Chapter appears in E. Robinson's and S. Einav's Trust and Skepticism: Children's Selective Learning from Testimony
2014 Psychology Press

CH 4. Inquiring Minds: Using Questions to Gather Information from Others

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Children are frequently faced with problems that they cannot immediately solve on their own. For some of these problems, children can learn from listening to claims and advice from others. Indeed, sometimes they need not do anything but passively attend to what they are told or what they overhear to learn something new (e.g., Mills, Danovitch, Grant, & Elashi, 2012). However, in many other situations, children must actively seek information from others by asking questions. Although prior work has shown that children begin to ask questions at a very young age (Chouinard, 2007 includes a substantial review), less is known about the extent to which they can use questions as tools to gather information from appropriate sources for problem solving and learning. How adept are children at formulating effective questions and seeking out enough information to resolve their problems? How much do they take into account the trustworthiness or reliability of an informant when deciding whether or not to ask that informant questions? This chapter examines developmental and individual differences in the ability to question the most knowledgeable, accurate sources when problem solving.

Gathering Information from Others

The ability to successfully gather information from others for the purpose of problem solving is a complex cognitive process involving at least four steps: (1) recognizing when solving a problem may require assistance from others, (2) deciding whom to question, (3) determining what to ask, and (4) deciding how much information to ask for in order to solve a given problem. In this chapter, we will review each of these steps in turn before reviewing the research bridging across these steps. We will then discuss the implications of this body of work, making recommendations for future directions.

Recognizing when solving a problem may require assistance from others

In order to successfully use inquiry to acquire information from others, it is important to first recognize when others may be able to provide helpful information for solving a problem. This initial step can be challenging. For instance, in a set of studies discussed in the previous chapter, 4- to 6-year-old children were given a choice between answering questions themselves or seeking information from others to determine what was inside a box. In many cases, children (particularly 4- and 5-year-olds) did not attempt to seek out information from others, even though the children demonstrated that they recognized which informant should know the answer (Robinson, Butterfill, & Nurmsoo, 2011). Other research examining 4- to 6-year-old children's understanding of expertise found similar results: when children were given the opportunity to answer some questions themselves or assign those questions to one of three experts (either a doctor, firefighter, or farmer), only 6-year-olds were able to recognize when they did not know the answers themselves and assign test questions to experts fairly accurately (Aguiar, Stoess, & Taylor, 2012).

For children, recognizing a lack of knowledge and the need for information from others can be difficult for many reasons. First, children often overestimate their own knowledge, and sometimes just hearing others ask effective questions or listening to expert explanations helps them recognize what they do not know (e.g., Mills & Keil, 2004). Second, even when children recognize that they lack knowledge or information, they need to know how to gather this information from others – and be motivated to do so. Moreover, this drive to seek out information may also be partially dependent on the strength of our desire to obtain this information (e.g., see Jirout & Klahr, 2012, on exploratory curiosity).

Deciding whom to question

Once the decision has been made that it would be helpful to seek out information from others, the next step is to determine who will be able to provide helpful, accurate information. Much of this book focuses on children's ability to distinguish between sources who vary in trustworthiness and accuracy, often by asking them to choose from which of two sources to seek and endorse information. Ultimately, it is clear that preschool-aged children (and to some extent older infants and toddlers) have some sense that different people can know different things (e.g., Lutz & Keil, 2002) and that some sources are more reliable than others (e.g., see Chapter 2).

