

# Classifying Prosocial Behavior: Children's Responses to Instrumental Need, Emotional Distress, and Material Desire

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This study investigates the diversity of early prosocial behavior by examining the ability of ninety-five 2- to 4-year-olds to provide aid to an adult experimenter displaying instrumental need, emotional distress, and material desire. Children provided appropriate aid in response to each of these cues with high consistency over multiple trials. In contrast to the consistency with which the children provided aid within each task, there were no cross-task correlations, and the tendency to respond to each of the cues revealed unique developmental trajectories. Taken together, these results provide preliminary support for the importance of examining the cues to which children are responding and of differentiating between varieties of aid when considering the development of prosocial behavior.

Within the animal kingdom, humans are unique in the frequency and complexity with which they engage in other-oriented, prosocial behaviors (Warneken & Tomasello, 2006). In particular, humans appear exceptional in their ability to provide aid to others across a wide variety of contexts (Warneken & Tomasello, 2009a, 2009b)—and in response to a diversity of needs (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011)—very early in development (Warneken, Chen, & Tomasello, 2006). However, despite a long history of philosophical and empirical interest (e.g., Radke-Yarrow, Zahn-Waxler, & Chapman, 1983) and a recent surge of research on the topic, the developmental trajectories of, and relations between, the earliest forms of other-oriented behaviors are still poorly understood.

## *Varieties of Prosocial Behavior*

The term *prosocial behavior* typically refers to a large class of voluntary behaviors that share the common intention to benefit another. There are a

number of different actions that individuals can engage in to achieve this goal, including helping, sharing, comforting, informing, and cooperating (e.g., Brownell, Svetlova, & Nichols, 2009; Dunfield et al., 2011; Eckerman, Whatly, & Kutz, 1975; Rheingold, Hay, & West, 1976; Svetlova, Nichols, & Brownell, 2010; Warneken & Tomasello, 2006; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). For decades, research employing this broad definition has examined the emergence of prosocial behavior, individual differences therein, and the identification of behavioral correlates with mixed success (see Eisenberg, Fabes, & Spinrad, 2006, for review).

Research that has sought to systematically examine and compare multiple forms of prosocial behavior has revealed varied results (e.g., Underwood & Moore, 1982a, 1982b). Some studies that have directly compared multiple forms of prosocial behaviors have found low but statistically significant relations (Eisenberg-Berg, & Hand, 1979; Hay, 1979; Radke-Yarrow et al., 1976), whereas others find no association (Dunfield et al., 2011; Iannotti, 1985). Indeed, even within studies that found associations between the three varieties of behavior, the relations were not consistent. Some researchers, for example, found that the strongest associations were between sharing and comforting (Radke-Yarrow et al., 1976), whereas others have found helping

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## 2 Dunfield and Kuhlmeier

and comforting to be more closely related (Eisenberg-Berg & Hand, 1979). Moreover, other research has found that the same behavior (e.g., sharing) can show different patterns of correlations depending on whether the behavior was produced spontaneously as opposed to in response to an explicit request (e.g., Eisenberg, Pasternack, Cameron, & Tryon, 1984; Eisenberg-Berg & Lennon, 1980; Hay, 1979; Hay, Castle, Davies, Demetriou, & Stimson, 1999).

Indeed, the inconsistent and sometimes contradictory nature of much of the work on early prosocial behavior is thought to be a function of the general tendency of researchers to examine one or two exemplar behaviors and then extrapolate their findings to explain prosocial behavior as a whole (see Eisenberg-Berg & Hand, 1979; Radke-Yarrow et al., 1976; Zahn-Waxler et al., 1992, for notable exceptions). Importantly, this is not a new problem; in a review of the literature, Radke-Yarrow et al. (1983) identified three existing limitations that affect our ability to understand the emergence and development of prosocial behavior: (a) the narrow base of behaviors that have been studied, (b) the heavy emphasis on the exchange of low-value commodities, (c) the limited and fragmented information on children both across tasks and time, and (d) the relative scarcity of research that integrates the cognitive, affective, and behavioral aspects of prosocial behavior. In response to these limitations, Radke-Yarrow et al. (1983) make suggestions that are still relevant today, namely, that to progress our understanding of prosocial behavior we cannot consider it as a single undifferentiated class of behaviors. In addition, we must acquire more varied descriptive data upon which hypotheses and systematic studies can be built, and we must take into consideration the role that cognition plays in the development of these behaviors.

Consistent with these suggestions there have been a number of recent attempts to categorize and clarify the varieties of prosocial behavior that children engage in, providing a framework within which to interpret past findings and direct future research (e.g., Dunfield et al., 2011; Hay & Cook, 2007; Warneken & Tomasello, 2009a). One proposal, by Hay and Cook (2007), suggests that the general construct of prosocial behavior is made up of three strands of development, *feeling for another*, *working with another*, and *ministering to another*. Feeling for another entails the development of other-oriented emotions such as empathic concern, friendliness, and affection. Working with another refers to the development of the ability to cooper-

ate to solve problems, provide help to another, and share. Finally, ministering to another involves developing the ability to nurture others, provide resources to another, and respond to another's needs and wishes. In this categorization, substantial weight is placed on the child's motivation to interact with another, with little emphasis placed on the role of cognition in identifying a need and determining an appropriate response. As a result, behaviors that may have substantially different cognitive requirements (such as helping and sharing) are combined in a single domain (working with others).

