

Crying babies, empathic toddlers, responsive mothers and fathers:

Exploring parent-toddler interactions in an empathy paradigm

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Word count: 7170

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Note: This paper is entirely original. That is, none of the material has been submitted for publication elsewhere or presented at any conference or workshop. The study was funded by an ESRC grant (ES/LO16648/1). No author has a conflict of interest to declare. We would like to thank all of the families who took part in the New Fathers and Mothers Study and Megan Cheyney for her assistance in coding videos of the crying baby paradigm.

Abstract

The ability to display caring responses to another child's distress is a key aspect of early empathy that is facilitated by parental socialization. However, existing studies typically involve lab settings and focus on toddlers' unsupported responses to adult simulations of distress, raising questions about their ecological validity. Framed within the New Fathers and Mothers Study (NewFAMS: see Hughes, Lindberg, & Devine, in press), the current study involved 156 British toddlers ($M_{\text{age}} = 24.35$ months, $SD = .73$ months) who were filmed at home with either their mother or father (87 mothers, 69 fathers) in a novel paradigm involving a life-like crying baby doll (Nichols, Svetlova, & Brownell, 2015). Capitalizing on the inclusion of both fathers and mothers, a key question concerned effects of parent-toddler dyad gender composition on both global ratings of toddlers' displays of empathic concern and more specific indicators, including toddlers' attentional, emotional and behavioral responses. While parental responses did not differ by either child or parent gender and appeared closely attuned to child behavior, toddlers' responses showed effects of both (a) child gender, evident in higher rates of emotion labeling in girls than boys (even when controlling for language ability); and (b) parent gender, evident in higher levels of empathic concern for girls observed with fathers than those observed with mothers. These findings are discussed within the context empathy development and parental socialization.

Keywords: empathy, toddler, crying baby paradigm, socialization

Crying babies, empathic toddlers, responsive mothers and fathers:

Exploring parent-toddler interactions in an empathy paradigm

Imagine you are a parent reading a book with your two-year-old child when a visitor's baby, previously asleep a few meters away in the same room, begins to cry. How distressed will your child become? Will this distress constrain or catapult your child's comforting responses toward the baby? In either case, how will you respond? Do your answers to these questions depend on either your own or your child's gender? These questions provide a framework for the current study, in which a crying baby paradigm was administered within a home-setting. Despite their apparent simplicity, these questions are important for researchers investigating early social and cognitive development, not least because displays of emotion are at the very heart of early social interactions, such that responding appropriately to another's distress is a key developmental task in the toddler years and beyond.

Supporting this view, individual differences in toddlers' ability to respond empathically to another's distress are theoretically linked with variation in important social skills, such as social referencing and social perspective-taking (e.g., Brownell & Kopp, 2007; Hobson, 2007; Strayer, 1980). Moreover, empirical evidence has shown that individual differences in empathy are associated with individual differences in popularity, friendship reciprocity and social competence in early childhood (e.g., Diener & Kim, 2004; Sallquist, Eisenberg, Spinrad, Eggum, & Gaertner, 2009; Ungerer, et al., 1990; Roth-Hannania, Davidov, & Zahn-Waxler, 2011; Spinrad & Eisenberg, 2017). These predictive associations have prompted investigations of a range of potential influences on early empathy, including intrinsic factors such as temperament (Schuhmacher, Collard, & Kärtner, 2017) and extrinsic family influences (e.g., Hughes, McHarg & White, 2018; Dahl, 2018). Further, positive correlations between empathy and aggression (e.g., Gill & Calkins, 2003) suggest that some

aspects of empathy are related to overall social involvement. The current study applied a quasi-naturalistic crying baby paradigm to explore toddlers' behaviors and empathic responses and parents' reactions to their toddlers in this context. Capitalizing on the inclusion of fathers as well as mothers, we also examined whether toddlers' empathic responses differed according to the gender-composition of the parent-toddler dyad.

Toddler empathy

During infancy, empathy is best understood through the lens of emotional contagion (Hoffman, 2000). Although empathy need not be constrained to responses to others' negative emotions only (e.g., Brownell, Zerwas, & Balaram, 2002), the current research focuses on children's responses to another's distress. Indeed, little has been done to investigate children's responses to peers' distress in naturalistic or quasi-naturalistic settings, despite the fact that infants' responses to others' cries are some of the first empathic responses humans make (Hoffman, 2000). As children develop, self-other differentiation provides the capacity to respond and alleviate the distress of others without being overcome by their own distress (e.g., Kärtner, Keller, & Chaudhary, 2010). Reflecting this developmental trend, Nichols, Svetlova, and Brownell (2015) reported that empathic concern for an infant's distress was displayed by just 25% of 18-month-olds, as compared with 67% of 24-month-olds in their study.

The current study builds upon a theoretical distinction between two different expressions of empathy in response to another's distress: (i) empathic feeling of concern directed towards the person in distress (Hoffman, 2000); and (ii) personal distress, which may be due to poor emotion regulation, is a self-concerned, aversive response to another's plight that typically leads to attempts to reduce one's own distress rather than the distress of the victim (e.g., Eisenberg, Fabes, & Murphy, 1996). Motivated by the surprising meta-analytic finding that variation in empathy explains only 1% of the variation in aggressive behavior

(Vachon, Lynam, & Johnson, 2014), researchers have also highlighted the need to distinguish between cognitive and affective components to empathy (e.g., Vachon & Lynam, 2016). Specifically, affective responses to another's cries might lead some toddlers to engage in prosocial behaviors, but can actually constrain prosocial behavior in other toddlers, resulting in weak or non-significant overall associations with behavioral or cognitive measures of empathy. Indeed, in a study of three- and four-year-olds, Lin and Grisham (2017) found that the relationship between personal distress and empathic concern was only evident for children who showed high levels of cognitive enquiry. Based on this work, we hypothesized that individual differences in toddlers' displays of personal distress would be: (a) relatively independent overall from variation in empathic concern; but (b) associated with empathic concern in the subset of toddlers who were able to provide a cognitive label (e.g., "Baby is sad").

