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Understanding the role of testimony in children's moral development: Theories, controversies, and implications

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ABSTRACT

Children, much like adults, rely heavily on information from other people in the domains of word learning, science and religion (Harris, Koenig, Corriveau & Jaswal, 2018). However, we know much less about how testimony affects children's moral thinking. In fact, many psychologists argue that morality is relatively impervious to direct testimonial influence, and emphasize children's early emerging moral abilities and intuitions (Haidt, 2001; Hamlin, 2013; Smetana, 1981). These accounts are consistent with recent philosophical work holding that while testimony is an acceptable source for non-moral beliefs, it is problematic to acquire moral understanding via testimony (*the asymmetry thesis*, Hopkins, 2007). Is testimony really insufficient to transmit moral understanding?

In order to address this question, we first draw attention to recent philosophical work on skepticism towards moral testimony. We then review the literature on children's moral development and testimonial learning and make the argument that testimony plays an indispensable role in children's acquisition of moral understanding. Lastly, we discuss how the study of moral testimony could be supported by appreciating a set of important distinctions (e.g., different levels of dependence, different types of testimony, different costs and benefits) to aid our theorizing and empirical work on testimonial learning in the moral domain.

1. Introduction

Children and adults get around in the world in large part by relying on the testimony of others, making it hard to imagine how the accumulation of scientific, historical, and conventional knowledge could have happened without testimony. When no conflicting beliefs are present, it seems unproblematic to accept the factual testimony we receive from others. In fact, testimony is commonly and historically associated with the communication of contingent facts derived from experience, and empirical knowledge is the result (Gelfert, 2014). This makes sense because testimony is such an efficient and reliable way for individuals to extend their lens by way of sharing experiences (Quine & Ullian, 1978). Empirically, many of the testimonial learning studies in the developmental literature also focus on the transmission and acceptance of factual knowledge such as the name of an object, categorization of animals, or the existence of germs, even if they cannot easily verify these claims themselves (Harris & Koenig, 2006; Lane, 2018, for reviews, see Harris et al., 2018; Mills, 2013). Where does that leave us with respect to other kinds of knowledge? Are there any limits to the types of knowledge that can be transmitted by testimony?

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Although testimony seems to be an undisputed source of empirical knowledge, some have argued that it is not legitimate or even possible to acquire moral knowledge on the basis of testimony alone. Rather, they argue that moral beliefs need to be acquired and justified, at least to some extent, on the basis of one's own independent reflection and reasoning (Gelfert, 2014). Metaphorically, this means that moral agency requires individuals to drive their own bus, making it epistemically and morally wrong for moral agents to be passengers who allow their own moral judgments to be fully established by someone else. As Wolff puts it, a moral agent "may learn from others about his moral obligations……[but] he does not learn in the sense that one learns from an explorer, by accepting as true his accounts of things one cannot see for oneself" (p. 13, 1970). This captures the intuition behind the rejection of moral testimony: That the question of whether vegetarianism is morally right, for example, or capital punishment morally wrong, must be determined for the right kinds of reasons that are independently appreciated by the agent.

Compared to factual knowledge, which often involves forming beliefs which answer to evidence, moral knowledge requires appreciating a range of epistemic and moral reasons, principles or norms, as well as their application (e.g., Crisp, 2014; Fletcher, 2016). Indeed, many scholars have argued that core aspects of moral understanding are authority independent (Smetana, 2006), innate (Hamlin, 2013), or may need to be independently acquired (Kant, 1785/1959). If any of these positions are true, then many sources of social influence, including testimony, might be insufficient to transmit or alter these core aspects of moral understanding. However, none of these theoretical perspectives have discussed the role of testimony in detail (Harris, 2012).

One view in contemporary philosophy, *the asymmetry thesis*, does specify the role that testimony cannot take in the moral domain. This view holds that while testimony is a perfectly acceptable source for non-moral beliefs in other domains, it is problematic for a listener to base her moral beliefs by exclusively deferring to testimony (Hopkins, 2007). Unless an agent has their own understanding of the reasons and principles that underlie their obligations, the claim is that moral testimony cannot do more than help fine-tune, extend, or better specify the applications of those principles (Howell, 2014; Jones, 1999; Nickel, 2001). Does this claim hold for young children?

In this paper, we draw on the arguments for this philosophical view, as well as empirical support from adults, in order to examine the case for skepticism toward moral testimony as a source of moral knowledge. We then review empirical work on children's social learning and moral development, in the hopes of advancing our understanding of testimony's role in children's acquisition and use of moral knowledge. The central claim of this paper is that the theories on the autonomy of moral thinking are largely overstated. We argue that children rely heavily on moral testimony as they are navigating the moral world as developing moral agents. Specifically, Section 2 reviews recent skeptical accounts in moral philosophy, which hold that simple acts of testimony are unable to transmit true moral understanding or are normatively problematic in developing moral agency. Section 3 reviews the literature on moral development and testimonial learning in children, challenges some of the philosophical arguments against deference to testimony, and discusses unique aspects of moral testimony that can make it a perfectly legitimate source of knowledge for children. In Section 4, we argue that future research could further explore children's use and evaluations of moral testimony. Having reviewed the nuances of the philosophical debate regarding moral testimony, we proceed to identify open questions and new opportunities to advance our understanding of testimonial influences on moral development in early childhood.

2. Appreciating the limits of moral testimony?

Work in experimental philosophy shows that testimony is treated as a second-class citizen in moral thinking by adults. When adults on Amazon MTurk were asked to evaluate the legitimacy of forming a moral belief on the basis of testimony versus first-hand experience (e.g., "Suppose that [a friend/ first-hand experience] tells you that a particular action is immoral. Is it *legitimate* to rely solely on what [the friend / firsthand experience] tells you when forming your own opinion about whether the action is immoral?"]), beliefs formed on the basis of a friend's testimony were judged to be less legitimate than beliefs about descriptive matters such as the size of a painting (Andow, 2019). Why do adults have the intuition that moral beliefs based on testimony are inferior or less legitimate compared to testimonially-based empirical or factual beliefs?

These intuitions about the suspicious nature of second-hand moral knowledge are consistent with the philosophical tradition that moral understanding must be "self-given" through the exercise of one's own reasoning (Kant, 1785/1959). In the past two decades, a line of work in philosophy specifically addressed the issues of testimony, arguing that dependence on testimony for moral knowledge is epistemically unattainable or morally problematic. In fact, an *asymmetry thesis* has been proposed, arguing that there are interesting principled differences between moral and non-moral testimony. Specifically, this view holds that while testimony is a perfectly acceptable source for non-moral beliefs in other domains, it is problematic for a listener to base her *moral beliefs* on testimony (e.g., Hopkins, 2007). Philosophers who argue for the asymmetry thesis are sometimes known as *moral testimony pessimists*. To a certain degree, pessimists consider relying on testimony to be inferior to judging for oneself (Crisp, 2014), and argue that moral beliefs formed on the basis of another's testimony are in poor epistemic or moral standing (e.g., Nickel, 2001; McGrath, 2011). Below, we will overview the main pessimistic arguments about dependence on moral testimony, which can be broadly classified into two categories: (1) Epistemic doubts regarding testimony's ability to transmit moral understanding, and (2) moral reservations related to whether deferring to moral testimony threatens our ability to exercise good moral agency.

