Predicting Sympathy and Prosocial Behavior from Young Children's Dispositional Sadness

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Abstract

The purpose of this study was to examine whether dispositional sadness predicted children's prosocial behavior and if sympathy mediated this relation. Constructs were measured when children ($n = 256$ at Time 1) were 18-, 30-, and 42-months old. Mothers and non-parental caregivers rated children's sadness; mothers, caregivers, and fathers rated children's prosocial behavior; sympathy (concern and hypothesis testing) and prosocial behavior (indirect and direct, as well as verbal at older ages) were assessed with a task in which the experimenter feigned injury. In a panel path analysis, 30-month dispositional sadness predicted marginally higher 42-month sympathy; in addition, 30-month sympathy predicted 42-month sadness. Moreover, when controlling for prior levels of prosocial behavior, 30-month sympathy significantly predicted reported and observed prosocial behavior at 42 months. Sympathy did not mediate the relation between sadness and prosocial behavior (either reported or observed).

Prosocial behavior and empathy-related responding, particularly sympathy, have frequently been related to children's moral and social competence (Eisenberg, 2005; Eisenberg, Fabes, & Spinrad, 2006). Moreover, early individual differences in prosocial tendencies appear to predict prosocial behavior in adulthood (Eisenberg et al., 2002). Thus, there is considerable interest in factors related to the early development of aspects of prosocial responding.

Because empathy-related responses involve vicarious emotion and often are evoked by another's sadness/distress, individual differences in young children's tendencies to experience general sadness seem relevant to their capacity for empathy and sympathy. However, few researchers have examined the relation of dispositional sadness (i.e., the tendency to experience sadness in general [often about one's own state/situation] versus sadness in response to another's sadness/distress) to sympathy or prosocial behavior (see Denham & Burger, 1991, for an exception). It would seem that proneness to sadness, unlike emotions such as anger, might predispose children to empathy and, if they are not overly aroused by sadness, foster prosocial behavior via sympathy. The goal of this study was to examine the relation of young children's dispositional sadness to their sympathy and prosocial behavior and to test if any link between sadness and prosocial behavior was mediated by sympathy.

Prosocial behavior typically is defined as voluntary behavior intended to benefit another (Eisenberg et al., 2006). Most researchers are especially interested in *altruistic* prosocial behavior, which is prosocial behavior that is not motivated by extrinsic or social rewards but by concern for others and perhaps moral values. In the early years before children have developed many clearly defined and internalized values, empathy-related emotions such as sympathy are particularly likely to motivate altruistic prosocial behaviors.

Although researchers have defined empathy in various ways, one commonly used

definition of empathy is that it is "an affective response that stems from the apprehension or comprehension of another's emotional state or condition, and which is identical or very similar to what the other person is feeling or would be expected to feel" (Eisenberg et al., 2006, p. 647). However, empathy alone probably often is not enough to motivate prosocial behaviors. Empathy is believed to frequently result in sympathy, an affective response that consists of feeling sorrow or concern for the needy or distressed person, as opposed to merely experiencing the same emotion that the person is experiencing (e.g., sadness or distress) or is expected to experience (Eisenberg et al., 2006). Feeling concern for another's situation or distress (i.e., sympathy) has been conceptually (e.g., Batson, 1991, Hoffman, 2000) and empirically associated with prosocial behavior (Batson, 1991; Eisenberg & Fabes, 1990; Zahn-Waxler, Robinson, & Emde, 1992; see Eisenberg et al., 2006, for a review). This association between concerned reactions and prosocial behavior is evident in 1- to 2-year-old children (e.g., Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008; Spinrad & Stifter, 2006; Svetlova, Nichols, & Brownell, 2010; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) and is occasionally observed in even younger children (Roth-Hanania, Davidov, & Zahn-Waxler, 2011).

Because of the role of vicarious emotion in empathy-related responding, it is not surprising that researchers have examined the relation of negative emotionality to prosocial behaviors and/or empathy/sympathy. Investigators studying situationally induced sadness have found little consistency in the relation between such sadness and prosocial behaviors (see Carlson & Miller, 1987). In contrast, researchers examining the relation between dispositional negative emotionality and prosocial behavior generally have found that they are negatively related, although this relation has not been highly consistent and likely varies for different negative emotions. However, much of the work has focused on anger or a global measure of

negative emotionality (e.g., Diener & Kim, 2004; Strayer & Roberts, 2004; see Eisenberg et al., 2006, for a review).

Dispositional sadness might be expected to relate somewhat differently than negative emotions such as anger to sympathy and prosocial behavior, especially at a young age. Rothbart, Ahadi, Hershey, and Fisher (2001) defined sadness as negative affectivity and lowered mood and energy related to exposure to suffering, disappointment, and object loss. Being receptive to others' sadness or distress, or expected sadness/distress based on their situation, appears to be particularly relevant to sympathy. People who are prone to sadness may be especially responsive to others' sadness, which may in turn evoke empathy, and as a consequence, sympathy and prosocial behavior. Moreover, children who experience sadness relatively frequently may be especially prone to experience sorrow for others in distress (sympathy) even if they do not actually vicariously experience another's negative emotion (empathy). Because researchers often use measures that likely tap both empathy and sympathy, relations between these constructs and sadness (or negative emotionality more generally) often cannot be attributed solely to empathy or sympathy alone.

Consistent with the view that dispositional sadness is related to prosocial behavior, empathy, and sympathy, Howes and Farver (1987) found toddlers who cried more than their peers were more prosocial. Moreover, Robinson, Zahn-Waxler, and Emde (1994) noted that young children who expressed more negative emotion were more likely to be stably high in sympathy (which the authors call "empathy," in line with Hoffman's (1975) definition). In addition, Rothbart, Ahadi, and Hershey (1994) found that fear, but not anger, at the age of two predicted higher empathy at the age of seven; this measure of empathy likely reflected both empathy and sympathy. In a study of elementary school children, children's negative emotional

expressivity (but not anger) tended to be positively related to their empathy (Roberts & Strayer, 1996). Furthermore, in a study of adults, dispositional sadness was positively related to self-reported sympathy; a global measure of negative affectivity was only weakly, positively related to sympathy when controlling for social desirability (Eisenberg et al., 1994).

