Children Seek Help from Technological and Human Agents Depending on Domain

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Abstract

Seeking help from knowledgeable others is a crucial part of human learning. Prior work shows that children consider informants' social and epistemic traits when deciding whom to trust, but has primarily focused on human sources. As artificial intelligence becomes increasingly integrated into children's lives, they face new choices about whom to seek help from. The present study examines young children's help-seeking preferences between human and technological agents across various domains. Children chose which agent to consult when faced with problems involving encyclopedic information, moral harm, or conventional norms. Results show a clear pattern of help-seeking based on domain. Children preferentially seek help from technological agents for encyclopedic questions, but favor human informants when faced with problems about moral transgressions or social norms. These findings suggest that children's help-seeking behavior is not driven by a general preference for humans or technology, but instead reflects domain-specific understanding about the kind of knowledge different sources can provide.

Keywords: help-seeking; social cognition; technological agents; social domain theory

Introduction

Much of children's learning is inherently social. From infancy, children learn through others' teaching (Csibra & Gergely, 2009) and testimony (Harris, 2012). Beyond receiving information, they also actively seek help from knowledgeable others to advance their own learning (Nelson-Le Gall, 1981; Raport et al., 2025). Consequently, deciding whom to consult is a central problem in developmental psychology. Children not only need to evaluate the credibility of the source and the reliability of the information they provide, but also develop expectations about the kinds of agents who possess knowledge for a given problem (Jaswal & Neely, 2006). With age, the set of potential informants children encounter expands dramatically, from only primary caregivers in infancy to extended family, teachers, and peers in early childhood, and in the current technological landscape, to increasingly sophisticated technological agents.

Advances in artificial intelligence and the growing integration of technology have substantially expanded the range of information sources available to children. In 2021, 97% of children ages 3–17 in the United States had internet access at home (National Center for Education Statistics, 2023). Beyond passive exposure, children increasingly interact with various technologies to seek information. Recent national survey data indicate that more than half of children ages 5–12 have used tools such as ChatGPT to ask questions or to obtain information (Bickham et al., 2024). This evolving information landscape presents both opportunities and challenges. Although digital tools can provide rapid access to factual information, children often struggle to evaluate the reliability of online sources. Elementary and middle schoolers tend to assume that information encountered on the internet is generally accurate and find it difficult to distinguish real from fake news (Leu et al., 2007; Xu et al., 2022). As a result, children now routinely encounter situations in which they must decide whom—or what—to consult and trust.

Over the past several decades, research in selective trust has shown that children do not indiscriminately accept information from others; instead, they selectively seek and endorse testimony based on a range of social and epistemic cues (see Tong et al., 2020, for a meta-analysis). Children preferentially trust informants who display positive social cues, such as those who are familiar (Corriveau & Harris, 2009), confident (Juteau et al., 2019), and benevolent (Johnston et al., 2015). They also track informants' past accuracy and reliability, endorsing the testimony of those who are knowledgeable as opposed to ignorant (Koenig et al., 2004). When the two dimensions conflict, older preschoolers consistently prioritize epistemic reliability over social characteristics when deciding who to trust (Jaswal & Neely, 2006; Tong et al., 2020), preferring informants who were more knowledgeable but had negative social characteristics.

Recent work suggests that children also treat the internet and other technological agents as legitimate sources of information. For example, preschoolers judge information obtained from the internet to be as reliable as information provided by adults, and more reliable than information from peers (Wang et al., 2019). One study found that children preferentially seek factual information from technological agents, such as voice assistants, rather than from human informants (Wojcik et al., 2022). Consistent with this, children also show heightened endorsement of information provided by technological agents: when asked to learn novel object labels, they are more likely to endorse labels offered by a robot than those offered by a human (Stower et al., 2024). Importantly, this trust in technology is not indiscriminate. With age, children differentiate among informants based on the type of knowledge involved. In one study, children selectively directed questions about physics and machines to robots, while direct-

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ing questions in human-centered domains—such as biology, language, and psychology—to human informants (Oranç & Küntay, 2020). Preschoolers also turn to voice assistants for factual information and to human informants for personal information (Girouard-Hallam & Danovitch, 2022). These findings suggest that children are especially inclined to seek help from technological agents when confronted with problems in the factual domain, where accuracy and access to information are crucial. However, because this body of work has focused almost exclusively on factual knowledge and personal information, it remains unclear how children select informants when faced with problems in other socially meaningful domains, such as moral and social-conventional reasoning.

