

Inferring One's Own Prosociality Through Choice: Giving Preschoolers Costly Prosocial Choices Increases Subsequent Sharing Behavior

Nadia Chernyak (nc98@cornell.edu) & Tamar Kushnir (tk397@cornell.edu)

Department of Human Development, Martha Van Rensselaer Hall

Ithaca, NY 14853 USA

Abstract

Prosociality emerges early in ontogeny, but the mechanisms driving its early-emergence are not well understood. We propose that the experience of choice is tied to the expression of children's prosocial behavior. In Experiment 1, preschoolers shared with a puppet by either making a Costly Choice (giving a resource they could have kept for themselves), Non-Costly Choice (giving a resource that would otherwise be thrown away), or No Choice. Subsequent prosociality was measured by allowing children to share with a new puppet. While most children shared initially, children who were given costly choices shared more with the new puppet. Experiment 2 replicated this result using a different manipulation for Costly vs. Non-Costly choices. Experiment 3 found that preschoolers were more likely to infer that actions are intentional when they are costly. Results suggest a *prosocial construal hypothesis*: that children rationally infer their prosociality through making difficult, autonomous choices.

Keywords: cognitive development; choice; altruism; preschoolers

Introduction

People very rapidly acquire remarkable prosocial tendencies. By the second to third year of life, children help others complete their goals (Warneken & Tomasello, 2006), share toys (Schmidt & Sommerville, 2008; Svetlova, Nichols, & Brownell, 2010), sympathize with those who are harmed (Vaish, Carpenter, & Tomasello, 2009) or are in distress (Zahn-Waxler, Radke-Yarrow, & Wagner, 1992), and punish those who harm others (Dunfield & Kuhlmeier, 2010; Vaish, Carpenter, & Tomasello, 2010; Vaish, Missana, & Tomasello, 2011). But how children acquire such tendencies remains an understudied empirical question. Here, we explore the possibility that having and making choices encourages young children's prosocial behavior.

One potential mechanism for the expression of prosocial behavior is through past experience with prosocial action (Staub, 1971). Self-perception theory (see Beaman, Cole, Preston, Klenty, & Steblay, 1983; Bem, 1967; Eisenberg, Cialdini, McCreath, & Shell, 1987; Lepper, 1973) suggests that individuals are likely to act in congruence with their past actions because of a desire to stay self-consistent. Thus, through acting prosocially, children may be forming a cognitive representation of what "the self" is like, and acting in accordance with that representation (Freedman & Fraser, 1966; Grusec, Kuczynski, Rushton, & Simutis 1978; Grusec & Redler, 1980).

Importantly, however, children evaluate their own actions not simply by their occurrence, but also by the contexts under which they occur (Warneken & Tomasello, 2008). Here we explore one important context critical to evaluating prosocial behavior: that of choice. Choice differs from action in that it involves the contrast between actions performed and alternative actions not performed. For example, I evaluate Bob, who gave \$5 to charity but could have kept it for himself (had an alternative) more positively than Jim, who accidentally dropped \$5 into the hands of a homeless person (had no alternative). In fact, we often go beyond evaluating choice in absolute terms (having vs. not having choice) to also consider degree of costliness of the alternatives. To extend the above example, I would consider Bob more generous if his choice was to give away his last \$5 than if his choice was to give away \$5 out of his last \$100. Thus, both the presence and the costliness of choice influence how we evaluate others.

No study to our knowledge has addressed whether choice plays a causal role in young children's own prosocial behavior. In this work, we asked whether making costly choices increases young children's prosociality. Specifically, we hypothesized that the contrast between actions chosen and alternative actions not chosen influences children's later prosocial behavior above and beyond the prosociality of the actions themselves.

We allowed preschool-aged children (3-4 year-olds) to perform a prosocial action: allocating a limited and desired resource to a puppet who was feeling sad. We systematically manipulated the presence and magnitude of alternative actions (non-prosocial actions) that children could also undertake. We were interested in how the presence and valence of these alternative actions affected children's subsequent prosociality. Subsequent prosociality was measured by allowing children to then make a new prosocial action towards a different puppet.

