
THE ROLE OF SOCIAL UNDERSTANDING AND EMPATHIC DISPOSITION IN YOUNG CHILDREN'S RESPONSIVENESS TO DISTRESS IN PARENTS AND PEERS

Sara R. NICHOLS^{*}, Margarita SVETLOVA, Celia A. BROWNELL

Department of Psychology, University of Pittsburgh, Pittsburgh, USA

ABSTRACT

The second year of life marks the beginning of empathic responsiveness to others' distress, a hallmark of human interaction. We examined the role of social understanding (self-other understanding and emotion understanding) and empathic disposition in individual differences in 12- to 24-month olds' responses to mothers' and an unfamiliar infant peer's distress (N = 71). Results reveal associations between empathic responsiveness to distressed mother and crying infant peer, suggesting that individual differences in prosocial motivation may exist right from the outset, when the ability to generate an empathic, prosocial response first emerges. We further found that above and beyond such dispositional characteristics (and age), children with more advanced social understanding were more empathically responsive to a peer's distress. However, responses to mothers' distress were explained by children's empathic disposition only, and not by their social understanding. Thus, as early as the second year of life some children are dispositionally more inclined to empathy regardless of who is in distress, whether mother or peer. At the same time, emotion understanding and self-other understanding appear to be especially important for explaining individual differences in young children's empathic responsiveness to a peer's distress.

KEYWORDS: *empathy, prosocial behavior, emotion understanding, toddlers, peers.*

^{*} Corresponding author:
E-mail: srn1@pitt.edu

The role of social understanding and empathic disposition in young children's responsiveness to distress in parents and peers

Caring about others enough to intervene to reduce their pain or sorrow and to increase their well-being, i.e., to help, share with, and minister to others, is one of the bedrocks of human morality and civilization. Our emotions connect us to one another, but it is our caring about others' emotions and needs that promotes interpersonal bonds. When and how does compassionate caring arise, and what influences children to become more, or less, empathic and prosocial? Individual differences in empathic responsiveness toward others can be observed even in its earliest manifestations (Gill & Calkins, 2003; Spinrad & Stifter, 2006; van der Mark, van IJzendoorn, & Bakermans-Kranenburg, 2002; Young, Fox, & Zahn-Waxler, 1999; Zahn-Waxler, Robinson, & Emde, 1992). Beginning in the middle of the second year, some toddlers become distressed when they encounter someone else who is upset, some appear genuinely concerned about the other person and even sometimes try to help or comfort them, and some are unaffected. When a sibling or peer is distressed some youngsters are additionally amused, and may go so far as to further aggravate the situation, exacerbating the other child's distress (Demetriou & Hay, 2004; Dunn & Munn, 1986). In the current study we examined sources of individual differences in early prosocial orientation during this formative second year of life.

Because the capacity for empathy is both a developmental universal in humans and a dimensional trait that varies among adults, there are two ways to interpret such early-appearing individual differences. One possibility is that at any given age some children are ahead of others normatively. Toddlers who are more likely to exhibit concern for others' well-being may be more developmentally advanced than others their age, essentially functioning like an older child, whereas those who become distressed themselves or who ignore the plight of others may be less mature. In this case, the presumed correlates of developing empathy that are also developmental universals, such as emotion and internal state understanding, autonomous self-regulation, representational change, and the like, would be expected to be more mature in the former children and less so in the latter. We call this possibility the *developmental hypothesis*.

Another possibility is that individuals differ from one another in a more global empathic disposition, with some individuals more likely than others to respond empathically to another person in distress, regardless of age. Those children who exhibit more frequent or more intense empathic responses at any age, including toddlers whose capacity for empathy is still primitive, may differ on this disposition. Such differences could be a result of any number of factors, such as greater arousal in response to others' emotions, better regulation of one's own arousal, greater other-orientation or identification with others, or motivational

factors. If this were the case, then one or more of such factors would be expected to be associated with differences in empathy, regardless of the child's age. We call this second alternative the *dispositional hypothesis*.

Consistent with the *developmental hypothesis*, theoretical explanations of empathy and its development often emphasize cognitive and social-cognitive contributors (Bischof-Köhler, 1991; Eisenberg, 1997; Hoffman, 1975; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). However, one prominent group of investigators recently concluded that "children's cognitive and language skills are an understudied aspect of empathy development despite the intuitive links between these skills and appropriate interpretation and behavior during an empathy-eliciting situation" (Moreno, Klute, & Robinson, 2008, p. 617). Indeed, there is relatively little research devoted to exploring such relations. Early studies were concerned with reflective self-awareness as a prerequisite for empathic concern (Hoffman, 1975), and found that one- and two-year old children were more likely to respond prosocially to an adult's distress if they were also capable of self-recognition (Bischof-Köhler, 1991; Johnson, 1982; Zahn-Waxler, Radke-Yarrow, et al., 1992). More recently, researchers have found that toddlers with more advanced internal state language or emotion understanding are more prosocial as rated by mothers, although not as observed in their prosocial behavior (Ensor & Hughes, 2005; Garner, 2003; Lamb, 1991).

Consistent with the *dispositional hypothesis*, some researchers have hypothesized that temperament characteristics reflecting emotional arousal and emotion regulation, especially of negative emotions, should be systematically linked with individual differences in empathy (e.g., Eisenberg & Fabes, 1992; Gill & Calkins, 2003; Spinrad & Stifter, 2006; Zahn-Waxler, Schiro, Robinson, Emde, & Schmitz, 2001). Other investigators have suggested that parenting influences likely to produce other-oriented caring might explain individual differences in empathic responsiveness (e.g., Robinson, Zahn-Waxler, & Emde, 1994; Thompson, 2006; van der Mark, et al., 2002; Zahn-Waxler & Radke-Yarrow, 1990). Correspondingly, research has demonstrated that some aspects of temperament are associated with empathic responding in both toddlers and older children (Eisenberg, Pasternack, Cameron, & Tryon, 1984; Spinrad & Stifter, 2006; van der Mark, et al., 2002; Young, et al., 1999) and that parenting practices and relationship characteristics are linked to empathic responsiveness at multiple ages (Kochanska, Forman, & Coy, 1999; van der Mark, et al., 2002; Zhou, et al., 2002).

The *dispositional* and *developmental* hypotheses are not mutually exclusive, however. Children can differ in their dispositional tendency to display empathy across ages and at the same time differ in developmentally driven accomplishments that allow them to comprehend and respond appropriately to a distressed other. Moreover, dispositional and developmental factors could influence each other, and thus be correlated. In the current study we focus on the

developmental hypothesis, but take the dispositional hypothesis into account. Specifically, we ask whether differences in developing social understanding can explain individual differences in early empathic responsiveness above and beyond any differences due to a more general empathic disposition. Thus, we explore the role of social understanding as a mechanism in the early development of empathic responding, acknowledging that empathic disposition may also play a role.

Social understanding and early prosocial behavior

It stands to reason that in order to respond prosocially to others, toddlers must possess the social understanding necessary to comprehend others' needs, and that they must additionally recognize and distinguish their own emotions and needs from those of others. A number of scholars have argued on these grounds that a fundamental prerequisite for the development of empathic responsiveness is objective self-awareness, in which the child distinguishes his or her own psychological point of view on the world from that of others, understanding that others have unique perspectives on the world, including on the child herself (Hoffman, 2000; 2007; Kagan, 1981; Moore, 2007). To respond empathically to someone else's distress, the child must know that another's distress is unique to that person, even if the child herself is also distressed. To intervene, the child must also know that the other person may need something different from what the child herself needs when she is upset. This sort of self-other understanding is first evident in the second year with the advent of mirror self recognition (Brooks-Gunn & Lewis, 1984; Nielsen, Suddendorf, & Slaughter, 2006), explicit references to oneself by name, use of personal pronouns, displays of pride in self-accomplishment, and self-conscious emotions in response to the attention and requests of others (Bretherton & Beeghly, 1982; Bullock & Lutkenhaus, 1990; Kagan, 1981; Kelley, Brownell, & Campbell, 2000; Lewis & Ramsay, 2004; Ricard, Girouard, & Decarie, 1999).

