



Contents lists available at SciVerse ScienceDirect

Journal of Experimental Child Psychology

journal homepage: www.elsevier.com/locate/jecp



Brief Report

Young children selectively seek help when solving problems



Annette Cluver^{a,1}, Gail Heyman^a, Leslie J. Carver^{a,b,*}

^a Department of Psychology, University of California, San Diego, La Jolla, CA 92093, USA

^b Program in Human Development, University of California, San Diego, La Jolla, CA 92093, USA

ARTICLE INFO

Article history:

Received 20 June 2012

Revised 19 December 2012

Available online 26 February 2013

Keywords:

Help seeking

Trust

Social cognition

Problem solving

Social development

Preschoolers

ABSTRACT

There is strong evidence that children show selectivity in their reliance on others as sources of information, but the findings to date have largely been limited to contexts that involve factual information. The current experiments were designed to determine whether children might also show selectivity in their choice of sources within a problem-solving context. Children in two age groups (20–24 months and 30–36 months, total $N = 60$) were presented with a series of conceptually difficult problem-solving tasks and were given an opportunity to interact with adult experimenters who were depicted as either *good helpers* or *bad helpers*. Participants in both age groups preferred to seek help from the good helpers. The findings suggest that even young children evaluate others with reference to their potential to provide help and use this information to guide their behavioral choices.

© 2013 Elsevier Inc. All rights reserved.

Introduction

Understanding the nature of children's cognitive capacities has been a major focus of cognitive development research for decades. In much of the experimental work on this topic, the question of how these capacities emerge has been either ignored or portrayed as a process in which a child acts much like a lone scientist (Gelman, 2009). Recently, there has been an increasing appreciation of the role of social experience in cognitive development (Harris, 2007), including a greater acknowledgment

* Corresponding author at: Department of Psychology, University of California, San Diego, La Jolla, CA 92093, USA.

E-mail address: ljcarver@ucsd.edu (L.J. Carver).

¹ Current address: Georg Elias Müller Institute of Psychology, Department of Developmental Psychology, University of Göttingen, 37073 Göttingen, Germany.

that efforts to socialize children and transmit cultural knowledge to the next generation are grounded in children's capacity to draw on other people as sources of information (Baldwin & Moses, 1996; Tomasello, 2008).

Many recent studies on how children learn from others have focused on the skill of selectivity in reasoning about potential sources of information. This ability is a crucial aspect of critical thinking, and without it children are left vulnerable to being misinformed or potentially manipulated (Heyman, 2008; Heyman, Fu, & Lee, 2007; Heyman & Legare, 2005; Mills & Keil, 2005, 2008; Moses & Baldwin, 2005).

Even very young children demonstrate some of the cognitive skills that are involved in effective reasoning about people as potential sources of information. One skill that emerges by a child's first birthday is social referencing, which involves making use of information presented by others to guide one's behavior and affect (Sorce, Emde, Campos, & Klinnert, 1985; see also Baldwin & Moses, 1996). Between 10 and 16 months of age, children have already developed the skill of making use of an individual's observed behavior to make predictions about how the individual will behave in the future (Poulin-Dubois & Chow, 2009; Sommerville & Crane, 2009). By 16 months of age, children can differentiate between accurate and inaccurate labelers, which demonstrates an understanding that not all information that people provide is accurate (Koenig & Echols, 2003).

Much of the work in this area has directly addressed the developmental origins of children's ability to appreciate that some individuals are better sources of information than others. This work has documented that children as young as 3 or 4 years can make use of their knowledge about the past behavior of potential informants to determine which informant is likely to be the best source of information about factual knowledge such as the names, locations, and properties of specific objects (Birch, Vauthier, & Bloom, 2008; Clément, Koenig, & Harris, 2004; Jaswal & Neely, 2006; Koenig & Harris, 2005; Nurmsoo & Robinson, 2009). A primary goal of the current work was to determine whether this selectivity extends beyond contexts involving factual information.

