

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

How can I help? Developmental change in the selectivity of two to four-year-olds' attempts to alleviate others' distress

Permalink

<https://escholarship.org/uc/item/7hv066q3>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

Authors

Ebo, Regina

Schulz, Laura

Publication Date

2019

Peer reviewed

How can I help? Developmental change in the selectivity of two to four-year-olds' attempts to alleviate others' distress

Regina Ebo (reginae@mit.edu)

Department of Brain and Cognitive Sciences, MIT
43 Vassar St Cambridge, MA 02139

Laura Schulz (lschulz@mit.edu)

Department of Brain and Cognitive Sciences, MIT
43 Vassar St Cambridge, MA 02139

Abstract

Young children are selective in deciding whom to help (i.e., they preferentially assist and share resources with prosocial versus antisocial others; Hamlin, Wynn, Bloom, & Mahajan, 2011; Vaish, Carpenter, & Tomasello, 2010) but are they also selective in deciding *how* to offer help? Here we show two to five-year-olds ($N = 32$; mean: 42.41 months; range 27-68 months) characters who are distressed for different reasons: they are hurt, bored, or sad. Children of all ages tried to help the agent but the selectivity of children's responses varied with age and condition; in particular, children's responses to boredom and sadness became increasingly differentiated with age.

Keywords: helping, empathy, social cognition, theory of mind, preschoolers, toddlers

Introduction

One of the more charming characteristics of young children is that they try to help others, even at ages when they themselves need help with almost every aspect of daily life. Toddlers who struggle to put on their own socks will open doors and pick up objects for others (Warneken & Tomasello, 2006; 2007), point to show others the location of hidden objects (Liszkowski, Carpenter, Striano, & Tomasello, 2006), hug and pat distressed peers (Friedman, Zahn-Waxler, & Radke-Yarrow, 1982), and try to understand the causes of others' distress (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee 2008; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman 1992; Zahn-Waxler, Robinson, & Emde 1992). Children's empathetic and prosocial behavior increases between two and four years of age (Knafo et al., 2008; Volbrecht, Lemery-Chalfant, Aksan, Zahn-Waxler, & Goldsmith, 2004; Zahn-Waxler, et al., 1992). This is arguably mediated by broad changes in their theory of mind (Miller, Eisenberg, Fabes, & Shell, 1996; Wellman, Cross, & Watson, 2001), specific changes in their emotion understanding and emotion regulation (Denham, 1998; Eisenberg, Spinrad, & Sadovsky, 2006), and increased socialization towards prosocial behaviors (Hoffman, 2000).

But the selectivity of children's helping behavior also increases over development (Hay & Cook, 2007; Hay,

1994) -- and even the youngest children do not help others indiscriminately. Toddlers preferentially help prosocial versus antisocial others (Behne, Carpenter, Call, & Tomasello, 2005; Dunfield & Kuhlmeier, 2010; Hamlin, et al., 2011; Vaish, et al., 2010). By three, children consider others' past contributions to shared goals (Baumard Mascaro, & Chevallier, 2012) and history of reciprocity in deciding how to allocate resources (Olson & Spelke, 2008). Four and five-year-olds evaluate relative ability in deciding how to divide labor to achieve cooperative and prosocial goals (Magid, DePascale, & Schulz, 2018). By five and six, children's attempts to inform others take into account the learners' prior knowledge, past mistakes, and goals (Gweon, Shafto, & Schulz, 2014; Ronfard, Was, & Harris, 2016), the transparency and availability of information (Clegg & Legare, 2016; Ronfard, Was, & Harris, 2016), and the relative costs and benefits of information to the learner (Bridgers, Jara-Ettinger, & Gweon, 2016; Gweon & Schulz, 2019).