Epistemically, moral testimony pessimists hold that testimony cannot transmit true moral understanding (e.g., Hopkins, 2007; Nickel, 2001; McGrath, 2009, 2011). While it can be relatively easy to acquire empirical knowledge in various empirical domains, their position is that it is difficult to acquire true moral understanding via testimony. For example, the *understanding argument* (Nickel, 2001) contends that moral understanding is holistic and includes the ability to build networks of facts and justifications (Hills, 2009). In this respect, holding a moral belief not only involves agreeing to a proposition (e.g., one should become a vegetarian), but also requires a grasp of the connections between moral beliefs and their justifications (Hills, 2009; Nickel, 2001; McGrath, 2011). In other words, if a

listener comes to believe a moral claim based on the testifier's word, or on her authority, she may still fail to appreciate the reasons behind the claim, and the connections with other moral beliefs. Relatedly, failure to comprehend reasons after reliance on moral testimony may also prevent the listener from extending their judgment to other circumstances, or from applying moral claims at appropriate times (*extension argument*, Crisp, 2014; Nickel, 2001). Given the complex and subtle nature of many situations which moral agents face, it seems essential for one to have a flexible mastery of moral reasons. For example, an individual could be told that it is wrong to steal from one's neighbor. But based on that testimony alone, he would be ill-prepared to respond to changes that arise, and unable to draw the appropriate conclusion about stealing from a store to feed his family.

Other epistemic arguments against the reliance on testimony include the difficulties in identifying moral experts (Hills, 2009; Goldman, 2001; Driver, 2006; Matheson, McElreath, & Nobis, 2018; McGrath, 2009, 2011), and the considerable amount of disagreement about moral matters even among the experts (Hopkins, 2007) — both of which can threaten the transmission of moral beliefs. Another related argument, sometimes referred to as the *calibration worry*, holds that independent access to facts is not readily available in the realm of morality (McGrath, 2009), and this in turn prevents us from verifying the track record of potentially reliable testifiers. In both respects, we can see how the usual markers of expertise – relevant skills, participation in consensus and track record – seem to be difficult to judge in the moral domain.

So far, the skeptical arguments against moral testimony that we have covered focus on the independent epistemic agency that is necessary in the moral domain. Aside from these epistemic arguments that concern moral testimony's limits, the most prominent *moral argument* against the dependence on testimony builds on the *understanding argument*, and proposes that understanding is necessary for morally worthy action (Howell, 2014; Jones, 1999; McGrath, 2011; Hills, 2009, 2013). Note that while the previous arguments primarily concern the possibility of transmitting moral understanding, this argument questions deference to testimony because it is in tension with one's moral agency. Specifically, reliance on moral testimony is problematic because it runs against the central aspects of our moral agency such as moral worth and moral virtue. Some contend that what virtue requires is that the agent makes good judgments for herself rather than doing what she is told (e.g., McGrath, 2011; Hills, 2009, 2013; Nickel, 2001).

In summary, moral testimony pessimism is concerned both with *epistemic reasons* that cast doubt on the possibility of moral testimony transmitting moral knowledge, and *moral reasons* related to the moral worthiness of deferring to testimony. It is worth noting that although some accounts are not sufficiently clear about the definition of testimony, these pessimistic arguments are usually focused on cases in which testimony provides a simple statement of right and wrong, which was then treated as one's only basis of belief (Hills, 2009; Lewis, 2020; Viswanathan, 2021, see more detailed discussion in Section 4).

Although individual's moral evaluations of deference to testimony remain largely untapped in empirical work, the epistemic reasons against relying on moral testimony are generally consistent with psychological accounts that dominate discussions of moral development and moral thinking, which imply that the psychological processes governing children's moral decisions are either innate (e.g., Hamlin et al., 2007; Mikhail, 2007) or acquired through independent learning and reasoning (Piaget, 1965, Smetana, 2006; Rhodes & Wellman, 2017)). In the next section, we use recent developmental evidence to evaluate the role of moral testimony on children's social learning, arguing that in contrast to these skeptical accounts, children actually rely heavily on testimony to acquire moral understanding.

3. Children's use of moral testimony

In light of philosophical reservations about moral testimony as a source of knowledge (Hopkins, 2007; Jones, 1999), and given evidence that adults believe that reliance on testimony in the moral domain is more problematic than in the factual domain (Andow, 2019), do children accept moral testimony at high rates? Admittedly, the skeptical arguments are more focused on moral testimony being problematic for mature moral agents who have capabilities for gaining moral understanding under their own power, and moral testimony pessimists have fewer issues with children depending on testimony to form moral beliefs (Hopkins, 2007; Hills, 2009; Lewis, 2020). However, none of the philosophical accounts make it clear why children's dependence is more acceptable than adults' dependence. Moreover, as we review in this section, the uniqueness of moral testimony in the context of the literature on moral development is still relevant. Namely, the developmental traditions and mainstream theories tend to prioritize children's autonomous moral thinking - arguing that moral decision-making can be treated as a primarily intuitive and independent endeavor. As a result, it is often implied that testimony plays a limited role in children's moral thinking. Since research has scarcely begun to explore the normative question of how children evaluate testimony in the moral domain, here, we focus on the empirical question of whether children actually depend heavily on moral testimony. In this section, we discuss reasons to think that children treat moral testimony seriously and rely heavily on others' moral testimony to acquire moral understanding.

Moral development as an independent endeavor

Much developmental research has taken a constructivist or nativist approach, arguing that children either (1) independently develop moral competencies by actively assessing their social environment, or (2) are born with innate, nascent moral intuitions that are independent of social influences. As pioneers in the study of moral development, Piaget and Kohlberg argued that children start out by depending on adult authority to judge what is right and wrong, and then follow a stepwise progression toward more autonomous reasoning. More specifically, Piaget (1965/1932) argued that younger children, for example, focus more on the amount of external damage and punishment given by authority figures, whereas older children are more likely to ground moral judgments on independent reflections about the intentions behind an act. Piaget also stressed that children actively construct their own moral development by interacting with their social environment, which includes adult instruction, peer relations and other socio-cultural experiences. In line

with Piaget, Lawrence Kohlberg's (1969) proposals of stages of moral reasoning also had constructivist assumptions about moral development, taking moral autonomy as an ideal. As a dominant moral development theory over the past two decades, Social Domain Theory argues that preschoolers understand that the wrongness of basic transgressions (e.g., hitting, stealing) is not tied to how an adult authority reacts (Turiel, 1983; Smetana, 1981; Smetana, 1985; Smetana et al., 2012). Instead, children's understanding of moral norms is related to the intrinsic consequences of the acts for others (e.g., concerns for others' welfare, Smetana, 2006). Additionally, Social Domain Theory posits that children's welfare-based reasoning is largely constructed by directly and independently observing and experiencing the negative consequences (e.g., distress) caused by harmful actions as victims, transgressors or third-party observers of moral conflicts (Smetana, 2006). More recently, Rhodes and Wellman (2017) argued that children's moral thinking is guided by intuitive theories on mental states as well as on group membership and relations, indicating that children can acquire rule-like structure in the moral domain from rational inference with little explicit instruction.