Experiment 1

In Experiment 1, children were presented with an attractive and limited resource: 1 star sticker that they could give to a puppet ("Doggie") who was described as feeling sad. We manipulated children's experience of choice by allowing children to either make a **Costly Choice** (give the sticker to Doggie instead of keeping it for themselves), **Non-Costly Choice** (give the sticker to Doggie instead of having the experimenter put the sticker away), or **No Choice** (instructed to give the sticker to Doggie). As such, all children were given the option between (a) a positive

prosocial action (+), and (b) either a selfish, negative action (-), a neutral action (0), or no action. See table 1 for a summary. Children’s actions towards Doggie were recorded. We were then interested in how the contrast between the action chosen (action a) and the action unchosen (the alternative action b) affected children’s subsequent prosociality. To measure subsequent prosociality, children were introduced to a new puppet (“Ellie”) who was also feeling sad, and given three stickers that they could either keep or share with Ellie.

Table 1: Summary of Experiment 1

Condition	Target Action	Alternative Action
Costly Choice	Give sticker to Doggie (+)	Keep sticker for self (-)
Non-Costly Choice	Give sticker to Doggie (+)	Throw sticker away (0)
No Choice	Give sticker to Doggie (+)	None

Participants

Seventy-two preschool-aged children (*mean*: 3.96 years; *range*: 2.85–4.98) participated. Conditions were fully balanced for age and gender. There were no age differences between conditions, $F(2,71) = .96, p = .39$. One child was replaced due to parental interference. Participants were tested at a local school or children’s museum.

Materials and Procedure

Materials were two plush puppets (“Doggie” and “Ellie”), three small wooden boxes: Doggie’s box, Ellie’s box (which had pictures on the tops and insides of Doggie and Ellie, respectively), and the child’s box (no pictures), and a set of small star and smiley face stickers. A schematic of the materials and procedure is shown in Figure 1.

Introduction All children sat at a table facing the experimenter. Children were first shown a plush animal named “Doggie” and told that Doggie was feeling “very sad today”. Doggie was then put away. One of the toy boxes was placed on the table and introduced as “Doggie’s box.”

Choice Manipulation All children were induced to act prosocially. However, we varied the presence and magnitude of the alternative option across conditions. In the *Costly Choice Condition*, children were presented with the choice of either keeping the sticker for themselves or giving it to Doggie. In the *Non-Costly Choice* condition, children were presented with the choice of putting the sticker away or giving it to Doggie. Finally, in the *No Choice Condition*, children’s actions were restricted by experimenter instruction (“This star sticker, you *have* to put in the box for Doggie so that he feels better”). Across all conditions, once

children made their choices, the experimenter said “good job!” and put the box away.

Dependent Measure A new puppet was then shown (“Ellie”) who was also feeling sad. Ellie was then put away, Ellie’s box was presented along with a second (plain) box on the table, and three smiley-faced stickers placed between the two boxes. The positioning of the two boxes was counterbalanced across participants. The experimenter then said that the three stickers were for the child, but that Ellie also really liked them. The number 3 was chosen to force children to create an uneven distribution (either to prioritize themselves, or to prioritize Ellie).

After counting the stickers, the experimenter then said that the child could either keep all of the stickers for him/herself (and pointed to the plain box) or share some with Ellie (and put them in Ellie’s box). Re-prompts were used if children left any stickers on the table (“and what do you want to do with this/that one?”), until a box was chosen for each sticker.

Results and Discussion

We first analyzed children’s initial prosocial responses: the majority of children chose the prosocial action over the non-prosocial alternative: 19/24 in the Costly Choice condition, 23/24 in the Non-Costly Choice condition, and 23/24 in the No Choice condition (all Binomial p ’s < .01).

Next, we analyzed children’s prosocial actions subsequent to the choice manipulation (Figure 2). Almost all children gave at least one sticker and shared at least one sticker, confirming that children both liked stickers and were motivated to share. Children were thus divided into two response groups based on whether they distributed unequally in favor of themselves or Ellie: *other-prioritizing* (giving majority, 2, or 3, stickers to Ellie), and *self-prioritizing* (giving the minority, 1, or 0, stickers to Ellie).¹ See Table 2 for details on number of stickers given per condition. A higher proportion (16/24; 67%) of children in the Costly Choice condition made an other-prioritizing response than those in the No Choice (8/24; 33%) condition, Fisher’s exact test $p < .05$ (see Figure 2), suggesting that having choice influenced children’s subsequent sharing. The cost of the choice also affected sharing: a higher proportion of children who made the initial Costly Choice were more likely to be other-prioritizing than those who made the Non-Costly Choice (7/24; 29%), Fisher’s exact test $p < .01$. Making a non-costly choice did not increase subsequent sharing over being instructed to share, $p > .15$.