Thus, children's helping behavior is sophisticated in many respects. However, toddlers and young preschoolers are more likely to share resources or provide help with instrumental goals than offer comfort (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Newton, Thompson, & Goodman, 2016; Svetlova, Nichols, & Brownell, 2010). Similar results have been found in four and five-year-olds: they are more likely to help achieve goals than to share, and are least likely to try to offer soothing, encouragement or solace (Thompson & Newton, 2013).

Because very young children are adept at inferring both others' desires (e.g., Meltzoff, Gopnik, & Repacholi, 1999) and the goals of their failed intentional actions (e.g., Meltzoff, 1999), it may be relatively easy for young children to know what resources to offer and what actions to take. By contrast, it may be difficult for children to know what constitutes a helpful response to someone's emotional distress. Even as adults, we may understand perfectly well that someone is disappointed, agitated, or distraught and still find ourselves at a loss as to how to help them.

However, even if children do not know how best to intervene, there is reason to think that they may be attuned even to relatively fine-grained distinctions among emotions.

Within hours of birth, newborns respond differently to distinct emotional expressions (Field, Woodson, Greenberg, & Cohen, 1982) and by seven months, babies distinguish emotions cross-modally and within valence (e.g., generating distinct responses to anger and fear; matching happy faces to happy voices and interested faces to interested ones; Serrano, Iglesias, & Loeches, 1992; Walker-Andrews, 1998; see also Soken & Pick, 1999; Soderstrom, Reimchen, Sauter, & Morgan, 2017). Older infants map positively valenced emotions to the achievement of goals (Skerry & Spelke, 2014), and make nuanced distinctions among emotional expressions and connect them to their probable eliciting causes (Wu, Muentener, & Schulz, 2018).

Nonetheless, children's ability to categorize emotions (Widen & Russell, 2008; 2010), and their understanding of the way past experiences and social contexts shape the experience and expression of emotions (Pons, Harris, & de Rosnay, 2004), undergo considerable development between preschool and middle childhood. Emotion regulation in particular is relatively protracted (Pons et al., 2004), and this may apply to the ability to regulate other's emotions as well as one own. Moreover, perhaps the most common way to try to regulate someone else's negative emotions is to talk to them, thus offering comfort might place high verbal demands on children. The infrequency with which young children offer comfort may reflect limitations on their fluency, not their insight or compassion. In the current study, we remove linguistic demands by giving children a choice of objects that might be helpful, allowing us to ask whether children can calibrate their responses to the particular nature of others' distress.

Here we focus on two to four-year-olds because we know children in this age range can use social and moral evaluation to decide *whom* to help (Behne et al., 2005; Dunfield & Kuhlmeier, 2010; Vaish et al., 2010; Baumard, et al., 2012; Olson & Spelke, 2008) but the degree to which they use social cognition to make distinctions about *how* to help remains an open question. We show children characters who are upset for one of three reasons: they have scraped their knee and are hurt, there is nothing to do and they are bored, or their parent has left them at daycare and they are sad. In all cases, children are given a choice of three candidate offerings: a Band-Aid, a novel electronic toy, or the victim's favorite stuffed animal. We selected these pairings because both the emotional states and the stimuli should be familiar to children in this age range and yet the complexity of the inferences required to intervene upon the emotional states might differ across categories. In particular, children's tendency to choose an intervention might be related to the intuitive likelihood that the intervention would successfully change the agent's state.

Children have abundant experience with minor scrapes and bumps (Fearon, McGrath, & Achat, 1996), and in the United States, "booboos" are reliably linked with Band-Aids. Crying in response to a minor injury is an ambiguous response with respect to the extent to which it reflects a physiological response to pain or an emotional response to