Several studies have examined associations between self-other understanding and empathic responsiveness in the second year. All employed variations of the classic mirror self-recognition rouge task (Amsterdam, 1972) to index self understanding, but differed in the empathy-related outcomes that were assessed. These included empathic responses to a parent or an examiner whose toy had broken (Bischof-Köhler, 1991), or whose toy had been taken (Johnson, 1982), or who expressed pain upon hurting herself, as well as maternal report of children's prosocial and empathic responses (Zahn-Waxler, Radke-Yarrow, et al., 1992). In some cases, significant relations were found between mirror behavior and empathy toward mothers but not toward female examiners (Johnson, 1982). In other cases the relations were significant earlier but not later in the second year; or for some of the measures of prosocial responsiveness but not others (Zahn-Waxler, Radke-

Yarrow, et al., 1992). In still others, mirror behavior was related to prosocial behavior but relations with empathic emotional responses were weak or unclear (Bischof-Köhler, 1991; Zahn-Waxler, Radke-Yarrow, et al., 1992). In sum, although the evidence on the whole points to associations between self awareness and empathic responding to adults in the second year, there is considerable variability in the strength and consistency of the findings.

In part because the extant research has been restricted to self-related behavior in front of the mirror as the primary measure of emerging self-other understanding, we used a more broad-based measure in the current study in an effort to provide a more robust estimate of the psychological differentiation of self and others (Moore, 2007). It included mirror self-recognition but also tapped other indices of early self-awareness such as expressions of pride, possession, and references to self (Stipek, Galinski, & Kopp, 1990). We also included a distressed infant peer as a potential recipient of empathic responses. A peer may be less likely than an adult to elicit shy or inhibited behavior in toddlers, thereby increasing the possibility of observing empathic responses to an unfamiliar other. At the same time, children must understand something of the peer's plight to exhibit empathic or prosocial responses. Notably, they must do so without the support of adult scaffolding and direction, thus perhaps depending to a greater degree on social understanding (Brownell, Ramani, & Zerwas, 2006; Nichols, Svetlova, & Brownell, 2009, in press; Svetlova, Nichols, & Brownell, 2009, in press).

In addition to self-other understanding generally, understanding of others' emotions more specifically may be a core skill that contributes to the development of empathic responsiveness. To interpret and respond appropriately to others' distress, a child must know what the other person is feeling, that it is some form of distress, and must in turn distinguish others' experience from his or her own emotions. To enact a skilled prosocial intervention the child must both identify with the other's emotional experience (a hug from mommy cheers me up when I am sad, maybe it will help her too) and at the same time understand that that experience belongs to the other and is not the child's own. There is a rich body of research indicating that understanding others' emotions as referring to objects in the world develops over the course of the first and second years (Campos & Stenberg, 1981; Feinman, 1982; Nichols, et al., 2009, in press; Phillips, Wellman, & Spelke, 2002). Additionally, by the end of the second year of life children are using emotion and internal state words and have become good readers of adults' emotion expressions, with a burgeoning awareness of others' mental states (Bartsch & Wellman, 1995; Bretherton & Beeghly, 1982; Bretherton, McNew, & Beeghly-Smith, 1981; Phillips, et al., 2002; Repacholi & Gopnik, 1997; Smiley & Huttenlocher, 1995).

Two studies have explored relations between young children's nascent understanding of internal states and their empathic behavior. In an early study Lamb (1991) found that toddlers' internal state language and maternal reports of the

children's empathic behavior coincided with each other. As intriguing as this finding is, there were just four subjects with complete data and the empathy measure was based on one question posed to mothers. In a more extensive study of this question, Garner (2003) found relations between internal state words and maternal reports of children's empathy, but no relations between internal state words and observed empathy with an adult. Moreover, the empathy task involved having the child accidentally break the examiner's toy, so it may have indexed guilt rather than empathy. In a study that examined associations between emotion understanding and prosocial responses more broadly, Ensor and Hughes (2005) found that laboratory measures of emotion understanding were related to maternal ratings of their two-year-olds' prosocial behavior, even when controlling for age and language ability. However, there were no associations between emotion understanding and children's observed positive social behavior with either mothers or peers.

Thus, as with the work on the relationship between self-awareness and empathic responsiveness there is evidence for relations between emotion understanding and prosocial behavior, but there is also variability in the consistency and robustness of the findings, which suggests the need for further inquiry. In the current study, therefore, we assessed not only general self-other understanding, but also emotion understanding more specifically. We used an index of emotion understanding similar to the one used by Lamb (1991) and Garner (2003), i.e., children's use of emotion-rich internal state words such as 'happy' and 'sad.' But we extended the measure of empathic responsiveness from the maternal reports used by these investigators to observed empathy-related reactions. Thus, we asked how both self-other understanding and emotion understanding were related to individual differences in young children's observed empathic responses to others' distress.

As noted previously, the child must be able to distinguish his or her own distress from the distress of another to enact a prosocial response. Infants have been found to react to other infants' distress with contagious distress of their own (Martin & Clark, 1982), which may well be a necessary first step on the road to empathic responsiveness (Hoffman, 1975; 2007). But such self-oriented responses must ultimately yield in development to other-oriented caring responses, and several scholars have argued that they do so in concert with the developing ability to take another's emotional perspective (Hoffman, 2000, 2007; Moore, 2007; Zahn-Waxler, Radke-Yarrow, et al., 1992). Experiencing a peer in distress may be especially likely to generate contagious distress in toddlers if only because another child's crying is so like their own. Thus, the social understanding demands may be uniquely challenging for mounting empathic, prosocial responses to a distressed peer. Indeed, in naturalistic studies prosocial responding to peers' distress is quite rare. For example, one study found that toddlers in a daycare setting responded

prosocially to their upset peers only about 3% of the time (Lamb & Zakhireh, 1997) while more than a third of the children became distressed themselves instead. In the more familiar home context prosocial behavior was slightly more frequent when toddlers played in dyads; between 12% and 37% of 12- to 30-month old children comforted, helped, or shared at least once when the peer was distressed. At the same time, however, up to 40% of children further provoked the peer and increased the distress (Demetriou & Hay, 2004). By exposing children to a crying peer under more controlled conditions in the current study, we aimed to identify more precisely individual differences in the developmental transition between self-oriented distress and other-oriented concern and their association with developing self-other understanding.

In sum, the current study builds on and extends past research concerning relations between self-other understanding and early empathy in several ways. By assessing responses to both mother and a peer, we can identify individual differences in children's disposition to respond empathically across different partners. This then permits us to address a novel question, that is, to what extent early developments in social understanding contribute to empathic responsiveness above and beyond individual differences in prosocial disposition. Furthermore, we include both self-other understanding, broadly operationalized, and emotion understanding specifically as potential correlates of early empathy, to permit a more detailed analysis of the role of social understanding in early prosocial responsiveness than previously undertaken. Finally, by including a distressed peer as a potential target of young children's empathic behavior, we can explore possibly unique social understanding correlates of prosocial responsiveness outside of the highly scaffolded parent-child context and under the more challenging demands of a potentially contagious distress response. We follow previous researchers by employing a laboratory-based procedure to assess empathy to both mother and peer so as to standardize the distress context. We hypothesized that across the second year of life social understanding would contribute to individual differences in prosocial responsiveness to both mother and peer above and beyond empathic disposition, but not to children's personal distress responses to another's distress. In other words, we expected that between 12 and 24 months of age social understanding would contribute uniquely to empathic responsiveness, as distinct from self-distress, when children witnessed either a parent or another infant in distress, regardless of how generally empathic the child might be.

METHOD

Participants

Participants were 71 children (37 girls) tested within three weeks of 12 months ($N = 30$; 16 girls), 18 months ($N = 20$; 11 girls), or 24 months of age ($N = 21$; 10 girls). More children were tested in the 12-month age group because existing research suggested that empathic behavior would be relatively uncommon at this age and we wanted to maximize the possibility of observing it. All families were from a medium-sized urban area and varied from working class to upper middle class by parent report; 74.6% were Caucasian, 7% African-American, 14.1% other (including Hispanic, Asian, Indian), 4.2% biracial. About half the children had some exposure to other children, 52% with playgroup or child-care experience and 48% with siblings.

