

Folding Your Hands Helps God Hear You: Prayer and Anthropomorphism in Parents and Children

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Abstract

Previous research has indicated that the physical actions of prayer are especially salient for preschool-aged children, and children in this age range tend to associate prayer with communicating with God. As the context in which children learn about new concepts impacts on how children come to understand those concepts, and children are often introduced to the concept of God through prayer, the current study examined if the views of parents and preschoolers about the function of actions (e.g., bowing head, closing eyes) involved in prayer are related to, and provide the basis for, children's developing conception of God. Protestant, Catholic, and Muslim parent-child dyads were interviewed ($N = 246$). Results indicated parents and children primarily think the actions of prayer function as helping the individual praying to think about God. However, parents who endorsed the possibility that prayer actions served a ritualistic, communicative function had children with more anthropomorphic views of God. These findings are discussed in terms of the implications for the ways in which prayer serves as a context of religious concept development.

Keywords

anthropomorphism – cognitive development – God concepts – prayer

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Despite the fact that prayer is one of the first shared religious activities in which children are engaged, minimal research has examined the influence of engaging in prayer on children's developing religious thinking. Researchers in the field of religious and spiritual development have highlighted the need for studies examining the cultural factors that contribute to children's understanding of religious activities, such as prayer, and their understanding of religious concepts (Richert & Granqvist, 2013). Conducting this research with preschoolers is crucial because children's concepts during these years provide insight into cultural influences on the earliest formation of these concepts. According to Vygotsky (1934/1986), in the preschool years, children's concepts are pseudo-concepts, or 'shadows' of adult concepts. Preschoolers' pseudoconcepts are initially formed through an associative relationship between the word for the concept and the concrete components that are associated with the concept, such as the actions performed while learning the concept and/or the environment (e.g., home, church) in which the concept was learned. As such, the context in which children are first exposed to a word (or concept) provides the preliminary structure of that concept, and the features that children associate with a given concept reflect the context in which that concept has been introduced and built.

In relation to the development of a concept of God, the contexts in which children are exposed to, and learn about God, are themselves a fundamental feature of that concept. As Bronfenbrenner (1988) outlined, cultural processes influence development at a variety of hierarchical levels: microsystems (e.g., home, school), mesosystems (e.g., home-school link), exosystems (e.g., parent work experience), macrosystems (e.g., cultural systems and structures), and chronosystems (e.g., historical context). The goal of the current study was to examine how children's concepts of God are influenced by individual level (within child), microsystem level (parents' beliefs and practices), and macro-system level (religious belief systems) factors.

Preschooler concepts of God tend to be more anthropomorphic than adult conceptions of God (for review, see Heiphitz, Lane, Waytz, & Young, 2015). Shtulman (2008) demonstrated this developmental pattern by asking 5-year-old children and adults whether religious beings (angels and God) had certain properties, categorized as psychological (e.g., thinks), physical (e.g., sits), and biological (e.g., eats). The 5-year-olds were more likely than adults to attribute human-like psychological, physical, and biological properties to religious beings (Shtulman, 2008). Heiphitz et al. (2015) argued that the tendency to anthropomorphize God is intuitive and is demonstrated as early as 3 years of age, however, the cultural perspectives outlined above (i.e., Vygotsky, Bronfenbrenner) highlight the fact that all concepts emerge in cultural contexts.

Cultural mechanisms through which a concept of God may be more or less anthropomorphic during early childhood include the presence of iconic imagery (Barrett & VanOrman, 1996), parent testimony about God (Heiphitz et al., 2015), and shared religious activities like prayer (Richert & Granqvist, 2013). The research reviewed by Heiphitz et al. (2015) was conducted with children raised in Judeo-Christian cultural contexts (e.g., Greece, Germany, the United States); these contexts incorporate extensive imagery depicting God as having a physical form and in which over 50% of families engage in daily prayer (Pew Research Center, 2009). Thus, the conclusion that an anthropomorphic conception of God is intuitive at these early ages necessitates comparison to children raised in cultural contexts that vary along relevant dimensions (i.e., iconic imagery, testimony about God, children's participation in prayer), as is the case in Islam, which prohibits iconic imagery of God and differs in prayer practices.