We chose to focus on the domain of problem solving, which is central to cognitive development. To successfully navigate the world, children must acquire facts and must also learn how to use them to carry out difficult tasks. However, learning to solve problems differs from acquiring factual knowledge in some fundamental ways. As compared with learning factual information, children are not likely to have the same heuristics available to them when they try to determine the reliability of potential informants in a problem-solving context. For example, children may have opportunities to check claims against known facts (Harris, 2007) in ways that are often unavailable within the problem-solving domain. In addition, there is evidence that different brain systems are involved in these different forms of learning. Whereas factual knowledge involves subcortical structures such as the hippocampus and basal ganglia, problem solving also recruits later maturing structures such as the prefrontal cortex (Guevara, Rizo Martínez, Robles Aguirre, & Hernández González, 2012; Hart et al., 2012).

A study by Mills, Legare, Bills, and Mejias (2010) provides a foundation for answering questions about the development of children's selective information seeking in problem-solving contexts. These researchers gave 3- to 5-year-olds an opportunity to solve novel problems in which they were to determine which of four "blickets" (cards varying in color and shape) could open a slot on a box. Two puppets were available to help solve the problem. One puppet was described as having expertise about which shapes will work, and the other puppet was described as having expertise about which colors will work. Participants were told that they could ask the puppets questions to get help with the problem. Whereas 4- and 5-year-olds directed their questions to the appropriate expert, 3-year-olds failed to show any such selectivity despite evidence that children as young as 3 years realize that individuals can differ in their expertise (Lutz & Keil, 2002).

The current research addresses an additional set of questions about the development of selective information seeking in problem-solving contexts. We were interested in examining this issue among younger children to connect findings about component skills that emerge within the first 2 years of life with findings that involve preschool children. To this end, we selected a group of children who were completing their second year of life (20–24 months) and another group of children who were completing their third year of life (32–36 months). The earlier age group was selected in light of evidence concerning the skills that emerge during the second year of life (Koenig & Echols, 2003; Poulin-Dubois & Chow, 2009; see also Baldwin & Moses, 1996), and the later age group was selected to exam-

ine how the use of these skills might change as children approach the preschool years. We chose to develop a new paradigm that would be appropriate for children in this age group, and we adapted a standard component of the deferred imitation paradigm for this purpose. In this paradigm, children observe a set of problems being solved and then have the opportunity to solve the same problems as well as a set of new ones (Carver & Bauer, 1999). Because our pilot testing showed that young children often seek help for these problems even when the possibility of seeking out help was not explicitly mentioned by the experimenter, this paradigm provided a way to further examine this spontaneous help-seeking behavior.

Another goal was to determine whether children would be able to make use of cues associated with being a good helper (i.e., those suggesting competence and social engagement). One possible strategy would be to examine the effects of different cues in isolation. However, because we were testing children at an age when no selective help seeking within problem-solving contexts has yet been established, we chose to use redundant cues as a way to determine whether young children would show a tendency to differentiate between good and bad helpers under clear-cut circumstances.

A final goal of the current research was to determine whether children's help-seeking decisions would differ based on whether they were encountering the task for the first time or had seen an adult complete the task previously. There are at least three distinct ways in which children might respond to variations in task familiarity. First, children might seek more help for familiar problems than for novel problems, which would suggest that they see the qualifications of potential helpers as relevant only for the problems that had been seen previously. Second, children might seek help at similar rates on familiar and novel problems, which would suggest that they treat the characteristics of potential helpers as generalizable across problem-solving contexts. Third, children might seek out more help on novel problems than on familiar problems, which would also suggest that they treat the characteristics of potential helpers as generalizable across problem-solving contexts and that they preferentially seek help on problems that are more challenging.

Experiment 1

Method

Participants

The participants were 60 children in two age groups: 20 to 24 months ($n = 30$, 15 girls and 15 boys, mean age = 22 months 15 days) and 32 to 36 months ($n = 30$, 15 girls and 15 boys, mean age = 34 months 0 days). Children were from primarily high-SES (socioeconomic status) families. The sample was primarily White (64%). Other ethnicities represented were Asian (3%), Hispanic (3%), and mixed (30%).

Procedure

Each participant visited the lab with a parent and was given an opportunity to engage in a series of problem-solving tasks that were designed to be conceptually but not physically challenging. Each task involved one of four novel props that were constructed for the study (see Fig. S1 in Supplementary material). The props could each be manipulated by completing two actions in a particular order to retrieve an attractive toy and are similar to props that have been used to study memory development (Bauer, Wenner, Dropik, & Wewerka, 2000). These props present a problem-solving challenge to children because although the goal is clear, the mechanism by which to achieve it is not.