Research on humans' conceptions of mental life provides a basis for domain-specific preferences (Weisman et al., 2017). Adults perceive mental life as organized around three broad clusters: bodily sensations (e.g., pain, fatigue, hunger), moral sentiments (e.g., experiencing guilt, telling right from wrong), and cognitive abilities (e.g., remembering, recognizing, making choices). Adults attribute cognitive capacities to robots and computers, but largely deny them moral and social-emotional capacities, suggesting that adults view technological agents as capable of processing information but not of engaging in moral reasoning. Consistent with this, when faced with problems, adults sought advice from human agents significantly more in social tasks that require mental state attribution, such as judging the emotion behind a pair of eyes, than in analytical tasks such as solving arithmetic problems (Hertz & Wiese, 2019). Children hold similar intuitions: 4- to 11-year-olds' beliefs about familiar technologies such as Amazon Alexa or a Roomba clustered along the same three dimensions (Flanagan et al., 2023). Further, by around age 7, children's distinctions along these dimensions begin to shape their trust preferences in robots—trusting robots with cognitive abilities over those with social-emotional abilities for factual problems (Grigoreva Crean & Tasimi, 2025). Children may thus view technological agents as well-equipped for domains that require cognitive capacities but ill-equipped for problems that require social-emotional understanding or moral reasoning.

The Present Study

The present study examined whether children selectively seek help from humans and technological agents depending on problem domain. We distinguish between encyclopedic (general, factual information such as when the first train was invented), social-conventional (context- and culture-dependent rules such as using appropriate utensils during meals) and moral knowledge (universal ideas about justice, fairness, and human welfare). Work in social domain theory (Smetana, 2006) demonstrates that preschoolers distinguish between the violation of social conventions and moral wrong-doing, treating these domains as governed by different kinds of authority. Children evaluate moral transgressions as less permissible and wrong independent of authority and rules, whereas conventional transgressions are viewed as more context-and authority-contingent (Yoo & Smetana, 2022). Compared to encyclopedic questions, moral and social-conventional judgments are not merely about what is factually accurate, but require sensitivity to others' intentions, welfare, and group norms.

We tested 6- to 7-year-old children, an age at which the social-conventional/moral distinction is in place (Smetana, 2006), children are beginning to differentiate the dimensions of mental life (Weisman et al., 2018), and are sensitive to the different types of expertise technology and humans offer (Wang et al., 2019; Wojcik et al., 2022). Children were presented with short vignettes involving encyclopedic, social-conventional, and moral problems and were asked to choose whether they would seek help from a human or a technological agent.

In line with prior work (Girouard-Hallam & Danovitch, 2022; Stower et al., 2024; Wang et al., 2019), we hypothesize that children will consult technological agents for encyclopedic questions because these problems have objective truth criteria. In contrast, moral problems require weighing values and discerning right from wrong—capacities that adults do not typically attribute to computers (Weisman et al., 2017) and that older children weigh heavily when seeking moral advice (Danovitch & Keil, 2007). We thus hypothesize that children will preferentially seek help from human agents in the moral domain, whom they view as members of an ethical community. We did not have explicit hypotheses regarding the social-conventional domain, as conventional knowledge is partially factual (rules and norms can be looked up), but is also socially embedded.