Crying baby paradigm

Though older children have been observed responding to baby cries coming from another room (e.g., Eisenberg, Fabes, & Murphy, 1996), previous studies of toddlers' empathic responses have typically relied on simulations of distress by a parent or experimenter in a lab context and so have questionable ecological validity. An exception is the work by Spinrad and Stifter (2006) investigating the responses of 18-month-olds who, accompanied by their mothers, witnessed a life-like baby doll crying via a speaker in the arms of his or her caregiver. Building on this work, Nichols et al. (2015) and Lin and Grisham (2017) investigated the responses of children aged 12 to 24 months to a similar crying baby paradigm administered in the lab, without the baby's caregiver. In these studies, toddlers' mothers were present, but were either uninvolved or minimally involved. To date, research on the crying baby paradigm has focused on toddler behavior only, leaving caregiver socialization strategies in response to the crying baby paradigm yet to be investigated. This is

a notable omission, given that toddlers experience most emotionally distressing events with a parent or caregiver present, and these scenarios provide rich opportunities for socialization.

Addressing this gap in the literature, the current study, comprising a relatively large sample of 156 parent-toddler dyads (between 23.26 and 26.97 months of age), aimed to examine toddler responses in the context of parental responses to better understand how parents' responses to children's initial distress or empathy in an empathy eliciting context may amplify or dampen their children's responses. To increase the study's ecological validity, this paradigm was administered in the child's home, rather than in a lab setting, and used Bluetooth technology to remotely activate the baby at a fixed point within a standard parent-child interactional context (shared picture-book reading). Examining variation in toddlers' expression of empathy to the crying baby paradigm in a home setting, specifically focusing on toddlers' attention, personal distress and empathic concern for the crying baby, alongside emotion labelling and prosocial behavior was the first goal of the study.

Toddler empathy and parenting behaviors

In addition to being ubiquitous in children's lives, conversation provides a means of organising experiences into meaningful narratives that gives children both the psychological distance needed for reflection and an opportunity to share thoughts with another in order to construct a new meaning. In comparison with other conversational partners (e.g., siblings, peers, teachers), parents are especially likely to be invested in promoting children's prosocial development and can also draw on their uniquely powerful and enduring affective bond to promote such behaviors (e.g., Stern & Cassidy, 2017). Our second goal was therefore to capitalise on the home setting by exploring parental verbal responses to toddlers' empathic concern or prosocial behavior.

Previous observational studies have shown that parents who engage in discourse about the feelings of others are likely to instil empathic concern in their children through a

process of socialization (for reviews, see Brownell, 2016; Spinrad & Gal, 2018). Likewise, experimental work has shown that viewing a brief video of adults modelling a novel prosocial act in response to a display of distress increases the likelihood of 2-year-olds offering prosocial responses when their own parent modelled distress (Williamson, Donohue, & Tully, 2013). We were therefore particularly interested both in the kinds of discourse parents engaged in during the crying baby paradigm and in whether parents would use toddlers' reactions to the crying baby to model helpful acts.

In the NICHD Early Childcare study, lab-based observations of 612 parent-toddler dyads revealed that individual differences in maternal sensitivity were related to the frequency of 36-month-olds' displays of cooperation, but unrelated to variation in toddlers' concern for a close peer (Blandon & Scrimgeour, 2015). In contrast, in a recent smaller study of 58 18-month olds, variation in maternal positive parenting was unrelated to toddlers' instrumental helping but directly related to toddlers' comforting responses (Schuhmacher et al., 2017). This between-study contrast in the parental correlates of empathy and helpfulness/cooperation may indicate that associations between sensitive/positive parenting and particular aspects of prosocial behaviour are developmentally-specific. However, two methodological contrasts also deserve note. In particular, while the NICHD study applied nursery-based naturalistic observations to rate concern for peers in 36-month-olds, Schuhmacher et al. (2017) adopted an experimental approach involving an adult display of distress to assess empathy in 18-month-olds. Bridging these two approaches, we sought to increase the ecological validity of the current study by observing children's responses to another child (rather than an adult) in a familiar setting while also bringing experimental rigour to naturalistic observations by standardizing the administration of the crying baby paradigm. As this paradigm elicits both toddlers' empathic reactions and parental

socialization responses to these reactions, it enables the interplay between these two constructs to be examined.