Each session began with an *exposure phase* in which two female experimenters attempted to demonstrate how to retrieve the toy from two of the four props. One experimenter was assigned the role of a *good helper*, which she portrayed by performing the demonstration successfully, varying the pitch of her voice, and making frequent eye contact with the child. A second experimenter was assigned the role of a *bad helper*, which she portrayed by performing the demonstration unsuccessfully, speaking in a monotonous voice, focusing on the toy, and avoiding eye contact. The assignment of roles to each of

the female experimenters was counterbalanced across participants, so that each experimenter played each role equally often. The first experimenter (either a good helper or bad helper, counterbalanced across participants) entered the room and modeled an action sequence using each prop, twice in succession, either successfully or unsuccessfully according to her role (see Fig. S2 in Supplementary material). The first experimenter then exited the room, and the second experimenter entered and modeled a different set of action sequences using the same props (see Fig. S3 for a schematic illustration of the testing room setup for the exposure phase). For each experimenter, the modeling of actions was guided by a scripted narration based on her role (see Table S1 in Supplementary material). The exposure phase was followed by a *testing phase* in which the child was given an opportunity to interact with the same two props, and also two novel props, for the purpose of determining whether any spontaneous help seeking or help offering would be selectively directed toward one of the two experimenters. The two experimenters were seated in the center of the testing room on either side of a video camera that faced the participant and his or her parent (see Fig. S4). Prop presentation order and experimenter position were counterbalanced across participants. On each trial, one prop was placed in front of the child by a third experimenter, who then left the room. The child was free to play with the prop and to interact with the parent and the two experimenters. If the child exhibited a help-seeking behavior (e.g., verbalizing or offering a prop) that was directed toward one of the experimenters, the experimenter performed a demonstration on the prop, once again guided by a scripted narration according to her role (see Table S1). The child's parent was instructed to respond with the phrase "I don't know how this works" in the event that the child directed help-seeking behavior toward the parent. Once the child had sought help at least twice, or after 3 minutes had passed, the prop was replaced with another prop and a new trial began.

To identify the preferred targets of spontaneous help-seeking behavior, three separate *help-seeking scores* were computed for each participant. These scores consisted of the number of times each of the three potential targets of spontaneous help-seeking behavior (the two experimenters and the parent) was the first to be approached for help on a trial. We operationalized help seeking as consisting of verbal or nonverbal behaviors that were directed toward either of the two experimenters and that could be expected to elicit assistance from the adult. Specifically, children were credited with an instance of help seeking if they verbally requested help from one of the experimenters, looked back and forth between the apparatus and an experimenter with a quizzical expression, or pushed the apparatus toward one of the experimenters. For each trial, we noted the identity of the person who was the target of the first instance of help-seeking behavior. Because the testing phase consisted of four trials, the sum of the three help-seeking scores associated with each child had a possible range from 0 to 4. Across trials, children could contribute to the help-seeking score of multiple targets if they switched the target of their help seeking across trials.

Because we observed that participants sometimes offered help to experimenters, three separate *help-offering scores* were also computed for each participant in an analogous manner, based on the first target to be spontaneously offered help on a trial. Help offering was operationalized as a combination of joint attention and demonstrating the action steps that are necessary to bring about the goal.

Coding

Coders viewed videos in which only the child was visible and were kept blind to the role of each experimenter. Coders noted the spatial position to which children's help-seeking and help-offering behaviors were directed. One fourth of the sessions were coded by two independent coders. Cohen's kappa for the measure of help seeking was .92 and for the measure of help offering was .85.

Results

Table 1 presents the mean help-seeking scores for children of each age group. Nearly all children sought help on at least one trial; for the 20- to 24-month-olds, 29 of 30 did so, and for the 32- to 36-month-olds, 27 of 30 did so. In addition, approximately half of the children sought help from their parent on at least one trial ($n = 29$, 18 2-year olds and 11 3-year-olds), but these trials were not included in our analysis. Results indicated that children showed a clear preference for the good helper ($M = 2.01$, $SD = 1.26$) compared with the bad helper ($M = 0.75$, $SD = 0.97$), which

Table 1

Mean help-seeking scores for the two age groups for the two potential targets: The good helper and the bad helper.