In contrast, Warneken and Tomasello (2009a) have proposed a model in which other-oriented behaviors are split into three domains: *helping*, in which an actor aids another in achieving their goal; *sharing*, in which an actor relinquishes ownership of a valuable good; and *informing*, the transmission of information between individuals. This framework is situated within an economic analogy, whereby the varieties of prosocial behavior are intended to provide another with services, goods, and information. Importantly, this categorization relies heavily on the observable behavior that the child engages in, which is problematic because behaviors are multiply determined. In many cases it is not possible to differentiate the initial intentions that motivated the actions from the observable behavioral outcome. Indeed, a simple behavior like retrieving an out-of-reach object may have been intended as a helpful act to assist another in the completion of their goal (Warneken & Tomasello, 2006); it may also have been intended to alleviate a negative mood (Svetlova et al., 2010; Vaish, Carpenter, & Tomasello, 2009). One way to avoid the challenges of interpreting behavioral outcomes is to look at the cues that elicited the responses in the first place (e.g., Svetlova et al., 2010).

Engaging in prosocial behavior can be considered a three-step process. First, one must be able to recognize the presence of behavioral and (or) situational cues that suggest another individual is experiencing a negative state of need, desire, or distress. Second, one must be able to identify the appropriate intervention that will allow for the alleviation of that negative state. Third, one must be motivated to engage in behaviors that one believes will alleviate the negative state observed in the other. The present proposal is that within the domain of prosocial behavior, children are able to recognize, and are motivated to respond to, a triad of different negative states in others. Specifically, humans can have *instrumental need*, in which they are unable to

complete a goal-directed behavior; *emotional distress*, in which they are experiencing an unpleasant affective state; or *material desire*, in which they are unable to acquire a desired resource.

It is important to differentiate based on the initial negativity cue that the child is responding to because the same behavior may alleviate a variety of needs. For example, the provision of an out-of-reach object can alleviate both an instrumental need (e.g., Warneken & Tomasello, 2006) and emotional distress (e.g., Svetlova et al., 2010). Giving away a desired object can alleviate a material need (e.g., Brownell et al., 2009) or emotional distress (e.g., Vaish et al., 2009). These examples illustrate the importance of taking the initial situational and (or) behavioral cues to negativity that the child must recognize and interpret into account, and not simply the subsequent behavior that the child engages in, when attempting to make sense of the emergence and development of children's prosocial behavior.

In a previous study (Dunfield et al., 2011), we demonstrated that as early as 18 months of age, infants recognized and preferentially produced prosocial behaviors when an experimenter was demonstrating negativity (need, distress, or desire) and actually required aid as opposed to control conditions in which she did not (no need, distress, or desire). Specifically, when the infants witnessed the experimenter demonstrating an instrumental need or material desire they were significantly more likely to help and share (respectively) than in the matched control condition where need and desire were absent. In contrast, the participants did not show a difference in their tendency to provide comfort in response to the experimenter's display of emotional distress (or lack thereof). Importantly, the failure to find a difference across the two emotional distress conditions was not due to the infant's mistakenly overinterpreting the control "no need" condition, but instead failing to produce any prosocial behaviors even in the face of emotional distress. Taken together, these results suggest that infants are using the observation of negativity as a cue to motivate some prosocial responses.

The aim of this study is to build upon the results of Dunfield et al. (2011) and examine more closely children's ability to respond to a variety of negative states. In particular, and unlike previous examinations, we provided the participants with multiple opportunities to observe and respond to instrumental needs, material desires, and emotional distress in a controlled experimental situation, a feature that is not guaranteed in naturalistic observations. Importantly,

this design also allows us to determine whether there is consistency in young children's ability to respond to a variety of distinct negativity cues, and for the first time, the same cue to negativity multiple times. In addition, we examine a broader range of slightly older children to see how the ability to recognize and respond to a diversity of negative states develops. Furthermore, because this design allows us to examine the consistency with which the children respond to the same display of negativity repeatedly, in addition to a variety of negative states, we can better determine if the failure to observe consistent relations between multiple measures of prosocial behavior is due to lack of association between the various forms of prosocial behavior or to young children's inconsistent production of other-oriented behaviors *in general* in early development. We expect that if children are recognizing and responding to three distinct types of cues, then we should observe within cue consistency with little cross-task association.