Parent Gender

A key feature of the current study that sets it apart from the existing literature is the involvement of fathers as well as mothers. Early investigations of fathers' contributions to children's social and cognitive development were framed by the differential experience model and the context sensitivity model (e.g., Lewis & Gregory, 1987), which each emphasised potential contrasts in the nature of support provided by fathers and mothers. According to the differential experience model, substantial differences in time spent taking care of children lead to marked contrasts between mothers and fathers in levels of expertise and in the closeness of the relationship. According to the context sensitivity model, mothers and fathers differ in quality of care as much as quantity. Specifically, fathers spend a greater proportion of their contact time in free play or leisure activities and so are likely to be more playful than mothers. In the current study, however, parents were asked to spend contact time in the same way. The crying baby paradigm was administered in exactly the same setting (shared picture book reading) for mothers and fathers; therefore, effects of context were minimized. Differences in mother and father caregiving experiences are therefore more likely to underpin any contrasts in discourse or behavior.

Mother and father responses to children's emotions also appear to differ in character. For example, in a study that involved parents of 6- to 11-year-old children, Zeman, Perry-Parrish, and Cassano (2010) found that mothers were more likely than fathers to encourage emotions like sadness and less likely to minimise emotion (i.e., 'don't be such a cry baby'). Both of these responses contribute to emotion learning and regulation- though mothers' responses are more constructive. Indeed, the quality of interaction with each parent may impact socialization of emotion regulation. For example, Cabrera, Karberg, Malin & Aldoney

(2017) found that for families with low socio-economic status, children with more playful mothers displayed higher emotion-regulation. This was not the case for children with playful fathers, despite no group differences in playfulness between mothers and fathers. The authors suggest this might be due to a qualitative difference in how parents are playful, and in how they encourage emotion-regulation. In addition, contrasts between mothers and fathers are typically attenuated with parental education, as more educated fathers are more likely to be positively involved in childcare (e.g., Martin, Ryan, & Brooks-Gunn, 2007). Therefore, we expected to find similar levels of maternal and paternal involvement during the crying baby paradigm in the current study, where all parents were in the same context.

Child Gender

Gender differences in empathy, reported in both humans and non-human species (Christov-Moore et al., 2014), begin early in life. Specifically, compared with boys, infant girls show higher skills in both recognizing non-verbal emotions and facial expressions (Christov-Moore et al., 2014), and by primary school age, marked differences are seen (e.g., Catherine & Schonert-Reichl, 2011). However, investigations of gender differences in toddlers' responses to empathy-eliciting situations have produced mixed findings. For example, Spinrad and Stifter (2006) found that while girls were more likely than boys to display concern toward a distressed stranger, there were no gender differences in toddlers' responses to either a crying baby doll or mothers feigning an injury. In contrast, Nichols et al (2015) found that girls showed more positive social interest in the baby than did boys, regardless of whether the baby was crying or cooing. Similarly, Blandon and Scrimgeour (2015) found that even at 15 months of age, girls were more concerned for their peers than boys. Further, in a study of 584 toddlers aged 19 to 25 months, Volbrecht, Lemery-Chalfant, Aksan, Zahn-Waxler, and Goldsmith (2007) found that girls were more likely to display prosocial behaviors such as affective empathy and helping behaviour. However, mean levels

of cognitive empathy were similar for boys and girls. Building on this prior work, the current study examined whether effects of child gender; vary in magnitude across different facets of empathic responses.

In addition, the current study examines whether the interplay between parent and toddler gender plays a role in empathic responding (i.e., whether fathers and mothers show similar or contrasting patterns of responses to boys and girls during the crying baby paradigm). Zahn-Waxler, Radke-Yarrow, and King (1979) and Spinrad and Stifter (2006) reported that mothers requested similar levels of help from boys and girls but, in bystander situations, gave more explanations to boys than girls. In a study of 60 pre-schoolers, Chaplin, Cole, & Zahn-Waxler (2005) reported that fathers were more likely than mothers to endorse gender-stereotyped behavior during a fun but frustrating game. Additionally, Endendijk et al. (2014) found that during a picture book task mothers conveyed more positive messages about gender, and fathers' comments confirmed gender stereotypes more than mothers' comments.

The current study

In sum, the current study applied the crying baby paradigm to 156 24-month-old toddlers (88 boys, 68 girls) and their caregivers (87 mothers and 69 fathers) in order to address three key goals. First, to investigate individual differences in toddlers' responses to this empathy-eliciting paradigm in the home. Second, to observe how mothers and fathers socialize toddlers' empathic and prosocial responses. Third, to examine the interplay between toddler and parent gender in their interactions around the crying baby. As the paradigm may produce practice effects and may also elicit distress for some toddlers, a within-subject design was not feasible and so a between-subjects design was utilized for this study.

Methods

Participants

Families were visited in their homes when their children were 24-months old as part of a the New Fathers and Mothers Study in the East of England (see Hughes, Lindberg, & Devine, in press). All participating parents were in a cohabiting heterosexual relationship with the target child a first-born child for each participating parent to minimise variation due to family form. All parents spoke English exclusively to their children. Education levels in the sample were high, with 85% of mothers and 78% of fathers had Bachelors' Degree or higher tertiary qualification. These percentages are considerably higher than the national average across the UK (42% of people aged 21-64 have higher education qualifications; Higher Education Student Statistics, 2018). Families were recruited via antenatal hospital visits, enabling contact with men on the brink of becoming fathers. Coupled with the possible benefits of recruiting just before the transition to parenthood, asking fathers to participate directly rather than relying on mothers to bring their partners along is likely to have increased retention.