Thus, people prone to sadness may be particularly receptive to others' sadness, and, especially for such people, others' displays of sadness may communicate the need for social support and prosocial actions. Demetriou and Hay (2004) found that toddlers sometimes responded with prosocial behavior to another toddler's signals of distress (which included crying, weeping, and sobbing). Jenkins and Ball (2000) found that others' sadness (but not anger) motivated 6- to 12-year olds' prosocial behaviors because children saw sadness as a cue to others' distress and neediness. Biglan, Rothlind, Hops, and Sherman (1989) reported similar results for adults' reactions to another distressed adult; participants said that another's distress prompted the desire to comfort and support the needy other. Relatedly, Brownell, Svetlova, and Nichols (2009) reported that young children readily shared with an unfamiliar adult when the adult vocalized her desire or need for the item. Thus, it appears that communication of desire, need, and loss (whether by sadness, distress, or other reactions) is a cue to others to intervene with prosocial behaviors that are rooted in sympathy (see also Svetlova et al., 2010). Moreover, those who have frequently experienced sadness themselves may be especially sensitive to such cues.

To summarize, our predictions were based on relevant research indicating that negative emotions (including sadness), and sadness specifically, have been found to be positively related to empathy, sympathy, and/or prosocial behavior. Thus, it is important to discuss why sadness may be related to these constructs conceptually, as well as to provide empirical evidence which

supports our conceptual reasoning. Susceptibility to negative emotions—especially sadness (Eisenberg et al., 1994)—is likely to predispose a person to experience empathy, and the sharing and understanding of another's emotional state inherent in empathy can provide an important link between sadness and sympathy. The idea that is at the core of our hypothesis is that a person who is dispositionally prone to sadness has an "advantage" in regard to experiencing empathy and sympathy because they are relatively likely to understand, and possibly share, another person's sadness and/or to feel sorrow for another. However, it is important to note that we did not explicitly measure empathy in the present study, but primarily focused on sympathy because sympathy, rather than empathy, is believed to motivate prosocial behavior (Eisenberg et al., 2006). Moreover, as already noted, it is possible that dispositional sadness makes it easier to experience sympathy for another person, even if the viewer does not actually experience (i.e., share) the other's negative emotion (i.e., empathize). Thus, one might expect a direct pathway from dispositional sadness to sympathy, as well as an indirect path from dispositional sadness to sympathy *via* empathy.

However, there is also reason to predict that people high in dispositional sadness may not be sympathetic or prosocial. If children prone to sadness are more likely to experience a self-focused personal distress reaction to others' negative emotions (due to emotional overarousal) than sympathy, they would be expected to be low in sympathy and prosocial behavior (Batson, 1991; Eisenberg et al., 2006). Denham and colleagues have found that children's observed sadness at preschool has been negatively related to their prosocial behavior at the preschool (Denham, 1986; Denham & Burger, 1991). Sad children might be increasingly rejected or treated negatively by their peers (Caplan & Hay, 1989; Rubin, Bukowski, & Parker, 1998) and, especially over time, may become more self-focused and/or may have fewer opportunities to

interact with peers and to engage in prosocial behavior. Thus, there are reasons to expect young children's dispositional sadness to be positively or negatively related to their sympathy and prosocial behavior, although we favored the former alternative.

Due to the dearth of research on the relation of young children's dispositional sadness to their sympathy and prosocial behavior, the aim of this study was to examine these relations, as well as the relation of sympathy to prosocial behavior, using a multi-method approach and a longitudinal design to better untangle potential cause and effect. Children's sadness was assessed with reports from mothers and non-parental caregivers; sympathy was observed; and children's prosocial behaviors were reported by mothers, fathers, and non-parental caregivers, as well as observed. To our knowledge, this is the only study that has examined relations between young children's sadness and their sympathy and prosocial behavior while controlling for the stability of the constructs across time. We chose to focus on a young age range because prosocial behaviors are generally starting to develop by 18 months (and sometimes even earlier, see Roth-Hanania et al., 2011) and are increasing throughout the period examined (Eisenberg et al., 2006). It was of interest in the current study to investigate the longitudinal development of, as well as relations among, the constructs examined herein.

It was hypothesized that young children who are dispositionally susceptible to sadness, are better acquainted with the emotion of sadness and may be more likely than their peers to respond with sympathy and/or prosocial behavior to an empathy- or sympathy-eliciting situation. Particularly at a young age, being acquainted with the emotion of sadness may help to orient the child toward another's emotions and needs. This hypothesis was based on the aforementioned arguments and findings linking negative emotionality or dispositional sadness to empathy or sympathy, but it was somewhat tentative because sadness might also overwhelm young children

and result in feelings of personal distress rather than sympathy (see Batson, 1991; Eisenberg & Fabes, 1998). We further predicted that children's sympathy would mediate the relation between their dispositional sadness and prosocial behavior. However, given the limited research on sadness and prosocial tendencies, we were not highly confident in this prediction.

It also seemed possible that sympathy affects children's sadness. Sadness is expected to be a relatively stable construct; however, changes in children's socio-cognitive or emotional development may account for increases in children's dispositional sadness over time. Young children who are attuned to others' negative emotions might become increasingly adept at understanding sadness and increasingly prone to experiencing sadness because of their awareness of others' sadness and suffering. In the present study, we examined this possibility when indicated by the data.

