


## Children's and Adults' Attribution of Moral Judgments to Human and Supernatural Agents

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### **Abstract**

Adults commonly conceptualize intentional harms as worse than accidental harms. We probed the developmental trajectory of this pattern and asked whether children (4- to 7-year-olds) and adults expected other agents—including another person and God—to share their views. In contrast with some prior work, even the youngest children in the present study considered intent when making moral judgments. Although children did not distinguish among the agents when indicating how severely they would punish intentional and accidental transgressors, adults reported that God would punish less severely than would they themselves or another person. Furthermore, children and adults differed in their evaluation of how the agents would react to the transgressors: Adults and older children were more likely than younger children to attribute spiritual and religious reactions to God. These findings suggest that even young children's moral judgments are sensitive to information about intent but that the propensity to distinguish others' focus on intent from one's own emerges more gradually across age.

*Keywords:* cognitive science of religion, morality, punishment, social cognition

## **Children's and Adults' Attribution of Moral Judgments to Human and Supernatural Agents**

### **The Development of Intent-Based Moral Judgment**

Adults' moral judgments largely depend on their assessment of others' mental states (Cushman, 2015). Accordingly, they tend to judge intentional harm as morally worse than accidental harm (McNamara et al., 2019; Young et al., 2010). In contrast, young children tend to focus on the outcomes of actions rather than the intentions behind those actions. Piaget (1932/1965) was among the first scientists to conclude that young children's moral judgments prioritize outcomes over intentions. He presented 6- to 10- year-olds with stories about pairs of characters, a well-intentioned one who created serious damage (e.g., accidentally breaking fifteen cups) and an ill-intentioned one who created negligible damage (e.g., breaking one cup while trying to reach a forbidden object). When deciding how culpable the characters were, younger children tended to emphasize outcome over intent (e.g., reporting that the character who broke fifteen cups was naughtier). Although this focus on outcome diminished with age, Piaget highlighted that a focus on intent and outcome existed side by side up to the age of ten years, sometimes even within the same child. Nevertheless, he concluded that on average children focused on outcomes up to age seven, but this tendency disappeared on average by age nine.

A number of subsequent studies have provided additional evidence for this outcome-to-intent shift, showing that preschool-aged children primarily base their moral evaluations on outcome and that this tendency diminishes later in childhood (e.g., Killen et al., 2011; Zelazo et al., 1996; but also see Chernyak & Sobel, 2016, and Hamlin, 2013, for evidence of intent-based judgments at earlier ages). For instance, one relevant line of work (Cushman et al., 2013) probed complex cases where analysis of intentions versus outcome lead to opposing responses, such as

failed attempts of harm (harmful intentions paired with benign outcomes) or accidental harm (benign intentions paired with harmful outcomes). Here, children relied on both intention and outcome starting from the age of four years. With increasing age, however, they judged failed attempts of harm more harshly and accidental harm less harshly, demonstrating an increasing reliance on information regarding intent. Around the age of six years, these changes in moral cognition solidified an emphasis on intention rather than outcome.

Although it is clear that sensitivity to intent changes with age, little is known about how children expect *other agents* to reason about intentions. Young children often infer that others' minds are similar to their own; for instance, preschoolers expect others to share their preferences (Flavell et al., 1992; Repacholi & Gopnik, 1997), and children in preschool and early elementary school report that other agents share their knowledge (Wellman et al., 2001; Wimmer & Perner, 1983). Thus, preschoolers and elementary-schoolers may infer that other agents prioritize intent to the same extent that they themselves do. However, children also receive testimony that some minds differ from their own. In particular, Abrahamic religions—including Islam, Judaism, and Christianity—teach that God's mind is quite different from the mind of a person (Barrett, 1999). Thus, children growing up in cultures where these religious teachings are common, such as the United States, may make different inferences about God's, versus a person's, moral judgments. Because many religious teachings explicitly portray God's mind as different from a person's mind, asking about God was an ideal way to test the extent to which children expect other agents to share their own beliefs, even in the face of contradictory testimony.

### **The Intersection of Intent-Based Moral Judgment and Religious Cognition**

In the minds of many children and adults, religion is intimately connected with questions regarding morality. For example, adults in the United States view God as the source of morality

(Piazza & Landy, 2013) and conceptualize immorality as representative of atheists (Gervais, 2014). Similarly, in much of Africa, the Middle East, and Asia, many adults agree with the statement that “it is necessary to believe in God to be moral and have good values” (Pew Research Center, 2014). The tendency to connect religious views and morality is not limited to religious adults. Secular adults, like religious adults, are faster to attribute to God knowledge of moral transgressions rather than knowledge of morally neutral information (Purzycki et al., 2012). Further, secular adults view behaviors performed for secular reasons, such as helping others with their homework to please one's parents, as more moral than identical behaviors performed for religious reasons, such as a desire to please God (Heiphetz et al., 2015). Although the bulk of this literature has tested adults, some work does suggest that participants' propensity to link religion and morality emerges during childhood. While adolescents distinguish between religious and moral norms (Nucci & Turiel, 1993; Srinivasan et al., 2019), elementary-school-aged children selectively attribute morally good behaviors to peers who share their religious beliefs. For instance, when asked to guess which of two people helped their friends, 6- to 11-year-olds were more likely to select someone who shared their religious belief rather than someone who belonged to the same minimal group as them (Heiphetz et al., 2014).

These prior studies investigated how participants expect religion to shape *people's* moral judgments and behaviors. We built on this prior research to ask how children and adults expect *God*, as represented in Abrahamic religions, to make moral judgments. As discussed above, comparing representations of God's mind with representations of human minds allowed us to determine how children and adults reason about other agents' moral judgments, including one agent—God—whom many religious traditions portray as quite different from a human.

Three patterns of results could emerge. First, according to the *self-unique* hypothesis, participants could conceptualize their own mind differently from other minds. For instance, participants who are old enough to prioritize intent in their own moral judgments may not expect God, or other humans, to do the same. This possibility is consistent with work showing that Westerners view themselves as unique (Fromkin & Snyder, 1980; Markus & Kitayama, 1991).

Second, according to the *God-unique* hypothesis, participants could conclude that God's moral judgments differ from those made by themselves and other humans. This view is consistent with theological teachings in Abrahamic religions indicating that God's mind differs from human minds. In prior work, participants have often viewed God as capable of punishing transgressions (Norenzayan, 2013; Roes & Raymond, 2003) but also as forgiving and benevolent (Johnson et al., 2013; Spilka et al., 1964). Thus, if participants distinguish God's mind from human minds, they may expect God to respond particularly benevolently.