In total, 187 families (106 boys, $M_{\text{age}} = 24.29$ months) participated at the 24 month visit. Of these 187 families, 15 were unable to complete the crying baby paradigm during the visit due to time constraints and data from a further 10 families were lost as a result of technical difficulties (i.e., Bluetooth recording played infant crying for less than 50 seconds, toddler's face not visible on video). Families that did / did not complete the crying baby paradigm did not differ with respect to average toddler age or parental income, $ps \geq .12$, but mothers of participating toddlers were, on average, significantly older ($M = 32.57$ years, $SD = 4.42$) than mothers of non-participating toddlers ($M = 30.73$ years, $SD = 3.42$), $t(185) = -1.990$, $p = .048$, $d = .47$. With respect to toddler language ability, t-tests revealed significantly higher expressive language scores in toddlers who did participate in the crying

baby paradigm ($M = 58.80$, $SD = 21.94$) than in toddlers who did not participate, ($M = 47.86$, $SD = 27.24$) $t(178) = -2.124$, $p = .035$, $d = .44$.

Six children that did complete the CBP were under age 23 months, and, given the well-documented rapid language development at this age, we removed those seven cases from the current analysis. The included children's ages ranged from 23.26 months to 26.97 months, $M_{\text{age}} = 24.35$ months, $SD = .73$. Detailed coding of toddlers' and parents' actions during the crying baby paradigm was completed for the remaining 156 families (41 mother-daughter dyads, 46 mother-son dyads, 27 father-daughter dyads, 42 father-son dyads).

Table 1 includes details about the participants, including mother and father childcare hours (i.e., amount of time spent caring for their child during normal working hours) as a proportion of total childcare hours.

Table 1. Participant demographic information (N = 156)

	Mean	SD	Range
Child age in months	24.35	0.73	23.26-26.97
Mother's age (at birth of child)	32.76	3.57	25.04-42.38
Father's age (at birth of child)	34.26	4.43	24.04-49.54
Household Income (prior to the birth of the target child)	£73,161	£29,567	£20,000-£200,000
Mum Childcare (as proportion of all childcare hours)	.57	.20	.21-1
Dad Childcare (as proportion of all childcare hours)	.33	.15	0-1

Measures

Child language. One parent (counterbalanced) completed the infant short version of the MacArthur Communicative Development Inventories (Fenson et al., 2000) to assess child language ability. This measure asked parents to identify whether the child understood or understood and said 90 common vocabulary words (e.g., ouch, choo choo, cup). We added the word ‘daddy’ to the 89-item infant questionnaire, which was used at multiple time points throughout the larger longitudinal study. The total number of words from the list children said was calculated as a measure of the child’s expressive vocabulary.

Crying baby paradigm. An adapted version of Nichols et al.’s (2015) infant distress paradigm was used at the 24-month visit. A life-like baby doll (see Image 1) was introduced to the toddler by a researcher and put down “for a nap” near the play area, but out of the way of the interaction. The location of the doll varied by room set-up, but the doll was always far enough away that a child would have to actively approach it to see it better and/or to act in a prosocial manner toward it. The doll was introduced as ‘George’ if the child was a boy, and as ‘Charlotte’ if the child was a girl. After a book-reading task with the one parent (counterbalanced between parents), the baby cried via a Bluetooth speaker. Although played through a speaker, this ‘cry’ was a recording of an actual baby in distress. Parents were instructed to respond to their toddler’s interest – to ignore the baby if their child ignored it, but talking about the baby, why it might be crying, and what the toddler might do to help the baby, if the toddler showed interest.



Image 1. The life-like baby doll in the crying baby paradigm

We made two adaptations to Nichols, Svetlova, and Brownell's (2015) coding of passive attention, active interest, positive social expression, distress and concern to reflect our focus on individual differences (rather than contrasts between age groups) and to include parental responses. First, detailed behavioral coding was conducted based on the Nichols et al. coding scheme. Toddler responses grouped together differently than in the previous study, and three composite scores were created:

Attention: A mean score of standardised directed attention (proportion time spent looking at the baby and proportion of time spent not reading) and active attention (frequency of pointing to or labelling the baby and whether or not the toddler approached the baby) were summed.

Personal distress: This scale included affective or behavioral indications of anxiety, agitation, tenseness, discomfort, sadness, desire for contact with or comfort from parent, fear,

or worry that was not focused on the baby. Toddlers were rated on a 0- to 3-point global score (0 = no distress, 1 = fleeting distress, 2 = moderate distress, 3 = strong distress).

Emotion labelling: A categorical variable indicating whether or not the toddler labelled the baby's emotional state (saying things such as 'baby is sad' or 'baby is hungry').

In addition, using Nichols et al.'s coding scheme, two overall global scores were given:

Prosocial acts: A categorical variable indicating whether or not the toddler spontaneously helped the baby (e.g., stroking or offering the bottle/rattle).

Empathic concern: An overall score of toddlers' concern for/about the baby coded on a 4-point scale (0 = no empathic concern for the baby, 1 = mild empathic concern for the baby, 2 = moderate empathic concern for the baby, 3 = strong empathic concern for the baby). To achieve the maximum score, toddlers needed to show a spontaneous prosocial act accompanied by displays of urgency or insistence in helping the baby and/or concern about the baby.

Second, frequency scales were used to index how often the parent: (i) asked questions about the emotion of the baby; (ii) talked about helping the baby. In addition, the total duration of parental talk about the baby was recorded. Parents' talk about anything else (e.g., talk about the picture book / outside distractions) was not included in this variable. Parent modelling of help for the baby was also coded, but only evident in thirteen parents (8.3%) and so this code was removed from further analysis.