the fear associated with the pain, but in either case, from the perspective of a child, a Band-Aid may seem to solve the underlying problem. By contrast, there is no single canonical response to either boredom or sadness; intervening on these emotional states requires both understanding why the person feels as she does and understanding the role that the various choices may play in changing this state. Nonetheless, the link between boredom and novelty is arguably almost as straightforward as the link between booboos and Band-Aids: Children themselves respond to novelty with interest (Berlyne, 1950; Hutt, 1970) and providing something that is interesting effectively solves the problem of being bored. However, the distress of an agent who is sad about a separation is more complex. Children commonly regulate their sadness at separation from attachment figures with transitional objects (Kopp, 1989; Winnicott, 1986). Critically however, the intervention serves to regulate the distressed emotion rather than to resolve it (i.e., the only intervention that really solves sadness at separation from a loved one is for the loved one to return). Thus, although pilot data suggests that adults would offer Band-Aids, novel toys, and favorite stuffed animals in response to pain, boredom, and sadness respectively, children might well find some of these mappings easier than others.

Of course, if children offer anything at all to an agent who is upset, they are providing an empathetic, prosocial response, and any well-intentioned intervention may be effective even if it is not directly connected to the underlying concern. Band-Aids can alleviate boredom and sadness; novel toys can distract from sadness and pain, and stuffed animals can help with both pain and boredom. Perhaps more critically, engagement, attention, and sympathetic concern may go a long way towards resolving distress, independent of the degree to which any given intervention is specifically tailored to the source of the recipient's woes.

Nonetheless, commonsense suggests that some of these offerings are more likely to be effective in some contexts than others, and the early sophistication of children's helping behavior may relate to sensitivity to the contents of others' minds and overall social acuity. Thus, here we ask whether two to four-year-olds offer emotional comfort indiscriminately or whether they are sensitive to how different interventions might best alleviate different kinds of emotional distress.

Experiment

Participants

Thirty-two children ($M = 42.41$ months, range: 27-68 months) were recruited from an urban children's museum. Six children failed a practice trial but excluding them from the analysis made no difference to the results. Five additional children were recruited but excluded from analysis due to incomplete participation ($N = 1$), parental interference ($N = 2$), and incomplete consent forms ($N = 2$).

While most of the children were white and middle class, a range of ethnicities and socioeconomic backgrounds reflecting the diversity of the local population (47% European American, 24% African American, 9% Asian, 17% Latino, 4% two or more races) and the museum population (29% of museum attendees receive free or discounted admission) were represented.

Materials

In the practice trial an Ernie puppet from Sesame Street and two toys (a squishy ball and a plastic strawberry) were used. The test trial materials included six Paw Patrol Band-Aids each depicting a different or different set of characters from the children's series; six unique toys that lit-up, made funny sounds, and/or spun; and six unique stuffed animals. The materials were arranged on a plastic tray so that one material of each of the three kinds was placed on the tray (left/right/middle arrangement counterbalanced); children were presented with a different set of three items on each trial. (See Figure 1 for example presentation set). We also used six pairs of hand puppets; each pair had a parent and a child puppet. Stickers and a sticker "bookmark" were used to keep the children on task. See Figure 1 for examples of the stimuli.



Figure 1: Examples of the puppets (left) and the toy, stuffed animal, and Band-Aid (right)

Procedure

Children were tested individually in a private testing room. Children participated in a practice trial and six test trials, two of each kind (Hurt, Bored, and Sad). Sessions began with the experimenter explaining the task: "We're going to do six puppet stories okay? After each one, you get to put a sticker on this bookmark. Once we finish all six stories, you get to take the bookmark home. Does that sound good? Great! Before we start, we're going to do a practice story."

Practice Trial: The experimenter brought out the Ernie puppet and said, "This is my friend Ernie. He's really hungry. He hasn't eaten all day." Then the experimenter introduced the tray with the squishy toy and the strawberry. "Here we have a squishy toy and a strawberry. Which one of these things do you want to give him to make him feel better?" Choosing the correct option, the strawberry was met with positive feedback (Ernie said "thank you" and pretended to eat the strawberry "mm, mm, mm"); choosing the incorrect option was met with neutral feedback ("thank

you"). Regardless of whether children passed the training trial, they continued onto the test trials.

