosis, it is a well established set of symptoms that begin in childhood. Psychopathy is characterized by a lack of empathy and guilt, as well as the presence of antisocial behaviors (Blair 2007).

ASDs and psychopathy may involve different types of deficits in empathic ability, which correspond with very different outcomes. There is some evidence to suggest that individuals with ASDs may primarily have a deficit in cognitive empathy, while individuals with psychopathy primarily have a deficit in emotional empathy. Specific empathy deficits inherent to each of these disorders and a discussion of how these deficits relate to outcomes for individuals with these disorders are presented below.

Autism Spectrum Disorders (ASDs)

The presence of empathy deficits in individuals with ASDs is well established and are, in fact, one of the criteria for diagnosing the disorder (DSM-IV-TR 2000). As well, empathy deficits, and systemizing strengths (i.e., rule based thinking), are the central component of the extreme male brain theory of autism (Baron-Cohen 2002). This theory argues that autism may be an extreme variant of normal male intelligence, with an overreliance on and extreme preference for predictable, systematic situations that are uncommon in the social world. Evidence for this theory includes the predominance of males to females diagnosed with ASDs, as well as sex differences among typically developing individuals favoring females to males in social areas such as mindreading and empathy. Yirmiya and colleagues (1992) found that high functioning children with autism (IQ > 75; 9-16 years) performed less well on empathy related tasks (i.e., discriminating affective states of others, perspective taking, and emotional response) than their typically developing peers; a finding that has been replicated comparing children with autism to children with other mental health disorders, including depression and ADHD (Dyck *et al.* 2001). By as early as 20 months of age, children with autism are less likely to respond to and show less concern for others in distress compared to typically developing and developmentally delayed children (Bacon *et al.* 1998; Charman *et al.* 1997; Sigman *et al.* 1992). In a study in our lab

examining the social and emotional development of infant siblings of children with ASDs, we found preliminary evidence of an association between the level of empathic responding of 24 and 30 month old toddlers and the severity of autism symptomatology at 30 months. These preliminary results support findings from previous studies indicating less empathic responding in toddlers who are later diagnosed with an ASD.

Despite significant evidence that individuals with ASDs have empathy impairments, relatively little is known about the exact nature of these impairments. Dziobek and colleagues (2008) investigated specific empathy deficits in adults with Asperger's disorder, which is considered a somewhat higher functioning type of ASD. These adults were found to have deficits in cognitive empathy, but not in emotional empathy. This is consistent with the "theory of mind" understanding of autism. This theory proposes a central role of deficits in the ability to read others' minds or understand the perspectives of others in contributing to the overall social and communication deficits present in ASDs (Baron-Cohen *et al.* 1985; White *et al.* 2009). More specifically, individuals with ASDs are more likely to fail tasks that require taking the perspective of others than typically developing and developmentally delayed individuals (Baron-Cohen *et al.* 1985; White *et al.* 2009).

There has recently been a great deal of interest in the neural underpinnings of empathy deficits in individuals with ASDs, implicating dysfunction in various regions important for empathy. Some findings have suggested mirror neuron system dysfunction in people with ASDs (Dapretto *et al.* 2005; Iacoboni & Dapretto 2006; Oberman & Ramachandran 2007). There is also evidence that individuals with ASDs show amygdala dysfunction, which, as discussed, appears to be involved with the emotional experience of empathy (Ashwin *et al.* 2007; Baron-Cohen 2004; Blair 2008). Ultimately, however, current research suggests a predominantly

cognitive basis for empathy dysfunction in individuals with ASDs, which may eventually suggest pathways for improving the ability to empathize in individuals with ASDs.