The results of Experiment 1 thus provide initial evidence that having made a costly choice to perform a prosocial action increased children’s later prosocial behaviors. Why might this be the case? One possibility is that, by

¹ Results remain nearly identical when analyzing only the subset of children who made the initial prosocial choice. For a conservative estimate, we thus include the full set of children across all experiments.

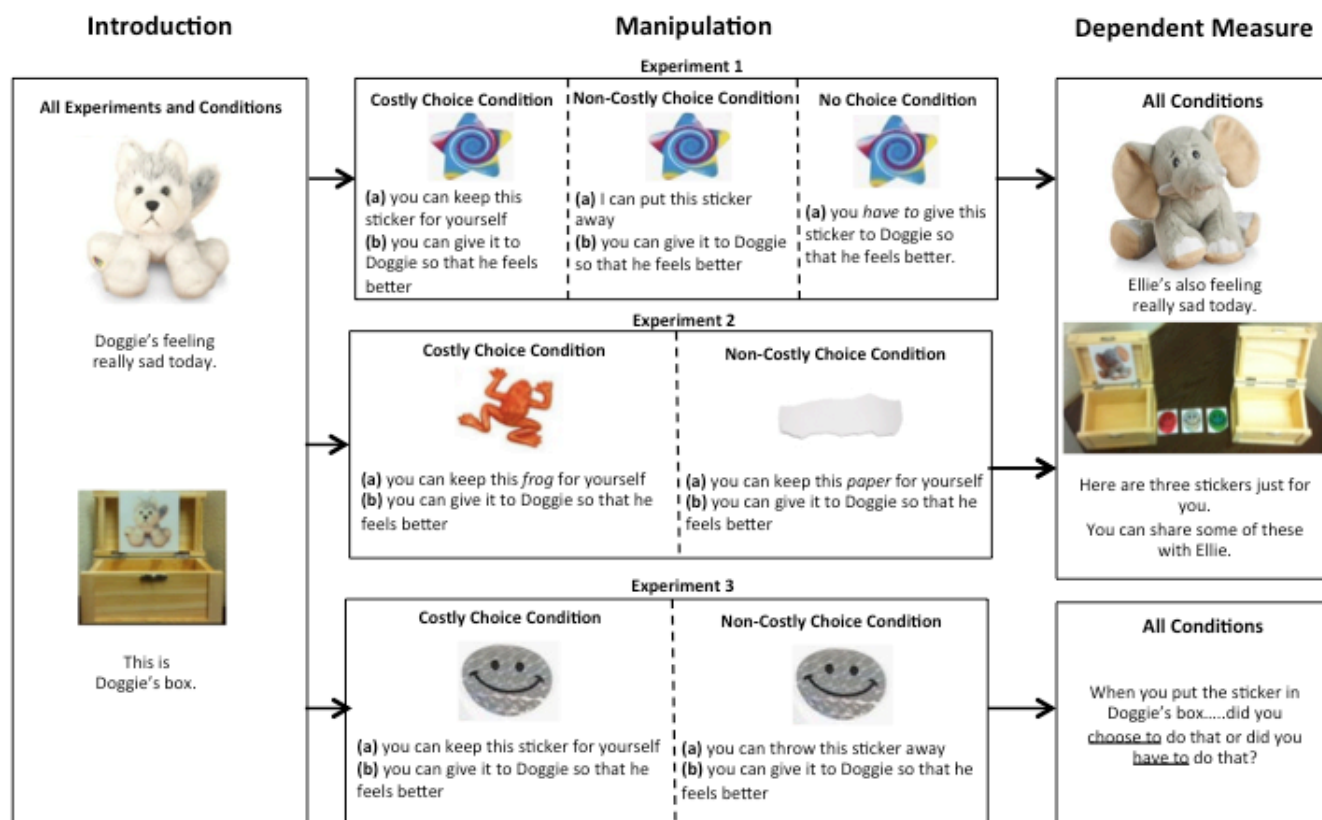


Figure 1: Schematic of materials and procedure used in all experiments. Choices (a) and (b) were presented verbally in the order shown.