To establish inter-rater reliability, two graduate raters independently coded 20% of the videos. All coding was done at the most fine-grained level before creating dichotomous variables, so intra-class correlations (ICCs) were calculated for both coders' codes of

frequencies of behaviours and codes on the behavioral scales. For toddler codes, the average ICC was .88, with individual ICCs ranging from .76 to .97. For parent codes, the average ICC was .87, with individual ICCs ranging from .77 to .99.

Analysis Plan

Our first set of analyses concerned gender differences and associations between individual toddler codes, treating emotion labelling and spontaneous prosocial behavior as binary (0/1) variables and controlling for language ability. The second set of analyses focused on parental questions and suggestions for helping the baby, expressed as proportions of total 'on task' talk. The third set of analyses explored the interaction between parent and toddler gender on toddler behavior, controlling for child language, and, as above, taking into account whether the dependent variable was dichotomous or not. Significant interactions were followed up with a simple slope analysis.

Results

As outlined above, presentation of results corresponds to the three study questions, with the first two sections focusing on toddler reactions to the crying baby paradigm and parental responses to these toddler behaviors. In the third section, the influence of gender composition of the parent-toddler dyad as a predictor of variation in toddler and parent responses is explored.

Toddler Responses in the Crying Baby Paradigm

As shown in Table 2 the majority of toddlers responded in some way to the crying baby. Those few who did not, simply carried on reading the book with their parent. Specifically, 88 toddlers (69.8%) looked at the baby, pointed to the baby, approached the baby, and/or stopped playing, showing an attentional response for at least half of the crying

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period; 108 (68%) displayed at least fleeting distress (scored 1 or above) and 62 (39%) displayed either moderate or strong distress in response to the crying baby. In addition, 71 toddlers (44%) provided an emotion label when reacting to the baby (e.g., labelling the baby as ‘sad’). However, just 23 toddlers (14%) spontaneously displayed a prosocial act, such as offering a toy to the baby or patting the crying baby.

Table 2. Descriptive statistics and bivariate correlations of toddler responses to Crying Baby Paradigm (N = 156)

* $p < .05$ ** $p < .005$

	<u>Descriptive Statistics</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
1. Attention	M = 0.0177 SD = .84	–					
2. Emotion Labelling	0 = 56.1% 1 = 43.9%	.341**	–				
3. Spontaneous Prosocial Behavior	0 = 86.4% 1 = 13.6%	.247**	.178*	–			
4. Personal Distress	31.8% none 27.9% fleeting 26% moderate	.295**	.043	-.162*	–		
5. Empathic Concern	29% none 27.1% mild 27.7% moderate	.550**	.531**	.582**	.043	–	
6. Expressive Language	M = 58.01 SD = 22.80	-.001	.216**	.100	-.049	.074	–
7. Child Age	M = 24.38 SD = .74	-.144	-.045	.058	-.095	-.050	.217**

As illustrated in Table 2, the different toddler responses showed several noteworthy associations and dissociations. First, attention toward the crying baby was positively associated with emotion labelling, prosocial behavior and scores for both empathic concern and personal distress. Second, personal distress was not significantly associated with empathic concern, but was inversely correlated with prosocial behaviour. As expected given the coding overlap, prosocial behavior and empathic concern were also significantly positively correlated. Third, toddlers who provided an emotion label were more likely to behave in a prosocial manner toward the baby and were rated as showing greater empathic concern.

Emotion labelling requires some language competence. Confirming this view, an independent samples *t*-test showed significantly higher mean expressive language scores for toddlers who provided an emotion label ($M = 64.82$) than for those who did not ($M = 55.38$), $t(149) = 2.70, p = 0.008, d = .45$. Independent samples *t*-tests were also used to compare boys' and girls' responses to the crying baby paradigm. These showed no mean gender differences in toddlers' attention, empathic concern and personal distress, $t_s < .92, p_s > .366$. Likewise, Chi-squared tests showed that similar proportions of boys and girls (14% and 13%, respectively) were categorised as displaying a spontaneous prosocial response, $\chi^2 = .017, p = .545$. However, girls were more likely than boys to provide an emotion label for the crying baby (57% girls vs 33% boys), $\chi^2 = 8.94, p = .003, \phi = .240, p = .003$. When toddler expressive language was included in a logistic regression with emotion labelling as the dependent variable and gender and expressive language as predictors, independent predictive effects were found for both gender and expressive language (see Table 3).

Table 3. Results of logistic regression for emotion labelling

<i>Child Gender</i>	$B = .982$ $p = .005$
<i>Expressive Language</i>	$B = .019$ $p < .001$

model $\chi^2 = 15.49$, $p < .001$, and Nagelkerke $R^2 = .131$.

Parental responses to their toddler in the crying baby paradigm

Table 4. Parent discourse and toddler behaviour
Pearson Correlations

Toddler Responses	N	Parent Discourse		
		Overall Talk	Questions	Talk about Helping Baby
Attentional Response	159	.469**	.291**	.263**
Emotion Labelling	161	.332**	.306**	.202**
Spontaneous Prosocial Behavior	159	.142	.180*	.289**
Personal Distress	159	.254**	.070	.063
Empathic Concern	160	.518**	.296**	.482**
Mean (SD)		9.25 (8.34)	1.09 (1.46)	1.53 (2.43)

* $p < .05$ ** $p < .005$

Independent t -tests showed no significant difference between mothers and fathers for the overall duration of talk to their toddler ($p = .164$), for frequencies of asking questions ($p = .947$), or talking to their toddler about helping the baby ($p = .287$). Overall duration of parental talk was similarly correlated with frequency of parental questions, $r = .430$, $p < .001$ and talk about helping the baby, $r = .642$, $p < .001$.