Target	20–24 months	32–36 months
Good helper	2.26 (1.26)	1.70 (1.22)
Bad helper	1.13 (0.96)	0.36 (0.56)

Note. Possible scores ranged from 0 to 4. Standard deviations are shown in parentheses.

was verified with a paired samples *t* test, $t(59) = 5.28$, $p < .01$, $d = 1.12$ (see Table 1). On approximately 20% of all trials, children sought help more than once, and the majority of these children stayed consistent in their choice of the good helper (50%) or switched to the good helper if their first help-seeking attempt had been directed toward the bad helper (36%). Among the children who initially sought help from the bad helper, 40% (6 children) later sought help from the good helper. An additional 27% of children sought help from their parent after initially seeking help from the bad helper.

A 2 (Target) \times 2 (Age) \times 2 (Gender) repeated measures analysis of variance (ANOVA) revealed that there was also a main effect of age, $F(1,56) = 23.15$, $p < .001$, $d = 0.94$, in which the younger group sought help significantly more often ($M = 3.1$, $SD = 1.09$, 95% confidence interval (CI) [2.60, 4.12]) than the older group ($M = 2.1$, $SD = 1.04$, 95% CI [1.30, 2.80]). There was no interaction between target and age. The main effect of gender approached significance, $F(1,56) = 3.54$, $p < .065$, $d = 0.41$, with girls ($M = 2.85$, $SD = 1.22$, 95% CI [2.47, 3.73]) showing slightly more help-seeking behaviors than boys ($M = 2.49$, $SD = 1.09$, 95% CI [1.65, 3.25]). There was a significant age by gender interaction, $F(1,56) = 3.58$, $p < .05$, because girls in the older age group showed a trend toward more help seeking than boys, $t(29) = 1.95$, $p = .06$, $d = 0.93$. This effect of gender was not found within the younger age group ($p > .56$).

A 2 (Familiarity) \times 2 (Age) repeated measures ANOVA revealed a main effect of familiarity, $F(1,58) = 14.80$, $p < .001$, $d = 0.57$. Collapsed across age groups, children showed more help seeking with novel toys ($M = 1.62$, $SD = 0.64$, 95% CI [1.46, 1.78]) than with familiar toys ($M = 1.20$, $SD = 0.82$, 95% CI [1.01, 1.39]). This effect was qualified by an interaction between familiarity and age, $F(1,58) = 5.33$, $p < .05$. Older children sought help more on novel toy trials ($M = 1.46$, $SD = 0.76$, 95% CI [1.24, 1.70]) than on familiar toy trials ($M = 0.80$, $SD = 0.73$, 95% CI [0.54, 1.06]), $t(29) = 3.81$, $p = .001$, $d = 0.89$. In contrast, no effect of familiarity was found for younger children ($M = 1.60$ for novel toy trials and $M = 1.77$ for familiar toy trials).

Among the younger age group, only 1 child made an offer of help, and this was toward the bad helper. Among the older group, the incidence of selective help offering was higher; of the 30 children, 9 directed at least one offer of help toward the bad helper, but none did so toward the good helper, $t(29) = 3.07$, $p = .005$, $d = 0.79$.

Experiment 2

The results of Experiment 1 indicate that by their second birthday, children can use cues associated with being a good helper (i.e., those suggesting competence and social engagement) to systematically guide their help seeking. Given that they view individuals showing evidence of high competence and social engagement as better potential sources of help than those lacking evidence of those qualities, it raises the question of whether one of these qualities might carry greater significance. On the one hand, it is possible that young children care a great deal about friendliness compared with competence (Leonova & Dubois, 2002). On the other hand, findings of selective help offering toward individuals low in competence and friendliness suggest that young children may be focusing on competence in this type of task, because it is unlikely that children would have a greater desire to help someone who is unfriendly. In Experiment 2, we explored this issue among a new sample of 20- to 24-month-olds. This age group was chosen because it was the youngest age group that had shown selective help seeking, and we were interested in understanding the conditions under which children first learn to use information about the psychological characteristics of others in this context.

Method

Participants

The participants were 20 20- to 24-month-olds (15 girls and 5 boys, mean age = 21 months 17 days). The sample was primarily White (75%), with the remainder of mixed ethnicity (25%).