Psychopathy

Empathy deficits may be even more central to psychopathy than to ASDs. In contrast to the previous discussion of empathy deficits in autism, antisocial behavior and psychopathy may be characterized by deficits in emotional empathy rather than cognitive empathy (Blair 2005; Blair 2007). Multiple studies have found no theory of mind impairments in individuals with psychopathy (Blair *et al.* 1996; Dolan & Fullam 2004; Richell *et al.* 2003). In contrast, individuals with psychopathy show less physiological responsiveness to distress cues (Blair 1999; Blair *et al.* 1997; House & Milligan 1976) and deficits in their ability to recognize facial affect, particularly fear (Blair *et al.* 2001; Blair *et al.* 2004; Hastings *et al.* 2007). There has been recent supportive evidence from neuroscience studies, which shows dysfunction in empathy related brain areas, particularly areas of the limbic and paralimbic system, among psychopathic individuals (Kiehl 2006; Shirtcliff *et al.* 2009). That these individuals evidence dysfunction in limbic and paralimbic structures associated with experiencing emotions supports the primacy of deficits in emotion reactivity and processing.

If psychopaths have intact cognitive empathy, but dysfunctional emotional empathy, it suggests that the ability to feel another's pain is the central component to motivating prosocial behavior and minimizing antisocial behavior. It also suggests that the ability to cognitively understand another's perspective can be socially dangerous in the absence of an emotional empathic connection with the other. From a broader perspective, we have presented evidence that cognitive empathy is more impaired in individuals with autism while emotional empathy is more impaired in individuals with psychopathy. This suggests that the cognitive and emotional

components of empathy can develop unequally, and that both are necessary in promoting healthy social functioning.

Conclusions

Empathy is essential for motivating prosocial behavior toward others, including complying with social rules and engaging in altruistic behavior. Empathy also facilitates the development of social competence and enhances the quality of meaningful relationships. Empathy can be both an emotional and a cognitive experience. The ability to empathize begins at an early age, with infants as young as 18 hours showing some responsiveness to other infants' distress. During the second year of life, toddlers responses to others' distress typically transform from an overwhelming personal distress reaction to a more other oriented empathic reaction. At the same time, toddlers become capable of rather sophisticated helping behaviors. As children reach the preschool years, significant developments occur in cognitive empathy, or theory of mind abilities. There is evidence to suggest that these early dispositions toward empathy and prosocial behavior may be consistent and stable over time.

The ability to empathize develops with contributions from various biologically and environmentally based factors. These factors include genetics, facial mimicry and imitation, subserving areas of the brain such as the mirror neuron system and the limbic system, child temperament, parenting factors such as warmth, parent-child synchrony, and other qualities of the parent-child relationship. If one or more of these factors function atypically, they may contribute to empathy deficits, such as those present in autism spectrum disorders or psychopathy. The empathy deficits present in autism spectrum disorders may be more indicative of impairments in the ability to take the perspective of others, while the empathy deficits in psychopathy may be more indicative of impairments in responsiveness to others' emotions.

These “disorders of empathy” further highlight the importance of the ability to empathize by illustrating some of the consequences to disrupted empathy development.

Acknowledgments

The authors' effort was supported by NIH (R01HD047417) and NICHD (T32HD007473). We would like to thank Heather Henderson, Naomi Ekas, and Seniz Celimli for their valuable feedback during the writing of this chapter.

References

- Ainsworth, M. S., M. C. Blehar, E. Waters, and S. Wall. 1978. *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, N.J.: Lawrence Erlbaum.
- Aksan, N., and G. Kochanska. 2005. "Conscience in childhood: Old questions, new answers." *Developmental Psychology* 41: 506-516.
- American Psychiatric Association. 2000. *Diagnostic and statistical manual of mental disorders (4th ed., text revision)*. Washington, DC: Author.
- Ashwin, C., S. Baron-Cohen, S. Wheelwright, M. O'Riordan, and E. T. Bullmore. 2007. "Differential activation of the amygdala and the 'social brain' during fearful face-processing in Asperger Syndrome." *Neuropsychologia* 45: 2-14.
- Atkinson, A. P. 2007. "Face processing and empathy." In T. F. D. Farrow, and P. W. R. Woodruff (eds.). *Empathy in Mental Illness*, New York: Cambridge University Press, pp. 360-386.
- Bacon, A. L., D. Fein, R. Morris, L. Waterhouse, and D. Allen. 1998. "The responses of autistic children to the distress of others." *Journal of Autism and Developmental Disorders* 28: 129-142.
- Baron-Cohen, S. 2002. "The extreme male brain theory of autism." *Trends in Cognitive Sciences* 6: 248-254.
- Baron-Cohen, S. 2004. "The cognitive neuroscience of autism." *Journal of Neurology, Neurosurgery, and Psychiatry* 75: 945-948.
- Baron-Cohen, S., A. M. Alan, and U. Frith. 1985. "Does the autistic child have a 'theory of mind'?" *Cognition* 21: 37-46.