In the current study, we specifically examine views about prayer in different religious traditions and the relation between these views and whether children view God as having human-like (i.e., anthropomorphic) limitations. The few studies that have been conducted on views of prayer in preschool-aged children suggest that children view prayer as a form of communication and that the conventional actions involved in prayer are especially salient to young children. Long, Elkind, and Spilka (1967) found 5-year-olds' conceptions of prayer were undifferentiated in the sense that children seemed to associate prayer with God and with specific formulae and believed their prayers somehow magically 'floated' or 'flew' to heaven. Similar to Long et al. (1967), Woolley and Phelps (2001) found 3- and 4-year-old children did not know how God knew about their prayers, and 5-year-old children indicated that God somehow 'just knows' what they prayed for. Additionally, when 3- to 4-year-old children taught a puppet how to pray, they were more likely to emphasize the physical aspects of prayer (folding hands, bowing head) than the mental aspects of prayer (Woolley & Phelps, 2001). Together, these findings indicate that during the preschool years, children are attuned to the conventional (formulaic) actions of prayer and view prayer as a mode of communication with God, but do not have a clear sense of how prayer 'works'.

Given the frequency of prayer in religious homes and the salience of prayer actions for preschoolers, the understandings of the purpose of conventional prayer actions held by parents and children are likely to structure the context in which a concept of God develops. A recent paper by Legare and Nielsen (2015) highlights two categories of cultural practices (instrumental and ritual) that suggest some possible functions parents and children might attribute to conventional prayer actions. Instrumental skills are "the technical toolkits of a cultural group" (p. 689) and rituals are the "socially stipulated, causally

opaque, group conventions that serve an affiliative function" (p. 689). Based on this characterization of cultural practices, we hypothesize three possible ways in which children and parents might view the functions of prayer actions: instrumental-external, instrumental-internal, and ritual-communicative.

First, children and parents may view prayer actions as serving the purely instrumental purpose of controlling behaviour. During the preschool years, children are actively developing their executive functioning skills, and parents are often encouraged to engage children in practices that support this development (Diamond & Lee, 2011). Thus parents and children may see the prayer actions as helping the child control his or her body (i.e., refrain from moving around) while praying. We term this function as 'instrumental-external', reflecting the belief that the instrumental effects of the prayer actions are immediately evident in behavioural control.

Second, many views of prayer emphasize prayer as silent contemplation (Hood, Morris, & Watson, 1989). Thus, we anticipate that some children and parents might view the conventional actions of prayer as having the instrumental function of helping the person praying to think about and reflect on God. We term this function as 'instrumental-internal', reflecting the belief that the instrumental effects of the prayer actions are mental and not perceptually evident to observers.

Third, Spilka and Ladd (2013) noted that contemporary definitions of prayer generally emphasize that prayer is a form of communication. As children in this age range generally view prayer as a form of communication with God, note the importance of prayer actions, and are unclear about how prayer works, we anticipate that many children (and some adults) will believe that the function of prayer actions is to help the person praying to communicate with God. We term this function as 'ritualistic-communicative', reflecting the belief that the prayer actions have a supernatural effect on communication with God through a causally-opaque mechanism.

We theorize that the ways in which parents view the conventional actions of prayer become a feature associated with children's God concepts during these years. The current study examined the attribution of human-like, anthropomorphic limitations to God by parents and preschool-aged children from three religious backgrounds: Protestant Christian, Roman Catholic, and Muslim. Consistent with Bronfenbrenner's (1988) ecological systems perspective, we assessed macrosystems level influences through religious group affiliation, microsystems level influences through parents' beliefs about the functions of prayer actions, and individual level influences through children's age and their own beliefs about the functions of prayer actions. Given the lack of iconic imagery in Islam, we hypothesize that Muslim parents and children will have

significantly less anthropomorphic God concepts than participants from any other religious background. In the framework of action functions above, we also hypothesize that a ritualistic-communicative view of the prayer actions in parents and children will be most strongly associated with children's anthropomorphic view of God, because a belief that the prayer actions are necessary for God to hear the prayer implies God has some degree of limitations in knowledge or perception.