Experiment

Method

In this experiment, we examined whether children preferentially seek help from human or technological agents depending on domain (encyclopedic, moral, or social-conventional). The experiment's hypotheses, sample size, and analysis plan were pre-registered on the Open Science Framework at https://osf.io/pek9h/overview?view_only=7351bf770bf24b60b533c4989f9ed25a

Participants A simulation study was conducted in RStudio (Posit team, 2025) using the packages mixedpower (Kumle et al., 2021) and simr (Green & MacLeod, 2016) to determine the required sample size for detecting a small to medium effect size for a mixed-effects logistic regression. A sample size of 48 was needed to detect a small- to medium- sized effect for the main-effect model (binary outcome for helper selection, predicted by domain). The final sample consisted of 48 participants, 50.0% female, ranging between 6 and 7 years old with a mean age of 86 months. Participants were recruited from various regions of the United States. Per parental report, 39.6% of children were White, 37.5% were African American, 16.7% were Asian, and 6.3% were American Indian/Alaska

Native; 16.7% of the children were Latinx. Household income ranged from above $20,000 to above $120,000, with a median household income of $80,000–$99,999. Children were tested via Zoom and received an electronic gift card for participating. The experiment was approved by the University of Southern California's institutional review board.

Materials This experiment employed a repeated-measures, within-subjects design. Each participant completed a single Zoom session with an experimenter, during which they engaged in 12 total trials, consisting of four vignettes per domain (encyclopedic, moral, and social-conventional). We utilized a graphic of a generic computer with a microphone to represent the technological agent, as prior work suggests that children's judgments about the capacities of technological devices did not differ by the specific kind of technology (Girouard-Hallam & Danovitch, 2024).

Twelve video vignettes depicting each problem were created using Vyond video editing software. An experience with technology questionnaire (adapted from Wojcik et al., 2022) was given to parents of participants to complete prior to testing sessions (see Table 1).

Table 1: Experience with Technology Questionnaire

Question	Answer Format
At approximately what age did your child first use an interactive technological device?	Age in years
How often does your child use a technological device to gather information?	Scale from 1 (never or less than once per month) to 5 (daily)
How often does your child see their parents use a technological device to gather information?	Scale from 1 (never or less than once per month) to 5 (daily)
How long did your child use a technological device yesterday or when last used?	In minutes
How often does your child use a technological device?	Scale from 1 (never or less than once per month) to 5 (daily)

Procedure At the start of the session, the experimenter (E) built rapport with the child by asking three brief questions about the child (e.g., favorite color, food, or game). E introduced the child to the task and began the first vignette (see Fig. 1).

Each trial followed the same structure. First, the child viewed a short animated video depicting a protagonist observing a third-party event relevant to one of three domains (see Table 2 for examples of vignettes in each domain). After the video, E shared a grayscale helper-selection slide, where a computer with a microphone graphic and a human female helper were placed side-by-side. E asked the test question, "Which one should [protagonist's name] seek help from?" The child made her selection. E acknowledged each answer with a neutral response (e.g., "Okay"), recorded the child's choice live, and proceeded to the next trial. This procedure was repeated for all 12 trials.

Table 2: Example Vignettes by Domain

Domain	Vignette
Moral	Narrator: Eli and Bobby are playing in the sand. Bobby pushes Eli. Carlos sees this. Carlos: "I just saw Bobby push Eli. I'm not sure what to do. I need help."
Social-Conventional	Narrator: Sara and Kayla are eating lunch. Sara tries to eat her soup with a straw. Kayla sees this. Kayla: "I just watched Sara try to eat soup with a straw. I'm not sure what to do. I need help."
Encyclopedic	Narrator: Tina and Billy are at the zoo and see a giraffe for the first time. Tina asks her friend Billy, "Where are giraffes from?" Billy: "Tina just asked me where giraffes are from. I'm not sure. I need help."