Method

Participants

Participants were young children in a longitudinal study and their mothers, fathers, and non-parental caregivers. Assessments used were at 18 months (henceforth labeled Time 1 [T1]), 30 months (T2), and 42 months (T3). At T1, 256 children (115 girls; mean (M) age = 17.79 months, standard deviation (SD) = .52) participated in the laboratory assessment and/or by questionnaire assessments completed by their mothers (9 families participated by mail-in questionnaires only). At T2 and T3, 230 children (102 girls; M age = 29.77 months, SD = .65) and 210 children (93 girls; M age = 41.75 months, SD = .65), respectively, participated in the laboratory assessment and/or by questionnaire assessments completed by their mothers (14 and 18 families participated by mail-in questionnaires only). In addition, at T1, T2, and T3, non-parental caregivers (n = 176, 153, and 151) and fathers (n = 201, 161, and 136) provided

questionnaires, usually by mail. At the T1 laboratory assessment, 82.4% of children were

Caucasian, 5.1% were African American, 2.4% were Asian, 5.9% were Native American, 0.4%

were rated as another race, 1.2% were a mix of two minority races, and 2.4% were unknown. In

regard to ethnicity, 76.5% of the children were not Hispanic/Latino and 23.1% were

Hispanic/Latino. Percentages were similar at T2 and T3. At T1, T2, and T3 respectively,

92.1%, 89.1%, and 86.3% of children lived in a two-parent household. Parents' education at T1

ranged from the completion of grade school to the completion of a Ph.D., J.D., or M.D., but on

average parents had completed some college or received a 2-year degree (34.6% of mothers and

36.9% of fathers). Annual family income ranged from less than $15,000 to more than $100,000;

the average family income was $45,000 - $65,000. Education and income were similar at T2 and

T3.

Attrition analyses. Attrition analyses were conducted to determine if there were

differences between individuals who participated at all three time points ($n = 196$) and those who

participated at only one or two time points ($n = 68$). T-tests (for continuous variables) or χ^2

difference tests (for categorical variables) were computed for demographic variables and all

study variables. Individuals who attrited were lower on hypothesis testing (an indicator of

sympathy), prosocial verbalizations, and family income ($M = 3.61$; 3 = between $30,000 and

$45,000; 4 = between $45,000 and $60,000) than those who remained in the study at all

assessments, ts(122.94, 126.35, 226) = 2.22, 1.98, and 2.08, ps = .03, .05, and .04, respectively.

In addition, families who attrited were lower on mothers' education ($M = 4.00$; 3 = high school

graduate; 4 = some college), and had children who were more likely to be Hispanic/Latino and

another race besides Caucasian, χ^2 (5, 1, 6) = 12.17, 9.37, and 22.63, ps = .03, .01, and .001,

respectively.

Procedure

Mothers and children were recruited from three hospitals in a metropolitan area at the time of the children's birth by distributing informational forms to mothers in the postpartum ward. Children who were recruited were born full term (> 37 weeks), healthy, and without complications. Parents who expressed interest were contacted later and asked to come to the laboratory with their child for the observational assessments at approximately 18 months and then again at 30 and 42 months. Prior to each assessment, mothers were sent a packet of questionnaires by mail to complete and to bring to the laboratory visit (fathers were sent a shorter packet that did not include temperament assessments) and additional questionnaires were filled out by the mother at the laboratory. Laboratory sessions lasted approximately 1.5 to 2 hours. Mothers' questionnaires included measures of their child's sadness and prosocial behavior. While the mothers were filling out the questionnaires, the children participated in tasks that assessed sympathy and prosocial behavior. Fathers and caregivers received questionnaires by mail. Families and caregivers received a modest payment for their participation and children received two small toys or t-shirt at the end of the laboratory session.

Measures

Measures of dispositional sadness and prosocial behavior were obtained via questionnaire, and sympathy and prosocial behavior were observed in the laboratory.

Sadness. Mothers and caregivers assessed children's dispositional sadness at T1 and T2 on a 7-point scale (0 = *never* and 6 = *always;* converted from the original 1-7 scale for interpretability) with 12 items from the Early Childhood Behavior Questionnaire (ECBQ; Putnam, Gartstein, & Rothbart, 2006; e.g., "During everyday activities, how often did your/this child become sad or blue for no apparent reason"; Cronbach's alphas (αs) = .81 and .87, for

mothers and caregivers, respectively, at T1, and αs = .82 and .79, for mothers and caregivers, respectively, at T2). At T3 mothers and caregivers assessed children's dispositional sadness with 13 items from the Children's Behavior Questionnaire (CBQ; Rothbart et al., 2001). The CBQ is similar in format to the ECBQ, but was designed for children ages 3 to 7 years old. Mothers and caregivers rated items (e.g., "Is sad when a favorite possession gets lost or broken") on a 7-point scale (0 = *extremely untrue of your/this child* and 6 = *extremely true of your/this child*; converted from the original 1-7 scale for interpretability; αs = .77 and .74, for mothers and caregivers, respectively). Items on each scale were averaged to form composites (after reversing items if appropriate). None of the ECBQ or CBQ items pertained to sympathy although two items on the CBQ likely tap empathic susceptibility (i.e., upset or distress) to sad stories/TV (e.g.," Rarely becomes upset when watching a sad event in a TV show" [reversed]).