Contrasting their chosen actions with non-prosocial alternatives, children inferred their prosociality. The above explanation is consistent with traditional self-perception theories (e.g., Bem, 1967) which predict that people learn about their own preferences from observing their past actions. There are, however, at least two alternative explanations, also consistent with self-perception theory, which consider the actions but do not take into account whether the action was contrasted with alternatives. One possibility is that the initial costly choice may have led children to believe they had exhibited their dislike for the object (“I gave away the sticker so I must not like stickers). Another possibility is that the initial Costly Choice caused children simply to repeat the initial outcome of distributing more to another than to themselves.

Experiment 2

Experiment 2 was designed to rule out these possibilities. Procedures mirrored Experiment 1's Costly Choice condition, with the following modifications. Children were once again introduced to the first puppet, Doggie. This time, however, in the **Costly Choice** condition, children were given a colorful rubber toy frog, rather than a star sticker. In the **Non-Costly Choice** condition, children were given a

small white piece of torn paper. All children were told they could choose to keep the object for themselves or give it to Doggie. The dependent measure (and the new puppet, Ellie) remained the same.

It is important to note that unlike in Experiment 1, the objects used were different between the choice manipulation (which involved either a frog or piece of paper) and the dependent measure (which again involved smiley face stickers). Thus, any increased tendencies to share stickers during the dependent measure phase could not be attributed to children's inferences about their preference (or lack thereof) for stickers. Additionally, the choice manipulation of both the Costly And Non-Costly choice conditions required children to undertake the same prosocial action of giving the object to Doggie instead of keeping it for themselves, controlling for the possibility that initial practice with giving away objects causes children to repeat the outcome of giving more to others than to themselves.

Participants

Forty-eight preschool-aged children (*mean*: 3.91 years; *range*: 2.81–4.96) participated. Conditions were fully balanced for age and gender. There were no age differences