Third, according to the *agent similarity* hypothesis, participants may not distinguish between God's mind and human minds. This pattern may be particularly likely to emerge among young children, who may experience difficulty distinguishing their minds from others' minds (Wimmer & Perner, 1983). Preschoolers often view God's mind as similar to a human mind (e.g., attributing to God only knowledge that they themselves possess; Kiessling & Perner, 2014; Lane et al., 2010, 2012). By six years of age, many children around the world—including US and Spanish children from religious and secular backgrounds, Yukatek Mayan children, and Greek Orthodox children—typically distinguish God's mind from human minds, such as by reporting that God, but not a person, would know what was in a display that was hidden from view (Barrett et al., 2003; Gimenez-Dasi et al., 2005; Knight et al., 2004; Makris & Pnevmatikos, 2007; Wolle et al., 2021). However, this distinction may occur somewhat later in development when

considering God's own moral beliefs, as opposed to God's knowledge of factual information. Adults attribute different moral beliefs to God versus humans (e.g., reporting that humans are more likely than God to find behaviors morally acceptable), whereas 5- to 8-year-olds do not distinguish between these types of agents (Heiphetz et al., 2018). This result may emerge because children in preschool and elementary school experience more difficulty attributing different moral beliefs, rather than different factual beliefs, to different people (Kuhn et al., 2000). Thus, participants in the current work—particularly children—may attribute to God similar views regarding intentional and accidental transgressions as they themselves hold.

Testing among these hypotheses makes a number of theoretical contributions. During the early elementary school years, children's moral judgments begin showing increased sensitivity to intent (Killen et al., 2011; Zelazo et al., 1996). However, it remains unclear how children expect supernatural agents to respond to wrongdoing and whether they expect God, like themselves, to distinguish between intentional and accidental harm. Addressing this question contributes to work on moral cognition, which has typically investigated children's own judgments (e.g., Cushman et al., 2013; Heiphetz et al., 2015), by clarifying the role that children expect intent to play in *other agents'* moral evaluations. Addressing this topic also extends work on theory of mind, or the ability to attribute mental states to others (Premack & Woodruff, 1978). Past work in this area has focused on factual knowledge, showing that the ability to explicitly attribute incorrect factual knowledge to others emerges around the age of four and continues developing throughout the elementary school years (Wimmer & Perner, 1983; Wellman et al., 2001). The current work extended this prior literature by probing children's attributions of moral beliefs, rather than factual knowledge, to other humans and to God. In doing so, this study clarified the

extent to which conclusions drawn on the basis of children's attributions of knowledge to other people generalize to other types of mental states and to other agents.

Finally, investigating attributions of moral judgments to God contributes to scholarship on the cognitive science of religion. Work in this area has focused on adults' God concepts (e.g., Johnson et al., 2013; McNamara et al., 2016; Norenzayan, 2013; Purzycki et al., 2012; Spilka et al., 1964), with a smaller number of developmental studies probing children's attributions of factual knowledge to God (e.g., Barrett et al., 2003; Kiessling & Perner, 2014; Knight et al., 2004). One prior study showed that 6- to 7-year-olds attribute greater moral knowledge to God than do 4- to 5-year-olds (Wolle et al., 2021) but did not ask how children expect God to respond to wrongdoing. In addition to extending basic scientific knowledge of God concepts, addressing this question can have translational implications. For instance, viewing God as punitive is associated with reduced propensity to cheat on an exam (Shariff & Norenzayan, 2011), and viewing God as knowledgeable of prosocial behaviors predicts generosity (Wolle et al., 2021). Thus, clarifying children's expectations around God's responses to morally relevant behaviors may highlight one possible factor underlying children's propensity to behave prosocially.

### **Overview of the Current Research**

The current work united approaches from social cognitive development, moral cognition, and the cognitive science of religion to probe the novel question of how children and adults in the United States expect other agents to respond to intentional versus accidental transgressions. Children's sensitivity to intent in their own moral judgments (e.g., Cushman et al., 2013), as well as their propensity to distinguish God's mind from human minds (e.g., Heiphetz et al., 2016), both shift around the age of six years. Therefore, the current work tested 4- to 5-year-olds as well as 6- to 7-year-olds. To learn more about the "end state" of attributions of moral judgments to



other agents, we also recruited adults. Participants in all age groups indicated their own judgments of intentional and accidental transgressions and attributed judgments regarding those transgressions to God and to another person. This design allowed us to test among the *self-unique*, *God-unique*, and *agent similarity* hypotheses described above.

To complement these close-ended items, we asked participants an open-ended question regarding how they expected God, themselves, and another person to respond to transgressions. Asking what type of punishment participants expect different agents to deliver provides a more nuanced perspective on moral cognition, as open-ended questions leave more room for participants to express views that researchers may not have considered and can elicit more fine-grained answers than questions about severity. For instance, participants may expect two agents to respond with different types of punishments, such as hitting versus verbally castigating a transgressor, that they perceive to be equally severe. In this case, asking only about severity would mask underlying differences in moral judgment. Thus, we used an open-ended approach to better understand children's and adults' judgments.

## Method

### Participants

To determine our sample size, we conducted a power analysis for a 2 x 3 x 3 mixed ANOVA with age serving as a between-participants factor, intentional versus accidental transgressions serving as a within-participants factor, and agent to whom participants attributed beliefs (self, another human, or God) serving as a second within-participants factor. Based on prior work related to age differences in responses to intentional versus accidental transgressions (e.g., Cushman et al., 2013; Killen et al., 2011) and concepts of God's mind versus human minds (Heiphetz et al., 2018; Lane et al., 2012), we estimated a medium effect size ( $f = .25$ ; Cohen,

1992) and employed other standard parameters ( $\alpha=.05$ ,  $\text{power}=.80$ ) to calculate a target sample size of 156 participants. We overrecruited adults given the anticipation of attrition due to failed attention checks and collected data from 204 participants—100 adults and 104 children.

We recruited adults via Amazon's Mechanical Turk. Volunteers were required to live in the United States and have an approval rate greater than 95%. We excluded responses from 16 adults who failed to answer an attention check question correctly ("In this study, you answered a variety of different questions. Please tell us one question you answered").<sup>1</sup> The remaining 84 adults ( $M_{\text{age}}=36.99$  years,  $SD_{\text{age}}=12.29$  years, range=19-76 years) self-identified as Christian (48%), Jewish (1%), Muslim (2%), non-religious/atheist/agnostic (39%), or "other" (6%). Adults also self-identified as Black or African American (11%), White or European American (75%), Asian or Asian American (8%), Native American or Pacific Islander (1%), Multiracial (4%), and "other" (1%). Participants indicated their ethnicity separately from race, and 10% of the participants identified as Hispanic or Latina/o. The breakdown of gender identification was 67% female and 33% male. Participants received \$1.00 for completing the 10- to 15-minute survey.

We initially recruited children using a lab database and in collaboration with community partners (e.g., schools, museums). Due to the COVID-19 pandemic, we also recruited 38 children online; they completed the study with an experimenter via Zoom. We did not observe different responses based on testing location and modality (in person versus online).<sup>2</sup> We excluded data from seven 4- to 5-year-olds and three 6- to 7-year-olds because they refused to complete the study in its entirety ( $n=5$ ), were distracted ( $n=3$ ), and did not answer the

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<sup>1</sup> Similar patterns of results as those reported below emerged when re-running the analyses including these 16 participants.