There has also been a surge of evidence leading some to suggest that basic moral systems and representations are innate or very early emerging, indicating that core aspects of morality are independent of social learning. Developmental psychologists supporting the nativist perspective argue that infants demonstrate harm-based and fairness-based moral beliefs during the first year of life (Hamlin, Wynn, & Bloom, 2007; Kuhlmeier, Wynn, & Bloom, 2003; Geraci & Surian, 2011; Sloane, Baillargeon, & Premack, 2012, for a review, see, Woo, Tan, & Hamlin, 2022). For example, 6–10-month-olds were more likely to reach for an agent that had helped another agent compared to one that had hindered an agent (Hamlin et al., 2007). Even 3-months-olds seem to show a preference for helpers compared to hinderers (Hamlin, Wynn, & Bloom, 2010), raising the possibility that young infants' own preferences are guided by the moral characteristics of agents. There is also evidence suggesting that 18-month-olds spontaneously help others in the absence of social praise or encouragement, leading some to argue that altruistic helping is the result of a natural or evolutionary disposition (Warneken, & Tomasello, 2009). In response to these studies, nativist accounts which are advanced to explain the origins of morality have become increasingly mainstream (Bloom, 2010, but see Tasimi, 2020, who argued that infants construct moral knowledge from interacting with their caregivers).

Since these developmental accounts prioritize the innate origins and authority-independent nature of moral development, the role of direct testimonial influence is often left unaddressed (Harris, 2012). Specifically, these dominant developmental theories are largely guided by the assumption that moral development is self-sufficient and autonomous, either because of children's innate moral capacities (Bloom, 2010), or the active role children play in independently constructing moral systems (Smetana, 2006; Rhodes & Wellman, 2017). Thus, these approaches leave open questions about the amount of weight that children put on *testimony* supplied by adult and peer informants. Here, we argue that moral development is actually an *interdependent* endeavor. In fact, even adults' judgments and behavior can be significantly influenced by testimony under certain circumstances (e.g., Bostyn, & Roets, 2017; Cornwell, Jago, & Higgins, 2019; Chituc & Sinnottt-Armstrong, 2020). Below, we first argue that some of the arguments for the suspicious nature of moral testimony do not actually prevent children from gaining knowledge from testimony. We then discuss how moral testimony can afford children opportunities to acquire moral understanding in ways that independent deliberation cannot achieve.

Is moral testimony suspicious to child Learners?

Strong Priors. One reason we might reasonably suspect that children find moral testimony to be less legitimate than testimony in factual domains is that children may hold innate or early emerging beliefs representing basic moral principles. As reviewed, infants are said to hold innate intuitions about harm and fairness related principles (Hamlin et al., 2007; Sloane, et al., 2012; Bloom, 2010), and they also have opportunities to experiment with their social environments to acquire moral knowledge from observation and trial and error (e.g., that hitting or pushing others causes distress, Heyes, 2019; Sterelny, 2010).In fact, the limited research on moral judgments has shown that children are sometimes resistant to social and testimonial influences when it comes to harm-related principles. For example, using non-verbal testimony, Kim, Chen, Smetana and Greenberger (2016) found that only 20 % of the U.S. preschoolers conformed to their peers' moral judgments (signaled by hand-raising) that hitting another child was good on at least one of four trials.

However, when the situation is made more ambiguous and described using novel language, adult testimony can lead children to judge actions that cause distress as permissible. Li, Harris and Koenig (2019) found that 3- to 5-year-old Chinese and U.S. American children independently judged novel, distress-inducing actions (e.g., described as "mibbing") to be morally wrong, but they often revised their original judgments after hearing counter-intuitive claims made by adults (e.g., "It is good to mib."). Moreover, Chinese children were more likely to defer to adult testimony than U.S. children, which might be related to cultural variability in socialization practices that prioritize the relative weighting of social learning versus independent judgments.

Beyond harm-related moral principles, children are receptive to testimony about other moral norms as well. Early work following Bandura (1986)'s social learning theory attempted to compare the effects of observational learning from adult models with direct instruction, finding that both observing a generous model's sharing decisions and hearing direct preaching about sharing (e.g., "It's good to give to kids like him") influenced 7- to 11-year-old children's own sharing decisions after two months (Rushton, 1975). More recently, a small but growing body of developmental research has shown that testimony can significantly affect moral beliefs about group norms (Chalik, & Rhodes, 2015; Lane, Conder, Rottman, 2020), distributive strategies (Benozio, & Diesendruck, 2016; Heck, Chernyak, & Sobel, 2018; Rottman, Zizik, Minard, Young, Blake, & Kelemen, 2020, as well as influence moral behavior such as helping (Dahl, 2015; 2018; Hammond, & Carpendale, 2015; Dahl, & Brownell, 2019) and lying (e.g., Fu, Heyman, Qian, Guo, & Lee, 2016; Zhao et al., 2018; Zhao et al., 2019). Thus, this broad range of findings might be explained by the variable strength of children's prior beliefs: children likely have weaker priors about some moral behaviors relative to others. This is consistent with Rottman and Young's (2015) developmental model that some moral norms (e.g., norms involving impurity) might be more heavily shaped by social

communication than others (e.g., norms involving harm).

Moral Expertise. Another reason that makes it difficult to defer to moral testimony, according to the pessimists, is the difficulty of identifying moral experts. As reviewed, it is difficult for adults to assess the reliability of moral testimony and the track record of an informant especially in complex situations (Hills, 2009; Goldman,2001; Driver, 2006; Cholbi, 2007; McGrath, 2011). Do children have the same issues in identifying moral expertise? Previous work has shown that preschool-aged children can identify expertise in different factual and scientific domains (e,g, Aguiar, Stoess & Taylor, 2012; Boseovski & Thurman, 2014; Danovitch & Keil, 2004; Koenig & Jaswal, 2011; Lane & Harris, 2015; Lutz & Keil, 2002), and keep track of an informant's record of competence (Corriveau, Meints & Harris, 2009; Koenig, Clément, & Harris, 2004; Pasquini, Corriveau, Koenig & Harris, 2007; for a review, see Stephens, Suarez, & Koenig, 2015). However, previous research has not explicitly assessed how or why children attribute moral expertise to speakers who make moral claims. One possibility is that similar to adults, children may find reliable informants about moral issues more difficult to identify, resulting in a higher tendency of self-reliance.