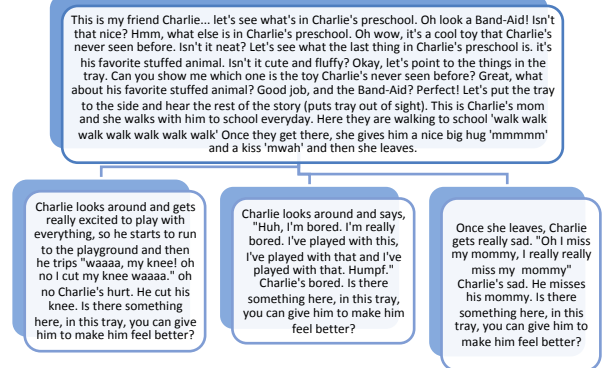


Figure 2: Example of the script and the three scenarios.

Test Trial Each test trial began with the introduction of the child puppet and three things in his preschool: a new toy that the puppet had never seen before, the puppet's favorite stuffed animal, and a Band-Aid. The child was given each item one at a time and told to place the item in the tray once they were done looking at it. Children were allowed to play for as long as they liked to minimize the chance that children would choose an item just to play more with it. Children heard a core story and one of three possible endings: Hurt, Bored, and Sad. In the Hurt condition, the child puppet tripped and hurt his knee; in the Bored condition, the puppet got bored; in the Sad condition, the puppet got sad because he misses his mom. Participants were prompted to pick an item from the tray that would make the child puppet feel better. (See Figure 2 for an example.) Children received neutral feedback ("thank you" or "thanks for helping"); then a new pair of puppets and a new tray with three different items, one of each kind, was introduced. The scenarios were presented in random order for the first three trials and this order was repeated for the last three trials.

Results

Children were counted as performing correctly if they chose the Band-Aid for the Hurt scenarios, the new toy for the Bored scenarios, and the stuffed animal for the Sad scenarios. There was no effect of order on children's performance (Kruskal-Wallis rank sum test, $p = .44$).

Children had a choice of three items on each of the six trials. They received one point for each correct choice. Overall, children performed above chance (mean = 3.5; one-sample t-test, $p < .0001$). Only one child (the oldest) performed at ceiling but nine of the thirty-two children (28%) answered five of the six questions correctly ($p < .0001$ by binomial test). There was an effect of age on children's overall score ($r^2 = 0.15$, $p < .0001$; see Figure 3); older children performed better, and as clear in Figure 4, the effect was driven primarily by improvement in the Sad condition.

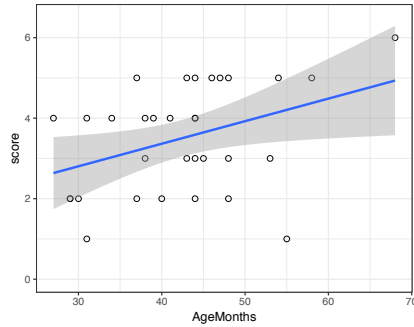


Figure 3: Children's overall score as a function of age

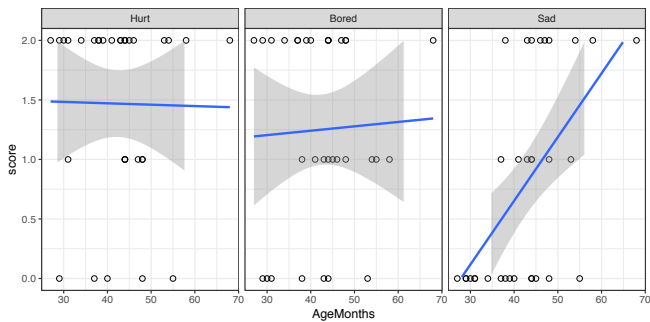


Figure 4: Children's responses by age and condition

The kind of scenario affected children's score (Test of Equal Proportions, $p < .001$); thus we used pairwise comparisons to look within each scenario at children's performance. Children performed better in both the Hurt and Bored conditions than in the Sad condition (Hurt versus Sad; $p < .001$; Bored vs. Sad, $p < .05$; see Figure 5); children's performance in the Hurt and Bored conditions did not differ from each other (Hurt vs. Bored; $p = .26$). Within each condition, children performed above chance in both the Hurt ($p < .0001$ by Test of Equal Proportions) and Bored conditions ($p < .0001$); but their scores in the Sad condition were not significantly different from chance ($p = 0.78$).