<sup>2</sup> Preliminary analyses comparing the trouble ratings of children tested online versus in person did not reveal any significant differences ( $p_s \geq .44$ ). In other words, it did not appear that children tested in person provided significantly different responses to our main variable of interest than did children tested online.

comprehension check items correctly ( $n=1$ ; see "Materials and Procedure"). The remaining child sample included 53 4- to 5-year-olds ( $M_{age}=4.73$  years,  $SD_{age}=0.45$  years) and 42 6- to 7-year-olds ( $M_{age}=6.52$  years,  $SD_{age}=0.51$  years). Parents of the younger children identified their children as Christian (50%), Jewish (12%), Buddhist (2%), non-religious/atheist/agnostic (33%), and "other" (2%); the remaining parents did not specify their child's religious affiliation. Parents also identified the younger children as White or European American (62%), Black or African American (2%), Asian or Asian American (10%), and multiracial (17%), with the remaining parents not specifying their child's race; 15% of younger children were additionally identified as Hispanic or Latina/o. The breakdown of gender identification was 40% female and 60% male. Parents of older children identified their children as Christian (33%), Jewish (17%), Buddhist (2%), non-religious/atheist/agnostic (36%), and "other" (10%); the remaining parents did not specify their child's religion. Parents also identified the older children as White or European American (69%), Asian or Asian American (5%), and multiracial (22%), with the remaining parents not specifying their child's race; 10% of older children were additionally identified as Hispanic or Latina/o. The breakdown for gender identification for this group was 33% female, 64% male, and 2% transgender. Children who participated at school, museum, or in the lab received a small toy, while children who participated online received a \$5 Amazon gift card.<sup>3</sup>

### **Materials and Procedure**

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<sup>3</sup> Preliminary analyses examined the potential role of participant religious background in two ways: by comparing Christian participants with all other participants (because participants who belong to the majority religious group in their culture may respond differently from minority group members) and by comparing participants who identified with any religious group with those who did not (because religiously affiliated participants may respond differently from those who do not affiliate with a religion). Across both types of analyses, religious background did not reliably influence participants' responses. For this reason, and because these analyses were exploratory (not pre-registered as part of the main study design), the analyses reported in the main text collapse across this variable.

We pre-registered this study at <https://aspredicted.org/u8xw9.pdf>. Participants learned four stories across two story contexts (i.e., Sand Castle, Baking).<sup>4</sup> In each context, the actor's behavior resulted in a harm to another character. However, the actor transgressed intentionally in one story and accidentally in the other story (adapted from Cushman et al., 2013; see Supplementary Materials for the full script of the four stories across the two contexts). For example, the stories from the Sand Castle context were as follows (intentional harm version in brackets):

*This is Debra[Audrey]. Debra[Audrey] was playing at the beach with her friend Anna[Lucy]. Debra[Audrey] did not want[wanted] to ruin Anna's[Lucy's] sand castle, but[so] she accidentally dropped her bucket full of sand [dropped her bucket full of sand on purpose] as she was passing by Anna's[Lucy's] sand castle. The bucket hit Anna's[Lucy's] sand castle and ruined it. So, Debra[Audrey] did not want[wanted] to ruin Anna's[Lucy's] sand castle by dropping her bucket on it, but[and] she really ruined it.*

Adults completed the task online via a Qualtrics survey. During in-person sessions, an experimenter tested each child participant individually at a quiet location in their school, the museum, or our lab after receiving signed parental consent and verbal child assent. Children who participated online completed the study via Zoom from a quiet location in their home. The experimenter read stories out loud while presenting illustrations on a laptop screen. Following each story, each child first responded two comprehension questions (adapted from Cushman et al., 2013) about (i) whether the actor actually produced the harm (e.g., “*Did Audrey actually ruin Lucy's sand castle?*”) and (ii) whether the actor wanted the outcome to occur (e.g., “*Did Audrey*

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<sup>4</sup> Preliminary analyses did not reveal reliable differences between these contexts. Therefore, subsequent analyses collapsed across them.

want to ruin Lucy's sand castle?"). We used these questions to help children focus on the most relevant aspects of the story and to detect participants who failed to do so. Any incorrect answers were corrected at this time. If a child failed to provide the correct response for both of the questions after being corrected, the experimenter completed the session, but we eliminated the child's responses from analyses.

Next, the experimenter introduced the task questions that measured intent-based moral judgment (Killen et al., 2011; Zelazo et al., 1996). Each child first answered "yes" or "no" to questions about whether the actor should get into trouble (e.g., "*Do you think that Audrey should get into trouble?*"). If the child said "yes," the experimenter then asked the child to indicate the amount of trouble they attributed to the actor (e.g., "*Should Audrey get into a little trouble, some trouble, or a lot of trouble?*")<sup>5</sup> and how they would respond to the actor's behavior ("*What would you do to Audrey for what she did?*").<sup>6</sup> In addition to answering these questions for themselves, participants also answered for two additional agents: a third person named Pat and God (e.g., "*I wonder what others would think about Audrey. What about a different person named Pat, who doesn't know Audrey?*"; "*How about God? Does God think that Audrey should get into trouble?*"; "*Does Pat/God think that Audrey should get into little trouble, some trouble, or a lot of trouble?*"). We chose the name "Pat" to be gender neutral.

All participants received the four stories and their accompanying questions as described above. The ordering of the story context (sand castle versus baking), story type (accidental harm versus intentional harm), agent type (self versus Pat versus God), and actors' names were

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<sup>5</sup> Our preregistration stated that we would ask the participants to "justify their response" for the severity of harm question. However, after submitting the pre-registration, we removed this question from our protocol as asking it for each agent made the procedure too lengthy, especially for children.

<sup>6</sup> We did not pre-register this question but included it for exploratory purposes after submitting the pre-registration. We reasoned that this question would yield more novel information than the question asking participants to justify their response for the severity of harm item while also being easier for children to answer, as children sometimes experience difficulty explaining their own judgments.

counterbalanced across participants. Participants learned stories about actors of their same gender; male participants heard the story above with the names William [Chris] and David [Richard].

## Results

### Participants' Trouble Ratings

For each punishment rating, if participants indicated that the actor should not be in trouble, they received zero points. If they indicated that the actor should be in *a little, some, or a lot of trouble*, they received one, two, or three points, respectively.

Figure 1 displays punishment ratings across accidental and intentional harm as a function of type of agent (self, Pat, God) and age group (younger, older, adult). Inspection of Figure 1 indicates that all age groups drew a clear boundary between accidental and intentional harm, judging the latter more harshly than the former themselves and expecting Pat and God to do the same. The figure also indicates that adults' punishment ratings shifted based on the type of agent, whereas children's did not. Specifically, across the two types of harm, adults expected God to judge the actors less harshly than would Pat or they themselves. Thus, adults' responses supported the *God-unique* hypothesis by showing that adults differentiated God's mind from human minds. In contrast, children's responses supported the *agent similarity* hypothesis, as children did not distinguish among their own mind, another person's mind, and God's mind.