Yet, determining who will be able to answer our questions is not necessarily easy. In everyday life, it is not always clear what people know or do not know, nor is it clear when they might be untrustworthy. It can also be difficult to distinguish between multiple trustworthy sources that all have some type of expert knowledge. Moreover, even when children recognize that one source is more likely to provide an accurate answer to their questions than another, they *still* may fail to keep that in mind when asking questions. For instance, even though 4- and 5-year-olds knew what doctors, firefighters, and farmers are each likely to know, they frequently failed to keep that in mind when determining whether they or one of those experts should answer a given question (Aguiar et al., 2012; see also Landrum, Mills, & Johnston, in press, for related examples of children finding it easier to recognize who would know a given fact than to apply that understanding when problem solving). Although children were better at determining which expert to consult when they had the opportunity to review which expert would know the answer to each question beforehand, they were still nowhere near perfect performance. This suggests that identifying who to ask for information is more difficult than simply recognizing who knows what.

Deciding what to ask

Once the appropriate source for a particular question is determined, the next step is to determine what to ask. It is evident that children ask many questions, and although their questions can serve the purpose of seeking attention or maintaining social interaction, they do not serve an exclusively social-regulatory function. Instead, children's questions frequently serve an epistemic function; children often use questions to seek additional information about topics of interest to them (e.g., Hickling & Wellman, 2001). To the extent that explicit "why" questions can be used as a prototypical index of information-seeking, developmental research indicates that requests for explanation are widespread even in very young children. For instance, toddlers and preschool-aged children frequently ask for causal explanations about a range of biological, psychological, and physical phenomena (Callanan & Oakes, 1992; Hickling & Wellman, 2001; Wellman, Hickling, & Schult, 1997).

Much of the past research looking at children's questions utilizes one of two methods. In one method, children are presented with situations in which they might want to seek out additional information to solve a problem, and the kinds of questions they ask are monitored. In this research, preschool-aged children can sometimes tailor their questions to obtain specific information, such as to identify an unfamiliar object (Kemler Nelson & O'Neil, 2005), to determine which of two objects is hidden inside of a box (Chouinard, 2007), or to acquire important information about a novel animal or artifact (Greif, Kemler Nelson, Keil, & Gutierrez, 2006). Elementary school-aged children can generate specific questions to determine which item of a set varying in physical characteristics is the target item, but there are developmental improvements, with older children asking more efficient, effective questions than younger children (Mosher & Hornsby, 1966).

In the second method, children are presented with questions or options for hypothesis testing, and children are asked to choose the best question or option provided by an experimenter to solve the problem. This research has traditionally been conducted with elementary school-aged children, who sometimes (but not always) can distinguish between effective and ineffective queries for information (e.g., Samuels & McDonald, 2002; Sodian, Zaitchik, & Carey, 1991).

Taken together, this research demonstrates that even preschool-aged children can generate their own questions in some circumstances to obtain information. However, even elementary school-aged children (and adults) sometimes struggle to determine what an effective question would be.

Determining how much information to ask for

Even after determining who to question and what to ask, successful learning from others is not guaranteed; it is also important to be able to recognize when enough information has been obtained and then be able to effectively make use of that information. In some cases, children and adults may ask questions and gather information but stop before they have gathered *enough* information to successfully solve their problems. Research examining hypothesis testing, for instance, finds that preschool-aged and elementary school-aged children often cease to gather additional information once they have found evidence to support their hypothesis, even if another hypothesis is correct (e.g., Klahr & Chen, 2003; Klahr, Fay, & Dunbar, 1993). In other cases, though, such as when children are presented with problems of interest to them and given the opportunity to ask questions, children can determine when their questions have not been sufficiently answered (e.g., Frazier, Gelman, & Wellman, 2009; Kemler Nelson, Egan, & Holt, 2004). Given the varied findings in past research, understanding the conditions under which children

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recognize when they have gathered enough information is important.

Bridging the who, the what, and the how much

Most of the past research examining how children seek information from others for learning and problem solving has focused on only one part of this process. For instance, research examining how children distinguish between different kinds of sources has tended to focus on having children indicate which of two sources seems most accurate (deciding whom to ask) instead of asking them to direct questions to the most accurate sources themselves (deciding both whom and what to ask). Research examining children's question asking, on the other hand, has focused on whether or not children can construct their own questions to gather information from one source (deciding what to ask), without regard to the characteristics of that source.