As shown in Table 4, overall parental talk was significantly related to all toddler measures except spontaneous prosocial behavior; moreover, the correlation coefficients for mothers and fathers considered separately were very similar. Parent questions and talk about the crying baby's emotion showed similar relations to toddler measures; note that these measures were also related to toddlers' spontaneous prosocial behavior but unrelated to toddlers' personal distress.

To control for variation in parental verbosity, partial correlations controlling for overall duration of talk about the baby were conducted. Specific associations between the content of parent talk and toddler reactions emerged, such that comments and questions about baby's emotions were only related with toddlers' own instances of emotion labelling, $r = .21$, $p = .010$, whereas parent talk about helping the baby was only significantly associated with toddlers' spontaneous prosocial behaviour, $r = .26$ $p = .001$, and toddlers' overall empathic concern, $r = .23$, $p = .005$. These findings remained unchanged when measures of talk were considered separately for mothers and fathers.

Interaction between parent and toddler gender

To explore the interaction between parent and child genders for children's response to the crying baby we applied logistic regressions to explore the combined effect of toddler and parent gender on prosocial responses and emotion labelling, and ANCOVAs to explore the effect of parent-toddler gender on toddler attentional or behavioral responses, empathic concern and personal distress. In both analyses children's expressive language was controlled.

Logistic regression revealed no significant toddler by parent gender interaction for either emotion labelling, $p = .841$ or prosocial behavior, $p = .321$ controlling for expressive

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language. While the ANCOVAs showed no interaction between parent and toddler genders for toddlers' attentional responses: $F(1,150) = 2.61, p = .108$, and a marginally significant interaction effect for personal distress: $F(1,151) = 3.43, p = .066$. There was a significant interaction effect of parent /toddler gender for toddlers' for empathic concern $F(1,151) = 4.49, p = .036, \eta_p^2 = .030$ (see Table 5 and Figure 1.).

Table 5. ANCOVA results for child responses and parent and child gender

IV	DV		
	Attention	Empathic Concern	Personal Distress
<i>Expressive Language</i>	F = .084 p = .772	F = .455 p = .501	F = .244 p = .622
<i>Child Gender</i>	F = .660 P = .418	F = 1.530 p = .218	F = .000 p = .987
<i>Parent Gender</i>	F = 2.368 p = .126	F = .506 p = .478	F = .312 p = .578
<i>Child x Parent Gender</i>	F = 2.610 P = .108	F = 4.49 p = .036	F = 3.426 p = .066

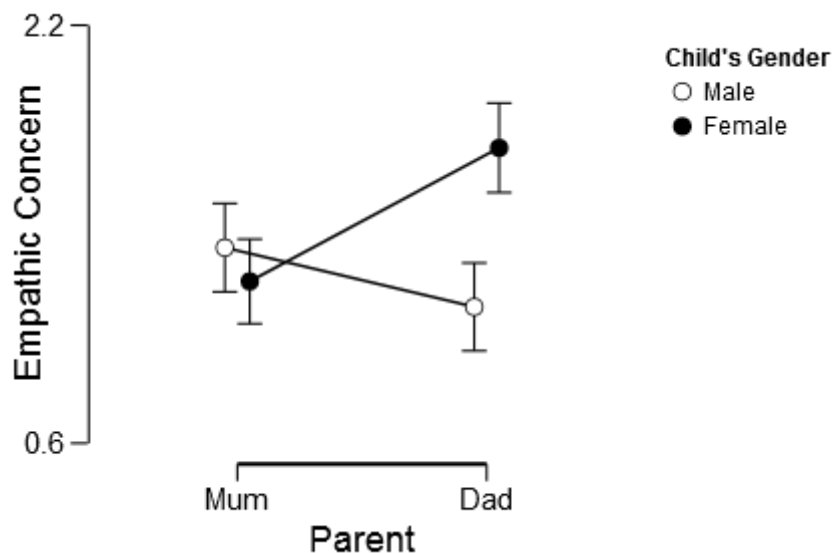


Figure 1. Empathic Concern in the parent-child dyad, controlling for child expressive language

To investigate the significant interaction between parent and child genders for empathic concern as well as the marginal interaction for personal distress further, follow-up exploratory independent t-tests separately for boys and girls were conducted, with parent gender at the independent variable. These showed that the presence of an opposite-gender parent was associated with stronger displays of personal distress in boys: $t(84) = 2.05, p = .043$ but not girls: $t(66) = -1.07, p = .289$. Conversely, the presence of an opposite-gender parent was associated with stronger displays of empathic concern in girls: $t(66) = -1.82, p = .074$, but not boys: $t(85) = 0.96, p = .342$. While only marginally significant, these contrasts are noteworthy given, (i) the lack of overall gender contrasts in toddlers' displays of personal distress or empathic concern and (ii) their consistency of direction (i.e., stronger toddler responses in opposite gender dyads).