Procedure

The procedure was identical to that of Experiment 1 with the exception of the roles of the two experimenters; one experimenter was assigned the role of appearing competent but low in social engagement, whereas the other experimenter appeared incompetent but high in social engagement.

Coding

One fourth of the sessions were coded by two independent coders who were blind to the experimental hypotheses. Cohen's kappa was .87.

Results

Help seeking

All children sought help on at least one trial, and in doing so they showed no systematic preference for either of the experimenters; they sought help roughly as frequently when they were presented with a target who was competent and low in social engagement ($M = 1.42$, $SD = 1.07$) as when they were presented with a target who was incompetent and high in social engagement ($M = 1.10$, $SD = 0.81$).

Help seeking and familiarity

Children sought help just as frequently when they were presented with novel toys ($M = 1.60$, $SD = 0.59$) as when they were presented with familiar toys ($M = 1.60$, $SD = 0.59$).

Help offering

None of the children showed help offering on any of the trials.

Discussion

Experiment 2 was designed to further explore selective help seeking that was seen among 20- to 24-month-olds in Experiment 1. Of interest was whether children might show a relative tendency to focus on social engagement over competence or vice versa. Consequently, we adapted the procedure of Experiment 1, such that children were presented with a contrast in which each experimenter was high on one dimension and low on the other dimension. We found no evidence of the experimenter preference that would have been expected had children been substantially more sensitive to either competence or social engagement.

General discussion

The current study was designed to investigate whether young children would show selectivity in their choice of helping sources in a problem-solving context. In Experiment 1, we presented young children with a case in which strong cues were provided as to which of two potential sources was likely to be a better helper. We found that by the time children reached their second birthday, they already showed selectivity in their information seeking. This finding is notable given that it extends prior work indicating selectivity in important ways. It demonstrates selectivity among a younger age group than is typically investigated in a new domain. In addition, it demonstrates selectivity in a context where young children themselves decide if, when, and how to engage in help seeking.

When examining help seeking as a function of task difficulty, we found that older children, but not younger children, varied their help seeking based on how familiar they were with the task and sought

help to a greater extent on novel problems than on familiar problems. This suggests that by 3 years of age, children prefer to seek help on problems that are relatively challenging (see also Benenson & Koulmazarian, 2008, for a related finding). Our findings also build on previous work documenting that children as young as 24 months can recall previously experienced events and distinguish them from new events (Bauer et al., 2000) by highlighting age-related changes that occur during the third year of life. Our results suggest that even though 24-month-olds are capable of recalling old events and differentiating them from new events, this capacity does not translate into a difference in help seeking until around the time children reach their third birthday, at which point they seek help primarily in situations where they have no prior knowledge about how to approach the problem.

We found that girls were more likely to seek help than boys, which is consistent with previous evidence that girls begin to seek help more readily than boys in problem-solving situations starting at around 3 years of age (Benenson & Koulmazarian, 2008; Thompson, 1999). A second possible explanation for this finding is that boys may be more interested in exploring the apparatuses and trying to discover how they work on their own, whereas girls may be more interested in being told how to operate the apparatuses.

When children spontaneously offered help, it tended to be directed toward the bad helper, which contributes to evidence that young children may be especially willing to help individuals who demonstrate a lack of competence or ability (Warneken & Tomasello, 2006). It also provides evidence suggesting that at least older children are sensitive to the competence dimension and focus on different personal characteristics depending on their goals.

Further research will be needed to identify the precise nature of the skills that children demonstrated in the current research and the ways in which these skills change across development. As noted previously, we were interested in determining whether young children are capable of selectively seeking help in a problem-solving context, and we presented strong cues as to which source was a good helper and which source was a bad helper. Children were successful at engaging in selective help seeking under these conditions. This raises questions of whether they might show greater sensitivity to certain cues than other cues and of whether there may be a developmental shift in focus from cues associated with sociability to cues associated with competence given evidence of this type of shift among older children (Feldman & Ruble, 1988; Stipek & Daniels, 1990; Thompson, Boggiano, Costanzo, Matter, & Ruble, 1995). Experiment 2 took a first step toward answering this question. It demonstrated that, at least for 20- to 24-month-olds, children show no systematic preferences under conditions where competence is pitted against social engagement. Of course, this is only a first step, and it will be important to independently vary each dimension at different levels at multiple ages to definitively answer this question. One possibility may be that young children consider social engagement only after they have been assured of competence. Another possibility is that young children require redundant cues and only later are responsive to individual cues in isolation.