- Batson, C. D., J. L. Dyck, J. R. Brandt, J. G. Batson, A. L. Powell, M. R. McMaster, and C. Griffitt. 1988. "Five studies testing two new egoistic alternatives to the empathy-altruism hypothesis." *Journal of Personality and Social Psychology* 55: 52-77.
- Blair, R. J. R. 1999. "Responsiveness to distress cues in the child with psychopathic tendencies." *Personality and Individual Differences* 27: 135-145.
- Blair, R. J. R. 2005. "Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations." *Consciousness and Cognition* 14: 698-718.
- Blair, R. J. R. 2007. "The amygdala and ventromedial prefrontal cortex in morality and psychopathy." *Trends in Cognitive Sciences* 11: 387-392.
- Blair, R. J. R. 2007. "Empathic dysfunction in psychopathic individuals." In T. F. D. Farrow, and P. W. R. Woodruff (eds.). *Empathy in Mental Illness*, New York: Cambridge University Press, pp. 3-16.
- Blair, J., C. Sellars, I. Strickland, F. Clark, A. Williams, M. Smith, and L. Jones. 1996. "Theory of mind in the psychopath." *Journal of Forensic Psychiatry* 7: 15-25.
- Blair, R. J. R., D. G. V. Mitchell, K. S. Peschardt, E. Colledge, R. A. Leonard, J.H. Shine, L. K. Murray, and D. I. Perrett. 2004. "Reduced sensitivity to others' fearful expressions in psychopathic individuals." *Personality and Individual Differences* 37: 1111-1122.
- Blair, R. J. R., E. Colledge, L. Murray, and D. G. V. Mitchell. 2001. "A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies." *Journal of Abnormal Child Psychology* 29: 491-8.
- Blair, R. J. R., L. Jones, F. Clark, and M. Smith. 1997. "The psychopathic individual: A lack of responsiveness to distress cues?" *Psychophysiology* 34: 192-198.

- Carr, L., M. Iacoboni, M. Dubeau, J. C. Mazziotta, and G. L. Lenzi. 2003. "Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas." In J. T. Cacioppo, and G. G. Berntson (eds.). *Social neuroscience: Key readings*, New York: Psychology Press, pp. 143-152.
- Charman, T., J. Swettenham, S. Baron-Cohen, A. Cox, G. Baird, and A. Drew. 1997. "Infants with autism: An investigation of empathy, pretend play, joint attention, and imitation." *Developmental Psychology* 33: 781-789.
- Cornell, A. H., and P. J. Frick. 2007. "The moderating effects of parenting styles in the association between behavioral inhibition and parent-reported guilt and empathy in preschool children." *Journal of Clinical Child and Adolescent Psychology* 36: 305–318.
- Cramer, D. 2003. "Facilitativeness, conflict, demand for approval, self-esteem, and satisfaction with romantic relationships." *Journal of Psychology: Interdisciplinary and Applied* 137: 85-98.
- Dapretto, M., M. S. Davies, J. H. Pfeifer, A. A. Scott, M. Sigman, S. Y. Bookheimer, and M. Iacoboni. 2005. "Understanding emotions in others: Mirror neuron dysfunction in children with autism spectrum disorders." *Nature Neuroscience* 9: 28-30.
- Davis, M. H, and A. H. Oathout, 1987. "Maintenance of satisfaction in romantic relationships: Empathy and relational competence." *Journal of Personality and Social Psychology* 53: 397-410.
- de Waal, F. B. M. 2008. "Putting the altruism back into altruism: The evolution of empathy." *Annual Review of Psychology* 59: 279-300.
- de Wied, M., S. J. T. Branje, and W H. J. Meeus. 2007. "Empathy and conflict resolution in friendship relations among adolescents." *Aggressive Behavior* 33: 48-55.