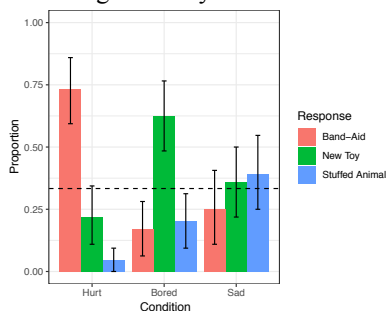


Figure 5: Children's choice of each of the three responses by condition

Discussion

Above all, these results suggest that, at least in simple forced choice contexts with low verbal demands, very

young children's helping behavior is not restricted to resource sharing or assisting with functional, goal-directed actions; children seek to help relieve others' distress and do so in ways that are responsive to distinct sources of negative affect. Although children's ability to calibrate their response to the emotional state improved over development, even children as young as two and three distinguished upset due to pain and upset due to boredom and generated distinct, appropriate responses.

As predicted however, children had more difficulty knowing how to respond to distress due to a separation. We hypothesized that this might be because the impact of the intervention on the outcome was more uncertain. None of the candidate options would directly remove the source of distress; the best children could do would be to offer something that would help moderate it. There are possibilities however. Children may simply have preferred the fun toy to the stuffed animal – inflating their performance in the Bored condition and impairing it in the Sad condition. We think this interpretation is unlikely however, given both the method and results: We intentionally allowed children to play with each item to satiation in advance to wash out any differential stimuli effects, and children had no difficulty overcoming any preference for the toy in the Hurt condition.

Alternatively, young children might genuinely believe that the other options (toys or Band-Aids) were more likely to provide comfort than the stuffed animal – and indeed, at least for some children, in some contexts, this might be correct. Indeed, emotion regulation is challenging because there are no determinate rules: what works one time might not work the next, and what works for one person might not work for another. Nonetheless, within a given culture and context, there is a probabilistic relationship between certain responses and outcomes, and the current results suggest that children begin to learn these relations over the preschool years. Future research might extend this study to older children to see if their responses are adult-like or even provide children with the option to not help the puppet. Future research might also look at children's sensitivity to culturally specific, or family specific, dimensions of emotion regulation to look at how socialization affects children's responses.

Overall however, these results suggest that children's empathetic responses are not monolithic. With apologies to Tolstoy, even two-year-olds seem to recognize that every unhappy puppet is unhappy in its own way – and they offer solace accordingly.

Acknowledgments

We thank Boston Children's Museum, families who participated in this study, and graduate students in ECCL.

References

Baumard, N., Mascaro, O., & Chevallier, C. (2012). Preschoolers are able to take merit into account when distributing goods. *Developmental psychology*, 48(2), 492.