There are also questions about the extent to which children look to others as a means to become oriented in unfamiliar situations versus as a means to solve the problem at hand. In addition, future research could investigate whether nonhuman primates would show selective help seeking in a manner similar to that seen in the current research. It is possible that they would given that chimpanzees are capable of noticing and making use of some psychological cues such as whether someone is unwilling versus unable to perform a task (Call, Hare, Carpenter, & Tomasello, 2004). However, it is also possible that they would not given evidence of cooperative tendencies that appear to be specific to humans (Tomasello, 2009).

The current work has important implications for how children learn to solve problems. Evidence from classic social referencing studies makes it clear that by the time children reach their first birthday, they already have some capacity to gather and respond to social information. Although this ability allows children to advance their learning in important ways, it is only once children can effectively engage in active information seeking that they can go beyond what can be learned through mere observation or direct intervention by others (Baldwin & Moses, 1996). Only when children gain this skill can they be free from depending on others to gauge their cognitive needs and supply the desired information in response (Baldwin & Moses, 1996). This process of learning to become an effective and efficient information seeker may unfold over many years and is something that even adults may find challenging at times. However, our results show that one of the key components of this process—

determining who can best provide needed information (Mills et al., 2010)—is already in place by the time children reach their second birthday, at least when strong and redundant cues are available. Our results also suggest that by the time children reach their third birthday, some have already taken another step toward becoming actively engaged with others in learning contexts by selectively helping those who need it most. This tendency was particularly striking in the current research because it involved children helping adults, and it is consistent with evidence that even though children have a default assumption that adults are more knowledgeable than children, they will conclude otherwise in specific cases when there is evidence to the contrary (Fitneva, 2010; Jaswal & Neely, 2006; Vander-Borghet & Jaswal, 2009). More broadly, this evidence of selective help offering suggests that by the time children reach their third birthday, their skills in effective collaboration extend not only to selective information seeking but also to selective teaching.

Acknowledgments

This research was funded by a Dissertation award to A.C. from the Society for Research in Child Development, and by a grant from the National Institute of Child Health and Human Development to G.H. (R01 HD048962).

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.jecp.2012.12.011>.