This being said, it is also plausible that children's trust in moral testimony is not deterred by the difficulty in identifying moral experts. After all, expertise is often understood in relative terms (Driver, 2006; Hopkins, 2007). Since moral knowledge often comes with prolonged experience and training in navigating social situations, it is not uncommon for young children to come across people who are more skilled at making moral judgments than themselves. Indeed, preschool-aged children are perfectly capable of assessing the reliability of an informant and her empirical claims by relying on factual evidence (e.g., acquiring first-hand evidence about what activates a music box, or the location of a sticker, Hermansen et al., 2021; Ronfard, & Lane, 2019) or speaker characteristics (e.g., sincerity, familiarity, group membership, age, for a review, see Harris at al., 2018). Furthermore, moral expertise can come in many forms. For example, moral experts can be moral practitioners who act morally well. In fact, preschool-age children have been found to use people's morally good or bad actions as a basis for distinguishing between reliable and unreliable informants (e.g., Johnston, Mills, & Landrum, 2015; Lane, Wellman, & Gelman, 2013; Vanderbilt, Liu, & Heyman, 2011). There is also evidence suggesting that children selectively seek moral advice from more helpful or prosocial agents (Danovitch, & Keil, 2007; Doebel & Koenig, 2013). Moral experts can also be those who are better able to apply moral principles in given situations and make less biased decisions (Driver, 2006; Jones & Schroeter, 2012), or those who have more relevant moral experience than others in virtue of their social location (e.g., being the person who experienced the transgression, Jones, 1999). Indeed, young children tend to defer to adult judgments when applying harm and fairness-related norms to novel situations, even when no competence-related information about the adult informants are given (Rottman et al., 2017; Li et al., 2019). Moreover, moral experts can be those who are putatively granted a superior status (e.g., parents, teachers as in Mammen et al., 2019; Kruger & Tomasello, 1986). Thus, while we appreciate the pessimists' concerns about identifying moral experts, we also think there are reasons to expect that children selectively use and trust testimony in the moral domain.

Moral Disagreement and Consensus. Another pessimistic argument against the value of moral testimony concerns the considerable amount of disagreement in the moral domain (Hills, 2013; Hopkins, 2007), with the rationale that the lack of consensus would undermine our confidence in potential informants and their testimony, pushing for first-personal authority in making moral judgments. Does observed disagreement in the moral domain hinder children's own trust in testimony? For children, many moral situations they encounter are not actually subject to sustained moral disagreement. After all, it seems implausible to think that children would be exposed to disagreement about basic moral principles such as the wrongness of hitting or hurting others, or the niceness of sharing and helping. Nevertheless, children may observe a range of opinions regarding more subtle, or complex situations when adults and peers make judgments about what counts as "harm", whether there are valid justifications for inflicting harm, or whether a victim is without fault. In fact, children are sensitive that some moral issues are more controversial than others. For example, Heiphetz and colleagues (2018) found that 5- to 8-year-old children were less sure that other agents (another person, god) would judge controversial beliefs such as telling prosocial lies to be okay than uncontroversial good behaviors such as helping others, indicating that children understand that some moral issues may elicit more disagreement between individuals than others (see also Hussar & Harris, 2010).

Will the prevalence of moral disagreements inhibit children's ability to identify reliable informants and learn from them? Here, we argue that children's reliance on testimony is not deterred by moral disagreements. On the contrary, they might be even more likely to defer to testimony from authorities when navigating controversial moral issues, possibly because they have less certainty about the given situation. Although children's judgments can be authority-independent when it comes to judging prototypical harm-related moral transgressions such as hitting and shoving (e.g., Smetana & Ball, 2019), there is evidence showing that children are especially likely to rely on adult authorities when resolving moral dilemmas. For example, even though children's acceptance of others' testimony has not been directly investigated, Noh and colleagues (2020) found that 6- to 12-year-old Korean children's judgment for the permissibility of necessary psychological harm (e.g., calling a friend a bad name to prevent him from climbing on the roof and hurting himself) is significantly affected by maternal disapproval. Mammen and colleagues (2019) also found that when faced with moral dilemmas (i.e., conflicts between keeping a promise and helping others), 4- and 6-year-old children engaged in collaborative reasoning with others, and produced fewer challenges when having discussions with their mothers compared to with peers, raising the possibility that children may readily defer to an adult authority's judgment when forming beliefs about complex moral situations.

Aside from possibly relying on sources of authority, another interesting issue concerns whether children would side with the majority in cases of moral disagreement. In the empirical domain, when there are disagreements between informants, children are sensitive to consensus when deciding whose claims to trust when making conventional judgments (e.g., Corriveau, Fusaro, & Harris, 2009). For example, when learning the name of a novel object, preschoolers were more likely to endorse information that had been approved by three consensual informants over a lone dissenter (Corriveau et al., 2009; Corriveau & Harris, 2010). Similarly, children were also more likely to imitate the use of a novel tool demonstrated by three agents compared to that displayed by a single individual (DiYanni, Corriveau, Kurkul, Nasrini, & Nini, 2015; Haun, Rekers, & Tomasello, 2012). Thus, perhaps when a consensus or near consensus exists for a moral issue, children are similarly sensitive to the majority view of their cultural community. However, there is

some evidence showing that children sometimes do not distinguish between the reliability of a single informant and a consensus when it comes to accepting a moral claim (Li, Harris, Koenig, 2019; Noh, Elenbaas, Park, Chung, & Killen, 2017), and even weigh an outside source of information more heavily than a consensus (e.g., deciding to be a vegetarian based on a source outside the family about animal welfare, despite being raised in families and communities that typically supported eating meat, Hussar & Harris, 2010). One possibility is that children have an emerging understanding that the moral realm is one in which consensus is less common, and a less valid cue to reliability. Moreover, it is possible that children do not prioritize consensus in the moral domain because the epistemic value of consensus is unclear. In the empirical domain, children often discern the reasoning or epistemic support behind an informant's claims (e.g., speaker has visual access to something, Corriveau & Harris, 2010; Koenig, Tiberius & Hamlin, 2019), so support from a consensus implies greater support for an empirical claim. By contrast, the reasoning behind a moral claim is typically more opaque and less connected to informational access, making it harder for children to determine the connection between consensus and accuracy.