Results

Helper Preference Across Domains A mixed-effects logistic regression predicting helper selection (1 = human agent, 0 = technological agent) from domain (reference = encyclopedic) with random intercepts for subject and vignette was used to determine whether 6-7-year-olds distinguished between human and technological agents when seeking help. As predicted, children sought significantly more help from the technological agent in the encyclopedic domain than in the moral or social-conventional domains ($b = 4.11$, $p < .001$; $b = 2.71$, $p < .001$, respectively). Children also sought significantly more help from the human agent for problems concerning moral harm than for social-conventional norm violations ($b = -1.41$, $p = .0006$), showing an early-emerging sensitivity to the types of help various agents can afford given the problem type.

Table 3: Human Informant Selection by Domain

Domain	Human Selected	Proportion Human	*SD*
Encyclopedic	65	0.34	0.47
Moral	182	0.95	0.22
Social-Conventional	160	0.83	0.37

Note. Human Selected is the number of trials in which the human helper was chosen. Proportion Human is the proportion of total trials in which the human helper was chosen.

Across ages, children sought help from the human in 33.9% of the trials in the encyclopedic domain, 83.3% of the trials

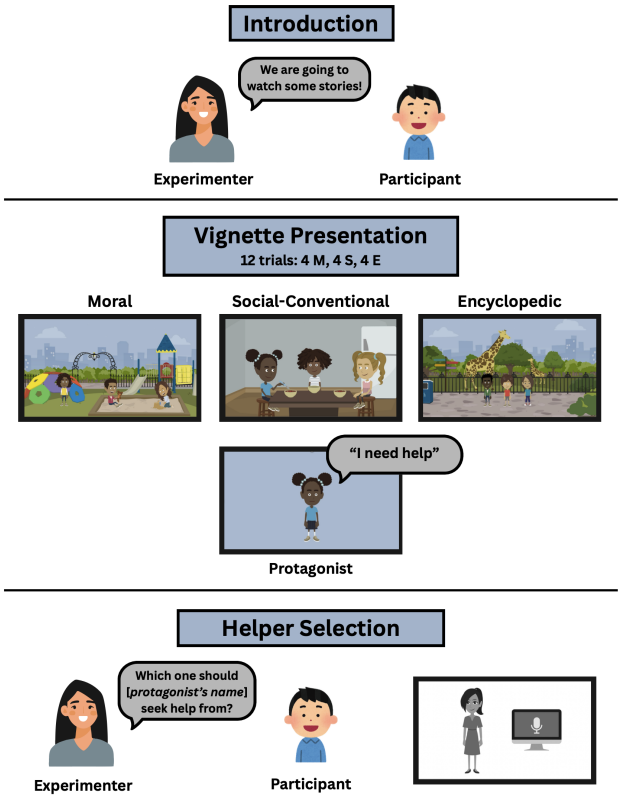

Figure 1: Procedure

in the social-conventional domain, and 94.8% of the trials in the moral domain (see Table 3). Children showed strong domain-specific preferences: they preferentially sought help from technological agents when the task concerned knowledge or factual information, but overwhelmingly preferred human helpers when the task involved social or moral considerations. They further differentiated between social-conventional and moral problems, preferring to seek help from human agents significantly more in moral contexts. This suggests that children are not only sensitive to broad distinctions between encyclopedic and social problems, but also to differences within the social domain as they pertain to the kind of authority and reasoning required, with moral judgments being closely tied to human insight.

An interaction model with age, using sum-to-zero contrasts for domain, revealed a significant main effect of domain, $\chi^2(2) = 103.62$, $p < .001$, a significant main effect of age, $\chi^2(1) = 6.15$, $p = .013$, and a significant Domain × Age interaction, $\chi^2(2) = 7.03$, $p = .030$ (see Table 4). To follow up on the significant interaction, we computed simple slopes of age within each domain. The age slope was significant in the moral domain ($b = 0.20$, $p = .003$), indicating that older children increasingly preferred the human helper for moral problems. In contrast, age slopes were nonsignificant in the encyclopedic ($b = 0.02$, $p = .495$) and social-conventional ($b = 0.03$, $p = .468$) domains (see Fig. 2).