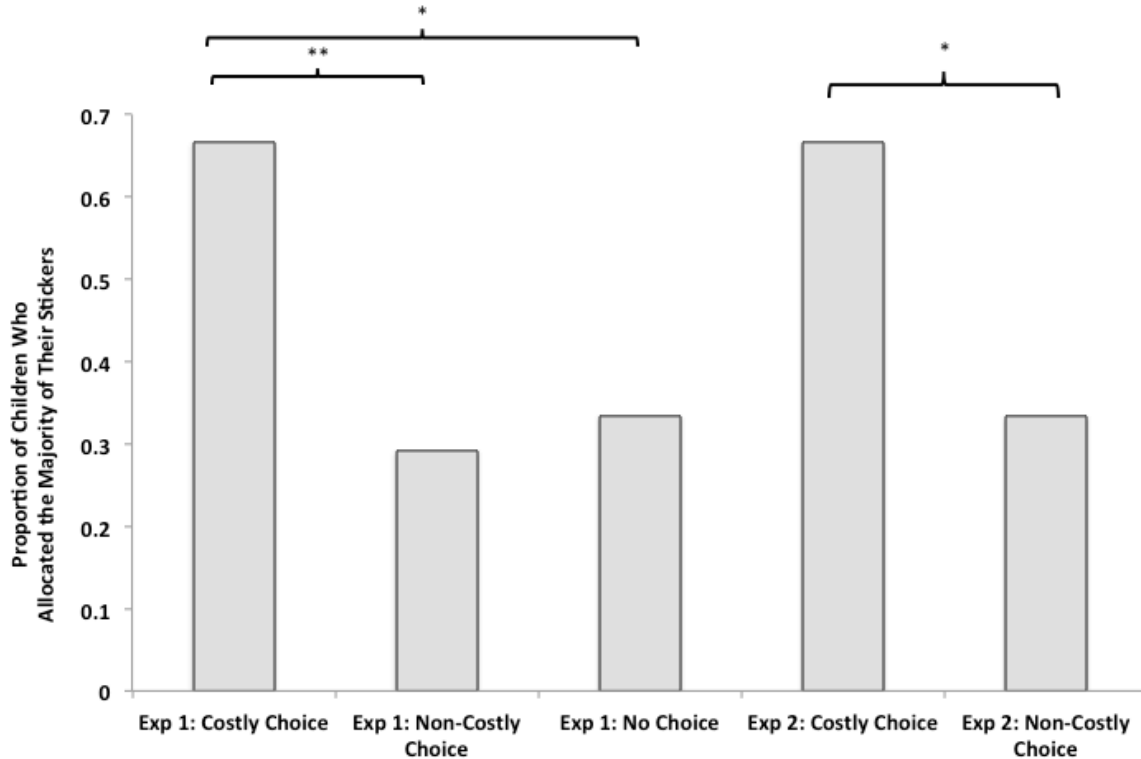


Figure 2: Proportion of children who allocated the majority of their stickers in the dependent measure phase (to Ellie) in Experiments 1 and 2. * $p < .05$, ** $p < .01$.

between conditions, $t(46) = .41, p = .69$. Four children were replaced due to either experimental error or prior participation. Participants were tested at a local school or children’s museum.

Materials and Procedure

Materials were the same as those used in Experiment 1, except a set of colorful toy frogs and plain torn pieces of paper were used during the introduction instead of smiley face stickers (see Figure 1).

The procedure also largely followed that of Experiment 1, with the following modifications. In the Costly Choice Condition, children were given an attractive object (a colorful toy frog), and told they could either keep it or give it to Doggie. In the Non-Costly Choice condition, children were given a small torn piece of paper and also told they could either keep it or give it to Doggie. The dependent measures remained the same.

Results and Discussion

First, to confirm that giving away the toy frog was in fact a more costly choice than giving away the piece of paper, we showed the two objects (side of object counterbalanced) to an independent sample of age-matched children, and asked them which object they preferred more. Nineteen (of 20) confirmed they preferred the frog (Binomial $p < .001$). Once again, the majority of children in both the Costly Choice (frog) condition (21/24) and the Non-Costly Choice

(paper) condition (24/24) chose the prosocial action over the non-prosocial alternative (Binomial p ’s $< .01$).

Table 2: Number of Stickers Donated Across Conditions (modal responses bolded and underlined)

Condition	Number of Children Who Made Each Allocation Type (to Ellie)			
	0	1	2	3
Exp 1: Costly Choice	2	6	<u>11</u>	5
Exp 1: Non-Costly Choice	3	<u>14</u>	3	4
Exp 1: No Choice	3	<u>13</u>	4	4
Exp 2: Costly Choice	2	6	<u>13</u>	3
Exp 2: Non-Costly Choice	3	<u>13</u>	5	3

A higher proportion of children in the Costly Choice (16/24; 67%) condition performed other-prioritizing prosocial behaviors than those in the Non-Costly Choice (8/24; 33%) condition, Fisher’s exact test $p < .05$, demonstrating once again, that costly choices led to greater subsequent sharing behaviors. Once again, for details on number of stickers given per condition, see Table 2.

Moreover, we confirmed that children’s prosociality could not be explained by the child making inferences about their own lack of preference for stickers: sharing rates across the two Costly Choice conditions of Experiments 1

and 2 were identical. Moreover, we ruled out the possibility that children in Experiment 1 simply repeated the outcome of having fewer objects than another agent – children in both conditions of Experiment 2 initially shared an object with Doggie instead of keeping it for themselves.

Experiment 3

The results of Experiments 1 and 2 provide initial evidence that making costly prosocial choices plays an important role in children's subsequent prosocial behavior. We suggest that our findings are best explained by a *prosocial construal hypothesis* (see Cialdini, Eisenberg, Shell, & McCreath, 1987; Grusec et al., 1978): In making costly prosocial choices, children construe their actions as a signal of their prosociality (e.g., "I shared so I must like to share").

How children perceive costly vs. non-costly situations, however, remains an important question. In Experiment 3, we wished to more closely investigate the differing perceptions that might occur during costly vs. non-costly choice situation. One possibility is that children perceive their own costly choices as intentions (i.e., that their actions were in fact, intentionally and freely chosen, rather than obligatory). On this account, children would encode costly choice situations as choices, and non-costly choices as obligatory acts (e.g., "I *chose* to give the sticker to Doggie instead of keeping it for myself" vs. "I *had* to give the sticker to Doggie instead of throwing it out").

In Experiment 3, we tested for this possibility, by once again giving children either a Costly or Non-Costly Choice, and then asking them whether they *chose to* or *had to* perform the target action.