In conclusion, despite the pessimistic worries related to moral testimony, we think that testimony can influence children's moral thinking considerably more than mainstream developmental theories acknowledge. Despite children's basic understanding of certain moral principles, and even in cases of pervasive moral disagreement, children have strategies to use moral testimony, and acquire much of their knowledge from socially transmitted information. In the next section, we discuss ways in which moral testimony has the unique capacity to foster moral understanding.

Reasons to think that moral testimony is legitimate to child learners

Despite reasons to think that moral testimony may be less legitimate than testimony in other domains, we have reasons to believe that children cannot afford to treat testimony this way — because testimonial input is essential for them to learn the moral beliefs of their communities and culture, and to guide and correct their moral decisions going forward. After discussing that concerns related to moral testimony may not hold for children, in this section, we draw from philosophical and psychological work which allows for the possibility of morality being an interdependent and collective endeavor, and how testimony can in fact be a unique and indispensable source of moral knowledge.

Value of Testimony for Moral Reasoning. Going beyond the dual-process model, Mercier (2011) suggests that moral reasoning can play an indispensable role in correcting one's moral intuitions (see also Mercier, 2016; Mercier, Castelain, Hamid, & Marín-Picado, 2017). In Mercier's view, reasoning, including moral reasoning, is fundamentally social, and mainly serves argumentative purposes when it comes to convincing others. While solitary reasoning often leads to confirmation biases, collaborative reasoning with others can often lead to improvements in moral thinking (Mercier et al., 2017; Köymen, & Tomasello, 2020). Specifically, being attentive to others' claims is beneficial because it can make one recognize the flaws in one's own arguments, and help generate new arguments amongst conversational partners that would perhaps never occur if each individual were merely reasoning independently (Mercier, 2016). These arguments have received support from studies of children's discussions about moral issues with peers. For example, when 4th and 5th grade children were presented with Piaget-style problems in pairs (e.g., judging which transgression is more serious: breaking six cups accidentally or breaking one cup when trying to get candy), children were more likely to focus on intentions and moral values instead of external consequences (Leman & Duveen, 1999; see also, Blatt & Kohlberg, 1975; Zhang et al., 2013). There is also evidence suggesting that having conversations with peers can improve children's moral reasoning skills. For example, Damon and Killen (1982) found that having a debate with peers about how much to share in a Dictator Game led to a modest increase in 5- to 9-year-old children's level of moral reasoning after 2 months (see also Walker, Hennig, & Krettenauer, 2000). Thus, these studies have shown that children's moral reasoning can be improved under testimonial influence.

Transcending Limits of Experience. On the view that dependence on moral testimony can be valuable as a way to overcome our own flaws in thinking, it may also be reasonable to speculate that children may have an emerging understanding that their own capabilities and experience in moral thinking are limited. After all, it becomes worthwhile to defer to another person who has reflected more carefully on a moral issue, or who has more relevant experience than we have (Sliwa, 2012; Wiland, 2017). For example, grasping exactly when a basic moral principle applies can be a matter of experience or ability — a man might need to defer to his female roommate to identify sexist microaggressions since she has more relevant experience (Jones, 1999). Indeed, learning when to apply a moral principle, and identifying the subtleties of specific cases takes experience and practice. Although there hasn't been any work on children's metacognitive evaluations of their own moral thinking, a couple of empirical studies have shown that children are receptive to adult testimony when applying harm-based norms and fairness norms to novel situations. For example, Rottman and colleagues (2017) found that neutral behavior (e.g., aliens covering their heads with sticks, or painting their faces white) could be perceived as morally impermissible by 7-year-olds after they heard counter-intuitive testimony invoking moral principles such as harmfulness and fairness (e.g., "It really hurts others when Kulvaws paint their faces white."). This finding also implies that children likely rely on testimony to appreciate the wrongness of victimless moral violations (e.g., Rozin, 1999). When new moral situations cannot be directly accessed through first-hand experience or socialization practices from children's own family, children can also acquire information from other people who are outside their direct social circle, independently learning that, for example, meat eating is wrong because of animal welfare-related concerns (Hussar & Harris, 2010).

Because of testimony's ability to transcend the limits of individual experience, it can also play an essential role in the intergenerational transmission of culturally specific moral knowledge. Although psychological and anthropological research have documented some universal moral beliefs across cultures (e.g., Curry et al., 2019), much empirical evidence has highlighted the important cultural and historical differences in moral norms, beliefs and practices, as well as the different patterns of emphasis on some moral principles over others. For example, robust cultural variations have been found in the three aspects of ethics (autonomy, community, and divinity) across populations with diverse social statuses and cultures (e.g., Haidt, Koller, & Dias, 1993). More direct developmental

evidence has shown cross-cultural differences in children's moral development such as prosocial sharing (Cowell et al., 2017; Schäfer et al., 2015) and helping (Callaghan et al., 2011). Therefore, it is plausible to assume that children acquire moral beliefs and practices through cultural learning from their own communities. Although observational learning from the environment can play an important role in moral socialization (Bandura, 1986), cultural testimony would be essential and irreplaceable in transmitting virtues such as what it means to be kind, or moral beliefs such as group-related obligations or concerns about purity and sanctity (Rottman, & Young, 2015; Haidt, & Bjorklund, 2008).

Correction of Biases. Another reason for children to trust testimony is that children may have the emerging understanding that our judgments may sometimes be compromised or biased by our own self-interest (Mills & Keil, 2005; Sliwa, 2012). Indeed, it can be difficult to have an impartial perspective in our moral thinking, since even children tend to reify norms as marking the way things ought to be rather than as variable, contingent and due to external forces (Peretz-Lange, Perry & Meuntener, 2021; Roberts, Ho & Gelman, 2021 Vasilyeva, Gopnik & Lombrozo, 2018). This argument is consistent with Mercier's (2016) point that independent reasoning often results in confirmation biases, leading young moral agents to favor arguments that already support their thinking. Although this particular evaluation of testimony has not been assessed, there is some evidence showing that from a young age, children realize that people's moral judgments can be biased towards themselves, towards friends or family members and toward in-group members. For example, preschool children treated moral transgressions, such as taking a toy, as more permissible when the transgressor was a friend of theirs (Slomkowski & Killen, 1992). Children were also more sympathetic toward a friend in need compared to an acquaintance (Costin, & Jones, 1992). In addition, with age, children increasingly prioritize social relationships when allocating resources, sharing more with friends who already have resources compared to nonfriends or strangers who are needy (Paulus, & Moore, 2014). Children's judgments are also biased towards in-group members. They judge between-group harm to be more permissible (Rhodes, & Chalik, 2013), and are less likely to tattle on an in-group member's moral transgression compared to an out-group member (Misch, Over, & Carpenter, 2018). Although endorsing biases is not equivalent to being aware of one's own biases, these results raise the possibility that children may rely on testimony in acquiring and changing moral beliefs when others serve as better judges of a given situation.