Discussion

Three sets of findings emerged from this study of 156 parent-toddler dyads observed during an empathy-eliciting crying baby paradigm. First, behavioral coding of toddlers' attentional, emotion labelling and prosocial behavior to the crying baby paradigm demonstrated striking individual differences in toddlers' responses to a crying baby in the presence of their parent. As expected, toddlers' responses to the baby were grouped such that a toddler who attended to the crying baby was also more likely to label the emotion of the baby, show a spontaneous prosocial response and express empathic concern. Interestingly, however, personal distress was unrelated to these other behaviors, suggesting that distress does not reliably either increase or reduce the likelihood of any of the other child behaviors. Second, parents' discourse about the crying baby were specifically related to the behavior of their toddler. That is, toddlers' emotional labelling was related to parental questions about the

baby's emotion, toddlers' spontaneous prosocial behavior elicited parental questions about how to help the baby and parents' talk about helping the baby was related to toddlers' overall empathic concern. Third, with the exception of increased emotion labelling in girls, there were few main effects of either toddler or parent gender, but interaction effects did indicate an effect of the gender composition of the parent-toddler dyad. Specifically, girls observed with fathers were more likely to display empathy than girls observed with mothers. Below, we discuss each of these findings in turn.

Crying baby paradigm and toddler responses

Overall, our results suggest that this home-setting adaptation of the crying baby paradigm is sensitive to individual differences in toddlers' responses to infant distress. Specifically, empathic responses such as attending to the baby, talking about the baby's emotions, and spontaneously helping the baby were associated and related to overall ratings of affective and behavioral empathic concern. This pattern of responses echoes Lin and Grisham's (2017) conclusion that helping actions in response to a crying baby were motivated by the interaction between empathic concern and cognitive exploration in 36 month old children. Unlike Lin and Grisham however, the current study did not find interaction effects between children's behavioral responses. The most likely reason for this contrast hinges on the age difference between the two study samples: at 24-months, some but not all toddlers were able to label the baby as sad, and none was able to formulate a question about *why* the baby was feeling sad, although a small number of toddlers offered explanations such as 'wants mummy' or 'hungry.'

Our current findings, by investigating individual differences in responses and how responses emerged together or separately, expand on Nichols et al.'s (2015) findings that 24-month old toddlers were more responsive to the baby than younger children. Specifically, the range in toddler responses (and their interplay), demonstrates that emotion regulation and

empathic responses are still very much nascent at 24-months (e.g., Brownell, 2013). Indeed, Spinrad and Stifter (2006) found that concerned awareness in 18-month old infants was related to prosocial behavior with their mothers, but only to personal distress in response to the crying baby. Our results show that individual differences in empathic responding are detectable by 23 months of age.

Strengthening findings from previous studies (e.g., Cole, Michel, & Teti, 1994; Eisenberg, Fabes, Murphy, et al., 1996; Fink, Heathers, & De Rosnay, 2015), toddlers' empathic concern and personal distress emerged as distinct responses. That is, while some toddlers appear able to manage their own affective response and respond in a concerned way, for others, the experience of distress becomes overwhelming and impedes any interaction with the crying baby. Indeed, the distinctness of these constructs and the lack of an inverse relationship suggests that some children displayed both personal distress and empathic concern. This finding highlights the developmental work involved in learning to overcome one's own distress in order to empathically respond to another in distress. However, our findings did contrast with Lin and Grisham's (2017) report of associations between personal distress and some spontaneous infant-oriented behaviors, including concerned expression, cognitive inquiry, and even approaching the infant. Contrary to Lin and Grisham's (2017) findings, emotion labelling, a more cognitive component of empathy, was unrelated to personal distress. Possible explanations for these contrasting findings include between-study contrasts in: (i) sample age; (ii) study setting (the availability of a toddler's own comfort objects in their home allowing for self-distraction in the more naturalistic context); and (iii) parental involvement.

Parental discourse in the crying baby paradigm

Previous studies have typically adopted unstructured home observations to examine how parents use discourse foster young children's empathy and prosocial behavior (for a

recent review, see Spinrad & Gal, 2018). While early accounts presented unidirectional models of socialization, more recent work (e.g., Dunn, 2006; Kochanska, Philibert, & Berry, 2009) has highlighted the dynamic interplay between parents and children. From this perspective, naturalistic studies offer only limited opportunities to distinguish between socialization effects of parental warmth or sensitivity and child-driven effects on parental behavior. In this regard, it is worth noting that parents in the current study were asked not to take the lead and simply to respond to their toddler's reactions to the crying baby doll (and data from the only parent who did not comply with this instruction were excluded from our analyses). By enabling the toddler to guide the direction of the interaction, our study provides a valuable opportunity to explore the various types of toddler reactions to the crying baby paradigm (i.e., attentional, affective, cognitive, prosocial and empathic responses) as predictors of parental discourse. Therefore, contrasts in parent behavior at least partly reflect variation in the extent to which toddlers' reactions to the crying baby elicited parental talk. In addition, the association between parent and child behaviors may also reflect the dyadic history of handling distressing situations. Parents who talked about helping the baby likely either have a habit of reinforcing helping behavior or engage in discourse of this nature with their children often. Indeed, previous research has shown that both reinforcement and discourse about helpful behaviors and others' emotions socialize empathic behavior and prosocial development (Hastings, Utendale, & Sullivan, 2007).

The inclusion of both fathers and mothers sets the current study apart from the extant literature. Early work in this field indicated that fathers are less aware of children's prosocial behaviors than are mothers (Grusec, Goodnow, & Cohen, 1996); the differential experiences theory (Lewis & Gregory 1987) also supports a prediction of parental differences.