## Method

### Participants

Ninety-five 2- to 4-year-old children participated in this study. Participants were recruited from three different age groups: 2-year-olds ( $N = 32$ ,  $M = 2.5$  years, range = 2.0–2.9 years, 17 females), 3-year-olds ( $N = 31$ ,  $M = 3.5$  years, range = 3.0–3.9 years, 16 females), and 4-year-olds ( $N = 32$ ,  $M = 4.5$  years, range = 4.0–4.9 years, 14 females). Six additional children were tested but not included in the final sample due to shyness (i.e., refusal to enter testing room; one 3-year-old and one 4-year-old), fussiness (one 2-year-old, one 3-year-old, and one 4-year-old), or atypical response patterns (i.e., repeating everything that the experimenter said; one 2-year-old). Participants were primarily White, middle-class families from a small city in southeastern Ontario, recruited through birth announcements, local festivals, and local advertising. The children received a small gift and a certificate for their participation.

### Procedure

Participation in the study took approximately 45 min. The prosocial tasks were interspersed between other social-cognitive tasks (i.e., effortful control, affective perspective taking) that were part of a separate study. This presentation allowed us to ensure that the prosocial tasks were administered

#### 4 Dunfield and Kuhlmeier

in a manner that appeared naturalistic and occurred relatively infrequently. One single task order was created and presented in two variations, forward and reverse. Sixteen 2-year-olds, thirteen 3-year-olds, and sixteen 4-year-olds were run in the forward order, the remainder of the participants were run in the reverse order.

The children were brought into the testing room on their own. Parents watched their children participate from a television in an adjacent room. Participants were situated at a small table across from a female experimenter in the middle of a testing room. Participants were presented with 12 prosocial opportunities (4 instrumental needs, 4 material desires, and 4 emotional distresses). For each of the three negative states, two different types of tasks were administered. Half of the tasks (2) replicated the measures administered in Dunfield et al. (2011), and the other half (2) were minor variations on the original task.

*Instrumental need.* In the instrumental need tasks, the experimenter was having difficulty completing a puzzle. The two varieties of instrumental need included an “out-of-reach” task that closely replicated the methods developed by Warneken and Tomasello (2006) and a novel “across-the-room” task; each variety was administered twice. In the two out-of-reach trials, the experimenter picked up a puzzle and as she flipped the puzzle over to remove the pieces, one fell onto the floor just out of the experimenter’s reach. The experimenter vocalized “Oops!” and reached for the toy with an outstretched arm and hand. For the first 5 s, the experimenter looked directly at the puzzle piece on the floor. After 5 s, she alternated gaze between the toy and the child until the child provided a response or the trial ended. Trials ended when approximately 10 s had elapsed. The experimenter never directly asked the child for help or articulated what the appropriate response would be.

The two across-the-room trials were similar to the out-of-reach task with the important exception that the puzzle piece that the experimenter required was already across the room, and thus the child did not observe it in the experimenter’s possession. When the child and experimenter completed the majority of the puzzle the experimenter exclaimed, “We’re missing a piece!” The experimenter looked around the room and then, spotting the piece of the puzzle, said “Oh!” and reached toward the piece. While reaching for the puzzle piece the experimenter furrowed her brow and made a slight frown, suggesting negative affect but not distress. Again, the experimenter looked for the first 5 s

directly at the puzzle piece and then for the subsequent 5 s alternated gaze between the puzzle piece and the child.

For the each of the three prosocial tasks (instrumental need, emotional distress, and material desire), participants received a score of 1 for engaging in an appropriate other-oriented intervention and all other responses received a score of 0. In this task, because the experimenter’s goal was to complete a puzzle, and she could not reach the remaining pieces the appropriate other-oriented behavior involved retrieving the required object and returning to the experimenter, and scores could range from 0 to 4.

*Emotional distress.* Participants were presented with two varieties of emotional distress. In half of the trials the experimenter demonstrated emotional distress in response to a minor injury (2), the other half involved emotional distress due to a broken toy (2). There were two varieties of injury trials, “banged knee” and “slammed fingers.” In the banged knee trial, the experimenter walked to the door to place an item outside of the room, on her way back to the table, she hit her knee on the edge of the table. The experimenter then sat down with a look of pain on her face, rubbing her knee and vocalizing pain (e.g., “Oh! My knee, I banged my knee!”). For the first 5 s the experimenter looked only at her knee and then for the next 5 s she alternated her gaze between the child and her knee. After the first 10 s the experimenter asked, “What should we do?” and then gave the child 10 more seconds to respond. We included a verbal probe in the comforting task because previous research using a similar paradigm resulted in very low rates of comforting relative to helping and sharing (Dunfield et al., 2011). The experimenter never indicated what the correct response would be or how the child could provide aid. The slammed finger trial was run identical to the banged knee trial with the single exception that instead of hitting her knee on the table, she slammed her finger in the door. Her vocalization was modified accordingly (e.g., “Oh! My finger, I slammed my finger in the door!”).