- Decety, J. and P. L. Jackson. 2006. "A social-neuroscience perspective on empathy." *Current Directions in Psychological Science* 15: 54-58.
- Dovidio, J. F., J. L. Allen, and D. A. Schroeder. 1990. "Specificity of empathy-induced helping: Evidence for altruistic motivation." *Journal of Personality and Social Psychology* 59: 249-260.
- Dolan, M., and R. Fullam. 2004. "Theory of mind and mentalizing ability in antisocial personality disorders with and without psychopathy." *Psychological Medicine* 34: 1093-1102.
- Dyck, M. J., K. Ferguson, and I. M. Shochet. 2001. "Do autism spectrum disorders differ from each other and from non-spectrum disorders on emotion recognition tests?" *European Child and Adolescent Psychiatry* 10: 105-116.
- Dziobek, I., K. Rogers, Fleck, S., M. Bahnemann, H. R. Heekeren, O. T. Wolf, and A. Convit. 2008. "Dissociation of cognitive and emotional empathy in adults with Asperger Syndrome using the Multifaceted Empathy Test (MET)." *Journal of Autism and Developmental Disorders* 38: 464-473.
- Eisenberg, N., I. K. Guthrie, B. C. Murphy, S. A. Shepard, A. Cumberland, and G. Carlo. 1999. "Consistency and development of prosocial dispositions: A longitudinal study." *Child Development* 70: 1360-1372.
- Eisenberg, N., and P. A. Miller (1987). "The relation of empathy to prosocial and related behaviors." *Psychological Bulletin* 101:91-119.
- Feldman, R. 2007. "Mother-infant synchrony and the development of moral orientation in childhood and adolescence: Direct and indirect mechanisms of developmental continuity." *American Journal of Orthopsychiatry* 77: 582-597.

- Ferrari, P. F., E. Visalberghi, A. Paukner, L. Fogassi, A. Ruggiero, and S. J. Suomi. 2006. "Neonatal imitation in Rhesus Macaques." *PLoS Biology* 4: 1501-1508.
- Field, T. M., R. Woodson, R. Greenberg, and D. Cohen (1982). "Discrimination and imitation of facial expressions by neonates." *Science* 218: 179-181.
- Forman, D. R., N. Aksan, and G. Kochanska. 2004. "Toddlers' responsive imitation predicts preschool-age conscience." *Psychological Science* 15: 699-704.
- Freud, S. 1958. *Civilization and its discontents*. New York: Doubleday Anchor Books.
- Gallese, V., M. Rochat, G. Cossu, and C. Sinigaglia. 2009. "Motor cognition and its role in the phylogeny and ontogeny of action understanding." *Developmental Psychology* 45 103-113.
- Garner, P. W. 2003. "Child and family correlates of toddlers' emotional and behavioral responses to a mishap." *Infant Mental Health Journal* 24: 580-596.
- Hastings, M. E., J. P. Tangney, and J. Stuewig. 2007. "Psychopathy and identification of facial expressions of emotion." *Personality and Individual Differences* 44: 1474-1483.
- Hess, U., and P. Bourgeois. 2009. "You smile-I smile: Emotion expression in social interaction." *Biological Psychology*.
- Hoffman, M. L. 1975. "Developmental synthesis of affect and cognition and its implications for altruistic motivation." *Developmental Psychology* 11: 607-622.
- House, T. H., and W. L. Milligan. 1976. "Autonomic responses to modeled distress in prison psychopaths." *Journal of Personality and Social Psychology* 34: 556-560.
- Kestenbaum, R., E. A. Farber, and L. A. Sroufe. 1989. "Individual differences in empathy among preschoolers: Relation to attachment history." *New Directions for Child Development* 44: 51-64.