Table 4: Generalized linear mixed-effects model predicting choice of helper from Domain, Age (centered in months), and their interaction

Predictor	Estimate	SE	z	p
Intercept	1.68	0.25	6.62	$< .001^{***}$
Domain (E)	−2.46	0.25	−9.90	$< .001^{***}$
Domain (S)	0.21	0.24	0.88	.380
Age	0.08	0.03	2.48	$.013^{*}$
Domain (E) × Age	−0.06	0.03	−1.96	.051
Domain (S) × Age	−0.05	0.03	−1.80	.072

Note. Estimates are log-odds from a binomial generalized linear mixed-effects model with random intercepts for Subject and Vignette. Domain was coded with sum-to-zero contrasts; coefficients reflect each domain's deviation from the grand mean across all three domains. The moral domain (M) is the implicit reference. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

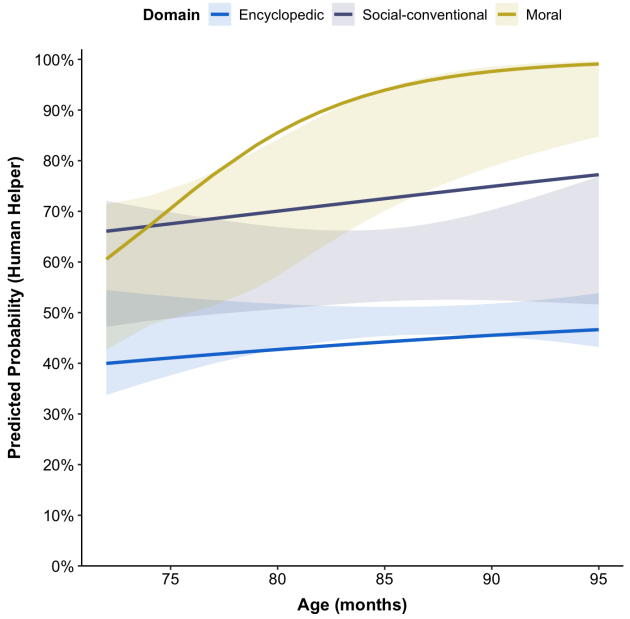

Figure 2: Predicted human helper choice probability by domain and age.

Technology Use and Help Seeking We conducted exploratory analyses examining the link between children's technological use and their help-seeking behavior. A principal components analysis (PCA) on five parent-reported variables (years of use, frequency of child using technology to gather information, parental usage of technology, overall frequency of technological device usage, and amount of time last used) yielded a two-factor solution with varimax rotation, accounting for 69.6% of total variance. The first component (Freq_Utility) revealed high loadings from frequency of child using technology to gather information and overall frequency of device usage (0.88, 0.85). This indexes how often and for what purposes children use technology and explained 35.2%

of the variance. The second component (Exp_Time) showed high loadings from years used and the amount of time a device was last used (0.78, 0.77). This component captures the duration of technological device exposure and explained 34.4% of the variance. Parental use of technology to gather information loaded moderately on both components, with a stronger negative loading on Exp_Time (loading = -.70) and a weaker positive loading on Freq_Utility (loading = .32). This item was not exclusively associated with either dimension but instead showed some cross-loading.

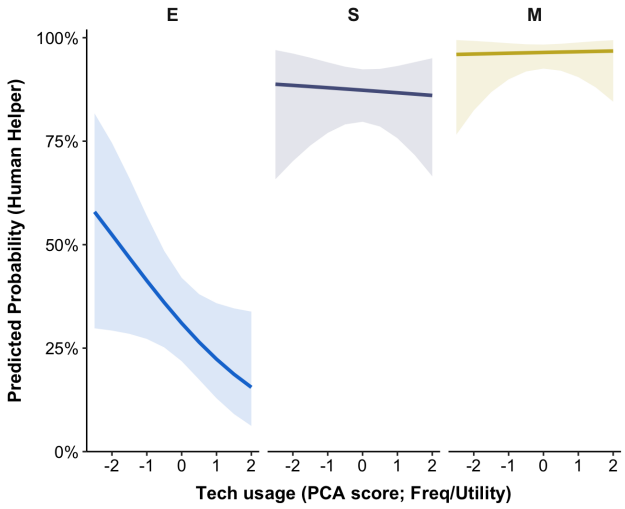

Figure 3: Predicted human helper choice probability by tech usage.