General Procedure

The empathy tasks were administered as part of a longer battery of activities. They took place in a playroom equipped with a one-way mirror across one end, through which the session was video recorded. The session began with a 10 – 15 minute period of warm-up freeplay with a standard set of toys. When children were sufficiently acclimated to the laboratory environment, the female experimenter (E) took them with their parents to another room to participate in several brief tasks. When they returned to the original playroom an appealing xylophone toy was waiting for them. E instructed parents to perform a brief (30 seconds) simulated distress incident (described below) and then left the room. Following the simulated distress, a period of freeplay ensued with the parent and a standard set of toys. E then returned to the room with a cart on top of which was a realistic-looking baby doll swaddled in an infant seat and partially visible, but out of the child's reach. E turned on a hidden tape recorder that played distressed (crying) baby sounds and then left the room for 90 seconds. Parents were instructed to let children play on their own with the toys while they completed questionnaires in a nearby chair, but to respond as they normally would if their child spoke to them or tried to get their attention.

Parent simulated distress task

Following procedures developed by Zahn-Waxler, Radke-Yarrow, et al. (1992), parents sat on the floor of the playroom with their child facing the camera, and engaged the child in playing with the toy xylophone. When E (watching from the adjacent observation room) saw that the child was engaged with the parent, she knocked gently on the one-way mirror to signal the parent to pretend to hurt a finger on the xylophone. Parents had been instructed to draw their child's attention to the hurt finger and to show their distress by saying "ouch!" "it really hurts!" "I hurt my

finger!” “I have a booboo,” and the like, using appropriate vocal expression, and frowning, shaking the hand, sighing, or moaning appropriately while holding or rubbing their finger. E provided sample scripts when she gave instructions, and these were left with parents as a “cheat sheet.” After 30 seconds, E knocked on the window again from the observation room to signal to parents to stop. At that point, the parent stopped showing distress and said “It’s all better now, my finger doesn’t hurt anymore,” as had been instructed.

Peer distress task

The peer distress task was modeled after tasks used by Spinrad and Stifter (2006) and Gill and Calkins (2003). The infant peer was a realistic-looking baby doll (51 cm long) swaddled in a blanket and placed in a baby-bouncer chair with its hair and the side of its face partially visible. A small microcassette voice recorder was hidden in the blanket next to the doll’s head. A 90-second tape recording was made prior to the study by recording infant distress cries obtained from the internet. Exemplary infant sounds were chosen by the first author in consultation with the other authors. The cry period was 30 seconds long, looped three times on the tape recorder.

To prevent the children from discovering that the infant peer was not real, the infant seat was secured on a high rolling cart (96.5 cm high, 75 cm long, 48 cm deep), which placed it more than an arm’s length above them, and prevented them from seeing inside the swaddling or touching the doll. On the lower shelf of the cart within reach of the child were a baby bottle with water, a rattle, a receiving blanket, and a small stuffed animal. As she entered the room with the cart, the experimenter announced “This is my baby,” rolled the cart into the corner of the room and locked the wheels to prevent children from moving it. She then turned on the tape recorder, walked to the door and announced, “I’ll be back in a few minutes.” The infant began vocalizing as the experimenter closed the playroom door behind her. Children were left for 90 seconds with the crying peer. At the end of the administration E returned and announced, “My baby is tired, she needs a nap now” and allowed the children to say “bye-bye” to the infant, if they wished. The experimenter did not comment on the infant or its behavior. Parents were also instructed not to comment on the infant or its behavior, but to respond normally if their children pointed out the infant or tried to get their attention. E requested that parents focus on filling out questionnaires in order to appear occupied. All parents complied with these requests.

Questionnaires

During the session, parents completed several questionnaires about their child’s development. Not all parents finished the questionnaires by the end of the session, resulting in slightly different n’s for analysis. Self-other understanding was indexed

by the UCLA Self-understanding questionnaire developed for this age group (Stipek et al., 1990), with seventeen items rated on a 3-point scale (0 = definitely not; 1 = sometimes/just starting to; 2 = definitely). Items tap self-recognition (including mirror self-recognition), self-description, and self-evaluation (e.g., recognizes self in photos; uses own name; says “me”, “mine”; uses terms like “good” or “bad” about self); Cronbach’s alpha = .93 ($n = 63$). Language development was indexed using the toddler form of the MacArthur Communicative Development Inventory (CDI; Fenson, et al., 2000), a widely used instrument to assess language comprehension and production in 12- to 36-month-old children. It yields frequency measures for overall vocabulary, with parents indicating whether the child understands (1) or understands and says (2) 89 common early words (e.g., mommy, hat, duck, etc.); Cronbach’s alpha = .99 ($n = 63$). Emotion understanding was indexed using the Emotion Words Checklist (EWCL; see appendix), adapted from Bretherton and Beeghly (1982), Shatz, Wellman, and Silber (1983) and Brownell, Ramani, and Zerwas (2006), to assess children’s use of words referring to emotion, perception and desire. The parent indicated for each of 30 words how often the child had used the word in the past 6 months (0 = never; 1 = once or twice; 2 = 3–5 times; 3 = often); Cronbach’s alpha = .94 ($n = 65$). Means and standard deviations for the three questionnaire measures are shown in Table 2.

Parent credibility coding

To ensure that parents’ simulated distress was reasonably realistic, two independent coders rated parents’ distress for credibility on a 0 – 3 scale, with 3 representing a highly believable, well-acted distress episode and 0 indexing a poor, unconvincing acting attempt. The two coders’ scores were averaged to create a final credibility score ($M = 2.08$, $SD = .85$). There were no significant differences in parent credibility as a function of child age, and parent credibility scores were not significantly associated with either children’s empathic concern to mother ($r = .19$, $n.s.$) or children’s self-distress responses to mother ($r = .14$, $n.s.$). Therefore, data from all parents were included in final analyses (results were identical with parent credibility controlled).

Qualitative Coding

Video records were rated for children’s emotional responses to parent and peer distress by independent coders. Ratings of *Empathic Concern* and *Self-distress* were adapted from Hastings, Zahn-Waxler, Robinson, Usher, and Bridges (2000) and Young et al. (1999), using 4-point scales rated for the entire episode (0 = none; 1 = infrequent, low intensity, brief; 2 = occasional or moderate in intensity or duration; 3 = frequent, intense, or prolonged). Concern was reflected by facial, vocal, gestural, and verbal signs of concern or sympathy for the victim that went beyond simple attentiveness or curiosity. Self-distress reflected the degree to which

the child was visibly upset by the victim's distress. Interobserver reliability was established between two raters who independently coded video records from 15 children (21%), approximately equally distributed over age. Coding criteria, percent agreement, and inter-rater correlations are shown in Table 1.

Table 1
Behavior coded from empathy tasks

Behavior	Definition	% Agreement or Intra Class Correlation(ICC)		
<i>Behavioral Composites</i>		<i>Average % Agreement</i>		
Passive Attention	Duration of time children looked at the baby + Duration of time that they stopped playing with the available toys	95.22%		
Active Interest	Total number of times that children approached the baby + duration of time spent in close proximity to the baby	86.24%		
Positive Social Interest	Total number of times a child pointed + called attention + labeled the baby + an emotion expression + number of times they handed toys to the baby	88.58%		
<i>Qualitative Ratings</i>		<i>% Agreement</i>		
Empathic Concern	Facial, vocal, gestural, and verbal signs of concern or sympathy for the victim that went beyond simple attentiveness or curiosity; included a sad or plaintive voice, pointing repeatedly to the victim with facial expressions of concern such as furrowed brow or downturned mouth, or verbalizing "hurt," "sad," or "cry" along with vocal or facial concern	<i>Parent:</i>	100%	1.0
		<i>Peer:</i>	74%	0.82
Personal Distress	Degree to which the child was visibly upset by the victim's distress, including agitation, bodily tension or freezing, fear or wariness expressed vocally or facially, active avoidance, crying or whimpering, self-comforting, or contacting the mother for comfort	<i>Parent:</i>	93%	0.92
		<i>Peer:</i>	85%	0.80

Note: Behavioral coding was conducted for the peer distress task only; qualitative ratings were conducted for both parent distress and peer distress tasks.