Examining these skills in isolation can be useful, but doing so also has its weaknesses. One major weakness is that doing so neglects the importance of examining the accumulated strains on cognitive resources when seeking information from others. Indeed, although the amount of information children can track in their working memory increases throughout childhood (e.g., Bayliss, Jarrold, Baddeley, Gunn, & Leigh, 2005), young children's cognitive resources are somewhat limited. Imagine a power grid with a limited capacity. A few processes may function at once without any issues, but if any individual process or combination of processes is too energy-intense, the power grid will fail. Similarly, with children, any step in this process (determining whom to question, deciding what needs to be asked and how to ask it, and determining if they have enough information or need more) can stretch their resources. If these steps together are too taxing, kids may run out of cognitive resources and give up on gathering information, preferring to guess or leave their problems unsolved. Presumably, some steps of this process are easier than others, but there is little evidence to date to address this issue.

Taking these ideas into consideration, several lines of research in our lab focus on all four of these steps, examining how children use questions as tools to seek information from others for problem solving. We discuss these paradigms and findings below before returning to the big picture.

Questioning informants varying in expertise.

In one line of research, we aimed to determine if preschool-aged children could apply their abilities to understand that different people know different things (e.g., Lutz & Keil, 2002) in order to question the appropriate experts to solve a problem. In this particular study (Mills, Legare, Bills, & Mejias, 2010), 3- to 5-year-olds were presented with a simple problem-solving task involving determining which of four special "blickets" (cards varying in background color and in the shape in the center of the card) would open a slot in a box. To solve the problems, children were invited to question two puppet "experts": the shape expert knew all about the shape on each blicket that would work in each slot, while the color expert knew all about the color of each blicket that would work in each slot.

Although past research had modelled questions to children (e.g., Chouinard, 2007), we wanted to refrain from doing so in order to measure what kinds of questions children would ask on their own. Thus, we implemented a warm-up phase in which children interacted with a different puppet with a different type of problem from the test phase; children did not witness any specific questions being asked but were encouraged to notice characteristics of that problem that could be used for questioning (i.e., a raven wanted to know which kinds of leaves to use and where they should come from to build a nest for a friend, and children were encouraged to notice that the four options varied in background color and in shape). During the task itself, whenever children asked a question, each expert responded in a scripted manner according to his expertise, with children permitted to guess when they were ready (even if they had not actually asked any questions). Once children were ready to guess, they inserted their card into the appropriate slot in the box, and an observer would surreptitiously press a remote control that made a doorbell ring inside the box. If children did not hear the doorbell, they were able to ask more questions or guess again.

The design of this study allowed us to examine the component skills previously described: *who* they asked, *what* they asked, and *how much* information they gathered. First, we examined how frequently children directed questions to the appropriate sources (i.e., the *who*; e.g., questions about color directed to the color expert) over the inappropriate ones. Second, we examined the *quality* of the children's questions (i.e., the *what*). Each question was coded globally for being effective (on-task and able to obtain information that would help distinguish between the options for solving the problem), ineffective (off-task, vague, or otherwise unable to help obtain information for

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solving the problem), or a clarification of the protocol. In addition, each question received a specific category code based on the characteristics of the question (for more in-depth coding information, see Mills et al., 2010). Third, we examined children's success at problem solving in the task: how much information they gathered through asking effective questions and how many attempts it took for children to obtain the right answer (out of a maximum of 4), and whether asking effective questions helped children solve the problems more efficiently (i.e., the *how much*).