Method

Participants

A total of 246 children aged 3 to 7 years ($M = 4.71$, $SD = .86$) and their parent or guardian participated in this study. Families were recruited to participate as part of a larger longitudinal study on children's developing understanding of religion (see also Shaman, Saide, Lesage, & Richert, 2016). The data presented here were drawn from the first wave of data collection in which children also were interviewed about their fantasy orientation, understanding of supernatural causality, theory of mind, and executive functioning. Families were recruited through Craigslist postings, flyers posted on and around the university campus, and at local religious (e.g., churches) and public (e.g., city libraries) organizations. All families reported English as the primary language spoken in the home.

Three exclusion criteria were applied to the analysis reported below. Parent-child dyads were excluded from data analysis if the child was older than 6.1-years-old ($n = 25$), the parents did not self-identify as Protestant Christian, Catholic, or Muslim ($n = 47$), and/or the child or the parent did not complete the questions used in the analyses below ($n = 43$). The exclusion based on religious group was applied because the Protestant, Catholic, and Muslim groups were large enough to allow for religious group comparisons.

After removing these dyads, the final sample of participants included 157 parent-child dyads. Children ranged in age from 3.31- to 6.07-years-old ($M = 4.68$, $SD = .71$; 57% female). All parents self-identified with one of the following groups: Protestant Christian ($n = 59$), Catholic ($n = 39$), or Muslim ($n = 59$). The gender and age breakdown of child participants in each religious group can be found in Table 1. Parents ranged in age from 22- to 59-years-old ($M = 33.66$, $SD = 6.91$; 95% female). The majority of parents (93%) provided information on their child's ethnic background; our sample of children fell into the following groups: White ($n = 47$), Hispanic/Latino ($n = 37$), other ($n = 24$), Asian ($n = 22$), Black/African American ($n = 14$), and Native American ($n = 2$).

TABLE 1 *Demographic breakdown of children in the study*

| | Female | Male | Age |
|-----------------------------|--------|------|------------------------|
| | % | % | <i>M</i> (<i>SD</i>) |
| Protestant (<i>n</i> = 59) | 59 | 41 | 4.61 (0.71) |
| Catholic (<i>n</i> = 39) | 59 | 41 | 4.72 (0.74) |
| Muslim (<i>n</i> = 59) | 54 | 46 | 4.68 (0.70) |

Instruments

Materials for this study included an interview for children and a questionnaire for parents/guardians. The child interview consisted of two main sections. The first section evaluated children's perceptions of the function of the behaviours associated with prayer. The second section assessed children's understanding of God through questions on the physical, biological, and psychological properties of God. These two sections were counterbalanced across the children, such that children were either asked about God first and then prayer, or vice versa. Parents answered in written survey format the same questions children answered in their interview.

Prayer Action Functions. Children and parents answered nine questions about three specific behaviours of prayer, which varied depending on religious background. For the Protestant Christian and Roman Catholic participants, the questions were about folding hands, closing eyes, and bowing head while praying. For the Muslim participants, the behaviours were raising both hands, kneeling down, and touching the forehead to the ground. The questions were varied slightly for parents and children so that children were asked age-appropriate versions of the parent questions. In both cases, participants were told that different people/children believed that the *actions* of prayer had different functions: instrumental-external (e.g., help the person praying not to move around), instrumental-internal (e.g., help the person praying to think about God), and ritual-communicative (e.g., help God to hear the person praying better).

The parents indicated their agreement with each of the potential functions of the actions associated with prayer on a 5-point scale ('no-really sure' [-2] to 'yes-really sure' [+2]). Positive scores indicate agreement that the prayer behaviours have that particular function. Negative scores indicate agreement that the prayer behaviours do not have that particular function. Responses to

questions were averaged across the three behaviours for continuous instrumental-external function (Cronbach's $\alpha = .87$), instrumental-internal function (Cronbach's $\alpha = .79$), and ritual-communicative function (Cronbach's $\alpha = .92$) scores for each parent.

In contrast to the parent rating scale, children were presented with each option and asked to choose which option they believed was correct (see Kelemen, 1999). The number of times children chose each explanation was tallied for instrumental-external, instrumental-internal, and ritual-communicative function variables, each of which could range from 0 to 3.