To further examine the pattern of judgments, we conducted a 2 (Harm: Accidental, Intentional) x 3 (Agent: Self, Pat, God) x 3 (Age Group: Younger, Older, Adult) mixed ANOVA for punishment ratings with repeated measures on the first two factors. This analysis revealed main effects of Harm ( $F(1, 176)=444.50, p<.001, \eta^2_p=.72$ ), Agent ( $F(1.91, 336.62)=13.39, p<.001, \eta^2_p=.071$ ), and Age ( $F(2, 176)=9.27, p<.001, \eta^2_p=.095$ ). These main effects were qualified by a Harm x Agent interaction ( $F(2, 352)=7.17, p=.001, \eta^2_p=.039$ ), an Agent x Age

interaction ( $F(4, 352)=5.58, p<.001, \eta^2_p=.06$ ), and a Harm x Age interaction ( $F(2, 176)=3.18, p=.044, \eta^2_p=.033$ ). These two-way interactions were, in turn, qualified by a Harm x Agent x Age Group interaction ( $F(4, 352)=4.60, p=.001, \eta^2_p=.05$ ).

To further examine the pattern of judgments, we conducted a separate 2 (Harm: Accidental, Intentional) x 3 (Agent: Self, Pat, God) ANOVA within each age group. Results from both older and younger children showed a main effect of Harm (younger:  $F(1, 52)=78.91, p<.001, \eta^2_p=.603$ ; older:  $F(1, 41)=127.37, p<.001, \eta^2_p=.756$ ). Data from both age groups did not reveal a significant main effect of Agent (younger:  $F(2, 104)=2.69, p=.073, \eta^2_p=.05$ ; older:  $F(1.65, 67.73)=2.80, p=.078, \eta^2_p=.064$ ) or a Harm x Agent interaction (younger:  $F(1.70, 88.60)=2.82, p=.064, \eta^2_p=.051$ ; older:  $F(2, 82)=.871, p=.422, \eta^2_p=.021$ ). In other words, children reported that they themselves, other people, and God would believe that actors should get into more trouble after committing intentional versus accidental transgressions, and our data did not reveal distinctions among agents among either the younger or older group of children.

For adults, the 2 (Harm: Accidental, Intentional) x 3 (Agent: Self, Pat, God) ANOVA yielded a main effect of harm ( $F(1, 83)=325.22, p<.001, \eta^2_p=.797$ ), a main effect of Agent ( $F(1.53, 127.22)=28.10, p<.001, \eta^2_p=.253$ ), and a Harm x Agent interaction ( $F(1.82, 151.22)=18.07, p<.001, \eta^2_p=.179$ ). To further probe this interaction, we compared adults' ratings for each agent separately for intentional and accidental transgressions. This analysis included six tests; therefore,  $p$  values needed to be .008 or lower to pass the Bonferroni-corrected significance threshold. Here and in all subsequent Bonferroni-corrected analyses, we report uncorrected  $p$ -values along with the adjusted alpha level. For accidental harm, adults did not differentiate between themselves ( $M=.13, SD=.34$ ) and Pat ( $M=.19, SD=.42, t(83)=-2.00, p=.05, d=.22$ ). However, adults reported that God ( $M=.06, SD=.27$ ) would judge accidental transgressors less

severely than would either they themselves ( $t(83)=-3.14, p=.002, d=.34$ ) or Pat ( $t(83)=-3.50, p=.001, d=.38$ ). A similar result emerged for intentional harm: Adults thought that God ( $M=1.13, SD=.92$ ) would judge intentional transgressors less severely than would either they themselves ( $M=1.71, SD=.78, t(83)=-6.79, p<.001, d=.74$ ) or Pat ( $M=1.53, SD=.86, t(83)=-4.12, p<.001, d=.45$ ). However, unlike when judging accidental harms, adults judged that Pat would punish intentional transgressors less severely than they themselves would ( $t(83)=2.92, p=.005, d=.32$ ).

In sum, both adults and children reported that intentional transgressors should receive harsher judgment than accidental transgressors, and they expected another person and God to share this view. Overall, this result—i.e., the effect of Harm, with intentional harms eliciting harsher moral judgments than accidental harms—was the largest effect we observed. However, results also revealed age-related changes. Specifically, only adults judged that agents would differ in terms of how harshly they judged the transgressors, reporting that God would judge both intentional and accidental harms less severely than would they themselves or another person. This finding provides support for the *God-unique* hypothesis, showing that adults' judgments were consistent with a "theologically correct" view portraying God's mind as distinct from human minds (Barrett, 1999). Unlike adults, children did not distinguish among the minds of different agents. Their responses provide support for the *agent similarity* hypothesis, indicating that the propensity to distinguish God's mind from human minds when making punishment-related judgments emerges after the age of seven years.<sup>7</sup>

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<sup>7</sup> The analyses reported here were pre-registered prior to data collection. Based on the suggestion of an anonymous reviewer, we also explored these ratings using several additional tests that we present in the Supplementary Materials. First, we re-analyzed these ratings using mixed-effects ordinal logistic regression models. These analyses replicated the results reported in the main text and revealed an additional finding indicating that the difference between the ratings of accidental and intentional harm was larger for older as compared to younger children. Because this analysis was not pre-registered, and because conducting multiple analyses on the same data can increase the risk of Type I error, caution is warranted when interpreting this result. Second, we re-analyzed data from child participants using tests that treated age as a continuous variable. These results for punishment ratings and for expectations regarding agents' responses to transgressions can be found in the Supplementary Materials. Because



### Participants' Expectations Regarding Different Agents' Reactions to Transgressions

To complement the quantitative data described in the section above, we also asked participants who indicated that actors should get into trouble *what kind* of trouble they should receive. We added this question after submitting our pre-registration (see Footnotes 5 and 6). However, we present analyses here because these qualitative responses provide more nuanced insight into children's and adults' own responses to transgressions as well as their expectations regarding another person's and God's responses.

The first author initially derived eight categories from the open-ended responses participants provided: (1) *verbal* (in which participants suggested that the agent would tell the actor to apologize or provide a warning), (2) *corporal* (which included spanking, hitting, etc.), (3) *tit-for-tat* (which included delivering a similar harm to the transgressor as the one experienced by the victim, such as ruining the transgressor's sandcastle), (4) *compensation* (participants suggested a way to make up for the victim's loss), (5) *withholding a privilege*, (6) *religion or morality related* (which included responses such as praying and making the transgressor feel guilty), (7) *forgiving*, and (8) *other* (which included vague responses such as "I would punish him" as well as responses where participants stated they did not know the answer). For the sake of simplicity and due to the low frequency of responses in some categories, we collapsed these categories into four major categories after all coding was complete: (1) *verbal*, (2) *physical*, which included corporal, tit-for-tat, compensation, and withholding a privilege, (3) *emotional*, which included the religion/morality and forgiving categories, (4) *other*. For a small number of cases (7% of all responses), participants suggested that the actor should apologize and take some action to make up for the harm (e.g., "She should apologize and rebuild the

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these tests were not pre-registered, could not include adults, and in many cases failed to converge, we urge caution when interpreting these exploratory analyses.

sandcastle”). We coded these responses into *physical* category, since the action taken would be physical. A second researcher separately coded all responses, and the agreement between the two coders was high (Cohen’s  $\kappa=.80$ ). Disagreements were resolved via discussion.