As anticipated, we found developmental improvements in knowing *whom* to question as well as *what* to ask. Three-year-olds had difficulty directing questions to the correct experts, and they asked more ineffective questions (e.g., questions that did not help children solve the problem due to being somehow off-task, such as "Is your daddy a fireman?", too vague, such as "Which one is it?", or otherwise unable to distinguish between the options, such as "Is it the blue one?" when all options were blue) than effective ones (e.g., questions aimed at gathering specific information about the problem, such as "Is it green?" when only one option was green). Four-year-olds were more successful at directing questions to the appropriate expert than younger children, but they asked similar proportions of ineffective and effective questions. Five-year-olds, in contrast, succeeded at both knowing who to ask and at asking more effective questions than ineffective ones. These results provide evidence that preschool-aged children sometimes know whom to ask before they know what to ask, and 5-year-olds ask more effective questions than younger children (see Mills et al., 2010 for additional information on the characteristics of the questions produced by children).

In contrast to knowing *whom* to ask and *what* to ask, we found no developmental improvements in knowing *how much* to ask. At least with this particular task, there were no great differences across development in children's ability to ask enough questions to gather enough information to solve the problems without guessing. This may be partially due to the fact that children were nowhere near ceiling performance on this task: they only asked enough questions to narrow down to one option for less than half of the trials. There are many possible explanations for this finding, including the possibility that having to ask different experts kept children from keeping track of how much information they had obtained. But in a study examining 4- to 6-year-olds' use of questions with only one person to question (i.e., no experts, albeit a more complex task involving cards varying in 4 dimensions), children still struggled. Although children were frequently asking effective questions, they often did not ask *enough* effective questions to narrow down to one option (Legare, Mills, Souza, Plummer, & Yasskin, 2013). We will return to this finding later in this chapter.

Importantly, regardless of age, children who asked enough effective questions to reduce the options for a possible correct answer down to one option performed better on the task than children who did not. Although 5-year-olds tended to be more likely to ask enough questions than younger children, even younger children could be successful if they asked enough questions. Thus, even during the preschool years, asking the right kinds of effective questions in the right combination is helpful for efficient problem solving.

Questioning informants varying in knowledge status

In another line of work, we examined children's ability to question informants varying in knowledge status (Mills, Legare, Grant, & Landrum, 2011). As noted earlier, informants do not always have clearly identifiable areas of expertise. Instead, informants frequently have varied amounts of knowledge, and we must determine which informant will be most helpful based on inferences about each informant's level of competency. In some cases, explicit signs of ignorance such as a shoulder shrug or admittance of ignorance can help us recognize that someone's knowledge is incomplete. In other cases, though, we may need to rely on other evidence, such as someone's prior demonstrations of accuracy.

In this line of work, 3- to 5-year-olds were presented with pairs of informants contrasting in knowledge levels, similar to much of the past research on selective trust. In two experiments, children were presented with two within-participants conditions. In one condition, a knowledgeable informant was contrasted with an informant who verbally indicated his ignorance (the ignorance condition). In the other condition, a knowledgeable informant was contrasted with an informant who was consistently and clearly inaccurate (the inaccurate condition). The demonstrations of inaccuracy and ignorance varied between experiments. In both experiments, after being introduced to the two informants, children were encouraged to ask them questions to help determine which one of two (or four) cards was inside a box.

As with the prior research examining how children question informants clearly contrasting in expertise, this research measured who children questioned, what they asked, and whether how much information they

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gathered was related to how successful they were at solving the problems. Like prior work, we were interested in whether there were developmental improvements in children's success in any step of the problem-solving task. But additionally, in this research, we were also interested in whether there were differences in performance based on the ease of distinguishing between the informants. Given that prior research has sometimes found that children are more successful at distinguishing between knowledgeable and ignorant informants than between knowledgeable and inaccurate ones (Koenig & Harris, 2005; see also Chapter 2), we anticipated that children should be more successful in the ignorant condition than in the inaccurate condition. Presumably, when the task of deciding whom to question is easier (i.e., the knowledgeable informant is contrasted with a clearly ignorant one), there are more mental resources available for other aspects of the problem-solving process, such as generating effective questions and integrating the answers to the questions to solve the problem. Finally, we also wanted to examine if, regardless of age, children would be most successful at problem solving if they had asked enough questions to obtain the information needed for problem solving.