We retained the two components as continuous predictors and ran an exploratory generalized linear mixed-effects model in interaction with Domain. Results replicated the significant effect of domain. Relative to encyclopedic problems, children were more likely to seek help from the human agent in both social-conventional and moral domains. Freq_Utility significantly predicted helper choice in the encyclopedic domain ($b = -0.45$, SE = 0.22, $p = 0.046$), suggesting that children who used technology frequently and relied on it to seek information were more likely to select the technological agent when faced with factual problems (see Fig. 3). Simple-slopes analyses revealed that Freq_Utility did not significantly predict helper choice in the social conventional or moral domains ($ps > .16$). Lastly, Exp_Time did not significantly predict helper selection in any of the domains ($ps > .08$).

Discussion

The present study examined whether children selectively seek help from human and technological agents as a function of the domain of the problem. Six - and 7-year-olds selectively sought help from the technological agent for encyclopedic questions, and from the human for moral and social-conventional problems. This pattern strengthened with age for moral judgments, suggesting that with age, children become increasingly aware of the limitations of technological agents in answering certain types of questions. Together, these findings suggest that children's help-seeking is not driven by a general bias toward humans or technology, but instead reflects their judgments about the types of expertise and authority each agent holds depending on the domain.

These results extend prior work on selective trust and help-seeking by demonstrating that children's reasoning about the reliability of informants goes beyond accuracy, familiarity, or confidence, and instead encompasses distinctions about different types of knowledge. Consistent with prior studies showing that children treat technological agents as reliable sources of factual information (Girouard-Hallam & Danovitch, 2022; Stower et al., 2024; Wang et al., 2019; Wojcik et al., 2022), children in the present study were also more likely to ask the technological agent for help when confronted with encyclopedic questions, such as where giraffes are from or when the first train was invented. Children also strongly preferred human informants when the problem involved moral harm or social-conventional norm violations. Between the two domains, children further preferred to seek help from a human agent in the moral than the social-conventional domain. One possible explanation is that moral violations are widely understood to be governed by universal principles and thus fall within the purview of any adult (Smetana, 2006). Conversely, norm violations are more context-dependent: what is considered rude or unacceptable in one culture may be completely acceptable in another. As a result, children may view any adult as an authoritative source for moral transgressions, whereas for conventional rule violations the adult may need to be within the in-group or be perceived as understanding the relevant shared norms.

Children's preferences for human helpers in the moral and social-conventional domains can be explained in part by social learning and imitation (Bandura & Walters, 1977). In everyday contexts, children frequently observe their caregivers turning to technological agents for factual information (e.g., "I don't know, but let me Google it"). Rarely will children observe their parents consult the internet for how to resolve a norm violation or a moral transgression. Problems in these domains are typically addressed through interpersonal interactions, perhaps by consulting other knowledgeable adults (e.g., teachers, grandparents), as opposed to asking technological agents. Thus, children rarely see adults deferring to technology to resolve issues of right and wrong. Through such asymmetries in their daily observations, they may acquire domain-specific expectations about the appropriate sources of information and authority, learning that technological agents are suitable for encyclopedic problems, whereas humans are the appropriate arbiters of normative and moral concerns.