Anthropomorphism. Children and parents indicated if God had eight anthropomorphic abilities or needs: to forget, to get bored, to get sick, to get wet in the rain, to eat and drink water, to have a heart to stay alive, to walk through walls, and to be touched. The Protestant Christian and Roman Catholic participants were asked about God, whereas the Muslim participants were asked about Allah. Participants responded on a 5-point scale ('no-really sure' [-2] to 'yes-really sure' [+2]), with positive scores indicating God is anthropomorphic. Responses were averaged for an overall anthropomorphism score (child Cronbach's $\alpha = .81$, parent Cronbach's $\alpha = .79$).

Demographic Information. Parents (or guardians) also provided demographic information about the child, themselves, and the child's family. Questions that pertained to the child asked about the child's birthday, ethnic background, age, gender, primary language, and religious exposure (e.g., frequency of religious attendance, observance, and schooling as well as participation in holidays and ceremonies). Questions that pertained to the parent and the parent's partner (i.e., husband or wife) asked about the parents' age, ethnic background, current employment, current relationship status, income, educational attainment, and religious exposure. Questions relating to the family asked about which adults live with the child and how many siblings the child has.

Procedure

Each child and his or her parent/guardian participated in an on-campus laboratory or in the family home. As noted above, the two sections about prayer and anthropomorphism were counterbalanced between participants; and independent-samples *t*-tests indicated no significant order effect on children's responses. The child interview took approximately 45 to 75 minutes. While a trained researcher interviewed the child, the accompanying adult filled out a questionnaire. Participants were compensated \$20 per child, and each child also received a small toy worth approximately \$1.

Results

We present the analyses in three sections. First, to assess macrosystem level influences, we present and describe differences in responses by religious group affiliation. Second, to examine microsystem and individual level influences we present and describe the relationships between parents' and children's beliefs about prayer and perceptions of God. Third, in a further examination of microsystem level influences, we present findings from a cluster analysis examining the patterns in parents' perceptions of prayer actions.

Means (and standard deviations) for each of the variables can be found in Table 2, both overall and within each religious group. A univariate ANOVA examining gender differences in each variable revealed a small, but significant effect of gender on child anthropomorphism of God, $F(1,155) = 7.24, p < .01, \eta_p^2 = .05$. Girls ($M = 0.18, SD = 1.09$) were more anthropomorphic than boys ($M = -0.27, SD = 0.95$) in their conceptions of God. None of the other variables differed significantly by gender. Children were also significantly more anthropomorphic than their parents, $t(156) = 11.10, p < .001, r = .21$.

In terms of children's views on prayer actions, children were significantly more likely to claim that prayer actions had instrumental-internal functions than instrumental-external functions, $t(156) = 7.03, p < .001, r = .41$ or ritual-communicative functions, $t(156) = 6.24, p < .001, r = .37$. Parents were also significantly more likely to claim that prayer actions had instrumental-internal functions than instrumental-external, $t(156) = 5.97, p < .001, r = .26$, or ritual-communicative, $t(156) = 8.09, p < .001, r = .49$, functions. Additionally, parents were significantly more likely to claim that prayer actions had instrumental-external functions than ritual-communicative functions, $t(156) = 3.65, p < .001, r = .20$.

Religious Affiliation

To examine religious group differences, univariate ANOVAs with Tukey's post-hoc tests were conducted. There was a moderate significant main effect of religious group for both parent and child anthropomorphism of God. Tukey's post-hoc analyses indicated the Muslim children had significantly lower anthropomorphism conceptions than the Protestant children ($p < .001$) and trended toward significantly lower anthropomorphism conceptions than the Catholic children ($p < .10$). Protestant and Catholic children did not differ from each other. This pattern was similar for parent anthropomorphism of God; Muslim parents had significantly lower anthropomorphism conceptions than Protestant ($p < .001$) or Catholic ($p < .001$) parents, who did not differ from each other.