- Behne, T., Carpenter, M., Call, J., & Tomasello, M. (2005). Unwilling versus unable: infants' understanding of intentional action. *Developmental psychology, 41*(2), 328.
- Berlyne, D. E. (1950). Novelty and Curiosity as Determinants of Explorative Behavior. *British Journal of Psychology. General Section, 41*(1-2), 68-80.
- Borke, H. (1971). Interpersonal perception of young children: Egocentrism or empathy? *Developmental Psychology, 5*(2), 263-269.
- Bridgers, S., Jara-Ettinger, J., & Gweon, H. (2016). Children consider others' expected costs and rewards when deciding what to teach. In *Proceedings of the 38th annual conference of the cognitive science society* (pp. 559-564). Cognitive Science Society.
- Clegg, J. M., & Legare, C. H. (2016). Instrumental and conventional interpretations of behavior are associated with distinct outcomes in early childhood. *Child Development, 87*(2), 527-542.
- Dondi, M., Simion, F., & Caltran, G. (1999). Can newborns discriminate between their own cry and the cry of another newborn infant?. *Developmental Psychology, 35*(2), 418.
- Denham, S. A. (1998). *Emotional development in young children*. Guilford Press.
- Dunfield, K. A., & Kuhlmeier, V. A. (2010). Intention-mediated selective helping in infancy. *Psychological science, 21*(4), 523-527.
- Dunfield, K., Kuhlmeier, V. A., O'Connell, L., & Kelley, E. (2011). Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy, 16*(3), 227-247.
- Eisenberg, N., Spinrad, T. L., & Sadovsky, A. (2006). Empathy-related responding in children. *Handbook of moral development, 517*, 549.
- Fearon, I., McGrath, P. J., & Achat, H. (1996). 'Booboos': the study of everyday pain among young children. *Pain, 68*(1), 55-62.
- Feshbach, N. D. (1975). Empathy in Children: Some Theoretical and Empirical Considerations. *The Counseling Psychologist, 5*(2), 25-30. <https://doi.org/10.1177/001100007500500207>
- Field, T. M., Woodson, R., Greenberg, R., & Cohen, D. (1982). Discrimination and imitation of facial expression by neonates. *Science, 218*(4568), 179-181.
- Friedman, S. L., Zahn-Waxler, C., & Radke-Yarrow, M. (1982). Perceptions of cries of full-term and preterm infants. *Infant Behavior and Development, 5*(2-4), 161-173.
- Gweon, H., & Schulz, L. (2019). From exploration to instruction: Children learn from exploration and tailor their demonstrations to observers' goals and competence. *Child development, 90*(1), e148-e164.
- Gweon, H., Shafto, P., & Schulz, L. (2014, January). Children consider prior knowledge and the cost of information both in learning from and teaching others. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 36, No. 36).
- Hamlin, J. K., Wynn, K., Bloom, P., & Mahajan, N. (2011). How infants and toddlers react to antisocial others. *Proceedings of the national academy of sciences, 108*(50), 19931-19936.
- Hay, D. F. (1994). Prosocial development. *Journal of Child Psychology and Psychiatry, 35*(1), 29-71.
- Hay, D. F., & Cook, K. V. (2007). The transformation of prosocial behavior from infancy to childhood. *Socioemotional development in the toddler years: Transitions and transformations*, 100-131.
- Hoffman, M. L. (2008). Empathy and prosocial behavior. *Handbook of emotions, 3*, 440-455.
- Hutt, C. (1970). Specific and diversive exploration. In *Advances in child development and behavior* (Vol. 5, pp. 119-180). JAI.
- Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental psychology, 25*(3), 343.
- Knafo, A., Zahn-Waxler, C., Van Hulle, C., Robinson, J. L., & Rhee, S. H. (2008). The developmental origins of a disposition toward empathy: Genetic and environmental contributions. *Emotion, 8*(6), 737.
- Liszkowski, U., Carpenter, M., Striano, T., & Tomasello, M. (2006). 12-and 18-month-olds point to provide information for others. *Journal of cognition and development, 7*(2), 173-187.
- Magid, R. W., DePascale, M., & Schulz, L. E. (2018). Four-and 5-Year-Olds Infer Differences in Relative Ability and Appropriately Allocate Roles to Achieve Cooperative, Competitive, and Prosocial Goals. *Open Mind, 1*(4), 194-207.
- Meltzoff, A. N. (1999). Origins of theory of mind, cognition and communication. *Journal of communication disorders, 32*(4), 251-269.
- Meltzoff, A. N., Gopnik, A., & Repacholi, B. M. (1999). Toddlers' understanding of intentions, desires and emotions: Explorations of the dark ages.
- Miller, P. A., Eisenberg, N., Fabes, R. A., & Shell, R. (1996). Relations of moral reasoning and vicarious emotion to young children's prosocial behavior toward peers and adults. *Developmental psychology, 32*(2), 210.
- Newton, E. K., Thompson, R. A., & Goodman, M. (2016). Individual differences in toddlers' prosociality: Experiences in early relationships explain variability in prosocial behavior. *Child development, 87*(6), 1715-1726.
- Olson, K. R., & Spelke, E. S. (2008). Foundations of cooperation in young children. *Cognition, 108*(1), 222-231.
- Pons, F., Harris, P. L., & de Rosnay, M. (2004). Emotion comprehension between 3 and 11 years: Developmental periods and hierarchical organization. *European journal of developmental psychology, 1*(2), 127-152.
- Ronfard, S., & Corriveau, K. H. (2016). Teaching and preschoolers' ability to infer knowledge from mistakes. *Journal of experimental child psychology, 150*, 87-98.
- Ronfard, S., Was, A. M., & Harris, P. L. (2016). Children teach methods they could not discover for