The broken toy trials were administered similarly to the injury trials. There were two varieties of broken toy trials. In one variety of the broken toy trials, the experimenter showed the child her favorite toy. While the experimenter was playing with her toy she tore a hole in the back of it. The experimenter looked at her toy and exclaimed in a sad voice “Oh! My toy, I broke my toy!” For the first 5 s the experimenter looked at her toy with a sad expression on her face, and for the subsequent 5 s

she alternated her gaze between the toy and the child. After 10 s, if the child had not responded, the experimenter asked, "What should we do?" The child was then given 10 s to respond. The trial ended when the child provided a response or approximately 20 s had elapsed. In the other trial, the experimenter and the child worked together to create a tower. Once the tower was complete, the experimenter commented on how nice the tower was and picked up the tower to put it away. In the process of putting away the tower, the experimenter broke the tower into a number of small pieces exclaiming "Oh! Our tower, I broke our tower!" The remainder of the trial was identical to the other emotional distress trials. Importantly, unlike the instrumental needs condition where the predominant cue to negativity was simply the experimenter reaching for the out-of-reach object, the predominant cue in the broken toy trials was the experimenter's negative affective state.

Previous research on children's responses to others' emotional distress has operationalized responses in a number of ways that range from concerned looks toward the victim to physical interventions (e.g., Eisenberg & Fabes, 1998; Eisenberg et al., 2006). Because we are specifically interested in the positive other-oriented actions that children produce in response to the observation of distress in others, we limited our categorization of comforting to positive verbal (e.g., "It's okay," "Put a Band-Aid on it," or "Rub it!"), or physical interventions (e.g., rebuilding the tower or kissing or hugging the experimenter). Other reactions, such as looking on with distress, rubbing their own knee, or laughing were not considered to be comforting behavior. Total scores for the emotional distress task could range from 0 to 4.

*Material desire.* The material trials were based on the methodology used by Dunfield et al. (2011) with two methodological differences. In the earlier study, the experimenter and the child were each given bowls; the experimenter received no food treats in her bowl, but the child received four treats. Once both the experimenter and child had received their bowls, the experimenter reached one hand out, palm up, toward the child, to highlight her desire. In contrast, in this study the experimenter indicated her desire more subtly by simply looking into the child's bowl; she did not outstretch her hand toward the child to highlight her desire for the child to share some items. The experimenter kept her hands on her cup and kept the cup tilted toward the child. Second, participants were presented with two varieties of sharing trials; half of

the trials (2) involved sharing food, whereas the other half (2) involved sharing stickers. In addition, we varied the number of items that the child had the opportunity to share; on half the trials (2) the children received two items, whereas on the other half of the trials (2) the children received four items.

The second experimenter gave the experimenter the empty cup first. Upon receiving the cup, the first experimenter drew the child's attention toward her cup remarking, "Look what I have." Once the child had an opportunity to look inside the experimenter's empty cup, the second experimenter placed the second cup, which contained the items, in front of the child. Like the helping trials, the experimenter furrowed her brow and made a slight frown, suggesting negative affect but not distress. For the first 5 s, the experimenter looked down into her cup with a mild frown, and then for the rest of the trial she alternated her gaze between her cup and the child. The procedures for all four varieties of the sharing trials were identical with the exception of the contents of the child's cup. The trial continued until the child had consumed, used, or put away all their items or until approximately 30 s had elapsed. Sharing was coded as the child taking at least one item from their cup and offering it to the experimenter. Total scores ranged from 0 to 4.

*Reliability.* Each of the experimental sessions was videotaped and coded by a research assistant who was blind to the purpose and hypothesis of the study and had no previous experience with any studies on the development of prosocial behavior. A second blind coder coded a random subset of the videos (32 videos, 34%) to establish interobserver reliability. The two coders were in perfect agreement for each of the prosocial tasks.

## Results

### *Prosocial Behavior*

*Instrumental need.* First, to examine the effect of age, gender, task, and order on the tendency to respond to instrumental needs, a 3 (age: 2, 3, 4 years)  $\times$  2 (type: out-of-reach, across-the-room)  $\times$  2 (gender: male, female)  $\times$  2 (order: forward, reverse) mixed-model analysis of variance (ANOVA) was conducted (Figure 1a; Table 1). There were no main effects for any of the variables ( $F_s < 2.45$ ,  $p_s > .12$ ); however, there was a three-way interaction between type, age, and gender,  $F(2, 81) = 3.54$ ,  $p = .03$ ,  $\eta_p^2 = .08$ . This unpredicted three-way