- Kiehl, K. A. 2006. "A cognitive neuroscience perspective on psychopathy: Evidence for paralimbic system dysfunction." *Psychiatry Research* 142: 107-128.
- Knafo, A., C. Zahn-Waxler, C. Van Hulle, J. L. Robinson, and S. H. Rhee. 2008. "The developmental origins of a disposition toward empathy: Genetic and environmental contributions." *Emotion* 8: 737-752.
- Kochanska, G. 2002. "Mutually responsive orientation between mothers and their young children: A context for the early development of conscience." *Current Directions in Psychological Science* 11: 191-195.
- Kochanska, G., D. R. Forman, N. Aksan, and S. B. Dunbar. 2005. "Pathways to conscience: Early mother-child mutually responsive orientation and children's moral emotion, conduct, and cognition." *Journal of Child Psychology and Psychiatry* 46: 19-34.
- Kochanska, G., D. R. Forman, and K. C. Coy. 1999. "Implications of the mother-child relationship in infancy socialization in the second year of life." *Infant Behavior and Development* 22: 249-265.
- Iacoboni, M. 2008. *Mirroring people: The new science of how we connect with others*. New York: Farrar, Straus and Giroux.
- Iacoboni, M., and M. Dapretto. 2006. "The mirror neuron system and the consequences of its dysfunction." *Nature Reviews Neuroscience* 7: 942-951.
- Joireman, J. A., T. L. Needham, and A. Cummings. 2002. "Relationships between dimensions of attachment and empathy." *North American Journal of Psychology* 4: 63-80.
- Liu, D., H. M. Wellman, T. Tardif, and M. A. Sabbagh. 2008. "Theory of mind development in Chinese children: A meta-analysis of false-belief understanding across cultures and languages." *Developmental Psychology* 44: 523-531.

- Martin, G. B., and R. D. Clark. 1982. "Distress crying in neonates: Species and peer specificity." *Developmental Psychology* 18: 3-9.
- Meltzoff, A. N., and M. K. Moore. 1983. "Newborn infants imitate adult facial gestures." *Child Development* 54: 702-709.
- Mikulincer, M., O. Gillath, V. Halevy, N. Avihou, S. Avidan, and N. Eshkoli. 2001. "Attachment theory and reactions to others' needs: Evidence that activation of the sense of attachment security promotes empathic responses." *Journal of Personality and Social Psychology* 81: 1205-1224.
- Oberman, L. M., and V. S. Ramachandran. 2007. "The simulating social mind: The role of the mirror neuron system and simulation in the social and communicative deficits of autism spectrum disorders." *Psychological Bulletin* 133: 310-327.
- Oberman, L. M., P. Winkielman, V. S. Ramachandran. 2007. "Face to face: Blocking facial mimicry can selectively impair recognition of emotional expressions." *Social Neuroscience* 2: 167-178.
- Piaget, J. 1965. *The moral judgment of the child*. New York: Harcourt, Brace.
- Preston, S. D., and F B. M. de Waal. 2002. "Empathy: Its ultimate and proximate bases." *Behavioral and Brain Sciences* 25: 1-72.
- Richell, R. A., D. G. V. Mitchell, C. Newman, A. Leonard, S. Baron-Cohen, and R. J. R. Blair. 2003. "Theory of mind and psychopathy: Can psychopathic individuals read the 'language of the eyes'?" *Neuropsychologia* 41: 523-526.
- Robinson, J. L., C. Zahn-Waxler, and R. N. Emde. 1994. "Patterns of development in early empathic behavior: Environmental and child constitutional influences." *Social Development* 3: 124-145.