Sympathy. A simulation when the experimenter pretended to be hurt (henceforth labeled E Hurt; Zahn-Waxler, Radke-Yarrow, et al., 1992) was administered in the laboratory at T1, T2, and T3. Empathic concern or sympathy often is conceptualized as including both hypothesis testing and empathic concern (sympathy; e.g., Knafo et al., 2008). During this task, the experimenter entered the room, dropped a box of toys on her foot, and enacted pain and distress for one minute (during this time, the experimenter said things like "ouch, my toe really hurts" every 15 seconds, and displayed body movements such as rocking back and forth and rubbing the injured foot). The task was coded (using videotapes of the task) for hypothesis testing (i.e., the child's attempts to label or understand the problem; perhaps an indication of sympathy or concern for the other) every 10 seconds (0 = *no hypothesis testing,* 1 = *mild hypothesis testing* [e.g., looking from the experimenter to her injured foot with either mild or no body movement], 2 = *sustained or a clear act of hypothesis testing* [e.g., bending over, approaching foot, 3 or more

looks from the experimenter to her injured foot]; Liew et al., 2011; adapted from Zahn-Waxler, Radke-Yarrow, et al., 1992). Inter-rater reliabilities (i.e., Pearson rs [intraclass correlations (ICCs)]; based on 101, 68, and 75 observations at T1, T2, and T3, respectively) were .67[.65], .75[.70], and .63[.63] at T1, T2, and T3, respectively.

In addition, the task was coded for intensity of concerned attention (e.g., eyebrows down and forward over nose, head forward, lower face relaxed, eyes may squint) every 10 seconds (0 = *no concern,* 1 = *low or vague indication of concern* [e.g., eye squinting or facial sadness]*,* 2 = *moderate indication of concern* [i.e., quick flash or brief indication]*,* 3 = *intense indication of concern* [i.e., concern during the majority of the epoch being coded]). Inter-rater reliabilities (i.e., Pearson rs[ICCs]; based on 101, 68, and 75 observations at T1, T2, and T3, respectively) were .68[.68], .70[.70], and .34[.32] for concern at T1, T2, and T3, respectively. The low reliability of T3 concern is likely due to low frequency/occurrence of this behavior (67.2% of children had no occurrence of concern; 22% of children had the next highest score of 1.17), and thus it was dropped from further analyses.

Prosocial behavior. Prosocial behavior was measured with both adults' reports and observations.

Reported prosocial behavior. Mothers, fathers, and caregivers assessed children's prosocial behavior at T1, T2, and T3 on a 3-point scale (0 = *not true,* 1 = *somewhat true or sometimes true,* 2 = *very true or often true*) with 2 items from the empathy subscale of the Infant-Toddler Social and Emotional Assessment (ITSEA; Carter & Briggs-Gowan, 1999). These items were chosen because they reflect prosocial behavior rather than empathy (i.e., "Tries to make you feel better when you are upset," and "Tries to help when someone is hurt; for example, gives a toy,"; αs for these 2-item scales, for mothers, fathers, and caregivers, respectively = .70, .62,

and .78 at T1; .60, .73, and .57 at T2; and .62, .77, and .67 at T3).

 Observed prosocial behavior (E Hurt). Children's direct prosocial behaviors (e.g.,

kissing, hugging, or patting the experimenter), indirect prosocial behaviors (e.g., getting their

mother's attention in order to help), and prosocial verbalizations (e.g., "need bandaid?") were

coded every 10 seconds during the E Hurt task on 4-point, 3-point, and 4-point scales,

respectively. Inter-rater reliabilities (i.e., Pearson *r*s [ICCs]; based on 101, 68, and 75

observations, at T1, T2, and T3, respectively) were 1.0[1.0], could not be computed (96%

overlap), and .76[.68], for direct prosocial behaviors at T1, T2 and T3, respectively, 84[.83],

.92[.91], and .75[.76] for indirect prosocial behaviors at T1, T2, and T3, respectively, and

.93[.93] and .93[.62], for prosocial verbalizations at T2 and T3, respectively (prosocial

verbalizations were not coded at T1). Because they were fairly rare, these three types of

prosocial behavior were dichotomized (0 = *no occurrence* and 1 = *any occurrence*) and then

averaged within each time point. After averaging, the composite was then dichotomized so that

0 = *no occurrence of any of the three types of behavior* and 1 = *any occurrence of one or more*

type of behavior.

 Inter-rater reliability (specifically ICC) for some measures was likely somewhat low (i.e.,

less than .70) due to a low occurrence of the specified behaviors (see Table 1), resulting in few

opportunities for reliability coders to score the occurrence of a given behavior. For instance, T3

hypothesis testing (ICC = .63; coded 0-2) had a mean of .15. However, for some measures, the

ICC was higher for the combined measure used in the model (described below) than it was for

the individual measures (e.g., the combined measure of T1 sympathy had an ICC of .73).

Results

 For each of the constructs, relations were examined both within and across time. In

addition, hypothesized relations were tested with path analyses because there were often only

one or two predictors of a construct (as was discussed above, the three forms of observed

prosocial behavior were combined due to low frequencies; additionally, observed and reported

prosocial behavior could not be combined [see below]). M*plus* 6.1 (Muthén & Muthén, 1998-

2010) with robust maximum likelihood (MLR) estimation (to handle skewed data) was used for

the path analyses.

Relations of Key Constructs Within and Across Time

Correlations within each construct are presented in Tables 2, 3, and 4. Within each time,

mother and caregiver reports of children's sadness were at least near significantly correlated.

Both mother- and caregiver-reported sadness were significantly correlated across time (note that

caregivers often changed across the study period).

For zero-order correlations, concerned attention was transformed at T1 using a

logarithmic transformation (log10), whereas T2 concerned attention was transformed using a

square root transformation (these measures had skewness greater than 2 and kurtosis greater than

7). Concerned attention and hypothesis testing were correlated within T1 and T2 (concern was

dropped at T3). Concerned attention was not significantly correlated across time and hypothesis

testing was significantly correlated only across T2 and T3.

The measures of prosocial behavior were mother, father, and caregiver reports, as well as

the composite of observed prosocial behavior during the E Hurt task (indirect and direct

prosocial behavior, and prosocial verbalizations, all dichotomized). At T1, mothers' reports

were significantly correlated with fathers' reports and observed prosocial behavior (a negative

relation; T1 mothers' reports also were marginally correlated with T1 caregivers' reports).