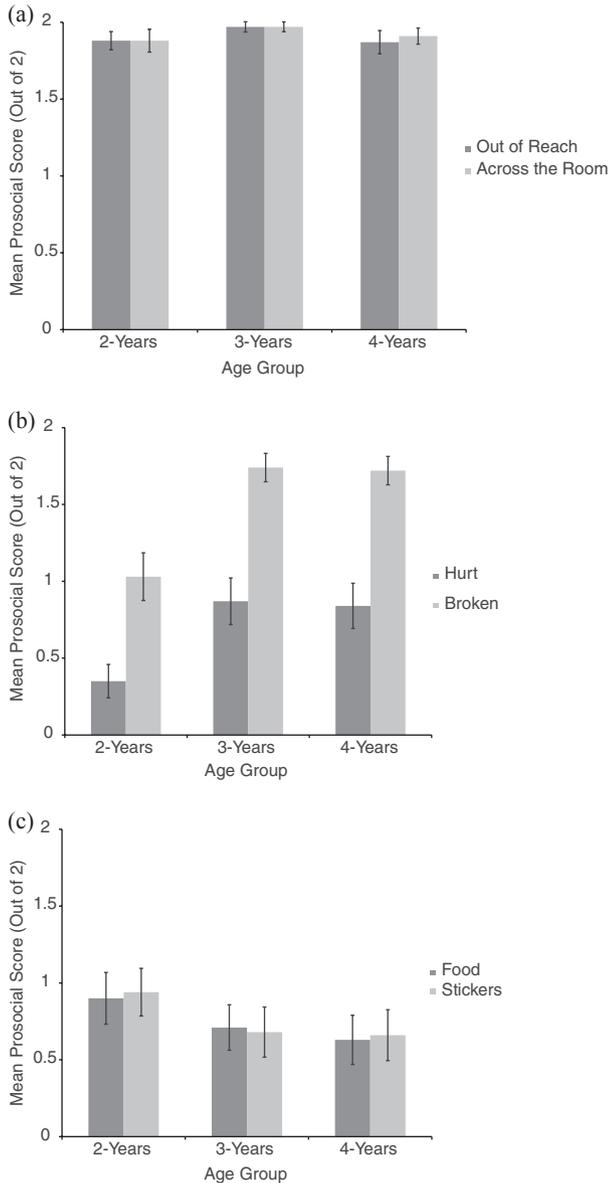


Figure 1. The mean production of prosocial behavior (with standard error bars), in response to each of the two varieties of tasks, for each age group for each of the three varieties of negative states: (a) instrumental need, (b) emotional distress, (c) material desire.

interaction is due to an interaction between gender and task in the 2-year-olds,  $F(1, 30) = 6.92, p = .013, \eta_p^2 = .19$ , that was not observed in the 3- or 4-year-olds ( $F_s < .05, p_s > .81$ ). Two-year-old females appeared to help more in response to items that were required but were already across the room ( $M = 2.00, SD = 0.00$ ) than items that were dropped out of reach ( $M = 1.81, SD = 0.43$ ). In contrast, 2-year-old males helped more when they observed the experimenter drop the item ( $M = 1.94, SD =$

Table 1

Mean Number of Prosocial Responses by General Need (Out of 4) and Specific Task (Out of 2)

	Prosocial response		
	<i>N</i>	<i>M</i>	<i>SD</i>
Instrumental need	93	3.83	0.54
Across room	95	1.92	0.31
Drop	93	1.90	0.33
Emotional distress	91	2.21	1.29
Broken	93	1.51	0.72
Hurt	93	.69	0.79
Material needs	93	1.51	1.51
Food	93	.74	0.74
Sticker	95	.76	0.76

Note. The sample sizes (*N*) for prosocial responses take into account only children who completed all test trials and thus differ when considering the general need as a whole as compared to the specific tasks.

0.25) than when the required item was already across the room ( $M = 1.75, SD = 0.58$ ). No other interactions were significant ( $F_s < 3.04, p_s > .09$ ).

*Emotional distress.* A 3 (age: 2, 3, 4 years)  $\times$  2 (task: hurt, broken toy)  $\times$  2 (gender: male, female)  $\times$  2 (order: forward, reverse) ANOVA revealed significant main effects of age,  $F(2, 79) = 10.69, p < .001, \eta_p^2 = .21$  (Figure 1b; Table 1); task,  $F(1, 79) = 84.67, p = .001, \eta_p^2 = .52$ ; gender,  $F(1, 79) = 4.67, p = .034, \eta_p^2 = .06$ ; and order,  $F(1, 79) = 3.32, p = .054, \eta_p^2 = .05$ , on children's tendency to respond to perceived emotional distress. Two-year-olds were significantly less likely to respond to an experimenter's emotional distress ( $M = 1.4, SD = 1.18$ ) than 3- ( $M = 2.61, SD = 1.17$ ) and 4-year-olds ( $M = 2.58, SD = 1.15$ ; Tukey honestly significant difference [HSD],  $p < .001$ ), who did not differ (Tukey HSD,  $p = .99$ ). Participants were significantly more likely to respond to an individual who was distressed because they broke a toy than because they were injured (Table 1). In the broken toy trials participants tended to comfort with physical acts as opposed to verbal reassurance in broken trials (73.4% vs. 26.6%), whereas they showed the opposite pattern in the hurt condition providing verbal reassurance (92.2%) more frequently than helpful acts (7.8%). Males were significantly more likely to aid the experimenter ( $M = 2.41, SD = 1.17$ ) than females ( $M = 2.00, SD = 1.38$ ), and participants were more likely to provide aid in the forward order ( $M = 2.43, SD = 1.38$ ) than in the reverse order ( $M = 2.02, SD = 1.18$ ). In addition to the main effects there was also an interaction between type of

distress and order,  $F(1, 79) = 6.40, p = .01, \eta_p^2 = .07$ ; this appears to be due to the fact that children were more likely to aid an injured experimenter when they saw the injury first ( $M = 0.89, SD = 0.84$ ) than when they saw it second ( $M = 0.51, SD = 0.71$ ). Aiding an individual in response to a broken toy, however, did not appear to be affected by whether the toy was broken early ( $M = 1.5, SD = 0.73$ ) or late ( $M = 1.5, SD = 0.70$ ) in the session. No other interactions were significant ( $F < 3.24, ps > .07$ ).