In Experiment 1, children were presented with a knowledgeable informant contrasted with a clearly ignorant informant for one set of trials and a clearly inaccurate informant for another set of trials. During a warm-up phase, children were told that one of two pictures was hidden inside a box, and that they could ask some puppet friends any questions about "what the special thing looks like, or sounds like, or feels like, or does, or anything you want that will help you figure out what's in the box". In order to demonstrate the knowledge status of the informants, children witnessed a puppet familiarization phase in which the puppets answered two questions unrelated to the test questions (e.g., why people wear coats in the winter). Each puppet responded according to its knowledge status: the knowledgeable puppet responded accurately, the inaccurate puppet responded with something clearly incorrect (e.g., people wear coats when it is hot outside to keep cold), and the ignorant puppet responded by indicating a lack of knowledge (e.g., I don't know why, I just don't know). This familiarization task clearly unrelated to the test task was intended to avoid constraining children's questions during the test phase (an issue we will return to later).

In this experiment, we found developmental improvements regarding the *who* and the *what* skills: 5-year-olds were better at directing questions to the most knowledgeable informant (with the largest age differences in the inaccurate condition) and better at generating effective questions than younger children. We also found that the ease of distinguishing between sources mattered to some extent: children were better able to direct questions to the most knowledgeable informant in the ignorant condition than in the inaccurate condition, and they also obtained more correct answers in the ignorant condition compared to the inaccurate condition. Additionally, consistent with prior research, we found that regardless of children's age or how difficult it was to distinguish between the sources of information, children's ability to ask enough effective questions to properly narrow down to one possible answer related to problem solving success.

Experiment 2 involved a knowledgeable informant contrasted with another informant in two conditions: the ignorant condition involved an informant who expressed uncertainty and then guessed (i.e., "I'm not sure, I'll guess [inaccurate but plausible response]"), and the inaccurate condition involved an informant who just provided an inaccurate but plausible response. Thus, the only difference between the guesser and the plausibly inaccurate informant was the paralinguistic cues marking uncertainty provided by the guesser, making the conditions more similar than in the previous experiment. The puppet familiarization task was also updated to be similar to the test phase in order to help children understand how to ask task-related questions.

In this experiment, we found that, overall, children were much more successful at asking effective questions, presumably because of the changes to the familiarization task to provide children with a sense of how to ask effective questions. But distinguishing between the informants was even more difficult, as expected. Moreover, only the 5-year-olds directed more questions to the knowledgeable informant than the other informant, and this was only in the ignorant condition in which the informant marked each response with an indication of uncertainty. Not surprisingly, given the difficulty of distinguishing between the informants, accuracy was low in this experiment, emphasizing how struggles in one aspect of the inquiry process can influence overall learning. But replicating findings in our other research, regardless of age, children who asked enough questions to narrow down the options to one were most successful at solving the problems.

Themes in moving forward

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These studies begin to provide insight into how young children seek information from others for learning and problem solving. Clearly, there are barriers at each phase. First, recognizing when assistance from others would be helpful is a challenge that requires children to be able to recognize when they do not have enough knowledge themselves, to know how to gather this information from others, and to have the will to actually do so. Second, determining which source to question can also be difficult, given that determining which source will be most helpful or accurate is not always obvious. Third, determining what to ask can be even more demanding, given that developing an appropriate, effective question involves identifying what is not known, determining what information would be helpful to obtain, and articulating a question that will help obtain that information. Finally, deciding when enough information has been gathered can be difficult, as one has to keep track of what information has been gathered so far and what else needs to be determined.

One important task for future research is to better reflect on the role of cognitive load in children's inquiry process. As discussed earlier, for every part of the process, children may implicitly calculate the costs and benefits of asking questions. In some cases, the costs seem to outweigh the benefits, and children either utilize an unsuccessful strategy or give up on their inquiry. In other cases, the benefits outweigh the costs, and they carry the inquiry process out to its end. Presumably, if one could increase the benefits and reduce the costs enough, children would be more likely to successfully ask questions to gather information.