Deference as the first step to achieve moral understanding. Lastly, children cannot afford to treat testimonial input as secondary because dependence on moral testimony can give rise to moral understanding (Gelfert, 2014; Jones, 1999). Indeed, deferring to moral testimony may be the first step on the way to acquiring moral understanding. Even if a child decides to make a moral judgment just based on someone's say-so without fully understanding the nuances (e.g., judging that an action is harmful based on someone's claim), he may still be able to gradually improve his moral sensibility and hone his own capacities of moral perception over time, and eventually become better at making relevant moral judgments and correct distinctions between cases himself (Jones, 1999; Sliwa, 2012; Matheson et al., 2018; Paddy Jane, 2018). Specifically, since our moral commitments often shape our moral perception, it is plausible that the bulk of learning cannot happen without having accepted certain beliefs as truths by deferring to moral testimony. Imagine a child who understands the principle of fairness but cannot always tell what is considered fair or unfair. When she was unsure about a situation, her parents would tell her that she was being unfair (e.g., to choose a fun toy for herself and a boring toy for her sister), and, without fully understanding the reasoning behind her parents' judgments, the child defers. But over time, with more and more practice, the child develops more sensitivity to how the fairness norm applies to different contexts, and gradually develops the capacities for moral understanding. Thus, dependence on testimony could in fact promote understanding.

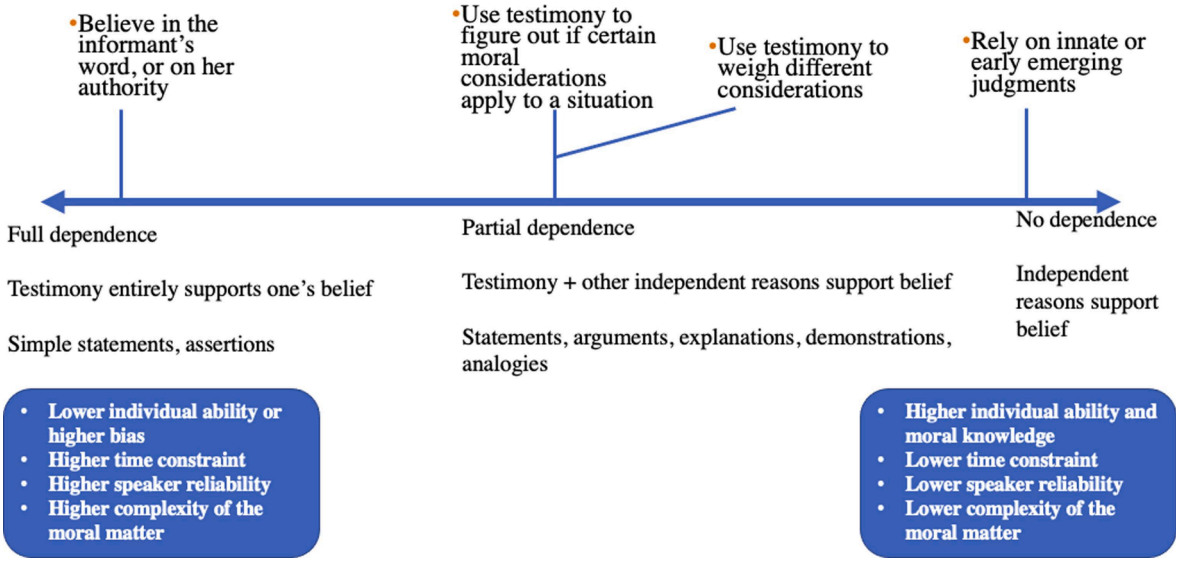


Fig. 1. An illustration of different levels of dependence on moral testimony for acquiring moral understanding, and different factors that can affect one's level of dependence.

4. A more textured view of dependence on moral testimony

Thus far, we have introduced a set of skeptical arguments which contend that unlike acquiring empirical knowledge of contingent facts, testimony is insufficient to transmit or change one's understanding in the moral domain. We have reviewed the predominant developmental accounts of morality, all of which emphasize innate moral capacities and how moral thinking hinges on independent reasoning or construction of moral beliefs (e.g., Hamlin et al., 2007; Smetana, 2006). Although these lines of work suggest that moral testimony plays a limited role in the development of moral competence, we have discussed reasons why children nevertheless rely on moral testimony heavily to acquire moral understanding, much like they do in other domains.

In this last section, we hope to draw attention to our limited understanding of testimony in the moral domain, and suggest ways in which future studies might contribute to our current understanding and theorizing about testimonial learning. In particular, we argue that instead of investigating whether children are pessimists or optimists when it comes to using and evaluating moral testimony, it can be more productive for future work to distinguish between cases of dependence that are more epistemically possible or morally acceptable from cases that are not. Specifically, future work needs to distinguish between (1) different levels of dependence on moral testimony; (2) different types of moral testimony; (3) the different costs and benefits related to one's reliance on testimony; and (4) the learning issue versus the normative issue. Our hope is that by appreciating these factors, the field opens to new questions that allow researchers to investigate the distinct ways in which children trust speakers in moral learning.

Different levels of dependence

First, when exploring children's evaluations of moral testimony, it is worthwhile to distinguish between different levels of dependence from the listener's perspective. Specifically, there are different ways that children and adults can relate to testimony, with the level of dependence ranging from full dependence to no dependence (see Fig. 1). While previous studies have established that children and adults readily depend on testimony to understand the morally relevant considerations at stake and the importance of each consideration (i.e., partial dependence), whether one's moral belief can solely depend on testimony still warrants further study.

Full dependence on testimony can happen when the listener utterly lacks an appreciation of the moral considerations related to the given situation. Thus, the listener may acquire belief only by taking a speaker's word or deferring to her authority, and not have any independent support for their belief. This type of full dependence has attracted a lot of controversy in philosophy, and is often deemed epistemically impossible (e.g., Hopkins, 2007; Nickel, 2001) and morally unjustifiable (e.g., McGrath, 2011; Hills, 2009, 2013) for adults. But it remains unknown whether young children can fully rely on moral testimony as they develop into mature moral agents.

While there is no direct developmental evidence regarding the extent to which young children depend on adult testimony to learn about moral matters, it is likely that children can take the word of reliable and trustworthy sources for what's right and wrong when acquiring certain types of moral beliefs and moral norms. Infant studies (Hamlin et al., 2007; Kuhlmeier et al.,2003) as well as work conducted by Social Domain Theorists (Smetana, 2006) suggest that children understand basic, harm-based principles from an early age, and that judgments about harm-inducing actions are not moved by authorities' permission to engage in the transgression. If this pattern is robust, it would mean that children do not need to acquire the basic anti-harm principle from testimony. Instead, they are likely to bring this knowledge to the conversations with adults and peers. However, these lines of work do not exclude the possibility that children can still defer to new moral norms and principles from testimony. For example, consistent with Rottman and Young (2015)'s argument, it is possible that some domains of moral beliefs (e.g., purity/sanctity, authority/respect) may be more fully dependent on testimony compared to others (e.g., harm/care).