*Material desire.* We conducted the same analyses on the children's responses to the observation of material inequity. The 3 (age: 2, 3, 4 years)  $\times$  2 (task: food, stickers)  $\times$  2 (gender: male, female)  $\times$  2 (order: forward, reverse) mixed-model ANOVA revealed no main effects or interactions, ( $Fs < 0.73, ps > .40$ ; Figure 1c; Table 1).

*Internal consistency.* To address the question of whether the previous failure to observe consistent relations between multiple measures of prosocial behavior is due to the inconsistency with which children engage in other-oriented behavior in general, rather than the unique demands specific to interpreting each of the needs, we examined the consistency with which children responded prosocially across the four opportunities. Specifically, alpha coefficients were calculated separately for each of the four measures of the three subtypes of prosocial behavior. All of the alphas approached or exceeded the .60 threshold outlined for adequate internal consistency ( DeVellis, 1991). Instrumental need ( $\alpha = .59$ ) and emotional distress ( $\alpha = .68$ ) revealed acceptable levels of internal consistency, whereas material desire exceeded the .80 threshold for very good internal consistency ( $\alpha = .86$ ; DeVellis, 1991).

*Relations between responses to each type of need.* A 3 (negative state: instrumental, emotional, material)  $\times$  3 (age: 2, 3, 4 years) mixed-model ANOVA revealed a significant main effect of negative state,  $F(2, 168) = 88.21, p < .001, \eta_p^2 = .512$ , and an interaction between negative state and age,  $F(4, 168) = 6.431, p < .001, \eta_p^2 = .13$ , but no main effect of age,  $F(2, 84) = 1.35, p = .27$  (Figure 2). Post hoc tests revealed that participants were significantly more likely to respond to another's instrumental need than material desire,  $t(90) = 12.81, p < .001$ , or emotional distress,  $t(88) = 10.93, p < .001$ , and they were more likely to respond to emotional distress than material desire,  $t(88) = 3.19, p = .002$  (Figure 2). The interaction between age and negative state is due to the age-related increase in the response to emotional distress that is not observed in the response to instrumental need or material desire (Figure 2).

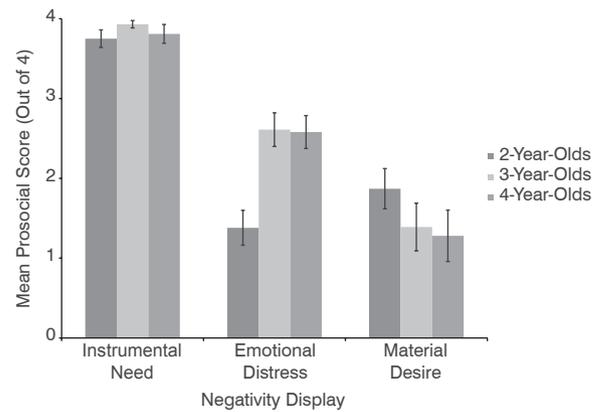


Figure 2. The average performance of three subtypes of prosocial behavior by age.

Finally, to examine the potential relations between the participants' responses to the three negativity cues, we conducted three correlation analyses that were collapsed across age. Performance on any one task did not correlate with any other task ( $rs < .08, ps > .43$ ). Because we observed age-related increases in the children's responses to emotional distress, we wanted to ensure that the lack of correlation between the responses to the three cues was not due to age. We reran the correlations controlling for age, and the three prosocial behaviors remained uncorrelated ( $rs < .17, ps > .12$ ).

## Discussion

The general term *prosocial behavior* is typically used to apply to a diversity of actions that are intended to benefit another individual, and previous research has suggested that the general category of prosocial behavior may be made up of a variety of more specific behaviors (e.g., Dunfield et al., 2011; Eisenberg-Berg & Hand, 1979; Radke-Yarrow et al., 1976; Zahn-Waxler et al., 1992). This study provides promising support for this claim by demonstrating that although young children can respond to a diversity of negative states, their responses to each of the cues show different developmental patterns and little cross-task correlation. We will discuss the children's responses to each of the cues to negativity in turn, then explore more thoroughly the relations (or lack thereof) between the children's responses and suggest how we believe the children's responses to the cues relate to varieties of prosocial behavior. Finally, we consider the implications of these findings for the continued study of prosocial behavior.

*Instrumental Need*

This study supports previous research (e.g., Warneken & Tomasello, 2006; Zahn-Waxler et al., 1992) by demonstrating that the ability to respond to another's instrumental need is one of the earliest emerging prosocial behaviors. Indeed, by at least 2 years of age, the vast majority of children are providing aid in response to the observation of instrumental need in a variety of contexts at a rate that is stable across the three age groups examined here. Specifically, in this study, children observed an individual demonstrate instrumental need in two contexts, one in which the experimenter was in possession of a required item and then lost it, and another in which the experimenter was not initially in possession of (or seen using) the item in a goal-directed manner prior to the instrumental challenge. The children's success in the second condition suggests that the ability to identify an appropriate intervention does not necessarily require the observation of the experimenter possessing an item but can be made based on behavioral cues of ongoing goal-directed action alone.