To increase children's perceptions of the benefits of engaging in inquiry, it may be useful to highlight the efficaciousness of finding accurate information. One way to do this experimentally is to offer extrinsic motivation for correct answers such as rewards for accuracy, and there is some evidence that this helps their performance in seeking information from others. For instance, children are more likely to accurately assign questions to appropriate experts when the benefits of accuracy are higher than when they are lower (Aguiar et al., 2012). But there may also be ways to model an intrinsic drive for explanatory completeness that may encourage children to value finding accurate information.

To decrease children's perceptions of the costs (as well as the actual costs) of engaging in inquiry, it may be useful to determine how to decrease cognitive load for each step of the process. Reducing the costs of knowing which source to question, such as clearly labelling and providing experience interacting with each of the sources, should help children understand what each source knows. Reducing the costs of asking questions, such as giving children greater familiarity with how questions could be useful for a specific task, should prove beneficial for helping children generate effective questions. And reducing the costs of determining if they have received enough information, such as helping children more easily keep track of the eliminated options, may be helpful. Even listening to questions asked by others helps children and adults recognize gaps in their knowledge (Chin & Brown, 2002; Choi, Land, & Turgeon, 2005; Mills & Keil, 2004; Rozenblit & Keil, 2002); thus, children may benefit from listening to others narrow down options to one in order to understand how to do so themselves.

Notably, the costs of engaging in inquiry may have been high in studies to date. Although these recent studies explore children's use of questions to seek out information in action so that each component is not studied in isolation, these studies also involve novel problems that children are being told to solve, with unfamiliar informants to consult. The novelty of the problems and the unfamiliarity of the potential informants both likely increase cognitive load, making it even more difficult to seek out information from others in effective ways. Although some experimental control is useful for being able to measure how children use inquiry to solve problems, the novelty of the experimental task may have been burdensome, and the benefits of accuracy may not have been high enough to outweigh the costly cognitive load. It may be useful for future research to present children with interesting problems that they are likely to want to solve instead of telling them to solve the problems provided to them, given the power of self-directed learning (e.g., see Gureckis & Markant, 2012). It is likely that the process of inquiry will still be somewhat demanding for young children, but if they are highly motivated to perform well, they might have a higher desire to push through a cognitively taxing process.

A second important task for future research is to better understand developmental and individual differences in the inquiry process. One general finding across the research to date is that at least with children ages 3 to 6, using questions effectively to gather information is not easy. Developmental improvements exist across all steps of the process: knowing whom to question, what to ask, and asking enough questions to obtain a correct answer. But there are also some strong individual differences. In some studies, we find that

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even young 4-year-olds can perform better than older children, as long as they have asked enough questions to narrow down the options to one. These developmental and individual differences most likely influence how costly or beneficial each step of the inquiry process is to a given child.

Therefore, future research needs to examine the role of specific developmental and individual differences in children's success at the problem-solving process. Take, for instance, the ability to decide which informant should be able to provide the most accurate answers to one's questions. Some evidence suggests that children with a deeper understanding about how people can differ in their beliefs, desires, and thoughts (i.e., theory of mind; e.g., Flavell & Miller, 1998) may be better at recognizing that some sources are more knowledgeable than others. This understanding increases over development, but there are individual differences even within an age group. Indeed, although one study using a 3-item false belief task found no relationship between theory of mind performance and selective trust (Pasquini et al, 2007), other research has found a correlation between other aspects of theory of mind and selective trust. For instance, DiYanni and Keleman (2008) found that performance on an 8-point, 4-item false belief task correlated with children's ability to recognize which informant was most reliable, and Vanderbilt, Liu, & Heyman (2011) found a relationship between performance on a 5-item, more comprehensive ToM scale (Wellman & Liu, 2004) and children's ability to recognize which of two informants was truthful.