As seen in Figure 2a, *verbal* and *physical* reactions were the most common reactions among young children regardless of the type of harm and type of agent. As Figure 2b represents, *physical* reactions were very common among older children across the two types of harm, especially for themselves and Pat, and to a lesser degree for God. Emotional reactions, however, were very infrequent among both younger and older children. In sharp contrast with children’s judgments, the frequency of adults’ verbal and physical reactions changed as a function of both type of harm and type of agent, as the inspection of Figure 2c reveals. Although adults provided a considerable amount of emotional reactions as compared to children, these reactions were restricted to God.

In sum, the frequency of each type of reaction showed a unique pattern given the effect of age, type of harm, and agent. Accordingly, we analyzed each of these reactions separately using mixed-effects binomial logistic regression with the *glmer* function of the *lme4* package in R statistical software (version 4.0.1).

### ***Verbal Reactions***

To examine the likelihood of providing *verbal* reactions in comparison to other reactions, we ran mixed-effects binomial logistic regression models with Harm Type (accidental as the reference category), Agent Type (God as the reference category), and Age (Adults as the reference category) as fixed effects. We employed a backward elimination approach; thus, our initial model included all main effects and interactions, and we removed predictors individually if they did not contribute to the model. Participant ID and Story ID were entered as random

effects to account for the variability caused by the repeated measures design. For the sake of simplicity, we provide only the significant findings in the subsequent text; Table 1 summarizes all the parameters resulted from this analysis.

As summarized in Table 1, the main effect of Harm was significant,  $\beta=-1.62$ ,  $SE=0.53$ ,  $z=-3.05$ ,  $p=.002$ , indicating that overall, accidental harms led to more verbal reactions than did intentional harms. The effect of Agent was significant when comparing God to Self,  $\beta=1.13$ ,  $SE=0.56$ ,  $z=2.04$ ,  $p=.041$ , and to Pat,  $\beta=1.17$ ,  $SE=0.54$ ,  $z=2.16$ ,  $p=.031$ , indicating that participants provided verbal reactions less frequently for God as compared to Self and Pat. The interaction between Age and Harm was significant when comparing adults to younger children,  $\beta=1.51$ ,  $SE=0.59$ ,  $z=2.56$ ,  $p=.011$ , indicating that compared to younger children, adults provided more verbal reactions for accidental as compared to intentional harms. Lastly, the interaction between Age and Agent was significant when comparing adults to younger children for the verbal reactions they provided for Self versus for God,  $\beta=-1.30$ ,  $SE=0.57$ ,  $z=-2.26$ ,  $p=.024$ . This result shows that compared to younger children, adults expected less verbal reactions for God as compared to Self and Pat.

### ***Physical Reactions***

To analyze the likelihood of providing a physical versus non-physical reaction, we ran the model above with the probability of providing a physical reaction as the outcome variable. Once again, we provide only the significant findings in the subsequent text. The summary of all parameters resulted from this analysis can be found in Table 2.

The results revealed a significant three-way interaction between Age, Agent, and Harm,  $\beta=5.73$ ,  $SE=1.68$ ,  $z=3.41$ ,  $p=.0006$ , as summarized in Table 2. To further probe this three-way interaction, we analyzed the likelihood of providing a physical reaction within each Age with

Agent (God as the reference category), Harm, and their interaction as fixed effects and Participant ID and Story as random effects.

None of the effects reached significance for younger children,  $p \geq .167$ , indicating that their likelihood of providing a physical reaction did not vary significantly across the type of Harm and type of Agent. For older children, we observed a main effect of Agent when comparing God to Self,  $\beta=4.67$ ,  $SE=1.40$ ,  $z=3.33$ ,  $p=.0008$ ,  $OR=106.42$ ,  $CI [6.83, 1657.31]$ , revealing that older children provided more physical reactions for Self than they did for God. The interaction between Agent and Harm was also significant when comparing God to Self,  $\beta=-3.63$ ,  $SE=1.45$ ,  $z=-2.50$ ,  $p=.012$ ,  $OR=0.03$ ,  $CI [0.00, 0.46]$ , indicating that older children provided more physical reactions for accidental as compared to intentional harms for Self whereas they expected God to show more physical reactions for intentional as compared to accidental harms.

For adults, we observed a main effect of Harm,  $\beta=2.57$ ,  $SE=0.42$ ,  $z=6.08$ ,  $p<.001$ ,  $OR=13.05$ ,  $CI [5.70, 29.87]$ , indicating that they expected more physical reactions for intentional versus accidental harm. We also observed a main effect of Agent for adults when comparing God to Self,  $\beta=2.01$ ,  $SE=0.34$ ,  $z=5.83$ ,  $p<.000$ ,  $OR=7.45$ ,  $CI [3.79, 14.64]$ , and to Pat,  $\beta=1.73$ ,  $SE=0.34$ ,  $z=5.11$ ,  $p<.000$ ,  $OR=5.66$ ,  $CI [2.91, 11.02]$ , indicating that adults expected less physical reactions from God than they did from themselves and Pat.

### ***Emotional Reactions***

As mentioned above, emotional reactions were rare among both younger and older children. Although adults invoked them to some degree, they attributed these reactions to God only, and the type of harm did not reliably influence this invocation. To confirm this pattern, we ran a mixed binomial regression analysis with the type of harm as fixed effect and Participant ID

and Story Type as random affects. As expected, we did not observe a significant effect of Harm on adults' likelihood of providing an emotional reaction for God,  $\beta=1.67$ ,  $SE=2.01$ ,  $z=0.83$ ,  $p=.406$ .

### ***Summary of Participants' Expectations Regarding God's Responses to Transgressions***

The data on participants' expectations regarding the reactions of different types of agents—like the results from participants' quantitative ratings—largely supported the *agent similarity* hypothesis for younger children. For instance, younger children provided *emotional reactions* very rarely regardless of the type of agent; additionally, the frequency of the *physical reactions* they provided did not vary depending on type of agent. In contrast, for adults, these data—like the results from their quantitative ratings—largely supported the *God-unique* hypothesis. For instance, compared to younger children, adults were less likely to report that God, versus they themselves, would show a verbal reaction. Additionally, adults were less likely to report that God, versus Pat and they themselves, would show a physical reaction. Lastly, adults provided a considerable number of emotional reactions, but they expected these types of reactions from God only. The responses of older children fell somewhat between younger children and adults. For instance, like younger children, older children expected emotional reactions very rarely and did not expect these reactions to vary across agents. However, like adults, older children were less likely to report that God, versus they themselves, would show physical reactions.

In sum, adults systematically differentiated God from themselves and another person to a greater extent than did older children, who, in turn, made these distinctions to a greater extent than did younger children. Age-related changes in expectations regarding the *type* of response to

punishment may occur more gradually, and begin somewhat earlier in development, than judgments about the *severity* of the punishment that different agents would deliver.