Behavioral Coding

In addition to qualitative codes, children's responses in the peer distress task were also event-coded using the Noldus™ Observer 5.0 coding software. This was conducted only for the peer distress task because of the possibility that young toddlers might not demonstrate high levels of concern for a distressed peer, instead verbalizing or looking for information about the crying infant. Therefore, behavioral coding was conducted to supplement the ratings of facial or vocal concern. Specific task-related behaviors were identified based on previous research (Gill & Calkins, 2003; Sigman, Kasari, Kwon, & Yirmiya, 1992; Spinrad & Stifter, 2006) and behavior observed during qualitative coding of the video records (see Table 1). Interobserver reliability was established between two raters who independently coded video records from 19 children (27%), approximately equally distributed over age. Because individual behaviors were not mutually exclusive (e.g., talking about the peer and looking at the peer could be coded at the same time) percent agreement was calculated rather than Kappas (see Table 1).

Three composite variables were created based on previous empirical findings for toddlers' empathic responsiveness and *a priori* conceptual considerations. Duration scores were created as proportions of the total observation period as this varied slightly across children. All scores were z-transformed before being summed to create the composites. The first composite, Passive Attention, consisted of the amount of time children looked at the peer and the amount of time that they stopped playing with the available toys (Cronbach's alpha = .76). The second composite, Active Interest, consisted of the total number of times that children approached the peer and the amount of time they spent in close proximity to the peer (Cronbach's alpha = .65). The third composite, Positive Social Interest, consisted of the number of times children pointed to, verbally called attention to, or labeled the peer or its emotion, and the number of times they attempted to intervene by handing the blanket, bottle, rattle or stuffed animal to the peer (Cronbach's alpha = .64).

RESULTS

Table 2 shows sample means and standard deviations for measures of children's empathy-related responses to mother and peer, child language, and social understanding. Preliminary analyses found no gender differences on any measure, thus gender was not included in substantive analyses. Preliminary analyses for partner differences showed that children were generally more distressed in response to the peer's distress than to their mother's distress, paired sample $t(69) = 3.04$, $p = .003$. They also displayed higher levels of empathic concern toward the crying peer than they did toward their distressed mothers, paired sample $t(69) = 3.44$, $p = .001$. Similar differences were reported by Spinrad & Stifter (2006) whose

design informed the current study. Significant age differences existed for each measure, except for the ratings of personal distress in response to mother and peer. Because this study addresses individual differences in empathic responsiveness, age is controlled in the substantive analyses; age differences are reported in a separate paper (Nichols, Svetlova, & Brownell, submitted).

Table 2
Means and SD's for children's empathy-related responses and social understanding measures

	Mean	SD
Peer Distress		
Personal Distress	0.69	0.80
Empathic Concern	0.44	0.73
Passive Attention (z-score)	0.00	1.71
Active Interest (z-score)	0.00	1.58
Positive Social Interest (z-score)	0.00	2.76
Mother Distress		
Personal Distress	0.34	0.61
Empathic Concern	0.16	0.43
Questionnaires		
Language (CDI)	71.16	53.34
Self- Other understanding (UCLA)	18.09	10.99
Emotion Words (EWCL)	6.81	12.26

Two sets of substantive analyses were conducted. Based on the *dispositional hypothesis*, the first set tested whether empathic responsiveness was stable across mother and peer, as an indicator of individual differences in general empathic disposition. Based on the *developmental hypothesis*, the second set of analyses tested whether social understanding contributed uniquely to individual

differences in empathic responsiveness to either mother or peer after controlling for general empathic disposition.

Individual differences: Empathic disposition

We asked first whether children who were more concerned about their mothers' distress were also more concerned about a peer in distress. We similarly asked whether children who found the crying infant personally distressing also found their mothers' distress upsetting. Results for zero-order correlations among measures of empathic concern and personal distress for the peer and for the mother are shown in Table 3 (above the diagonal).

Table 3
Correlations between children's responses to mother's and peer's distress

	Peer: Personal Distress	Peer: Empathic Concern	Mother: Personal Distress	Mother: Empathic Concern
Peer: Personal Distress			.02	.24*
Peer: Empathic Concern			.08	.39**
Mother: Personal Distress	.03	.15		
Mother: Empathic Concern	.20 [†]	.26*		

Note: zero-order correlations are above the diagonal; partial correlations controlling for age are below the diagonal.

[†] = $p < .10$; * = $p < .05$; ** = $p < .01$

Because the significant associations could have been carried by age, we conducted the same analyses controlling for age, and display the partial correlations in Table 3 as well (below the diagonal). As evident, children's empathic concern toward their distressed mothers was related to their empathic concern toward a distressed peer, even with age controlled. However, children's personal distress in response to their mothers' expressions of pain and distress was not related to either distress or empathic concern for the peer, although children who found the crying peer more

distressing were more concerned about their mothers. Children's distress about the crying peer was also associated with their empathic concern for the peer ($r = .34$, $p = .004$); but their distress in response to mothers' distress did not relate to their empathic concern toward mothers ($r = .06$, *n.s.*).

The multiple correlations with self-distress in response to the peer led us to re-examine the association between children's empathic concern for the peer and for their own mothers, this time controlling for the amount of distress they experienced with the crying peer in addition to age. This correlation remained marginally significant, $r = .21$, $p = .09$. Thus, regardless of age and how distressing children found the crying peer, those who exhibited more empathy toward one partner also tended to do so toward the other. This suggests that even when empathy is first emerging, some children are more likely to exhibit other-oriented concern, and to express this disposition similarly across contexts and partners.

Individual differences: Social understanding

We next tested the hypothesis that early social understanding might be a contributor to these individual differences in emerging empathy. We expected that regardless of age, children with greater social understanding would exhibit greater empathy for someone in distress, whether a peer or their own mothers. Zero-order correlations, displayed in Table 4, showed that both of the measures of social understanding (UCLA self-other scale; Emotion Words), as well as total vocabulary were associated with empathic concern to mother and peer, but not with distress responses to either. Total vocabulary (CDI) was also associated with both of the social understanding scores, even with age controlled: Emotion words, partial $r(65) = .61$, $p < .001$, UCLA scale, partial $r(65) = .69$, $p < .001$. Therefore, in predictive models we controlled for total vocabulary in addition to age.

We conducted a series of hierarchical regression analyses predicting empathic concern and personal distress in response to peer and mother in distress, as well as predicting the behavioral responses to the distressed peer. To predict children's responses to the peer, we entered age and total vocabulary together as a block of covariates in the first step, followed by empathic concern for mother in the second step, followed by the two social understanding measures entered together as a block in the third step. The predictive model for responses to mothers was the same except that empathic concern for the peer was entered in the second step. This approach thus asks whether individual differences in early social understanding uniquely account for individual differences in responsiveness toward peer or mother, above and beyond age, vocabulary, and general empathic disposition. The final regression models are shown in Tables 5 and 6, including significance tests for each model, as well as R^2 and beta weights. Only significant models are interpreted below.