themselves. *Journal of experimental child psychology*, 142, 107-117.

Serrano, J. M., Iglesias, J., & Loeches, A. (1992). Visual discrimination and recognition of facial expressions of anger, fear, and surprise in 4-to 6-month-old infants. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, 25(6), 411-425.

Skerry, A. E., & Spelke, E. S. (2014). Preverbal infants identify emotional reactions that are incongruent with goal outcomes. *Cognition*, 130(2), 204-216.

Soderstrom, M., Reimchen, M., Sauter, D., & Morgan, J. L. (2017). Do infants discriminate non-linguistic vocal expressions of positive emotions?. *Cognition and Emotion*, 31(2), 298-311.

Soken, N. H., & Pick, A. D. (1999). Infants' perception of dynamic affective expressions: Do infants distinguish specific expressions?. *Child Development*, 70(6), 1275-1282.

Svetlova, M., Nichols, S. R., & Brownell, C. A. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child development*, 81(6), 1814-1827.

Thompson, R. A., & Newton, E. K. (2013). Baby altruists? Examining the complexity of prosocial motivation in young children. *Infancy*, 18(1), 120-133.

Vaish, A., Carpenter, M., & Tomasello, M. (2010). Young children selectively avoid helping people with harmful intentions. *Child development*, 81(6), 1661-1669.

Volbrecht, M. M., Lemery-Chalfant, K., Aksan, N., Zahn-Waxler, C., & Goldsmith, H. H. (2007). Examining the familial link between positive affect and empathy development in the second year. *The Journal of genetic psychology*, 168(2), 105-130.

Walker-Andrews, A. S. (1998). Emotions and Social Development: Infants' Recognition of Emotions in Others. *Pediatrics*, 102(Supplement E1), 1268-1271.

Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *science*, 311(5765), 1301-1303.

Warneken, F., & Tomasello, M. (2007). Helping and cooperation at 14 months of age. *Infancy*, 11(3), 271-294.

Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child development*, 72(3), 655-684.

Widen, S. C., & Russell, J. A. (2008). Children acquire emotion categories gradually. *Cognitive development*, 23(2), 291-312.

Widen, S. C., & Russell, J. A. (2010). Differentiation in preschooler's categories of emotion. *Emotion*, 10(5), 651.

Winnicott, D. W. (1986). 10. Transitional Objects and Transitional Phenomena: A Study of the First Not-Me. *Essential papers on object relations*, 254.

Wu, Y., Muentener, P., & Schulz, L. E. (2016). The invisible hand: toddlers connect probabilistic events with agentive causes. *Cognitive science*, 40(8), 1854-1876.

Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental psychology*, 28(1), 126

Zahn-Waxler, C., Robinson, J. L., & Emde, R. N. (1992). The development of empathy in twins. *Developmental psychology*, 28(6), 1038.