By 2 years of age, children respond to others' instrumental needs at a consistently high rate that shows relatively little variation between individuals. This could be due to the fact that the ability to respond to others' instrumental needs relies on a very early emerging set of social-cognitive factors. Previous research (Dunfield et al., 2011) has suggested that the ability to provide aid to overcome instrumental need relies on the ability to interpret goal-directed behavior, differentiate intentional from accidental actions, and correct unintended outcomes, abilities that are found in children as young as 15 months (e.g., Behne, Carpenter, Call, & Tomasello, 2005; Csibra, Gergely, Biro, Koos, & Brockbank, 1999; Meltzoff, 1995; Woodward, 1998). It is also the case that a majority of the recent research on the development of prosocial behavior in response to incomplete goals has relied upon the interpretation of very basic goals and the provision of easy low-cost aid; it may be necessary to employ a wider range of more difficult goals to better understand how this ability develops. Taken together, however, it appears that the developmental mechanisms that support the ability to aid others in overcoming instrumental challenges is in place by 2 years of age and that future research should examine the relation between the development of the understanding of others' goal-directed behavior and the production of aid to gain better insight into the mechanisms underlying this early emerging prosocial behavior.

In interpreting these results it is important to keep in mind two limitations. First, the similarity between the two measures and the universally high production of aid in response to another's instrumental needs limits our ability to make strong claims from these data. Indeed, it is possible with more varied measures we would have observed a different pattern of associations both within the domain of instrumental need and across the three varieties of negative cues. In addition, the surprising observation of an interaction between gender and order in the production of aid suggests that future research may benefit by examining factors that influence gender differences in the production of helping behavior.

*Emotional Distress*

This study supports previous theoretical claims (e.g., Hoffman, 1982, 2000) regarding the developmental trajectory of children's responses to others' distress. We observed a significant increase in children's ability to provide aid to others experiencing emotional distress from 2 to 3 years of age that stabilized between 3 and 4 years. In addition, we found that all three age groups were more likely to respond to emotional distress that was the result of an instrumental cause (e.g., broken toy) than emotional distress that was the result of injury. Specifically, children were better able to aid a distressed experimenter who had a broken toy than a distressed experimenter who had a physical injury. It appears as though it is easier for children to respond to a negative emotional state when there is a clear instrumental response (e.g., the "broken" condition) than when the required intervention is strictly affective, or the appropriate instrumental response is less clear (e.g., the "injury" condition). Consistent with this suggestion, we saw a tendency for different types of comforting across the two conditions, with broken trials eliciting more physical acts whereas hurt trials elicited more verbal reassurance. Indeed, this result is predicted, to some extent, in Hoffman's (1982) theory of empathic development, in which he highlights the difficulty that many young children face identifying the appropriate, individual specific, other-oriented response that is required to respond effectively to another's negative affective state.

In interpreting these results it is important to consider the significant interaction observed between task and order. Specifically, children were more likely to aid the experimenter in response to an injury when the injury was presented before the

broken toy than when it was presented after. A similar order effect is not found in response to a broken toy. One explanation of this effect is the possibility that participants were less likely to believe that the experimenter was actually injured when they saw the injury trial second. A common concern when eliciting prosocial behavior in the lab is making sure that participants believe the experimenter is actually in distress. It is possible that when the injury trials were presented second, the children were less motivated to aid the experimenter due to finding the experimenter's distress less believable given the earlier instance of distress. It is important to note that no other effects of order were found in any of the other tasks, nor in previous studies of this sort, yet this is a methodological consideration that should be considered in future empirical studies of prosocial behavior.

#### *Material Need*

Previous research suggests that in contrast to other forms of aid, giving up one's own resources to aid another is relatively rare (Grusec, 1991; Radke-Yarrow et al., 1976). The results of the present study support this claim. We observed very low response rates to others' material desires that did not increase over the three age groups studied. We believe that the low rates of providing resources are due to a difficulty in *recognizing* the need for aid and not due to a lack in *motivation*. Specifically, previous research on sharing behavior has found that when the recipient's need or desire for a material good is made explicit through subtle nonverbal cues (such as an outstretched hand; Dunfield et al., 2011), verbal requests (e.g., Brownell et al., 2009), or direct instructions (e.g., Moore, Barresi, & Thompson, 1998; Olson & Spelke, 2008), children at similar ages quite readily give away desired resources. This finding poses an interesting dissociation between the ability to spontaneously and appropriately recognize a need and the motivation to respond to the need. Indeed, this finding resonates with previous research suggesting that there may be distinct mechanisms underlying the ability to spontaneously respond to the observation of inequality as opposed to respond based on explicit request (e.g., Eisenberg et al., 1984; Eisenberg-Berg & Lennon, 1980; Hay, 1979; Hay et al., 1999). The fact that children readily share in response to even the subtlest request, but do not do so spontaneously in absence of a request, suggests an important avenue for future research examining how and when children recognize material need in others. Furthermore, these

findings call into question the interpretation of the earliest cited examples of "sharing" behavior in which infants between 8 and 12 months spontaneously offer goods and toys to parents and familiar others (Hay, 1979; Hay & Murray, 1982; Rheingold et al., 1976), suggesting that these behaviors may be a desire for social interaction and engagement (e.g., Tomasello, Carpenter, Call, Behne, & Moll, 2005) as opposed to a response to material need.