- Rothbart, M. K., S. A. Ahadi, and K. L. Hershey. 1994. "Temperament and social behavior in childhood." *Merrill-Palmer Quarterly* 40: 21-39.
- Sagi, A., and M. L. Hoffman. 1976. "Empathic distress in the newborn." *Developmental Psychology* 12: 175-176.
- Saliquist, J., N. Eisenberg, T. L. Spinrad, N. D. Eggum, and B. M. Gaertner. 2009. "Assessment of preschoolers' positive empathy: Concurrent and longitudinal relations with positive emotion, social competence, and sympathy." *The Journal of Positive Psychology* 4: 223-233.
- Sato, W., and S. Yoshikawa. 2007. "Spontaneous facial mimicry in response to dynamic facial expressions." *Cognition* 104: 1-18.
- Sigman, M. D., C. Kasari, J. Kwon, and N. Yirmiya. 1992. "Responses to the negative emotions of others by autistic, mentally retarded, and normal children." *Child Development* 63: 796-807.
- Simner, M. L. 1971. "Newborn's response to the cry of another infant." *Developmental Psychology* 5: 136-150.
- Shirtcliff, E. A., M. J. Vitacco, A. R. Graf, A. J. Gostisha, J. L. Merz, and C. Zahn-Waxler. 2009. "Neurobiology of empathy and callousness: Implications for the development of antisocial behavior." *Behavioral Sciences and the Law* 27: 137-171.
- Sonnby-Borgstrom, M., P. Jonsson, and O. Svensson. 2003. "Emotional empathy as related to mimicry reactions at different levels of information processing." *Journal of Nonverbal Behavior* 27: 3-23.
- Stel, M., and A. van Knippenberg. 2008. "The role of facial mimicry in the recognition of affect." *Psychological Science* 19: 984-985.

- Stocks, E. L., D. A. Lishner, and S. K. Decker. 2009. "Altruism or psychological escape: Why does empathy promote prosocial behavior?" *European Journal of Social Psychology* 39: 649-665.
- Strayer, J., and W. Roberts. 1997. "Children's personal distance and their empathy: Indices of interpersonal closeness." *International Journal of Behavioral Development* 20: 385-403.
- Thompson, R. A. 1987. "Empathy and emotional understanding: The early development of empathy." In N. Eisenberg, and J. Strayer (eds.). *Empathy and its Development*, New York: Cambridge University Press, pp. 119-145.
- van der Mark, I. L., M. H. van IJzendoorn, and M. J. Bakermans-Kranenburg. 2002. "Development of empathy in girls during the second year of life: Associations with parenting, attachment, and temperament." *Social Development* 11: 451-468.
- Wellman, H. M., D. Cross, and J. Watson. 2001. "Meta-analysis of theory-of-mind development: The truth about false belief." *Child Development* 72: 655-684.
- White, S., E. Hill, F. Happe, and U. Frith. 2009. "Revisiting the strange stories: Revealing mentalizing impairments in autism." *Child Development* 80: 1097-1117.
- Yirmiya, N., M. D. Sigman, C. Kasari, and P. Mundy. 1992. "Empathy and cognition in high-functioning children with autism." *Child Development* 63: 150-160.
- Young, S. K., N. A. Fox, and C. Zahn-Waxler. 1999. "The relations between temperament and empathy in 2-year-olds." *Developmental Psychology* 35: 1189-1197.
- Zahn-Waxler, C., and M. Radke-Yarrow. 1990. "The origins of empathic concern." *Motivation and Emotion* 14: 107-130.
- Zahn-Waxler, C., M. Radke-Yarrow, and R. A. King. 1979. "Child rearing and children's prosocial initiations toward victims of distress." *Child Development* 50: 319-330.

Zahn-Waxler, C., M. Radke-Yarrow, E. Wagner, and M. Chapman. 1992a. "Development of concern for others." *Developmental Psychology* 28: 126-136.

Zahn-Waxler, C., J. L. Robinson, and R. N. Emde. 1992b. "The development of empathy in twins." *Developmental Psychology* 28: 1038-1047.

Zhou, Q., N. Eisenberg, S. H. Losoya, R. A. Fabes, M. Reiser, I. K. Guthrie, B. C. Murphy, A. J. Cumberland, and S. A. Shepard. 2002. "The relations of parental warmth and positive expressiveness to children's empathy-related responding and social functioning: A longitudinal study." *Child Development* 73: 893-915.

Figure 1 – Contributors to and outcomes of empathy development