Table 4

Correlations between measures of social understanding and language and children's responses to mother's and peer's distress

	Self-Other Understanding (UCLA)	Emotion Words (EWCL)	Language (CDI)
Peer			
Personal Distress	.07	.10	.10
Empathic Concern	.44**	.55**	.50**
Passive Attention	.26*	.19	.34**
Active Interest	.26*	.22 [†]	.29*
Positive Social Interest	.44**	.47**	.53**
Mother			
Personal Distress	-.03	-.05	-.02
Empathic Concern	.35**	.24*	.38**

† = $p < .10$; * = $p < .05$; ** = $p < .01$

Table 5

Predictive analyses of children's responses to maternal distress (hierarchical regression)

Maternal Distress				
	Empathic Concern		Personal Distress	
<i>Predictors:</i>	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²
Covariates		.15**		.05
Age	-.02		-.44*	
Child Language (CDI)	.00		.01	
Peer Empathic Concern	.19*	.20*	.16	.06
Social Understanding		.23		.09
Self-other und (UCLA)	.01		.01	
Emotion Words (EWCL)	-.01		-.01	
F (5, 62)	3.65**		1.15	

Notes:

1. R^2 statistics refer to the cumulative variance associated with each step. Significance levels for R^2 are based on the F-ratio associated with the R^2 change at each step. Betas reported are unstandardized, after all variables are entered into the regression. The F statistic is for the full model on the final step with all variables entered.
2. * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Table 6
 Predictive analyses of children's responses to peer distress (hierarchical regression)

	Peer Distress											
	Empathic Concern		Personal Distress		Positive Social Expression		Active Interest		Passive Interest			
<i>Predictors:</i>	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²	<i>B</i>	<i>R</i> ²		
Covariates		.25***		.02		.32***		.10*		.15**		
Age	.29		.28		1.68*		.62		.85			
Child Language (CDI)	.00		-.002		.01		.00		.01			
Maternal Empathic Concern	.44*	.30*	.44†	.07	2.03**	.39**	.28	.11	.07	.15		
Social Understanding		.40**		.08		.46*		.11		.18		
Self-other und (UCLA)	-.02		-.02		-.15*		-.01		-.06			
Emotion Words (EWCL)	.03*		.01		.08*		.01		-.01			
F (5, 62)		8.25***		1.11		10.48***		1.52		2.76*		

Notes:

1. *R*² statistics refer to the cumulative variance associated with each step. Significance levels for *R*² are based on the *F*-ratio associated with the *R*² change at each step. Betas reported are unstandardized, after all variables are entered into the regression. The *F* statistic is for the full model on the final step with all variables entered.
2. † = *p* < 0.10; * = *p* < .05; ** = *p* < .01; *** = *p* < .001

Predicting empathy and distress toward mothers. The regression models predicting children's empathy and personal distress in response to mothers' distress are shown in Table 5. The model predicting empathic concern was significant, but the model predicting personal distress was not. The covariates (age, CDI) and empathic concern toward the peer added significant amounts of variance (15% and 5% respectively) to the model predicting empathic concern toward the mother, $F(2, 65) = 5.67, p = .005$, and $F(2, 64) = 3.90, p = .05$, respectively. However, only the beta for peer empathic concern was significantly different from zero, $t = 2.39, p = .02$. Thus, above and beyond age and language competence, children's empathic disposition predicted empathic concern toward their distressed mothers, but their social understanding did not.

Predicting empathy and distress with peers. The regression models predicting children's empathy and personal distress in response to a peer's distress are shown in Table 6. As with responses to maternal distress, the model predicting children's empathic concern was significant, but the model predicting their personal distress was not. Each step in the model predicting empathic concern toward the peer explained a significant amount of the total variance. The covariates explained 26% of the variance in empathic concern for the peer, $F(2, 65) = 11.27, p < .001$; concern for mothers contributed another 4%, $F(1, 64) = 3.90, p = .05$; and the social understanding measures together contributed another 10%, $F(2, 62) = 5.13, p = .009$. The individual beta weights were significant for empathic concern toward the mother, $t = 2.39, p = .02$, and for emotion words, $t = 3.15, p = .003$. Thus, both empathic disposition and social understanding predicted individual differences in children's empathic concern toward the peer in distress, even after controlling for age and general language competence.

When predicting children's behavioral responses to a peer in distress, the models for positive social interest and for passive interest were significant, but the model for active interest was not. For passive interest, the block of covariates (age, CDI) explained a significant amount of variance (5%), $F(2, 65) = 3.75, p < .03$, but none of the individual beta weights was significant when the other variables in the model were controlled. Thus, interest in the peer expressed in terms of approaching and remaining in proximity was not associated with any of the predictors when they were all in the model. For children's positive social interest toward the peer, each step in the model added significant variance. The covariates together explained 32% of the variance in positive social interest, $F(2, 65) = 14.95, p < .001$; empathic concern for mothers contributed another 7%, $F(1, 64) = 8.01, p = .006$; and the social understanding measures together contributed a further 7%, $F(2, 62) = 3.82, p = .03$. All of the individual beta weights were significant save general language competence, t 's = 2.36, $p = .02$; 3.12, $p = .003$; -2.27, $p = .03$; 2.10, $p = .04$, respectively.

Thus, age, empathic concern toward mothers, and social understanding were all unique predictors of children's tendency to call attention to the peer's distress or offer toys. It should be noted that the beta weights in this model suggest net suppression effects (Cohen & Cohen, 1975), particularly for the social understanding measures. Here, the negative beta weight for the UCLA self-understanding score can be interpreted to mean that for children with more advanced emotion word knowledge, self-understanding plays a lesser role in positive social interest toward the crying peer; conversely, for those children with lower emotion word scores, self-understanding plays a greater role.

DISCUSSION

In the current study we focused on the role of developing social understanding in early-appearing individual differences in empathic responsiveness. A necessary prerequisite to caring about the emotional well-being of others is being able to understand their feelings, needs, and desires. By including responses to both parent and peer in similar distress contexts, we were able to consider the roles of self-other understanding and emotion understanding above and beyond dispositional differences in empathic responsiveness. Furthermore, the peer context can provide a unique and possibly clearer picture of the role of social understanding in early empathic responsiveness insofar as children's attention to and comprehension of the other's emotion is not supported and scaffolded by an adult, and because there are unlikely to be well-established routines or games with peers that children might call on to produce a response to a peer.

We found that one- and two-year old children who were more empathically concerned about their mothers' distress were also more concerned about a crying infant peer. This supports the *dispositional hypothesis* and suggests that individual differences in prosocial motivation may exist right from the outset, when the ability to generate an empathic, prosocial response first emerges. In support of the *developmental hypothesis* we found that once such dispositional characteristics were controlled, children with more advanced social understanding were more empathically concerned about a peer's distress. However, this did not hold for children's empathic responding to their own mothers. Responses to mothers' distress were explained by children's empathic disposition only, and not by their social understanding. Thus, as early as the second year of life some children are dispositionally more inclined to be empathic regardless of who is in distress, whether mother or peer. At the same time, social understanding appears to be especially important for explaining individual differences in young children's empathic responsiveness to a peer's distress.

Empathic disposition

In the current study cross-partner associations were found for empathic concern towards a distressed parent and both behavioral and empathic concern responses to a distressed peer. This is similar to previously reported cross-partner relations for empathic responses to mother and an unfamiliar adult (Robinson, Zahn-Waxler, & Emde, 2001; Zahn-Waxler, Radke-Yarrow, et al., 1992; Zahn-Waxler, et al., 2001). Such associations may reflect a temperamentally based empathic disposition and/or differences in the ability to regulate vicarious arousal to another's distress (Spinrad & Stifter, 2006; van der Mark, et al., 2002; Young, et al., 1999). They are consistent with a proposed genetic component underlying "a disposition toward caring and kindness," which is in part a function of temperament-based emotionality (Zahn-Waxler, et al., 2001). Alternately, they could be a result of attachment and relationship processes (Kochanska, et al., 1999; Moreno, et al., 2008; Spinrad & Stifter, 2006; Thompson, Laible, & Ontai, 2003; van der Mark, et al., 2002).

In line with prior research in this age group (Lamb & Zakhireh, 1997; Zahn-Waxler, Robinson, et al., 1992), we found no association between children's own distress in response to their mothers' distress and empathic concern for their mothers. Thus, these two forms of emotional responsiveness to mothers' distress were distinct. However, children who were more distressed by the infant peer's crying were more empathic toward both mother and peer. In naturalistic studies, young children who are more easily distressed in peer settings have also been observed to be more empathic toward their peers (Farver & Branstetter, 1994; Howes & Farver, 1987; Phinney, Feshbach, & Farver, 1986). In experimental studies children who are more temperamentally inclined to negative emotions are sometimes found to be more empathic toward adults (Gill & Calkins, 2003; Robinson, et al., 1994; Spinrad & Stifter, 2006; Young, et al., 1999). These findings are also consistent with studies of "high empathy" children, who are more readily aroused vicariously by others' sadness, pain, or distress, but at the same time possess greater capacity for emotion regulation so that their own negative arousal motivates rather than overwhelms their desire to alleviate the other's distress (Eisenberg & Fabes, 1992; Miller & Jansen op de Haar, 1997). Moreover, it appears that such early-appearing dispositional patterns are stable, at least into the early preschool years (Moreno, et al., 2008). Our findings thus lend support to the dispositional hypothesis, suggesting that some children are more inclined to empathy across contexts than others, and also suggest that a distress response to a crying infant peer may differentiate "high empathy" children even as early as the second year of life.