Participants

Fifty preschool-aged children (*mean*: 3.37 years; *range*: 2.84–4.84) participated. There were no age differences between conditions, $t(48) = 98, p = .34$. Five children were replaced due to either experimental error, or because they refused to answer the question. Participants were tested at a local school or children's museum.

Materials and Procedure

Materials were the same as those used in Experiment 1, except there was no new puppet (Ellie). See Figure 1.

The Introduction and Choice Manipulation were nearly identical to that of Experiment 1, with the following modifications: a smiley-face sticker was used instead of a star sticker in the Introduction phase. Additionally, because we did not wish to bias children's answers with choice language, we avoided using the phrase "You get to choose", and instead simply presented the two options (e.g., "You can either give this sticker to Doggie or you can keep it for yourself").

Dependent Measure In the dependent measure, children were reminded of the choice they had made ("Do you remember when you put that sticker in Doggie's box?"). Children were then asked a *Choice Question* ("Did you

choose to do that, or did you *have to* do that?"). The question was re-asked if children did not initially answer.

Results and Discussion

As in Experiments 1 and 2, the majority of children in both the Costly Choice condition (19/25) and the Non-Costly Choice condition (25/25) chose the prosocial action over the non-prosocial alternative (Binomial p 's < .01).

A greater proportion of children in the Costly Choice condition stated that they *chose to* perform the target action (18/25; 72%) than those in the Non-Costly Choice condition (9/25; 36%), Fisher's exact test $p < .05$.

These results suggest that one of the inferences children may be making during Costly Choice situations is that their actions were intentional. These results are consistent with work that finds that young children learn about people's intent, both in the moral and non-moral domain, through evaluating the presence and amount of alternative actions available to them (e.g., Kushnir, Xu, & Wellman, 2010; Zelazo, Helwig, & Lao, 1996).

General Discussion

We began this paper with the hypothesis that allowing children opportunities to make costly choices would influence their subsequent prosocial behavior. In fact, children were more prosocial after making costly than non-costly choices, and after making costly choices than making no choices at all. Moreover, children were sensitive to different types of evidence for what counts as a costly action: they shared more after making costly choices, and also after giving away costly objects. Finally, we found that children were more likely to construe their actions as intentional when making costly vs. non-costly choices.

Further work may examine the specific features of costly choice situations that enable children's subsequent prosocial behavior. One possibility is that children felt positive emotion by making a costly choice, and therefore were motivated to repeat the behavior at the next timepoint. The positive emotion may have occurred because children were subconsciously attuned to their own pride in making a choice that was costly, and were thus motivated to make themselves proud again by being prosocial. Yet another possibility is that in making a costly prosocial choice, children actively self-regulated their own physiological arousal elicited by hearing about a sad puppet (Hepach, Vaish, & Tomasello, 2012). The coordination of setting goals and watching oneself effectively self-regulate in order to meet those goals may then have empowered children to repeat the self-regulatory prosocial behavior later on (Grolnick, 2009).

It is also important to examine the scope of influence that costly choices have on the development of prosocial behavior and on later-developing altruistic behaviors. Moral self-construction, as well as altruistic behavior, are likely to be the product of a rather complicated process involving emotional, behavioral, and cognitive components (Blasi, 1983; Hardy & Carlo, 2011; Kochanska, 2002). Our

findings show that costly choices play a causal role in determining the short-term prosocial behavior of very young children. Though more research is needed to investigate how choice interacts with other components of moral development, demonstrating the short-term results underscores previous findings that choice may make a critical contribution to children's emerging understanding of themselves as moral beings through rational inference.

Acknowledgments

This work was supported by a Cornell Cognitive Science Fellowship to NC. We would like to thank Bertilia Trieu, Christina Bryce, Chelsea Brite, Andrew Strauss, Lauren St. Victor, Kelly Yang, and Emily Hayko for assistance with data collection and coding. A portion of this work has been accepted for publication.