A crucial factor that is likely to contribute to children's domain-bound preferences for help is the ontological divide between humans and technology. Humans are conscious practical agents made from flesh and blood. In their interactions, they are liable to physically and mentally harm each other. So-

cial conventions and moral rules are in place to curtail harm and wrong-doing in human interaction. As the bearers of rights, duties, and a sense of indignation when social conventions are broken, humans are the ultimate experts when it comes to ethical life. Unlike encyclopedic information, which can be acquired through symbolic input alone, moral and conventional norms are typically enforced through direct participation in settings where harm occurs or rules are violated. It thus makes sense for children to turn to conspecifics, not to technology — which is not spatially extended (with the exception of robots) or a member of an ethical community — to ask what to do when faced with moral conflict.

Exploratory analyses of children's technological experience further shed light on how everyday interactions with digital tools shape children's help-seeking preferences. A principal components analysis revealed two separate dimensions of technology exposure: one reflecting how frequently children use technology for information-seeking, and another capturing duration of exposure over time. Only the frequency–utility component predicted children's helper selection, such that children who often used technology to gather information and engaged more frequently with technological devices were more likely to select the technological agent in the encyclopedic domain. Additionally, sheer duration of exposure (years of use, time spent) was not a significant predictor. This dissociation suggests that children's epistemic trust in technology is shaped less by passive familiarity and more by functional experience. Increased technology use did not affect children's strong preference for human informants in the moral and social-conventional domains. Even children who frequently used technology to gather information continued to overwhelmingly seek human guidance for issues involving harm, fairness, and social norms. This pattern supports the view that children do not simply generalize epistemic trust in machines across all domains, but instead maintain domain-specific expectations about the kinds of agents who possess the relevant forms of understanding and authority.

There are several potential directions for future research. First, the current study focused on early elementary school children, a period when distinctions between encyclopedic, moral, and conventional domains are already well in place. Examining patterns of help-seeking in preschool-aged children will help clarify when domain-specific expectations about technological versus human expertise first emerge, and whether early exposure to technology and frequent use continue to predict children's helper selection. Secondly, since the present study utilized a forced-choice paradigm, children's motivations for their selection and whether their choices are truly guided by reasoning about knowledge states or authority remains unknown. Future work might investigate children's reasoning behind their choices by employing open-ended questioning in addition to forced-choice paradigms. This may also provide more insight into why children selected the human agent in the moral and social-conventional domains. Specifically, children may have expected humans to intervene directly, such as through punishment, something that technological agents lack the capacity for. Lastly, the technological agent in the present study was depicted as a computer. Future studies could examine how the degree of anthropomorphism of the technological agent affects children's helper-seeking in moral and social-conventional domains.

Children's selective trust has long been understood as a mechanism for identifying reliable sources of information (Harris, 2012; Henrich & McElreath, 2003). Yet the cues children have traditionally relied on to evaluate human informants (e.g., familiarity, group membership, benevolence) may not transfer cleanly to technological agents. Further, information from technological sources is not curated by knowledgeable, well-intentioned teachers the way that child-directed information typically is (Qiu et al., 2025). The present findings suggest that children's understanding of technological agents is more nuanced than a simple trust or distrust of technology. Rather than treating technological agents as all-knowing, children's information-seeking depends on the problem at hand. They view technology as a reliable source of factual knowledge, akin to an encyclopedia that can retrieve information quickly and accurately, but also recognize that it lacks the social-conventional and moral understanding that human agents possess. We think children turn to human beings for moral and conventional knowledge because as practical agents and unlike technological devices, they possess the rights and moral duties that characterize human life. This is consistent with work showing that adults attribute cognitive capacities to computers and robots but deny them capacities related to moral reasoning (Weisman et al., 2017). That children as young as six already navigate the informational landscape along these lines speaks to the early emergence of intuitions about the scope and limits of different kinds of minds. As technological agents become increasingly sophisticated and prevalent in children's everyday lives, understanding how children reason about the boundaries of technological expertise and where they continue to reserve authority for humans will be essential for guiding children's interactions with these agents and for supporting their development as discerning evaluators of information.

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