Social understanding

Several kinds of social understanding are necessary to enable other-oriented empathic responding. Children must know that others experience emotions; that these internal states are linked to events and things in the world (or to other internal states at more advanced stages of understanding); that they are different from the child's own emotions, and may have different causes; and that they can be identified by others' behavior and vocalizations. Prosocial responding additionally requires some knowledge of how to alter others' emotions. Accordingly, previous research has linked developments in self-awareness (Bischof-Köhler, 1991; Johnson, 1982; Zahn-Waxler, Radke-Yarrow, et al., 1992), internal state understanding (Garner, 2003; Lamb, 1991), or emotion understanding (Ensor & Hughes, 2005) to toddlers' empathic and prosocial responses to adults. In the current study we examined these aspects of social understanding together, to identify their common and unique associations with empathy to mother and a peer.

Toddlers' social understanding was a unique predictor of empathic responses to the crying infant peer, above and beyond age, language competence, and general empathic disposition. Emotion understanding specifically, and not self-other understanding, was associated with empathic concern for the crying peer, whereas both emotion- and self-other understanding were associated with behavioral responding to the peer. In fact, self-other understanding and emotion understanding traded off against each other in predicting positive social interest in the distressed peer. That is, if a child was advanced in one, then the other was less important. It is also worth noting that individual differences in social understanding predicted peer-directed empathy, but not mother-directed empathy. Moreover, children's personal distress in response to the crying peer and to their own upset mothers was not predicted by either empathic disposition or social understanding.

To experience and exhibit concern for others, children must be able to "read" another's emotion expression and understand what it means. Emotion language is used by parents and by children themselves to label and explain their own and others' emotions (Dunn, Bretherton, & Munn, 1987; Dunn, Brown, & Beardsall, 1991; Taumoepeau & Ruffman, 2006; 2008), hence young children's emotion language is presumed to index their emotion understanding (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986; Shatz, et al., 1983; Smiley & Huttenlocher, 1995). Here, we found that emerging emotion language predicted how concerned toddlers were about a crying infant peer, independent of their overall language competence. The specificity of this relationship suggests that toddlers may use their emotion knowledge to identify with the distress of a peer (Hobson, Chidambi, Lee, & Meyer, 2006), which then enables concern rather than self-distress or simple interest. Because children have no scripts or routines for responding to peers' distress, empathic responding to a peer may rely on children's social understanding

to a greater extent than does empathic responding to an adult's emotions, particularly those of a parent. This may be particularly true insofar as a peer's distress may be more novel, hence more arousing, than a parent's distress, especially the sort of distress simulated by parents in lab studies like this one in which adults typically hurt themselves by pinching a finger, banging a knee, and the like – all relatively routine events in family life. Very young children also have less exposure to and experience with peers than they have with adults, including with peers' emotion expressions. Moreover, unlike adults, peers do not scaffold, support, model, or teach young children about emotions, their causes, or how to respond to them. And infants' negative vocalizations can be difficult to interpret even for adults. Is a crying infant sad? afraid? angry? in pain? So, it may be that peers' emotions are inherently more difficult for young children to decipher and interpret than are adults' emotions. Social understanding may thus be especially important in young children's efforts to interpret their peers' emotion expressions.

In addition, in this study peers provided only vocal emotion cues while adults' distress included vocalizations, facial expressions and postural cues. Additionally, adults' distress was clearly caused by an injury, whereas the source of the peer's distress was less clear. Thus, it is possible that their mothers' distress was easier for children to comprehend not only because it was more familiar but also because it was conveyed multimodally. Moreover, children were exposed to 90 seconds of the peer's distress, compared to 30 seconds of mothers' distress (the latter consistent with previous research). Perhaps this extended time window made social understanding differences more pronounced in the peer condition. It will be important in future research to manipulate task demands more systematically to determine whether there are any conditions under which peers' emotions may be easier for toddlers to understand and interpret.

Given that early studies found associations between emerging self-awareness and empathic responses to adults (Bischof-Köhler, 1991; Johnson, 1982; Zahn-Waxler, Radke-Yarrow, et al., 1992), it is interesting that in the current study emotion understanding predicted empathic concern toward the peer, but the measure of self-other understanding did not. We do not suspect that the self-other understanding measure is at fault since it did predict children's behavioral responses to the peer, and it specifically predicted the most prosocial of the behavioral response types, namely positive social interest, rather than simple attention or passive interest. Positive social interest directed to the crying peer included children's attempts to draw attention to the peer by pointing, vocalizing, or labeling the peer or its emotions, as well as other verbalizations including asking to see the peer. These behaviors share commonalities with indices of empathic "inquisitiveness" (Kiang, Moreno, & Robinson, 2004), "cognitive empathy" (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008), and "hypothesis testing" (Zahn-Waxler, Robinson, et al., 1992) used by other researchers to reflect

young children's attempts to understand others' emotional states and their causes. Perhaps children who are attempting to understand a peer's emotion expressions are also still coming to distinguish self and other psychologically. This could explain the trade-off between self-other understanding and emotion understanding in predicting behavioral responses to the crying peer. That is, children with more advanced emotion understanding have presumably made the transition to self-other equivalence (Moore, 2007), thus no longer need to rely on possibly more basic self-other differentiation in figuring out the peer's feelings.

But why did social understanding, especially self-other understanding, fail to predict toddlers' empathic concern toward their own mothers in the current study, when mirror-based measures of self-awareness did so in previous studies, at least in some instances? We can only speculate, but we believe that measurement differences may account for this divergence. First, measures of empathic responding were somewhat different in previous research from those used here. For example, Bischof-Köhler (1991) used a task in which the experimenter broke a favorite toy; children were then dichotomized as "Empathizers" or "Non-Empathizers" according to whether or not they called attention to the situation or attempted to repair the toy or help the adult with it. The task used by Johnson (1982) involved someone taking a toy away from the child's mother or the experimenter; empathic responses included giving the toy back to the victim, again without a measure of the child's overt emotional concern, and may have indexed children's social-affiliative motivations or their awareness of possession rights more than empathy. In the current study, self-other understanding was also measured more broadly than in previous studies, and by maternal report, rather than by observed mirror self-recognition. Thus, relations between self-other understanding and empathic responding toward adults may partly depend on how each is elicited and measured. In the current study, mothers' pain-related distress in response to a pinched finger may have been familiar, exaggerated, and well-timed such that children's differential responding was not a product of self-other understanding, but rather a matter of routine (Robinson, et al., 2001) or of dispositional differences in emotional, empathic responsiveness.

It is also worth noting that the findings from previous studies relating self-awareness and empathy in this age period are not especially strong or consistent. For example, Johnson (1982) found that mirror self-recognition was associated with empathic responses to mothers but not to a female experimenter; and photo self-recognition was unrelated to empathic responding toward either one. Zahn-Waxler, Radke-Yarrow, and colleagues (1992) found relations between mirror-related behavior (including but not limited to self-recognition) and mother-reported empathy at 24 months of age, but not at 18 months. Particularly given the variability in mirror self-recognition itself over the second year (Courage, Edison, & Howe, 2004), it is possible that relations between self-recognition and empathic

responding to adults are somewhat variable during this transitional period, and that the broader measure of self-other understanding used in the current study provides a more robust measure of the construct.

