Contents lists available at ScienceDirect

Cognitive Development

Proactive help-seeking: Preschoolers know when they need help, but do not always ask for it

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ARTICLE INFO

Article history: Received 1 October 2015 Received in revised form 13 November 2016 Accepted 14 February 2017 Available online 6 March 2017

Keywords: Social learning Problem-solving Help-seeking Preschoolers

ABSTRACT

Help-seeking can be costly, particularly when help is not truly needed. Children typically seek help after encountering difficulty with a problem, but little is known about whether children can accurately judge whether they will need help with a problem prior to attempting it. Anticipation of a need for help requires children to assess both the problem and their existing knowledge of it; if an existing skill applies to a new problem, they should not need to seek help from a teacher. In four experiments, 151 3- to 5-year-olds were taught the solution to a puzzle box and decided how to approach subsequent boxes that were identical to (in perceptual appearance and name) or different from the initial box. Children successfully predicted that they would need help with different, but not identical, boxes. Other factors that may affect children's willingness to seek help are discussed.

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1. Introduction

From a very young age, children exhibit a persistent curiosity about the world around them. They take an active role in their learning, gathering information both by directly experimenting on their surroundings and by seeking it out from others. Free exploration offers many learning benefits. For example, direct intervention with objects helps children to understand causal relationships (e.g., Cook, Goodman, & Schulz, 2011; Schulz & Bonawitz, 2007). Sometimes, children even learn more about objects or problems through unguided exploration (as opposed to direct instruction), because instruction may restrict their focus to the highlighted features (Bonawitz et al., 2011).

Although free exploration can be extremely fruitful, it is also limited. Regardless of how persistently they explore the world, children are unlikely to learn about some things – for example, invisible things (e.g., germs), internal properties, and cultural traditions. Children must consult others to gain such knowledge. Moreover, some problems may be impossible for children to solve themselves, due to low skill level, lack of knowledge, or a need for collaboration. Social learning enables children to both expedite their information gathering and access information they would be unable to obtain on their own. Children are aware of the rich body of knowledge that adults possess and do not hesitate to query them (e.g., Callanan & Oakes, 1992; Frazier, Gelman, & Wellman, 2009). As one striking example, children under the age of five ask an average of 76–95 questions per hour (Chouinard, 2007). In asking questions, children are essentially asking for others' help in solving some problem – be it what something is called, how something works, etc.

Previous work has demonstrated that preschool-aged children readily seek help from others after encountering difficulty with a problem. For example, preschoolers will request an experimenter's help when they are unable to assemble a pictured

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http://dx.doi.org/10.1016/j.cogdev.2017.02.010 0885-2014/© 2017 Elsevier Inc. All rights reserved.







toy (Vredenburgh & Kushnir, 2015) and they are more likely to seek help with perceptual identification problems whose solutions they are uncertain of (Coughlin, Hembacher, Lyons, & Ghetti, 2014). Even infants seek appropriate help after encountering a simple toy that does not work (Gweon & Schulz, 2011) and will selectively seek help from "good" helpers (Cluver, Heyman, & Carver, 2013).

It remains unclear, however, whether children have the foresight to proactively ask for help with a new problem. In previous studies, children have already attempted to solve some problem themselves and encountered difficulty; it is thus logical that they should then seek others' help. Such reactive help-seeking requires that children have some awareness that their efforts are unsuccessful and that a knowledgeable other can help them to reach success. Proactive help-seeking, on the other hand, involves recognizing that help is necessary *prior* to attempting a problem. As such, proactive help-seeking likely relies upon a suite of cognitive abilities. Children need to inhibit any prepotent bias to immediately tackle a problem (which may be particularly difficult with hands-on or otherwise compelling problems). They must also possess some knowledge of their own abilities and use it to determine whether they are capable of solving the problem at hand. This involves analyzing the current problem and detecting any similarities with previous problems.

Being unable to accurately predict when you need help with a problem can be quite costly. Seeking help for problems you are already equipped to solve is not only redundant, but it strips you of the opportunity to test your skills and knowledge (and to potentially prove mastery to yourself and others). Moreover, seeking help may take more time than solving the problem yourself and the helper may expect some portion of any rewards that were generated as a result of their helping (or, worse yet, the helper may be less equipped to solve the problem than you are!). Conversely, failing to seek help for problems whose solutions you do not know may result in the total loss of a reward and the time spent in trying to solve the problem. You also forfeit the opportunity to learn how to solve the problem (and similar problems) in the future. The ability to recognize whether solutions from previous problems apply to new situations allows us to avoid these potential issues.