Fathers' reports were significantly correlated with caregivers' reports and observed prosocial

behavior (negatively). At T2, the correlation between mothers' and fathers' reports, as well as between fathers' and caregivers' reports, was significant. At T3, the correlations of mothers' reports with fathers' reports and caregivers' reports were significant, and the correlation of caregivers' reports with fathers' reports was significant. It is worth emphasizing that both observed and reported prosocial behavior were stable over time, but these constructs were negatively related at T1 and unrelated at T2 and T3.

Mothers' and fathers' reports were both significantly correlated within reporter across all three time points. Caregivers' reports were significantly correlated from T1 to T2, and T2 to T3. Observed prosocial behavior was correlated from T1 to T2, and T2 to T3.

Data Reduction

Due to the limited number of indicators for constructs and the fact that initial confirmatory factor analyses indicated that observed and reported prosocial behavior could not be combined, we opted for a path analysis and reduced the data into single constructs. Measured variables were averaged into composites for each of the constructs of interest (see Table 5 for correlations of composite measures across time). Sadness consisted of an average of mothers' and caregivers' reports at each time point (they were significantly related at 2 assessments and near significantly related at the third). Hypothesis testing and concerned attention tend to load on the same latent factor (Liew et al., 2011) and were significantly correlated within both time points. Thus, hypothesis testing and concerned attention (the untransformed measures) were standardized (because they were on different scales) and then averaged at T1 and at T2 (T3 concerned attention was dropped due to low reliability). Reported prosocial behavior consisted of an average of mother, father, and caregiver reports within each time point. Measures of observed prosocial behavior were the dichotomized composite described above of E Hurt direct

and indirect prosocial behavior at T1 and an average of E Hurt direct prosocial behavior, indirect prosocial behavior, and prosocial verbalizations at T2 and T3 (there was no measure of prosocial verbalizations at T1).

Relations with Gender

To examine the relations between gender and study variables, t-statistics or χ^2 statistics were computed for the composite measures described above. Constructs that significantly, or marginally, differed by gender (0 = *girls*, 1 = *boys*) were T2 reported prosocial behavior, $t(225) = 1.98$, $p = .048$, T3 sadness, $t(201) = 2.63$, $p = .01$, T3 reported prosocial behavior, $t(202) = 1.89$, $p = .06$ and T3 observed prosocial behavior, $\chi^2(1) = 2.83$, $p = .09$. Gender was used as a covariate for these four constructs.

Path Models

The final path model is presented in Figure 1. Within each time point, the variables were allowed to correlate with each other. The hypothesized model initially fit the data fairly well, but the modification indices (Jöreskog & Sörbom, 1979) indicated that model fit could be improved by adding a path from T2 sympathy to T3 sadness (the bolded path in Figure 1). The fit of the model was good after doing so: $\chi^2(41) = 47.64$, $p = .22$; comparative fit index = .97; root mean square error of approximation = .03 (confidence interval = .00 - .06); standardized root mean square residual = .05. Girls were higher in T2 reported prosocial behavior ($p = .03$) and T3 sadness ($p = .001$) than boys (see Figure 1 and Table 6).

All autoregressive paths were positive and significant for sadness, reported prosocial behavior, and observed prosocial behavior, ps = .02 to < .001, as was the path from T2 to T3 sympathy ($p = .004$). Significant, positive cross-lagged paths were found from T2 sympathy to T3 reported prosocial behavior, T2 sympathy to T3 observed prosocial behavior, and T2

sympathy to T3 sadness (ps = .03 to < .001). The path from T2 sadness to T3 sympathy was near significant, p = .054.

In addition, there were three positive within-time correlations among the constructs that were significant—T2 sympathy with T2 observed prosocial behavior, T2 sympathy with T2 reported prosocial behavior, and T3 sympathy with T3 reported prosocial behavior—and three negative relations—T1 sadness with T1 reported prosocial behavior, T1 reported prosocial behavior with T1 observed prosocial behavior, and T2 sadness with T2 sympathy (see Figure 1 and Table 6; three other marginal relations are marked in Figure 1 and Table 6). The correlations between constructs within T2 and T3 represent correlations among the disturbances (i.e., residual variances) of the constructs because they are endogenous variables. Based on a model with MODEL INDIRECT and then bootstrapping (which both fit fairly well), the indirect effect of T1 sadness to T3 prosocial behavior (both reported and observed) through T2 sympathy was not significant, as indicated by 95% bias-corrected bootstrapped confidence intervals.

Discussion

The goal of the present study was to examine whether sadness predicted prosocial behavior and whether sympathy mediated this relation. In general, the results did not support the hypothesis that dispositional sadness promotes prosocial behavior in young children. However, there were other interesting findings.

Within time, sadness was related to prosocial behavior only at T1 and only for reported measures, albeit negatively. This suggests that children who were higher in dispositional sadness at 18 months were reported as concurrently lower in prosocial behavior. However, additional results, discussed below, suggest that this relation may change over time due to a change in the nature of the relation between sadness and sympathy.

In model-estimated correlations, sadness was related to sympathy within time at T2 and T3; this relation was negative at T2, but positive at T3 (the relation was only marginal at T3). In zero-order correlations, T2 sadness was non-significantly related to sympathy at T2 and near significantly positively related to sympathy at T3; moreover, T3 sadness was significantly positively related to T3 sympathy. Given the correlational relations (in the model and zero-order correlations), along with the marginal ($p = .054$) path from T2 sadness to T3 sympathy (which held even when controlling for the prior level of sympathy), it appears that the relation between sadness and sympathy is likely to become more positive with age. Thus, being prone to sadness might increase the likelihood of children recognizing another's sadness, perspective taking about their experience, and experiencing sympathy; this may be especially true for older children. However, given that this relation did not reach a conventional level of significance, this finding should be viewed with caution and replicated.