Other factors

Although we have focused on child-specific contributors to individual differences in empathic responding in the current study, we do not mean to suggest that socialization influences are unimportant. Indeed, both dispositional and developmental sources of individual differences in early empathy may be influenced by socialization, even in the second year of life. With respect to dispositional sources of individual differences, there is good evidence for shared and non-shared environmental influences in this period in addition to evidence for heritability of an early disposition toward empathy (Zahn-Waxler, et al., 2001). Specifically, a history of sensitive, responsive mothering and secure attachment may shape children's general tendency to respond to others with caring and compassion (Kochanska, et al., 1999; Spinrad & Stifter, 2006; Thompson, et al., 2003; van der Mark, et al., 2002). In the case of developmental sources of individual differences in empathic responding, research is quickly accruing in support of the role of parents' emotion-related and other internal-state talk as an important and consistent contributor to the development of early forms of social understanding (de Rosnay & Hughes, 2006; Hughes & Leekam, 2004; Symons, 2004). However, social understanding in the absence of other-oriented caring would not be sufficient to produce empathic concern and an emotion-based motivation to alleviate others' distress or suffering. Thus, socialization may induce other-oriented caring, possibly via children's mirroring of the ministering and comforting responses that they themselves have received from others, or via generalization of mutual affective responsiveness and affective attunement with parents to other relationships. Alternatively, socialization may implement whatever built-in predispositions toward altruistic motivations infants might come with (Warneken & Tomasello, 2009, in press). In either case, the current data suggest the possibility that socialization effects on individual differences in empathic responsiveness may be mediated by more proximal dispositional and social understanding contributors.

In conclusion, the findings from the current study suggest that both emotion understanding specifically, and self-other understanding more broadly, are important in the early origins of individual differences in children's empathic responsiveness, and that they operate above and beyond individual differences in general empathic disposition. It will be valuable for future research focused on this age period to expand the measures of social understanding and to manipulate specific contextual factors such as the age of the distressed partner and the causes and characteristics of the other's distress. It will also be important to consider

longitudinally how socialization in infancy operates to shape both normative development and individual differences in later prosocial responsiveness.

ACKNOWLEDGEMENTS

This research was supported in part by grants from the National Institute of Child Health & Human Development, HD043971 & HD055283, to the third author. Portions of this research were presented at meetings of the Society for Research in Child Development and the International Conference on Infant Studies. We thank the children and parents who volunteered their time to participate in this research. Thanks also to Ranita Anderson, Rachel Cobb, Jason Colditz, Kandi Felmet, Catie Henderson, Lori Hiller, Maryam Khatami, Brenda May, Charla Newhouse, Elizabeth Posti, Yuliya Rinberg, Lauren Shuck, Hilarie Stern, Emily Yarrison, Amy Yeu, and Alina Volper for assistance with data collection and coding. Portions of these data were collected as part of Alina Volper's Honors Thesis in Psychology. Special thanks to Stephanie Sivers for her expert editorial assistance.

REFERENCES

- Amsterdam, B. (1972). Mirror self-image reactions before age two. *Developmental Psychobiology*, 5, 297-305.
- Bartsch, K., & Wellman, H. M. (1995). *Children talk about the mind*. London: Oxford University Press.
- Bischof-Köhler, D. (1991). The development of empathy in infants. In M. E. Lamb & H. Keller (Eds.), *Infant development: Perspectives from German speaking countries* (pp. 245-273). Hillsdale, NJ: Erlbaum.
- Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Developmental Psychology*, 18, 906-921.
- Bretherton, I., Fritz, J., Zahn-Waxler, C., & Ridgeway, D. (1986). Learning to talk about emotions: A functionalist perspective. *Child Development*, 57, 529-548.
- Bretherton, I., McNew, S., & Beeghly-Smith, M. (1981). Early person knowledge as expressed in gestural and verbal communication: When do infants acquire a theory of mind? . In M. E. Lamb & L. R. Sherrod (Eds.), *Infant social cognition: Empirical and theoretical considerations* (pp. 333-342). Hillsdale, NJ: Erlbaum.
- Brooks-Gunn, J., & Lewis, M. (1984). The development of early visual self-recognition. *Developmental Review*, 4, 215-239.
- Brownell, C., Ramani, G., & Zerwas, S. (2006). Becoming a social partner with peers: Cooperation and social understanding in one- and two-year-olds. *Child Development*, 77, 804-821.
- Bullock, M., & Lutkenhaus, P. (1990). Who am I? Self-understanding in toddlers. *Merrill Palmer Quarterly*, 36, 217-238.
- Campos, J. J., & Stenberg, C. R. (1981). Perception, appraisal and emotion: The onset of social referencing. In M. E. Lamb & L. R. Sherrod (Eds.), *Infant social cognition* (pp. 273-314). Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, J., & Cohen, P. (1975). *Applied multiple regression/correlation analysis for the behavioral sciences*. NJ: Erlbaum.

- Cole, P. M., Barrett, K. C., & Zahn-Waxler, C. (1992). Emotion displays in two-year-olds during mishaps. *Child Development, 63*, 314-324.
- Courage, M. L., Edison, S. C., & Howe, M. L. (2004). Variability in the early development of visual self-recognition. *Infant Behavior & Development, 27*, 509-532.
- de Rosnay, M., & Hughes, C. (2006). Conversation and theory of mind: Do children talk their way to socio-cognitive understanding? *British Journal of Developmental Psychology, 24*, 7-37.
- Demetriou, H., & Hay, D. F. (2004). Toddlers' reactions to the distress of familiar peers: The importance of context. *Infancy, 6*, 299-318.
- Dunn, J., Bretherton, I., & Munn, P. (1987). Conversations about feeling states between mothers and their young children. *Developmental Psychology, 23*, 132-139.
- Dunn, J., Brown, J., & Beardsall, L. (1991). Family talk about feeling states and children's later understanding of others' emotions. *Developmental Psychology, 27*, 448-455.
- Dunn, J., & Munn, P. (1986). Siblings and the development of prosocial behaviour. *International Journal of Behavioral Development, 9*, 265-284.
- Eisenberg, N. (1997). The development of empathy-related responding. *Nebraska Symposium on Motivation, 45*, 73-117.
- Eisenberg, N., & Fabes, R. A. (1992). Emotion, regulation, and the development of social competence. In M. S. Clark (Ed.), *Emotion and social behavior* (Vol. 14). Newbury Park, CA: Sage Publications.
- Eisenberg, N., Pasternack, J. F., Cameron, E., & Tryon, K. (1984). The relation of quantity and mode of prosocial behavior to moral cognitions and social style. *Child Development, 55*, 1479-1485.
- Ensor, R., & Hughes, C. (2005). More than talk: Relations between emotion understanding and positive behaviour in toddlers. *British Journal of Developmental Psychology, 23*, 343-363.
- Farver, J., & Branstetter, W. (1994). Preschoolers prosocial responses to their peers' distress. *Developmental Psychology, 30*, 334-341.
- Feinman, S. (1982). Social referencing in infancy. *Merrill-Palmer Quarterly, 28*, 445-470.
- Fenson, L., Pethick, S., Renda, C., Cox, J. L., Dale, P. S., & Reznick, J. S. (2000). Short-form versions of the MacArthur Communicative Development Inventories. *Applied Psycholinguistics, 21*, 95-116.
- Garner, P. W. (2003). Child and family correlates of toddlers' emotional and behavioral responses to a mishap. *Infant Mental Health Journal, 24*, 580-596.
- Gill, K. L., & Calkins, S. D. (2003). Do aggressive/destructive toddlers lack concern for others? Behavioral and physiological indicators of empathetic responding in 2-year-old children. *Development and Psychopathology, 15*, 55-71.
- Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The development of concern for others in children with behavior problems. *Developmental Psychology, 36*, 531-546.
- Hobson, R., Chidambi, G., Lee, A., & Meyer, J. (2006). Foundations for self awareness: An exploration through autism. *Monographs of the Society for Research in Child Development, 71* (Serial no. 284).
- Hoffman, M. L. (1975). Developmental synthesis of affect and cognition and its implications for altruistic motivation. *Developmental Psychology, 11*, 607-622.