Preliminary research in our lab has further examined the relationship between ToM (as measured by the 5-item ToM scale mentioned above) and finding appropriate sources for inquiry, focusing on the hypothesis that there is a relationship between ToM abilities and identifying the most *knowledgeable* source of information to question to solve problems. In this study, 4- and 5-year-olds were tasked to ask different puppets (i.e., knowledgeable vs. ignorant, knowledgeable vs. inaccurate) questions to determine which of four pictures was inside a box. After 4 trials, children were asked which puppet gave them the most right answers and which puppet gave them wrong answers. Responses were compiled across conditions to create a composite metacognition score (out of 4). On a different day, children were tested on a battery of individual differences measures including 5 ToM tasks (Wellman & Liu, 2004). As expected, we found developmental improvements on both the ToM and metacognition tasks. Importantly, though, we found that after controlling for age, children's ToM scores significantly predicted children's recognition of an informant's knowledge abilities within this task (the composite metacognition score; $p < .001$). Ongoing research is examining how this ability to recognize the most accurate informant within the task itself related to questioning behavior as well as overall accuracy in problem solving (Williams, Landrum, Pflaum, & Mills, 2013).

In addition to theory of mind, other individual differences may relate to children's success at using questions to gather information from others. For example, early work examining the frequency of question-asking and the types of information being sought (e.g., explanations versus procedural inquires) has found differences based on socioeconomic status. Research by Tizard and Hughes (1984) found that 4-year-old girls from middle class families were more likely to ask curiosity-based questions and engage in persistent question-asking than 4-year-old girls from working class families. In fact, very early research from McCarthy (1930) found socioeconomic differences in the amount of questions asked from children as young as 24 to 30 months old.

Culture has also been shown to affect children's question-asking behaviors. Gauvain, Munroe, and Beebe (in press) examined children's question asking in Belize, Kenya, Nepal, and Samoa. Although children from these areas also engaged in frequent question-asking, these children asked far fewer questions aiming to seek explanations (i.e., how and why questions) than children in the U.S. Also noteworthy, question-asking seemed to vary between these four different cultures based upon the availability of education for parents: the Samoan children, whose parents had access to both primary and secondary education, asked the greatest proportion of information-seeking questions, whereas Kenyan children, whose parents had access only to primary education, asked the least.

Although the specific reasons for these socioeconomic and cultural differences are unclear, some have speculated that the way the parents interact with their children may have a large impact. For instance, Gauvain and her colleagues (in press) mentioned the possibility that some types of child rearing techniques focus on "passive obedience", which may discourage children from asking questions. Yet, there is little research exploring this possibility or how other aspects of parenting, culture, and socioeconomic status may interact to influence children's abilities to use questions to gather

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information. Thus, a crucial part of future research will be to investigate the role of socioeconomic status and culture in successfully engaging in the four steps described in this chapter.

When speculating about how this process gathering information from others through asking questions works in everyday situations, we predict that children may frequently acquire only skeletal, incomplete information. At some level, this may seem like failure, but it is crucial to think about the implications of partial inquiry. Although not acquiring enough information to fully solve their problems may sometimes be detrimental, ceasing to gather information when a comfortable level of satisfaction with the solution has been reached may actually be adaptive. Often, a skeletal understanding provides enough insight to answer basic questions while not being overwhelming in terms of cognitive load (Keil, 2012; see also Mills & Keil, 2004; Rozenblit & Keil, 2002). Moreover, given that it is impossible to know full, complete answers to all question and problems, being satisfied with answers that are sufficient may allow children to develop a broad base of knowledge with which they can build upon for further, more in-depth learning. And when a skeletal understanding is not enough, the hope is that children will be motivated to seek a full understanding from more knowledgeable others through the use of inquiry.

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