References

- Baldwin, D. A., & Moses, L. J. (1996). The ontogeny of social information gathering. *Child Development*, 67, 1915–1939.
- Bauer, P. J., Wenner, J. A., Dropik, P. L., & Wewerka, S. S. (2000). Parameters of remembering and forgetting in the transition from infancy to early childhood. *Monographs of the Society for Research in Child Development*, 65(4, Serial No. 263).
- Benenson, J. F., & Koulazarian, M. (2008). Sex-differences in help-seeking appear in early childhood. *British Journal of Developmental Psychology*, 26, 163–169.
- Birch, S. A. J., Vauthier, S. A., & Bloom, P. (2008). Three- and four-year-olds spontaneously use others' past performance to guide their learning. *Cognition*, 107, 1018–1034.
- Call, J., Hare, B., Carpenter, M., & Tomasello, M. (2004). "Unwilling" versus "unable": Chimpanzees' understanding of human intentional action. *Developmental Science*, 7, 488–498.
- Carver, L. J., & Bauer, P. J. (1999). When the event is more than the sum of its parts: 9-month-olds' long-term ordered recall. *Memory*, 7, 147–175.
- Clément, F., Koenig, M., & Harris, P. L. (2004). The ontogenesis of trust in testimony. *Mind and Language*, 19, 360–379.
- Feldman, N. S., & Ruble, D. N. (1988). The effect of personal relevance on psychological inference: A developmental analysis. *Child Development*, 59, 1339–1352.
- Fitneva, S. A. (2010). Children's representation of child and adult knowledge. *Journal of Cognition and Development*, 11, 458–484.
- Gelman, S. A. (2009). Learning from others: Children's construction of concepts. *Annual Review of Psychology*, 60, 115–140.
- Guevara, M. A., Rizo Martínez, L. E., Robles Aguirre, F. A., & Hernández González, M. (2012). Prefrontal-parietal correlation during performance of the towers of Hanoi task in male children, adolescents, and young adults. *Developmental Cognitive Neuroscience*, 2, 129–138.
- Harris, P. L. (2007). Trust. *Developmental Science*, 10, 135–138.
- Hart, J., Jr., Maguire, M. J., Motes, M., Mudar, R. A., Chiang H. S., Womack, K. B., et al. (2012). Semantic memory retrieval circuit: Role of pre-SMA, caudate, and thalamus. *Brain and Language*, <http://dx.doi.org/10.1016/j.bandl.2012.08.002>.
- Heyman, G. D. (2008). Children's critical thinking when learning from others. *Current Directions in Psychological Science*, 17, 344–347.
- Heyman, G. D., Fu, G., & Lee, K. (2007). Evaluating claims people make about themselves: The development of skepticism. *Child Development*, 78, 367–375.
- Heyman, G. D., & Legare, C. H. (2005). Children's evaluation of sources of information about traits. *Developmental Psychology*, 41, 636–647.
- Jaswal, V. K., & Neely, L. A. (2006). Adults don't always know best: Preschoolers use past reliability over age when learning new words. *Psychological Science*, 17, 757–758.
- Koenig, M. A., & Echols, C. H. (2003). Infants' understanding of false labeling events: The referential roles of works and the speakers who use them. *Cognition*, 87, 179–208.
- Koenig, M. A., & Harris, P. L. (2005). Preschoolers mistrust ignorant and inaccurate speakers. *Child Development*, 76, 1261–1277.
- Leonova, T., & Dubois, N. (2002). The developmental approach to young children's strategic social cognition and behavior. *European Journal of Social Psychology*, 32, 547–562.
- Lutz, D. J., & Keil, F. C. (2002). Early understanding of the division of cognitive labor. *Child Development*, 73, 1073–1084.
- Mills, C. M., & Keil, F. C. (2005). The development of cynicism. *Psychological Science*, 16, 385–390.

- Mills, C. M., & Keil, F. C. (2008). The development of (im)partiality. *Cognition*, *107*, 528–551.
- Mills, C. M., Legare, C. H., Bills, M., & Mejias, C. (2010). Preschoolers use questions as a tool to acquire knowledge from different sources. *Journal of Cognition and Development*, *11*, 533–560.
- Moses, L. J., & Baldwin, D. A. (2005). What can the study of cognitive development reveal about children's ability to appreciate and cope with advertising? *Journal of Public Policy and Marketing*, *24*, 186–201.
- Nurmsoo, E., & Robinson, E. J. (2009). Identifying unreliable informants: Do children excuse past inaccuracy? *Developmental Science*, *12*, 41–47.
- Poulin-Dubois, D., & Chow, V. (2009). The effect of a looker's past reliability on infants' reasoning about beliefs. *Developmental Psychology*, *45*, 1576–1582.
- Sommerville, J. A., & Crane, C. (2009). Ten-month-old infants use prior information to identify an actor's goal. *Developmental Science*, *12*, 314–325.
- Sorce, J. F., Emde, R. N., Campos, J., & Klinnert, M. D. (1985). Maternal emotional signaling: Its effect on the visual cliff behavior of 1-year-olds. *Developmental Psychology*, *21*, 195–200.
- Stipek, D. J., & Daniels, D. H. (1990). Children's use of dispositional attributions in predicting the performance and behavior of classmates. *Journal of Applied Developmental Psychology*, *11*, 13–28.
- Thompson, E. P., Boggiano, A. K., Costanzo, P., Matter, J. A., & Ruble, D. N. (1995). Age-related changes in children's orientations toward strategic peer interaction: Implications for social perception and behavior. *Social Cognition*, *13*, 71–104.
- Thompson, R. B. (1999). Gender differences in preschoolers' help-eliciting communication. *Journal of Genetic Psychology*, *160*, 357–368.
- Tomasello, M. (2008). *The origins of human communication*. Cambridge, MA: MIT Press.
- Tomasello, M. (2009). *Why we cooperate*. Cambridge, MA: MIT Press.
- VanderBorgh, M., & Jaswal, V. K. (2009). Who knows best? Preschoolers sometimes prefer child informants over adult informants. *Infant and Child Development*, *18*, 61–71.
- Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science*, *311*, 1301–1303.