Alternatively, children can also partially depend on testimony to acquire instrumental values, such that children may rely on testimony to figure out the sorts of moral considerations that are at stake, or whether a certain moral principle or consideration applies to a given situation. For example, even with harm-based principles in mind, children may still rely on adult testimony to conclude that an unfamiliar, self-directed action is harmful (e.g., painting one's own face white, Rottman et al., 2017), or decide that a novel action that induces distress in a new context is more morally permissible than other familiar transgressions (Li et al., 2019). After all, when it comes to putting moral principles into practice in real life, testimony affords people the means to express diverse views about what counts as "harm" and why, whether any benefit might outweigh the harm, whether punitive actions should be taken, and so on. Therefore, when the details of the given situation are ambiguous, children in these studies may have chosen to rely on adults to figure out which actions might be morally right and wrong and what the consequences should be.

Another merit of partial dependence is to use testimony to help us weigh the importance of different considerations. After all, even when a child has a sense of what sorts of moral considerations are at stake in a given situation, she might still need help deliberating about the matter at hand. This can come in the form of explicit weighing of different values. For example, when Mammen and colleagues (2019) presented 4- and 6-year-old children with moral dilemmas about whether to help at the expense of breaking a promise, children relied on their mothers' and peers' explanations to weigh the two competing moral considerations (i.e., the importance of keeping one's promise and the prosociality of helping). But oftentimes, testimony in this regard can also be a simple statement without any elaboration. For example, after hearing a teacher say, "I prefer that you do not give away any of the stickers" before the child was asked to share with an out-group member (Benozio & Diesendruck, 2017), 5- and 6-year-olds minimized considerations related to fairness and put more weight on group-based considerations and the positive outcomes for themselves. Similarly, after deferring to the non-standard judgment that telling a white lie is morally unacceptable, adults justified their judgment by reporting that honesty outweighs kindness, indicating that they didn't change their basic moral values upon hearing testimony, but rather, reprioritized competing values (Cornwell et al., 2019).

Relating to the question about level of deference (whether testimony is children's only basis for their beliefs), another important

empirical question concerns whether testimony can affect children's true moral beliefs, or if potential changes in children's responses merely reflect children's endorsement of these beliefs under social pressure (Koenig, Li, & McMyler, 2021). While this challenge is not unique to testimony in the moral domain, it will be important for future studies to assess the degree of children's deference to moral testimony (e.g., whether they can transfer the judgment to other contexts, or transmit it to someone else, Li et al., 2019) and the duration of children's deference (e.g., how long they would sustain the updated judgments, Damon, & Killen, 1982; Conder & Lane, 2021).

Aside from assessing children's own reliance on testimony, it is also important to explore the normative question of whether children evaluate levels of dependence differently as third-party observers. Specifically, it will be interesting to see if children also judge testimonial exchanges as "dubious" when testimony is the third-party listener's only reason for belief with age, and judge reliance on testimony to be more acceptable if the listener brings some preexisting moral beliefs or reflection to the conversation. It is also important to assess whether there are developmental and cultural variations in children's judgment of the legitimacy of full reliance. Namely, it is possible that cultural socialization places stronger emphasis on authority and interdependence may lead children to be more likely to judge full dependence as acceptable and even desirable. By contrast, higher values of intellectual autonomy might lead children to judge full dependence to be problematic.

Different types of testimony

Aside from different levels of dependence, it is also worth distinguishing between different types of testimony. For example, Hills (2019) argues for a distinction between what she calls "transmission" (e.g., simple acts of telling) and "propagation" which can more easily result in first-hand knowledge and understanding (e.g., argument, explanations). Specifically, transmission of "pure moral testimony" (Hills, 2013) transmits beliefs by way of simple acts of telling or assertions that are not supported by reasons. In these cases, transmission requires the listener to form beliefs based only on the speaker's word, resulting in second-hand knowledge but no moral understanding. Propagation, on the other hand, is a kind of moral pedagogy, such that what the speaker says can result in not only moral knowledge, but also moral understanding (Hills, 2019). An example of transmission can be my telling a child that she should become a vegetarian and saying nothing more. If the child decides to accept this claim and my testimony is her only reason for this belief, her moral knowledge about vegetarianism will be entirely second-hand. But if I intentionally present reasons and arguments for why she should become a vegetarian, or present relevant moral analogies, my testimony becomes a form of "propagation". In these latter cases, my testimony may guide her thinking and give her ample motivation to search for other non-testimonial reasons for belief, and therefore encourage independent reflection and thinking.

Do children distinguish between different types of testimonial transmission, or do they treat cases of "transmission" and "propagation" interchangeably? Although no studies to date have directly compared different types of moral testimony, there is evidence showing that children defer to both "transmission" and "propagation": For example, young children are likely to take an adult's word and believe on their authority after the informant makes a simple statement about right and wrong (e.g., "It was good to mib.", Li et al., 2019, p.2607; "I think that would be fair!", Ruggeri et al., 2018, p.1592; "I think you should give….", McAuliffe et al., 2017, p.153). At the same time, children are moved by moral reasoning (e.g., "That's a much better way of dividing up stickers, because each boy should have as many stickers as he deserves based on what he did to earn them") or by appeals to emotions (e.g., "That's a much better way of dividing up stickers, because it would have made the boys much happier…", Rottman et al., 2020, p.8). One interesting avenue for future studies is to distinguish between different types of testimony (e.g., simple acts of telling, explanations, arguments), and explore whether these different types of speech acts affect the strength and duration of children's reliance on testimony.

Relatedly, it is also very important to distinguish between different conversational contexts. In most of the testimonial learning studies (e.g., Koenig & Harris, 2005; Li et al., 2019), the testimony is one-sided and presented on video in lab-based scenarios, and children are placed in the position of active listeners, whereas in some of the reviewed studies (e.g., Mammen et al., 2019; Damon & Killen, 1982), children not only listen to but engage in discussions and debates with adults and peers. Thus, it is important not to neglect the nuanced differences between various forms of dynamic interpersonal communication (e.g., Li & Koenig, 2020). It is possible that when children are third-party observers of testimonial exchanges, they feel less motivated to challenge or reflect on the given claims, and may either accept them without much independent deliberation, or simply reject claims that are in strong conflict with their own beliefs. However, if children are engaging in reciprocal and dynamic testimonial transactions with others, they may more freely ask for clarifications, challenge the speaker, and become more likely to encounter arguments that they cannot independently think of, which in turn makes new moral understanding more feasible (Li & Koenig, 2020; Mercier, 2016). Thus, future studies should also attempt to assess whether children can actively assess verbal testimony from parents, teachers and peers in more naturalistic settings (e.g., Dahl, 2018).