#### *Categorizing Prosocial Behavior*

To recognize when another requires aid, one must be able to identify and interpret behavioral and (or) situational cues to need. The main goal of this study was to test the hypothesis that children can recognize and respond to a variety of negativity cues (i.e., instrumental need, emotional distress, and material desire), and that the ability to respond to each diverse cue develops independently. The results of this study provide support for this claim; we demonstrate that within the domain of prosocial behavior children can appropriately respond to three distinct cues and that the aid provided in response to each of these cues is internally consistent yet clearly differentiated from each other. Specifically, children's ability and willingness to respond to one cue to negativity, such as an incomplete goal, will not necessarily transfer to another, such as responding to emotional distress, or material desire. Taken together, the high internal consistency, lack of cross-task correlation, and unique developmental trajectories suggest that there is an important role for considering the initial cue to which the child is responding when attempting to understand the nuances of children's early prosocial behaviors.

Up to this point we have refrained from providing a specific label for the resultant behaviors, in part because of the complexity associated with the existing behavioral terms. However, we believe that some of the complexity is reduced when the behaviors are considered in light of the initial negativity cue to which the individual is responding. Moreover, three terms that exist in the literature are appropriate descriptors of the aid children provide in response to the three types of negativity. In line with previous proposals (e.g., Eisenberg-Berg & Hand, 1979; Radke-Yarrow et al., 1976; Radke-Yarrow et al., 1983), we suggest that the prosocial response to instrumental needs is *helping*, to emotional needs is *comforting*, and material needs is *sharing*. Although we are drawing these distinctions based on the initial cue to which the child is

responding, not the specific behavior that the child produces, in this study these two variables co-occur. Specifically, the three negative states elicited three different types of prosocial interventions (i.e., retrieving an object, giving up a desired good, approaching a distressed adult), making it difficult to determine if the observed effects are due to differences in the recognition of the problem or the recognition of the type of intervention required to alleviate the problem. Future research that manipulates these two factors independently is required to disentangle the specific source of the observed dissociation.

Importantly, the point remains that failure to differentiate between subtypes of prosocial behavior has long been thought to be the cause of the difficulty in identifying a consistent developmental trajectory (Batson, 1991; Clark, 1991; Eisenberg & Fabes, 1998; Eisenberg et al., 1999; Hay & Cook, 2007; Radke-Yarrow et al., 1983) and the underlying mechanisms of the development of prosocial behavior (Eisenberg-Berg & Hand, 1979; Iannotti, 1985; Radke-Yarrow et al., 1976). Regardless of whether the source of the dissociation is in recognizing the negative states, identifying an appropriate intervention, or a combination of the two, the results of this study support the long-standing hypothesis that within the general domain of prosocial behavior there are multiple distinct subtypes. Indeed, not only do these three varieties of prosocial behavior emerge at different points in development (e.g., Dunfield et al., 2011) but they also show different developmental trajectories. Helping in response to instrumental needs appears to emerge early and increase rapidly in frequency prior to the second birthday. Comforting in response to emotional distress emerges later and continues to increase in frequency over the first 5 years. Finally, although sharing in response to material desires can be elicited early in development in some instances, future research is required to better understand how the ability to recognize material need develops. Overall, this study also supports the claim that “early prosocial behavior develops from relying on action understanding and explicit communications to understanding others’ internal states” (Svetlova et al., 2010, p. 1).

Moreover, in addition to providing a framework within which the development of “prosocial behavior” can be better understood by examining the factors that elicit each response independently, the current proposal will also aid in structuring the search for the underlying mechanisms. Specifically, by identifying three types of behavior that respond

to three unique negative states we can begin to better structure the search for the requisite representations. Indeed, given that helping, comforting, and sharing each responds to different types of negativity, one would expect that the behavioral and (or) situational cues that allow children to identify the need will also differ, as will the understandings required to determine the appropriate intervention.

### Conclusion

Although it is clear that children are able to engage in a wide range of prosocial behaviors early in life, the utility in categorizing these diverse behaviors into a single unified construct of prosocial behavior is less clear. Indeed, these results suggest that instead of conceptualizing prosocial behavior as a single “disposition,” it may be more useful to recognize the triad of distinct behaviors that characterize the domain and seek to better understand their unique developmental trajectories and behavioral correlates. By considering each discrete behavioral component separately, we can achieve greater insight into the true nature of human other-oriented behaviors.

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