### **Discussion**

The current work investigated how 4- to 7 years-olds and adults in the United States expect different agents to judge intentional and accidental transgressions. Overall, we observed a large effect of the type of harm, such that intentional harms elicited harsher moral judgments than did accidental harms. This result is consistent with prior work in which adults responded more harshly to intentional versus accidental transgressions (McNamara et al., 2019; Young et al., 2010). However, we observed the exculpation of accidental harm earlier in development than some previous studies (e.g., Cushman et al., 2013; Killen et al., 2011): although the effects of age were not as strong as the effects of harm type, even 4- to 5-year-olds in our study expressed skepticism that actors should get into trouble for causing accidental harm. Several methodological differences between our study and prior work could explain these results. For instance, prior work did not always explicitly state the harmdoer's intentions; young children may have experienced difficulty drawing relevant inferences themselves but taken information about intent into account when it was explicitly stated (for other findings suggesting that young children make judgments on the basis of explicitly stated information that they have difficulty inferring, see a review in Heyman, 2009). Additionally, in the current study, children heard stories about both accidental and intentional transgressions, which may have allowed them to judge the two types of harm in relation to each other. Such a comparison might have made the exculpation of accidental harm easier for younger children than it would have been in a fully between-participants experiment. Indeed, our results align with past work suggesting that infants

(e.g., Hamlin, 2013) and preschoolers (e.g., Chernyak & Sobel, 2016) consider information about intent when the methodology of the study is relatively straightforward.

In addition to reporting that they themselves would respond more harshly to intentional versus accidental transgressions, participants expected others—including another person and God—to do the same. This finding builds on past work focusing on children's own moral judgments by showing that children, as well as adults, expect intentional harms to garner greater punishment from a variety of agents. Indeed, the youngest children in this study (4- to 5-year-olds) did not distinguish between the minds of different agents. Such differences did not emerge regardless of whether children answered quantitative items about *how much* trouble actors should get into or qualitative items about *what kind* of response different agents would demonstrate to the actor's behavior, supporting the *agent similarity* hypothesis.

These data are consistent with past theorizing on the development of social cognition in non-religious contexts. For instance, Meltzoff's (2007) "like me" framework proposes that infants use information about themselves to help them understand other agents. In line with this framework, children in the current work may have used knowledge regarding their own moral judgments to attribute judgments to other agents, including a human being and God. These findings are also consistent with theorizing from social psychology suggesting that when adults try to understand minds that differ from their own, they anchor on their own mind and then adjust to some extent to account for differences between their own mind and the minds of other agents (Epley et al., 2007). In the current study, children may have anchored on their own minds and used that anchor to inform their attributions of moral judgments to other agents, possibly making smaller adjustments away from the initial anchor than adults do. It is also possible that the factors which led to an earlier exculpation of accidental harms (i.e., within-subjects design

and explicit emphasis on intentionality) would have also led children not to distinguish between different agents. However, we view this possibility as somewhat unlikely given that young children tend to view other minds—including people's ordinary minds and God's supernatural mind—as similar to their own across a variety of experimental paradigms (e.g., Heiphetz et al., 2018; Lane et al., 2010; Wellman et al., 2001).

In contrast, adults did draw distinctions among agents. They reported that God would punish both intentional and accidental transgressors less severely than would they themselves and another person, and they expected God to deliver different kinds of punishments. For instance, adults attributed emotional reactions such as facilitating forgiveness only to God, but they were less likely to expect physical reactions (e.g., forcing the transgressor to eat the cookies she had ruined) from God than from themselves and another person. Of the three hypotheses described in the Introduction, these findings provide the most support for the *God-unique* hypothesis and map on to theological teachings portraying God as quite different from a person (Barrett, 1999). They also correspond in an interesting way to prior work showing that adults expect God's mind to differ from human minds. In this prior research (Heiphetz et al., 2018), adults in the United States attributed harsher moral judgments to God than to themselves or other people, reporting that God would be less likely to view morally relevant behaviors such as telling prosocial lies as okay. In the current work, adults also distinguished between God's mind and human minds, but in a different way: They expected God to punish less harshly than would humans. Taken together, these studies suggest that adults may expect God to hold people to a high moral standard but also to respond benevolently when people fall short.

The responses from the older group of children (6- to 7-year-olds) fell somewhat between the responses of younger children and adults. Like younger children, older children did not



distinguish between humans' minds and God's mind when indicating how much punishment each agent would deliver. However, like adults, older children did expect God and humans to have somewhat different responses to transgressions (e.g., like adults, older children were less likely to attribute physical reactions to God than to themselves). This latter result suggests that distinctions between God's mind and human minds continue to develop after the age of seven years, a period during which children appear to distinguish between God and humans in some but not all ways. The fact that older children did distinguish among agents to some extent when answering questions about what type of response the agents would have, but not when indicating how much each agent would punish the transgressor, points to the importance of including qualitative components in developmental research. The open-ended questions in the current work may have allowed for more nuanced responses that the close-ended measure could not capture, and the earliest signs of distinguishing God's mind and human minds may have been more readily apparent when children were permitted to use their own words to express their developing understanding of God.

As highlighted above, the current work contributes to knowledge regarding children's and adults' moral and religious cognition. However, like all work, this study contains several limitations that future research could address. For instance, the current work focused on expectations of agents' responses to morally blameworthy behavior only. We made this choice because adults often conceptualize God as a moralizing agent who knows about and punishes transgressions (McNamara et al., 2016; Purzycki et al., 2012). Additionally, this decision allowed us to investigate expectations regarding agent's punitive behaviors. However, the outcome-to-intent shift in children's moral judgments occurs for evaluations of prosocial behaviors as well as transgressions (Margoni & Surian, 2017). Therefore, to expand the scope of

the current study, future research should also investigate how children expect God and human agents to judge and respond to praiseworthy behavior.

Extending this focus on religious cognition, future work can also investigate how participants' backgrounds shape attributions of moral responses to God. The participants in the current work were predominantly White and Christian, although this study also included a somewhat higher percentage of non-religious participants than might be expected in a completely representative sample (however, estimates of the prevalence of atheism vary depending on how the question is asked; Gervais & Najle, 2018). Despite the fact that these demographics are not perfectly representative of the United States as a whole, they nevertheless reflect the fact that most people in the United States are White (Jensen et al., 2021) and Christian (Pew Research Center, 2015). Thus, these results can be generalized to a relatively large group of individuals in the United States. At the same time, little work on the cognitive science of religion has focused on cultural contexts beyond Christianity within the United States (for several exceptions, see Knight et al., 2004; McNamara et al., 2016; Srinivasan et al., 2019). Past work varies in the extent to which it has found differences in religious cognition across different religious groups. In some cases—such as when attributing moral beliefs to God (Heiphetz et al., 2018) or reasoning about the extent to which an agent created natural phenomena for a purpose (Kelemen, 2004)—differences in responses based on religious background have not emerged. However, in other work, children of Muslim parents drew particularly strong distinctions between God's mind and human minds, while children of religiously non-affiliated parents drew relatively weak distinctions (Richert et al., 2016). Thus, future work can examine the extent to which religious background might shape the specific aspects of religious and moral cognition tested here, i.e., expectations regarding God's response to transgressions.

Just as some aspects of religious cognition vary depending on participants' backgrounds, so do some aspects of moral cognition, such as the propensity to base moral judgments on intent. For instance, participants from Yasawa—a society that sometimes sanctions speculating about others' mental states—showed similar moral judgments regardless of whether transgressions were intentional and incentivized or unintentional and unincentivized (Barrett et al., 2016; see also McNamara et al., 2019). In such cultures, moral judgments—including those of adults—may be less sensitive to intent than in the United States. Thus, cross-cultural investigations of God concepts and the role of intent in moral judgment remain a fruitful avenue for future work.