In addition, based on modifications indices in the model, a path was added from T2 sympathy predicting T3 sadness. This path and the lack of a significant path from T1 to T2 sympathy also suggest that the relation between sadness and sympathy may become stronger over time, and that these constructs may mutually influence each other as children develop. A proneness to sadness might foster sympathy as children age, but over time sympathetic children may become more prone to sadness, perhaps because they are more cognizant of others' sadness/distress than their less sympathetic peers. In addition, as children sympathize with and process situations involving other sad people, perhaps they become more aware of their own sadness and thus, express more sadness (perhaps empathic sadness).

It is also possible that the relation between sadness and sympathy could be due to individual differences in emotional expressivity. Although not assessed in the current study,

emotional expressivity is likely to predict children's displays of sadness and sympathy, such that children higher in emotional expressivity would be more likely to express their own sadness, as well as express sympathy for others. An avenue for future research would be to investigate whether this is the case.

Across ages, over time, sadness did not consistently relate to prosocial behavior. This is somewhat surprising given the marginal relation between sadness and sympathy at older ages (which approached significance, $p = .054$). Perhaps an indirect relation between sadness and prosocial behavior, mediated by sympathy, emerges with age, as children are better able to manage their sadness and experience sympathy as a consequence of sadness. Such a relation might be more easily detected when prosocial behaviors involving sympathy are studied rather than prosocial behaviors that could be motivated by other factors.

In contrast to findings for sadness, sympathy at T2 was at least marginally related to prosocial behavior at T2 and T3. In the path model, unexpectedly, T1 sympathy did not predict T2 prosocial behavior (either reported or observed). However, T2 sympathy positively predicted T3 reported and observed prosocial behavior (and was positively correlated with T2 prosocial behavior) and this relation remained even after controlling for stability in reported and observed prosocial behavior. The difference between the paths (i.e., sympathy predicting reported and observed prosocial behavior) over time did not seem to be due to differences in variability for either sadness or sympathy at T1 compared to T2 or T3 (see Table 1). It appears that the relation between sympathy and prosocial behavior becomes stronger over time, but perhaps 18 months is relatively early to detect these relations due to children's budding abilities in regard to other-oriented concern and prosocial behaviors. Although some investigators have found relations between prosocial behavior and sympathy in the second year of life (e.g., Knafo et al., 2008;

Svetlova et al., 2010; Vaish, Carpenter, & Tomasello, 2009; Zahn-Waxler, Radke-Yarrow, et al.,

1992), those relations usually were not across time and few researchers have tested the relation

between sympathy and prosocial behavior when controlling for prior levels of these variables.

Sympathy and prosocial behavior tend to increase in the early years (Eisenberg et al., 2006;

Knafo et al., 2008) and the relation between sympathy and prosocial behavior—especially over

time when controlling for stability of prosocial behavior—may become more evident with age.

Reported and observed measures of prosocial behavior were generally unrelated (and

negative when they were; see Table 4) and could not be combined, suggesting that these two

measures tapped different aspects of prosocial behavior. The observed measure of prosocial

behavior in this study assessed prosocial behavior toward a stranger. Very young children,

especially shy ones (Liew et al., 2011; Young, Fox, & Zahn-Waxler, 1999), are less likely to

display prosocial acts in a laboratory setting with an unfamiliar adult (Knafo et al., 2008). In

contrast, the reported measure of prosocial behavior, because it taps familiar adults' perceptions,

likely reflected prosocial behaviors directed toward familiar others.

It is also worth noting that sadness and prosocial behavior were consistent over time, and

sympathy was consistent across T2 and T3. Thus, there was some evidence of relatively stable

individual differences in these constructs—even when measured behaviorally—at a fairly young

age. Sympathy may become more consistent as children diverge in emerging socio-cognitive

abilities (e.g., perspective taking) that contribute to sympathy (Eisenberg et al., 2006).

In analyses, gender was used as a covariate as needed. Girls were higher in T3 sadness,

which is not surprising as many researchers have found that girls tend to experience and express

sadness more frequently than boys (Perry-Parrish & Zeman, 2011; Shipman, Zeman, Nesin, &

Fitzgerald 2003; Zeman & Garber, 1996). Girls also tend to be higher in sympathy and prosocial

behavior, although results vary somewhat with the index of these constructs (Eisenberg & Fabes, 1998; Eisenberg & Lennon, 1983; Eisenberg et al., 2006; Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000). This fits with the current results for T2 reported prosocial behavior.

Taken together, the key findings of this study suggest that the relations among sadness, sympathy, and prosocial behavior may become restructured during early childhood within a framework of consistency and stability in these constructs. In very young children (e.g., 18-month-olds), sadness and sympathy may be unrelated and sadness may be negatively related to prosocial behavior. This pattern is consistent with children's underdeveloped regulation and emotion understanding abilities at this age. By 30 months, children's sympathy has begun to relate to their prosocial behavior in the anticipated way, but sadness might have a more complex relation with sympathy and prosocial behavior over time. At 30 months of age, children who demonstrated more sadness were actually less sympathetic. However, sadness at 30 months positively predicted sympathy at 42 months (although this relation was marginal, $p = .054$). This suggests that around 42 months sadness is beginning to transition toward the hypothesized positive role in sympathy, whereas sympathy remains related to prosocial behavior. This change in the role of sadness may be due to more malleable and automatic emotion regulation, development of more mature emotion understanding and perspective taking skills, or both. In brief, sympathy predicted prosocial behavior by 30 months, but not at 18 months. Sadness might have a role in fostering sympathy between 30 and 42 months, and may even augment prosocial behavior via sympathy by 42 months.