Recent work suggests that proactive help-seeking may have its roots in infancy. When 20-month-old infants had to indicate the location of a hidden toy – but were actually ignorant of its true location – they were able to withhold immediately responding and instead asked a knowledgeable caregiver for help (Goupil, Romand-Monnier, & Kouider, 2016). Infants were less likely to ask for help when they had seen where the toy was hidden, though they sometimes asked for help when they had to respond after a delay (adding a delay presumably made the task more difficult, as infants had to hold the toy's location in memory for a longer amount of time). It remains an open question, however, whether children's performance would be similar for more complex tasks. Infants in the Goupil et al. (2016) study learned about the location of a hidden object, but did not learn potential problem-solving skills (i.e., knowing where a toy is hidden in a given trial would not provide any insight as to where it was hidden – or whether you should ask for help – in later trials).

Research on children's learning suggests that preschool-aged children may possess the necessary tools to engage in proactive help-seeking in complex tasks. Indeed, preschoolers can make informed decisions within social learning contexts. The testimony literature demonstrates that children know whose help to accept when offered it by multiple people. Preschoolers evaluate the trustworthiness of potential sources and prefer to learn from reliable, accurate others (e.g., Harris, 2012; Koenig & Harris, 2005 ; Pasquini, Corriveau, Koenig, & Harris, 2007). This ability is in place by the preschool years and it continues to improve with age (Corriveau & Harris, 2009; Corriveau, Meints, & Harris, 2009; Einav and Robinson, 2011; Mascaro & Sperber, 2009; Robinson, Haigh, & Nurmsoo, 2008). Research on pedagogy also suggests that children are sensitive to an informant's intention to teach and treat pedagogically-presented information (information accompanied by specific social-ostensive cues, such as eye contact, motherese, or joint attention) as particularly important and generalizable (Bonawitz et al., 2011; Butler & Markman, 2012; Csibra & Gergely, 2009; Gergely, Egyed, & Király, 2007; Shafto & Goodman, 2008; Shafto, Goodman, Gerstle, & Ladusaw, 2010).

Furthermore, preschoolers possess some preliminary metacognitive abilities, which could help guide their predictions about whether they will need help with a problem. Although young children tend to overestimate their skill level or performance, e.g., in memorization tasks (Flavell, 1979; Flavell, Friedrichs, & Hoyt, 1970), they are able to reflect upon their uncertainty (termed uncertainty monitoring). This ability also improves across the preschool years. By three years of age, children report that they are more certain of their responses in a picture identification task when these responses are correct than when they are incorrect (they are not given feedback on the accuracy of their responses). Moreover, four- and five-year-olds do not express less confidence in certain responses merely because they took longer to produce than other responses (though response latency appears to directly inform three-year-olds' confidence judgments; Lyons & Ghetti, 2011, 2013) Older preschoolers also tend to withhold a response instead of providing an answer they are unconfident about (Lyons & Ghetti, 2013). Thus, even three year olds have some awareness of their confidence in their ability to solve a specific problem. This ability may directly inform their decisions about proactive help-seeking. Children may decide to forgo help because they have high confidence in their ability to solve a problem; conversely, they may be more likely to seek out help if they are uncertain of their ability to solve a problem.

The current study investigates preschoolers' a priori predictions of their need for help – that is, whether they recognize if they need help with a problem *before* they are given the chance to attempt it. We compare children's help-seeking for problems of a same or different kind than a problem whose solution they have previously learned. Previous research suggests that children are sensitive to kind information starting at an early age. By 9 months of age, infants expect perceptually similar toys – but not dissimilar toys – to possess the same nonobvious properties (Baldwin, Markman, & Melartin, 1993). As children age, their inductive abilities become more sophisticated and they use cues beyond perceptual similarity (such as labels, animacy status, or traits) to guide their generalizations (e.g., Gelman & Markman, 1987; Heyman & Gelman, 2000; Massey &

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