- Hoffman, M. L. (2000). *Empathy and moral development*. Cambridge: University Press.
- Hoffman, M. L. (2007). The origins of empathic morality in toddlerhood. In C. A. Brownell & C. B. Kopp (Eds.), *Socioemotional development in the toddler years: Transitions and transformations* (pp. 132-145). New York: Guilford Press.
- Howes, C., & Farver, J. (1987). Toddler's response to the distress of their peers *Journal of Applied Developmental Psychology, 8*, 441-452.
- Hughes, C., & Leekam, S. (2004). What are the links between theory of mind and social relations? Review, reflections and new directions for studies of typical and atypical development. *Social Development, 13*, 590-619.
- Johnson, D. B. (1982). Altruistic behavior and the development of the self in infants. *Merrill-Palmer Quarterly, 28*, 379-388.
- Kagan, J. (1981). *The second year: Emergence of self-awareness*. Cambridge, MA: Harvard University Press.
- Kelley, S. A., Brownell, C. A., & Campbell, S. B. (2000). Mastery motivation and self-evaluative affect in toddlers: Longitudinal relations with maternal behavior. *Child Development, 71*, 1061-1071.
- Kiang, L., Moreno, A. J., & Robinson, J. L. (2004). Maternal preconceptions about parenting predict child temperament, maternal sensitivity, and children's empathy. *Developmental Psychology, 40*, 1081-1092.
- Knafo, A., Zahn-Waxler, C., Van Hulle, C., Robinson, J. L., & Rhee, S. H. (2008). The developmental origins of a disposition toward empathy: Genetic and environmental contributions. *Emotion, 8*, 737-752.
- Kochanska, G., Forman, D. R., & Coy, K. C. (1999). Implications of the mother-child relationship in infancy for socialization in the second year of life. *Infant Behavior & Development, 22*, 249-265.
- Kochanska, G., Gross, J. N., Lin, M.-H., & Nichols, K. E. (2002). Guilt in young children: Development, determinants, and relations with a broader system of standards. *Child Development, 73*, 461-482.
- Lamb, S. (1991). Internal state words: Their relation to moral development and to maternal communications about moral development in the second year of life. *First Language, 11*, 391-406.
- Lamb, S., & Zakhireh, B. (1997). Toddlers' attention to the distress of peers in a daycare setting. *Early Education & Development, 8*, 105-118.
- Lewis, M., & Ramsay, D. (2004). Development of self-recognition, personal pronoun use, and pretend play during the second year. *Child Development, 75*, 1821-1831.
- Martin, G. B., & Clark, R. D. (1982). Distress crying in neonates: Species and peer specificity. *Developmental Psychology, 18*, 3-9.
- Miller, P. A., & Jansen op de Haar, M. A. (1997). Emotional, cognitive, behavioral, and temperament characteristics of high-empathy children. *Motivation & Emotion, 21*, 109-125.
- Moore, C. (2007). Understanding self and others in the second year. In C. A. Brownell & C. B. Kopp (Eds.), *Socioemotional development in the toddler years: Transitions and transformations* (pp. 43-65). New York: Guilford Press.
- Moreno, A. J., Klute, M. M., & Robinson, J. L. (2008). Relational and individual resources as predictors of empathy in early childhood. *Social Development, 17*, 613-637.

- Nichols, S., Svetlova, M., & Brownell, C. (submitted). The cradle of compassion: Development of empathic responsiveness to peers in the second year of life.
- Nichols, S., Svetlova, M., & Brownell, C. A. (in press). Toddlers' understanding of peers' emotions. *Journal of Genetic Psychology*.
- Nielsen, M., Suddendorf, T., & Slaughter, V. (2006). Mirror self-recognition beyond the face. *Child Development, 77*, 176-185.
- Phillips, A. T., Wellman, H. M., & Spelke, E. S. (2002). Infants' ability to connect gaze and emotional expression to intentional action. *Cognition, 85*, 53-78.
- Phinney, J., Feshbach, N., & Farver, J. (1986). Preschool children's responses to peer crying. *Early Childhood Research Quarterly, 1*, 207-219.
- Repacholi, B., & Gopnik, A. (1997). Early reasoning about desires: Evidence from 14- and 18-month olds. *Developmental Psychology, 33*, 12-21.
- Ricard, M., Girouard, P. C., & Decarie, T. G. (1999). Personal pronouns and perspective taking in toddlers. *Child Language, 26*, 681-697.
- Robinson, J. L., Zahn-Waxler, C., & Emde, R. N. (1994). Patterns of development in early empathic behavior: Environmental and child constitutional influences. *Social Development, 3*, 125-145.
- Robinson, J. L., Zahn-Waxler, C., & Emde, R. N. (2001). Relationship context as a moderator of individual differences in empathic development. In R. N. Emde & J. K. Hewitt (Eds.), *Infancy to early childhood: Genetic and environmental influences on developmental change* (pp. 257-268). New York: Oxford University Press.
- Shatz, M., Wellman, H., & Silber, S. (1983). The acquisition of mental verbs: A systematic investigation of the first reference to mental state. *Cognition, 14*, 301-321.
- Sigman, M. D., Kasari, C., Kwon, J., & Yirmiya, N. (1992). Responses to the negative emotions of others by autistic, mentally retarded, and normal children. *Child Development, 63*, 796-807.
- Smiley, P., & Huttenlocher, J. (1995). Conceptual development and the child's early words for events, objects, and persons. In M. Tomasello & W. E. Merriman (Eds.), *Beyond names for things: Young children's acquisition of verbs* (pp. 21-61). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Spinrad, T. L., & Stifter, C. A. (2006). Toddlers' empathy-related responding to distress: Predictions from negative emotionality and maternal behavior in infancy. *Infancy, 10*, 97-121.
- Stipek, D. J., Gralinski, J. H., & Kopp, C. B. (1990). Self-concept development in the toddler years. *Developmental Psychology, 26*, 972-977.
- Svetlova, M., Nichols, S. R., & Brownell, C. A. (in press). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development*.
- Symons, D. K. (2004). Mental state discourse, theory of mind, and the internalization of self-other understanding. *Developmental Review, 24*, 159-188.
- Taumoepeau, M., & Ruffman, T. (2006). Mother and infant talk about mental states relates to desire language and emotion understanding. *Child Development, 77*, 465-481.
- Taumoepeau, M., & Ruffman, T. (2008). Stepping stones to others' minds: Maternal talk relates to child mental state language and emotion understanding at 15, 24, and 33 months. *Child Development, 79*, 284-302.

- Thompson, R. A. (2006). The development of the person: Social understanding, relationships, conscience, self. In N. Eisenberg (Ed.), *Handbook of child psychology* (6th ed., Vol. 3) (pp. 24-98). Hoboken, NJ: Wiley.
- Thompson, R. A., Laible, D. J., & Ontai, L. L. (2003). Early Understandings of emotion, morality, and self: Developing a working model. In R. V. Kail (Ed.), *Advances in child development and behavior, Vol. 31* (pp. 137-171). San Diego, CA: Academic Press.
- van der Mark, I. L., van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2002). Development of empathy in girls during the second year of life: Associations with parenting, attachment, and temperament. *Social Development, 11*, 451-468.
- Warneken, F., & Tomasello, M. (in press). The roots of human altruism. *British Journal of Psychology*.
- Young, S. K., Fox, N. A., & Zahn-Waxler, C. (1999). The relations between temperament and empathy in 2-year-olds. *Developmental Psychology, 35*, 1159-1197.
- Zahn-Waxler, C., & Radke-Yarrow, M. (1990). Origins of empathic concern. *Motivation & Emotion, 14*, 107-130.
- Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology, 28*, 126-136.
- Zahn-Waxler, C., Robinson, J. L., & Emde, R. N. (1992). The development of empathy in twins. *Developmental Psychology, 28*, 1038-1047.
- Zahn-Waxler, C., Schiro, K., Robinson, J. L., Emde, R. N., & Schmitz, S. (2001). Empathy and prosocial patterns in young MZ and DZ twins. In R. N. Emde & J. K. Hewitt (Eds.), *Infancy to early childhood: Genetic and environmental influences on developmental change*. New York: Oxford University Press.
- Zhou, Q., Eisenberg, N., Losoya, S. H., Fabes, R. A., Reiser, M., Guthrie, I. K., Murphy, B., Cumberland, A., & Shepard, S. A. (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.

Appendix 1

Items included in the Emotion Words Checklist (EWCL)

Afraid
Angry
Disappointed
Disgusting
Excited
Feel bad
Feel good
Feeling (as in an emotion)
Frustrated
Funny
Happy
Hate
Hurt
Interested
Jealous
Need
Like (or Don't Like)
Love
Mad
Mean
Naughty
Nice
Proud
Sad
Scared
Surprised
Upset
Want (or Don't Want)
Worried (or Worry)