This study has a number of limitations. The sample was not especially diverse; participants tended to be Caucasian, middle-class, and parents tended to be somewhat educated. Thus, the results may not generalize to other socioeconomic and ethnic groups. Additionally,

there is the possibility of Type I error due to the complexity of the model tested. Although the

path from T2 sadness predicting T3 sympathy was only marginal ($p = .054$), it should be noted

that this path was implicitly hypothesized (as part of the mediated pathway from sadness→

sympathy→prosocial behavior). Nonetheless, this result should be viewed with caution and

replicated.

      Despite these limitations, the longitudinal nature of this project, the use of multiple

reporters and methods, and the inclusion of both reported and observed measures of prosocial

behavior are strengths. Furthermore, virtually no investigators have studied relations among

sadness, sympathy, and/or prosocial behavior, especially while controlling for prior levels of

constructs; such a methodology better assesses possible causal relations. The current study gives

a more nuanced representation of the early development of prosocial behavior and provides some

initial support for the hypothesis that dispositional sadness, unlike other negative emotions, may

contribute to young children's sympathy. An important question is whether the relation between

sadness and sympathy continues to be positive and bi-directional, and gets stronger, at older ages

when dispositional sadness may play a greater negative role in social competence and social

relationships.

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Table 1

Means and Standard Deviations of Study Variables

	T1	T2	T3
Sadness			
Mother-reported [0-6 scale]	2.19 (.85)	2.18 (.84)	2.84 (.75)
Caregiver-reported [0-6 scale]	1.80 (.98)	1.81 (.82)	2.77 (.77)
Sympathy[a]			
Experimenter hurt – hypothesis testing [0-2 scale]	.23 (.32)	.29 (.38)	.15 (.26)
Experimenter hurt – concerned attention [0-3 scale]	.09 (.24)	.13 (.26)	--
Prosocial Behavior			
Mother-reported [0-2 scale]	1.17 (.59)	1.41 (.49)	1.50 (.48)
Father-reported [0-2 scale]	1.05 (.58)	1.38 (.53)	1.45 (.54)
Caregiver-reported [0-2 scale]	1.06 (.64)	1.34 (.56)	1.37 (.57)
Observed prosocial behavior[b]	.11 (.31)	.27 (.44)	.24 (.43)

Note. Standard deviations presented in parentheses. [a]Means and standard deviations are presented for sympathy measures *prior* to standardizing. [b]After dichotomizing. Observed prosocial behavior consisted of direct and indirect helping at T1 and direct prosocial behavior, indirect prosocial behavior, and prosocial verbalizations at T2 and T3.

Table 2

Correlations Among Measures of Sadness

	(1)	(2)	(3)	(4)	(5)	(6)
1. T1 mother-reported	--					
2. T1caregiver-reported	.23**	--				
3. T2 mother-reported	.58**	.13	--			
4. T2 caregiver-reported	.12	.44**	.14+	--		
5. T3 mother-reported	.22**	.06	.36**	.18*	--	
6. T3 caregiver-reported	-.07	.19*	.11	.30**	.21*	--

Note. ** $p < .01$; * $p < .05$; + $p < .10$

Table 3

Correlations Among Measures of Sympathy

	(1)	(2)	(3)	(4)	(5)
1. T1 hypothesis testing	--				
2. T1concerned attention	.29**	--			
3. T2 hypothesis testing	.10	-.02	--		
4. T2 concerned attention	-.02	-.09	.42**	--	
5. T3 hypothesis testing	.05	-.07	.25**	.06	--

Note. The T1 and T2 measures of concerned attention were transformed.

** $p < .01$

Table 4

Correlations Among Measures of Prosocial Behavior

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. T1 mother-reported	--	.35**	.13+	-.15*								
2. T1 father-reported	--	--	.19*	-.17*								
3. T1 caregiver-reported	--	--	--	.02								
4. T1 observed	--	--	--	--								
5. T2 mother-reported	.35**	.21**	-.09	-.03	--	.36**	.13	.01				
6. T2 father-reported	.24**	.27**	.16+	-.14+	--	--	.25**	.03				
7. T2 caregiver-reported	.12	-.01	.36**	-.03	--	--	--	-.01				
8. T2 observed	-.06	-.06	.01	.18**	--	--	--	--				
9. T3 mother-reported	.22**	.19*	.10	-.02	.40**	.24**	-.07	.10	--	.39**	.25**	.12
10. T3 father-reported	.06	.26**	.19+	.10	.34**	.35**	.07	.02	--	--	.28**	.14
11. T3 caregiver-reported	-.01	.04	.13	.06	.14	.10	.58**	.16+	--	--	--	.12
12. T3 observed	.01	-.004	.07	.12	.05	.05	.04	.28**	--	--	--	--

Note. Within-time correlation are presented above the diagonal; across-time correlations are presented below the diagonal.

** $p < .01$; * $p < .05$; + $p < .10$

Table 5

Correlations Among Main Composite Measures

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. T1 Sadness	.51**	.17*	-.02	.13+	.004	-.17**	-.09	.04	.04	.09	-.02
2. T2 Sadness		.37**	-.01	-.10	.13+	-.13+	-.08	-.07	.08	.05	.01
3. T3 Sadness			-.002	.19*	.19**	.11	.18*	.10	.07	.12	.11
4. T1 Sympathy				.01	.02	.03	.08	-.001	-.03	.01	-.03
5. T2 Sympathy					.18*	-.002	.12+	.18*	.07	.25**	.25**
6. T3 Sympathy						-.06	.11	.18*	.11	.27**	.21**
7. T1 Prosocial Behavior-Reported							.26**	.17*	-.15*	-.05	-.003
8. T2 Prosocial Behavior-Reported								.40**	-.07	.04	.05
9. T3 Prosocial Behavior-Reported									.06	.14+	.12
10. T1 Prosocial Behavior-Observed										.18**	.12
11. T2 Prosocial Behavior-Observed											.28**
12. T3 Prosocial Behavior-Observed											

Note. ** $= p < .01$; * $= p < .05$; + $= p < .10$. The T1 measure of sympathy was transformed.