### **Conclusion**

The current work extends previous research in the areas of social cognitive development, moral cognition, and the cognitive science of religion. The findings indicate important age-related differences in moral attributions to human and supernatural agents. While both children and adults expected all agents to make intent-based moral judgments, the propensity to distinguish God's mind from human minds increased with age. The representation of God as more merciful than humans may depend on individuals' increasing ability to draw a distinction between different minds across development.

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**Table 1**

*Results from the mixed effects binomial logistic regression model predicting the likelihood of providing a verbal reaction using Age (Adults as the reference category), Agent (God as the reference category), and Harm as predictors.*

	$\beta$ (SE)	Z	OR	95% CI for OR	
				Lower	Upper
<b>Intercept</b>	-1.35 (0.56)*	-2.42	0.26	0.09	0.77
<b>Age</b>					
Adults – Younger Children	-0.81 (0.78)	-1.04	0.45	0.10	2.04
Adults – Older Children	-0.50 (0.87)	-0.58	0.60	0.11	3.30
<b>Agent</b>					
God – Self	1.13 (0.56)*	2.04	3.11	1.05	9.23
God – Pat	1.17 (0.54)*	2.16	3.22	1.12	9.31
<b>Harm</b>	-1.62 (0.53)**	-3.05	0.20	0.07	0.56
<b>Age X Agent</b>					
Adults – Younger Children (God – Self)	-1.30 (0.57)*	-2.26	0.27	0.09	0.84
Adults – Older Children (God – Self)	-1.20 (0.62)	-1.94	0.30	0.09	1.01
Adults – Younger Children (God – Pat)	-0.43 (0.57)	-0.75	0.65	0.21	2.00
Adults – Older Children (God – Pat)	-1.02 (0.62)	-1.65	0.36	0.11	1.21
<b>Age X Harm</b>					
Adults – Younger	1.52 (0.59)*	2.56	4.55	1.43	14.52
Adults – Older	0.59 (0.68)	0.87	1.81	0.47	6.92
<b>Agent X Harm</b>					
God – Self	0.37 (0.58)	0.64	1.45	0.47	4.52
God – Pat	0.18 (0.56)	0.32	1.20	0.40	3.61
<b>Number of Observations</b>	1082				
<b>Number of Groups</b>	168				
<b>Log Likelihood</b>	-498.6				
<b>AIC</b>	1029.2				

*Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . OR = Odds Ratio. CI = Confidence Interval.*

**Table 2**

*Results from the mixed effects binomial logistic regression model predicting the likelihood of providing a physical reaction using Age (Adults as the reference category), Agent (God as the reference category), and Harm as predictors.*

	$\beta$ (SE)	Z	OR	95% CI for OR	
				Lower	Upper
<b>Intercept</b>	-2.03(0.76)**	-2.66	0.13	0.03	0.59
<b>Age</b>					
Adults–Younger Children	1.09 (1.03)	1.06	2.97	0.40	22.23
Adults – Older Children	-0.18 (1.29)	-0.14	0.84	0.07	10.42
<b>Agent</b>					
God – Self	0.12 (0.85)	0.14	1.12	0.21	5.94
God – Pat	0.16 (0.83)	0.19	1.17	0.23	6.03
<b>Harm</b>	0.96 (0.76)	1.27	2.61	0.59	11.55
<b>Age X Agent</b>					
Adults–Younger Children (God–Self)	0.73 (1.16)	0.63	2.07	0.21	20.19
Adults – Older Children (God – Self)	4.39 (1.58)**	2.79	80.87	3.68	1774.45
Adults–Younger Children (God–Pat)	-0.25 (1.15)	-0.22	0.78	0.08	7.39
Adults – Older Children (God – Pat)	2.03 (1.40)	1.45	3.28	0.26	4.06
<b>Age X Harm</b>					
Adults – Younger Children	-0.25 (1.03)	-0.25	0.78	0.10	5.79
Adults – Older Children	1.19 (1.28)	0.93	3.28	0.26	4.06
<b>Agent X Harm</b>					
God – Self	2.19 (0.93)*	2.35	8.94	1.44	55.52
God – Pat	1.80 (0.91)*	1.97	6.06	1.01	3.64
<b>Age X Agent X Harm</b>					
Adults–Younger Children (God–Self)	-2.48 (1.30)	-1.91	0.08	0.01	1.07
Adults – Older Children (God–Self)	-5.73 (1.68)***	-3.41	0.00	0.00	0.09
Adults – Younger Children (God–Pat)	-1.89 (1.29)	-1.46			
Adults – Older Children (God–Pat)	-2.80 (1.51)	1.85			
<b>Number of Observations</b>	1082				
<b>Number of Groups</b>	168				
<b>Log Likelihood</b>	-582.6				
<b>AIC</b>	1205.2				

*Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . OR = Odds Ratio. CI = Confidence Interval.*