In contrast, recent theoretical accounts highlight similarities between mothers' and fathers' parenting (Fagan, Day, Lamb, & Cabrera, 2014). Consistent with this view, our study revealed similar frequencies for mothers' and fathers' questions, talk about help and duration of talk about the baby. The specificity of the association between toddler behaviors and parent talk also suggests that both mothers and fathers were responding appropriately based on their toddlers' behaviors. While we cannot conclude that real-life situations involving infant distress would also elicit similar responses from mother-toddler and father-toddler dyads, the similarity of findings from mothers and fathers in the current study is striking, especially given the difference in hours spent with the child for mothers and fathers in this sample. However, these findings may not be generalizable to samples with differing education levels. The different child behaviors that emerged when considering the gender composition of parent-child dyads also highlight the need to adopt a more nuanced approach when examining the contribution each parent makes to family processes of socialization.

Effects of toddler gender in the crying baby paradigm are specific and interact with parent gender

With regards to potential effects of gender on toddlers' reactions to the crying baby paradigm our results indicate that similarities between boys and girls greatly outweighed contrasts. Specifically, while boys were less likely than girls to label the baby's emotion, there were no gender differences in the frequency of attentional, behavioral or empathic responses to the crying baby paradigm. This was unexpected given the previous findings that girls are more empathic (e.g., Spinrad & Stifter, 2006).

In contrast, differences between mother-daughter, mother-son, father-daughter and father-son dyads were evident. Specifically, boys observed with mothers showed more distress than boys observed with fathers; in contrast, girls observed with fathers showed (marginally) more empathic concern than girls observed with mothers; these results remained

essentially unchanged when effects of language were controlled. Though there were no overall gender differences in either parent or toddler responses to the crying baby paradigm, these interactions suggest gender-specific dyadic processes. With regards to personal distress it is possible that at 24-months of age boys are already sensitive to signals from fathers that may constrain their expressions of distress. Support for this conclusion comes from recent findings from a study in which preschool children (mean age = 31.12 months) displayed higher levels of attention-seeking (rather than distress) with fathers than with mothers during an observational paradigm designed to elicit feelings of jealousy towards an infant sibling (Volling et al., 2014). In discussing this finding, Volling et al. (2014) noted that children may adopt attention-seeking behaviors to elicit emotional assurance from their fathers, who may be less responsive than mothers to clingy or distressed expressions of emotion.

A contrast in toddlers' expectations of fathers and mothers may also explain why girls displayed more empathic concern for the crying baby in the presence of fathers than with mothers. Specifically, large contrasts in childcare responsibilities meant that the toddlers in this study were less likely to have observed fathers engaged in soothing behaviors than mothers, which may explain why girls initiated more empathic responses to the crying baby when in the presence of a father.

Here, our results are in accord with the findings reported by Chaplin, Cole, and Zahn-Waxler (2005) and Endendijk et al (2014), in that fathers may have supported gender-stereotyped behaviour by encouraging empathy in their daughters and in discouraging displays of distress in their sons. Indeed in a study of primary school children, Eisenberg, Fabes, and Murphy (1996) found that fathers gave better emotion-centred advice to their daughters who were low in social functioning when they were distressed in the midst of a comforting paradigm; this was not true for fathers of sons. This trend suggests that fathers invest greater effort in teaching their daughters (rather than their sons) to be comforting.

Caution must be taken when interpreting these finds, as we may have inflated Type I Error by using multiple ANOVAs and regressions due to our mixture of categorical and continuous variables.

Conclusions

Strengths of this study included the involvement of both mothers and fathers, the use of a home setting and the inclusion of detailed behavioral coding rather than a reliance on questionnaire measures to assess empathy. However, three key limitations should also be noted. Both ethical (the paradigm elicited moderate distress for some of the toddlers) and scientific (a repeated exposure to the crying baby paradigm is likely to elicit strong practice effects) reasons ruled out a within-study design involving parallel sessions with each parent within the home visit. As such, the current results do not directly compare the responses of mothers and fathers to their own toddler, which may have introduced uncontrolled individual differences to the analyses. Future research using new methods to elicit empathy repeatedly in a toddler without compromising the validity of the paradigm will shed light on the specific mother-toddler and father-toddler relationships.

In addition, there was a significant difference between the expressive language scores of those toddlers who did or did not complete the crying baby paradigm. Though expressive language is controlled for in the majority of the statistical analysis, this difference is marked and should be noted. This is likely due to different time constraints on the research visit as those children with less sophisticated language completed the visit more slowly and therefore were more likely to have specific tasks dropped. In the future, care should be taken to ensure there is adequate time for the paradigm regardless of the toddler's communication abilities. Similarly, the toddlers who completed the paradigm had older mothers; to ensure generalizability, the paradigm should be completed with a more diverse age range.

The current study was the first to explore empathic responses to a crying baby in toddlers and mothers' and fathers' socialization of empathic responding in the home setting. For the most part, toddlers were able to respond empathically and parental discourse was finely tuned to the types of behaviors that their toddlers displayed. Importantly, there were very few gender differences, for either toddlers or parents, suggesting that girls and boys are capable of empathy in equal measure. In addition, mothers and fathers do not differ in their responsiveness to their toddlers' reactions, although they respond differently based on the composition of the dyad for some child behaviors. Understanding the development of empathy is vital to support parents foster prosocial responses in children. Going forward, researchers should investigate how these early expressions of empathy may predict later social functioning and protect against later antisocial behavior.

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