Different costs and benefits of relying on testimony

Other contextual factors that need to be parsed out are related to the costs and benefits of depending on testimony. Important parameters in weighing the costs and benefits may include the listener's abilities to independently deliberate on the given situation (e.g., whether she might be biased by self-interest, Lillehammer 2014; Jones, 1999; see also Mills & Grant, 2009, for children's understanding of biases in judgments), whether there are situational and individual factors that may affect the speaker's reliability (e.g., Jones, 1999; Koenig et al., 2019), time constraints, and the stakes related to the moral decision (Lillehammer, 2014). Independent thinking might be costly, for example, if a child needs to decide what to do when she thinks she sees her friend cheating in an exam—because she is under time constraint, senses that she might be biased in the given situation, and knows that there is a high risk

associated with reporting her friend (e.g., losing her friendship). Another situation in which the benefits of relying on others outweighs the costs is when the moral judgment to be made is a low-stakes judgment, but the moral matter is complex and may take a lot of time and effort to appreciate all the nuances required. For example, adults may defer to the majority's judgment in a trolley dilemma in a lab setting (e.g., Bostyn, & Roets, 2017) because they realize that the weighing of deontological and consequentialist considerations is complex, and that the hypothetical decisions to be made in a research study will not have any real-life consequences.

In response to these considerations, future studies can explore specific cost-benefit factors likely to affect the extent to which children and adults defer to moral testimony. For example, researchers can increase the cost of independent thinking by adding a time constraint, increasing the complexity of the moral issues, or setting up conditions in which children are led to think that their moral judgments or actions may have real-life consequences for themselves or others (e.g., they might run the risk of wronging another person who is also present).

The learning issue versus the normative issue

Lastly, while the distinctions in the previous sections mainly concern testimony's ability to foster children's moral understanding, it remains an open question how children evaluate testimony when it provides the only justification for our beliefs and actions. While it may be perfectly reasonable to acquire moral beliefs, moral rules or norms from others' claims, adults tend to judge that testimony alone may not be a legitimate reason for a morally mature agent to make a moral decision (Andow, 2019). Thus, future work is also needed to assess whether children, who rely heavily on testimony to acquire knowledge, would have the intuition that a morally virtuous action not only requires doing the right thing, but being motivated in the right way (i.e., by reasons relating to one's own moral understanding instead of pure deference to others' claims).

Specifically, one interesting question concerns whether children understand that acquiring moral knowledge for oneself is epistemically and morally superior than acquiring second-hand knowledge from testimony. In the empirical domain, when children are asked to compare the two sources of knowledge as third party evaluators, children treat both independent reasoning (e.g., "Backpacks hold books. I think there is a backpack in there.") and learning from testimony by a reliable informant (e.g., "My teacher told me there's a ball in the box. I think there's a ball in there.") as reasonable ways of thinking (Koenig, 2012). However, there is some evidence showing that children sometimes prefer to learn from an informant who has independent knowledge compared to one who acquires second-hand knowledge from others (Einav & Robinson, 2011; see also, Einav, 2017). Moreover, children prefer to learn from an agent who was able to figure out how to solve a problem (e.g., activating a music box) by herself compared to one who did so after hearing direct instructions (Bridgers, Gweon, Bretzke, Ruggeri, 2018). These results might indicate that while children treat both testimony and independent thinking as good sources of empirical knowledge, they might have an emerging understanding that individuals who have independent knowledge are more epistemically competent than individuals with second-hand knowledge. However, it remains unclear whether this preference to learn from independent thinkers extends to the moral domain, and if children would not only rate agents with independent moral agency as more epistemically competent, but also more morally virtuous.

Relatedly, another important future direction concerns whether children cite testimony when they are asked to justify their own moral beliefs or actions. When do children have the understanding that there might be something lacking about one's justification if there is no independent support for one's moral beliefs (Hills, 2009; Nickel, 2001)? One straightforward way to explore this question is to provide children with moral scenarios as well as empirical scenarios and challenge them with open-ended questions (e.g., "What are some ways to find out if [action] is right or wrong?", "Why do you think [action] is right/wrong?"). If the *asymmetry thesis* is plausible, then we would expect children to cite testimony and authority more frequently in the empirical domain than they do in the moral domain.

Other important empirical questions concern whether intuitions about independent moral agency may develop at different points in ontogeny in relation to different sociocultural practices across various cultural contexts. While no research of this nature has been conducted with children, it is possible that skepticism towards moral testimony and appreciation for independent thinking varies by culture (Enesco et al., 2016; Li et al., 2019). It is possible that children across cultures start out by learning a substantial amount from moral testimony, and also appreciating testimony's importance and judging deferring agents positively. Then, because of the variability in cultural expectations and early socialization practices, children from cultures that value independence and creativity would appreciate the first-personal authority in morality earlier than children from cultures that place emphasis on interdependence, social learning and intellectual humility (Chen & French, 2008; Markus & Kitayama, 1991). As children learn when and to what extent members of their culture values independent thought and when they value humility and deference, they may learn from others that blind deference to testimony in the moral domain is often normatively problematic (Andow, 2019), especially when it comes to appreciating harm-based and fairness-based moral beliefs.

Concluding remarks

While testimony is an indisputable source of empirical knowledge, the role of testimony in the moral domain still remains an open question. Here, we have reviewed the controversy in the moral philosophy literature on whether testimony can effectively and legitimately transmit moral understanding. We have also reviewed psychological work examining the long-standing issue of how moral competence develops, and argued that moral development is a socially attuned, interdependent endeavor, whereby testimony from others plays an essential role. The presence of the philosophical arguments on moral testimony offers a unique opportunity to examine the asymmetry thesis in a developmental context, highlighting possibilities and questions for future study. By reviewing evidence that moral development can be profoundly influenced by testimony, we urge for a more nuanced picture of our dependence

on testimony, both for moral and immoral beliefs, in the hopes that future researchers can approach issues involving moral testimony in a more systematic and careful manner. Efforts to clarify the nature of children's reliance on moral testimony can be extremely informative for understanding the learning mechanisms and developmental processes that underlie the acquisition of moral beliefs. Note that some of the controversies surrounding moral testimony may not be domain specific, and can be applied to testimony in the mathematical and aesthetic domains (Gelfert, 2014; Mogensen, 2017). Thus, whether testimony is capable of transmitting and justifying beliefs in these domains also warrants future study. Nevertheless, moral testimony still presents a particularly fascinating case because of the theoretical and practical implications of depending on others' claims in the realm of morality. While testimony can be essential in the cultivation of children's capacities for moral understanding and promote children's prosocial development, it can also lead children to think or act in a self-interested, biased, ignorant or antisocial manner. Therefore, research focused on the role of testimony in children's moral development can have important implications for educational and parenting practices meant to support children's moral learning.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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