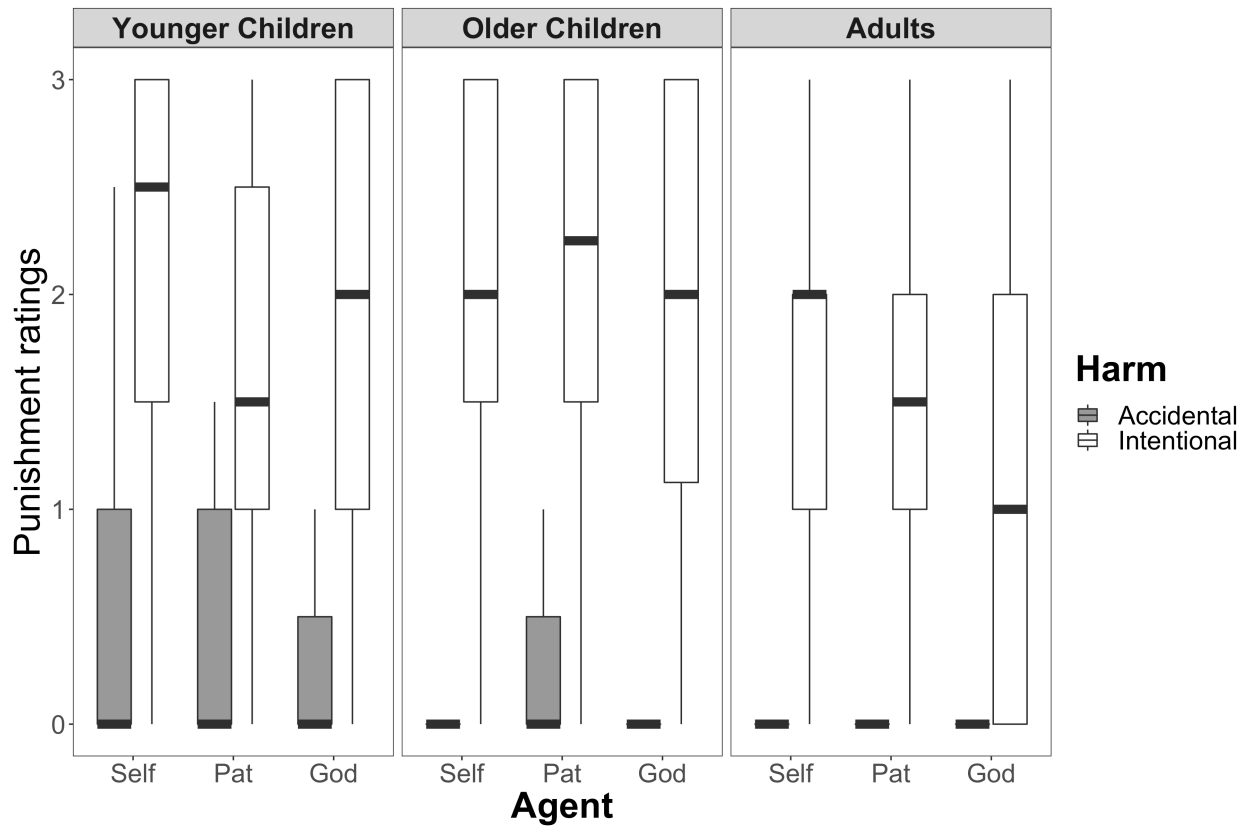
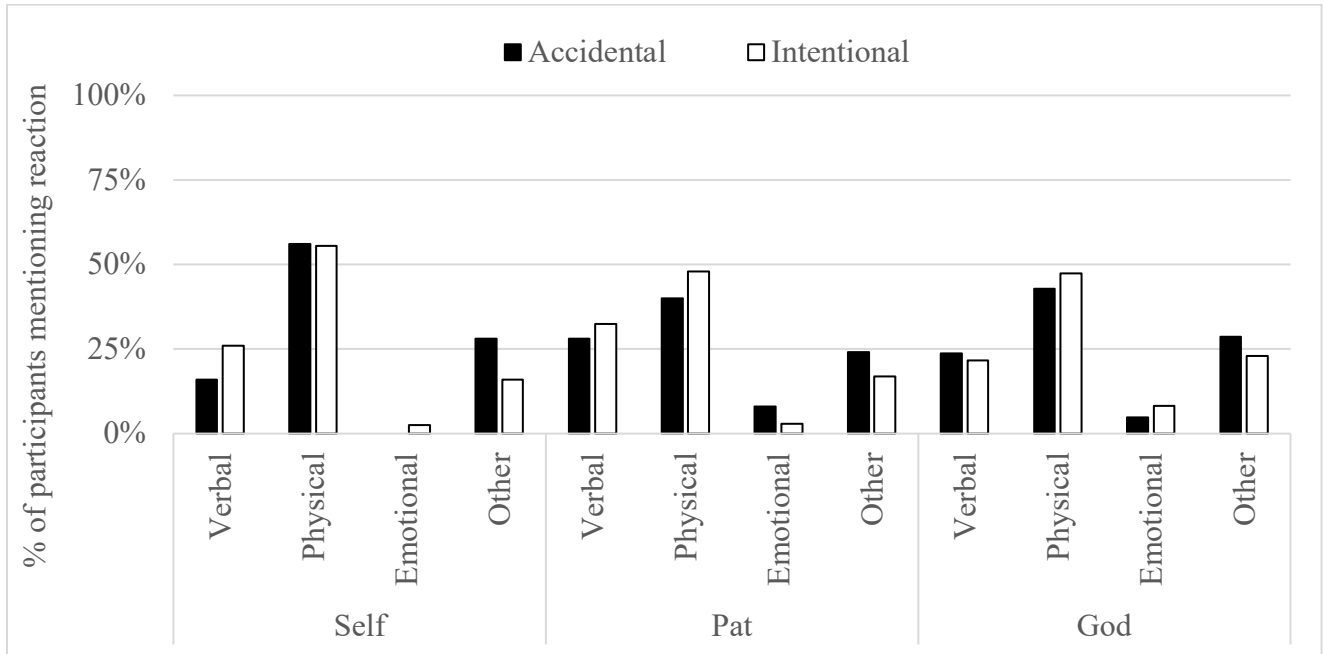
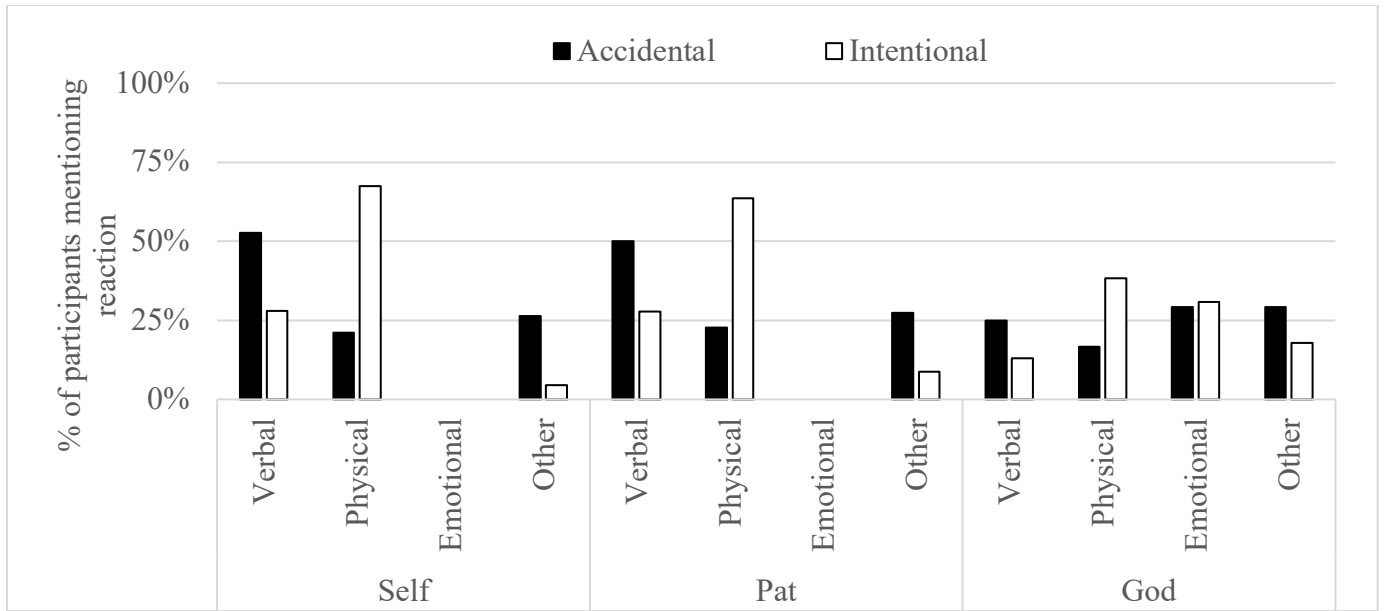


Figure 1.





Figures 2a (top), 2b (middle), and 2c (bottom).

**Figure Captions**

*Figure 1.* Punishment ratings across accidental and intentional harm as a function of type of agent (self, Pat, God) and age group (younger children, older children, adults).

*Figure 2.* Percentage of each reaction category (verbal, physical, emotional, other) by the type of harm and agent for (a) younger children, (b) older children, and (c) adults.