Table 6

Model-Estimated Relations Among Constructs Within Time

		T1		
	Sad	Symp	PS-R	PS-O
Sad		-.03 (.65)	**-.20 (.004)**	.08 (.20)
		-.02 (.65)	**-.07 (.01)**	.02 (.21)
Symp			.05 (.39)	**-.07 (.04)**
			.02 (.40)	*-.02 (.07)*
PS-R				**-.16 (.02)**
				-.02 (.03)
		T2		
Sad		**-.20 (.004)**	-.05 (.45)	-.01 (.90)
		-.10 (.02)	-.01 (.45)	-.002 (.90)
Symp			**.15 (.02)**	**.23 (.001)**
			.05 (.03)	**.09 (.002)**
PS-R				.05 (.39)
				.01 (.39)
		T3		
Sad		*.12 (.07)*	.03 (.65)	.08 (.22)
		.06 (.08)	.01 (.65)	.02 (.22)
Symp			**.12 (.02)**	*.15 (.09)*

	.04 (.02)	*.06 (.09)*
PS-R		.08 (.26)
		.01 (.27)

Note. Fully standardized estimates (correlations) are presented first, unstandardized estimates (covariances) are presented underneath; *p*-values are presented in parentheses. T2 and T3 estimates reflect the standardized correlations or unstandardized covariances among the *disturbances* of the constructs. Significant estimates are presented in bold; marginal estimates are presented in italics. Sad = Sadness; Symp = Sympathy; PS-R = Reported Prosocial Behavior; PS-O = Observed Prosocial Behavior.
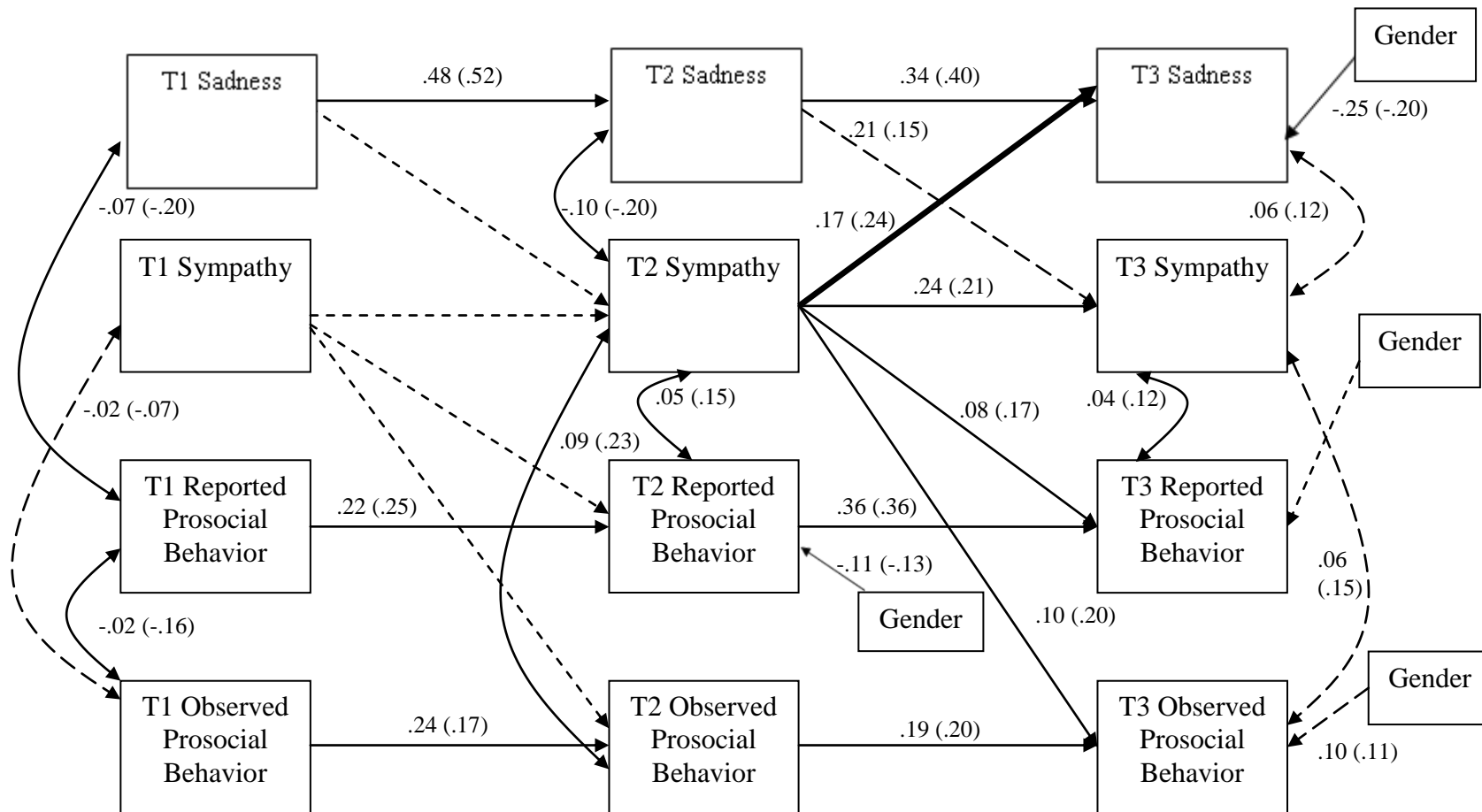
Figure 1. Final path model. Solid lines represent significant regression paths; long dashed lines represent marginal regression paths; short dashed lines represent non-significant regression paths; solid curved lines represent significant correlations among constructs within time; long dashed curved lines represent marginal correlations among constructs within time. Unstandardized estimates are presented first; fully standardized estimates are presented in parentheses.