References

- Beaman, A. L., Cole, C. M., Preston, M., Klentz, B., & Steblay, N. M. (1983). Fifteen Years of Foot-in-the Door Research A Meta-Analysis. *Personality and Social Psychology Bulletin*, *9*, 181-196.
- Bem, D. J. (1967). Self-perception: an alternative interpretation of the cognitive dissonance phenomena. *Psychological Review*, *74*, 183-200.
- Blasi, A. (1983). Moral cognition and moral action: A theoretical perspective. *Developmental Review*, *3*, 178-210.
- Cialdini, R. B., Eisenberg, N., Shell, R., & McCreath, H. (1987). Commitments to help by children: Effects on subsequent prosocial self-attributions. *British Journal of Social Psychology*, *26*, 237-245.
- Dunfield, K. A., & Kuhlmeier, V. A. (2010). Intention-mediated selective helping in infancy. *Psychological Science*, *21*, 523-527.
- Eisenberg, N., Cialdini, R. B., McCreath, H., & Shell, R. (1987). Consistency-based compliance: When and why do children become vulnerable? *Journal of Personality and Social Psychology*, *52*, 1174.
- Eisenberg, N., Guthrie, I. K., Cumberland, A., Murphy, B. C., Shepard, S. A., Zhou, Q., & Carlo, G. (2002). Prosocial development in early adulthood: a longitudinal study. *Journal of Personality and Social Psychology*, *82*, 993.
- Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: the foot-in-the-door technique. *Journal of personality and social psychology*, *4*, 195.
- Grusec, J. E., Kuczynski, L., Rushton, J. P., & Simutis, Z. M. (1978). Modeling, direct instruction, and attributions: Effects on altruism. *Developmental Psychology*, *14*, 51.
- Grusec, J. E., & Redler, E. (1980). Attribution, reinforcement, and altruism: A developmental analysis. *Developmental Psychology*, *16*, 525.
- Grolnick, W. S. (2009). The role of parents in facilitating autonomous self-regulation for education. *Theory and Research in Education*, *7*, 164-173.
- Hardy, S. A., & Carlo, G. (2011). Moral identity: What is it, how does it develop, and is it linked to moral action? *Child Development Perspectives*, *5*, 212-218.
- Hepach, R., Vaish, A., & Tomasello, M. (2012). Young children are intrinsically motivated to see others helped. *Psychological Science*, *23*, 967-972.
- Kochanska, G. (2002). Committed compliance, moral self, and internalization: A meditational model. *Developmental Psychology*, *38*, 338-351.
- Kushnir, T., Xu, F., & Wellman, H. M. (2010). Young children use statistical sampling to infer the preferences of others. *Psychological Science*, *21*, 1134-1140.
- Lepper, M. R. (1973). Dissonance, self-perception, and honesty in children. *Journal of Personality and Social Psychology*, *25*, 65.
- McGrath, M. P., Wilson, S. R., & Frassetto, S. J. (1995). Why some forms of induction are better than others at encouraging prosocial behavior. *Merill Palmer Quarterly*, *41*, 347-347.
- McGrath, M. P., & Power, T. G. (1990). The effects of reasoning and choice on children's prosocial behavior. *International Journal of Behavioral Development*, *13*, 345-353.
- Schmidt, F. H., & Sommerville, J. A. (2012). Fairness expectations and altruistic sharing in 15-month-old human infants. *PLoS ONE*, *6*, e23223.
- Staub, E. (1971). The use of role playing and induction in children's learning of helping and sharing behavior. *Child Development*, 805-816.
- Svetlova, M., Nichols, S., & Brownell, C. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development*, *81*, 1814-1827.
- Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective-taking and its relation to prosocial behavior in toddlers. *Developmental Psychology*, *45*, 534-543.
- Vaish, A., Carpenter, M., & Tomasello, M. (2010). Young children selectively avoid helping people with harmful intentions. *Child Development*, *81*, 1661-1669.
- Vaish, A., Missana, M., & Tomasello, M. (2011). Three-year-old children intervene in third-party moral transgressions. *British Journal of Developmental Psychology*, *29*, 124-130.
- Warneken F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science*, *311*, 1301-1303.
- Warneken, F., & Tomasello, M. (2008). Extrinsic rewards undermine altruistic tendencies in 20-month-olds. *Developmental Psychology*, *44*, 1785-1788.
- Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E. W. M. (1992). Development of a concern for others. *Developmental Psychology* *28*, 126-136.
- Zelazo, P. D., Helwig, C. C., & Lau, A. (1996). Intention, act, and outcome in behavioral prediction and moral judgment. *Child Development*, *67*, 2478-2492.