TABLE 2 Means by religious group

| | Overall | | Protestant | | Catholic | | Muslim | | Between religious groups | |
|-------------------------|----------|-----------|------------|-----------|----------|-----------|----------|-----------|--------------------------|------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>F</i> | η^2_p |
| Child Anthropomorphism | -0.01 | -1.05 | 0.40 | 1.00 | 0.01 | 0.87 | -0.43 | 1.06 | 10.40*** | .12 |
| Parent Anthropomorphism | -1.02 | 0.71 | -0.82 | 0.76 | -0.68 | 0.73 | -1.43 | 0.40 | 20.44*** | .21 |
| Child I-E Function | 0.43 | 0.79 | 0.29 | 0.72 | 0.36 | 0.63 | 0.63 | 0.91 | 3.05* | .04 |
| Child I-I Function | 1.31 | 1.14 | 1.19 | 1.18 | 1.28 | 1.17 | 1.46 | 1.09 | 0.85 | .01 |
| Child R-C Function | 0.53 | 0.80 | 0.48 | 0.80 | 0.33 | 0.62 | 0.71 | 0.87 | 2.94† | .04 |
| Parent I-E Function | 0.05 | 1.15 | 0.40 | 0.90 | 0.70 | 0.82 | -0.73 | 1.13 | 31.02*** | .29 |
| Parent I-I Function | 0.61 | 0.90 | 0.53 | 0.93 | 1.01 | 0.62 | 0.43 | 0.97 | 5.56** | .07 |
| Parent R-C Function | -0.36 | 0.80 | -0.59 | 1.18 | 0.01 | 1.15 | -0.36 | 1.35 | 2.74† | .04 |

Note: † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

There was no significant effect of religious group on children's instrumental-internal responses; however there was a small but significant effect of religious group on children's instrumental-external responses and a trend toward a small effect of religious group on children's ritual-communicative responses. Post-hoc analyses indicated the Muslim children were significantly more likely than the Protestant children to claim prayer actions had instrumental-external functions ($p < .05$) and were more likely than the Catholic children to say that the prayer actions had ritual-communicative functions ($p < .10$).

For parents, there were small but significant main effects of religious group on parents' endorsement of instrumental-external and instrumental-internal functions for prayer actions, and there was a trend toward a small effect of religious group on the endorsement of ritual-communicative functions to prayer actions. Post-hoc analyses indicated Muslim parents were significantly less likely than Protestant ($p < .001$) and Catholic ($p < .001$) parents to endorse instrumental-external functions for prayer. In contrast, Catholic parents were significantly less likely than Muslim ($p < .01$) and Protestant ($p < .05$) parents to endorse instrumental-internal functions for prayer actions. Finally, Catholic parents were more likely than Protestant parents ($p < .05$) to endorse ritual-communicative functions for prayer actions.

In sum, religious group affiliation played a significant role in parents' and children's concepts of God and prayer. Muslim children and parents anthropomorphized God less than their Protestant or Catholic counterparts. Overall, children and parents were most likely to attribute an instrumental-internal function to conventional prayer actions, but Catholic parents endorsed the function less than Muslim or Protestant parents. When attributing an instrumental-external function to prayer actions, Muslim children endorsed the function more than Protestant children and Muslim parents endorsed the function less than Protestant or Catholic parents. When attributing a ritual-communicative function, Muslim children endorsed the function more than Catholic children and Catholic parents endorsed the function more than Protestant parents.

Child and Parent Anthropomorphism

Bivariate correlations examined the relations of the variables with age as well as with each other (see Table 3). There was a moderate significant negative correlation between age and children's anthropomorphism, $r = -.34$, $p < .001$, and small significant positive correlations between age and children's endorsement of instrumental-internal functions, $r = .19$, $p < .05$, and ritual-communicative functions, $r = .16$, $p < .05$, to the prayer actions. No other variables were significantly correlated with age.

TABLE 3 *Correlation matrix*

| | Age | CA | PA | C-I-E | C-I-I | C-R-C | P-I-E | P-I-I |
|-------|--------|-------|-------|--------|--------|-------|-------|-------|
| CA | -.34** | | | | | | | |
| PA | -.00 | .23** | | | | | | |
| C-I-E | .05 | -.13 | -.15† | | | | | |
| C-I-I | .19* | -.09 | -.16* | -.29** | | | | |
| C-R-C | .16* | -.04 | .01 | -.12 | -.30** | | | |
| P-I-E | -.11 | .23** | .20* | -.09 | -.01 | -.15* | | |
| P-I-I | -.11 | .05 | .03 | .01 | -.03 | -.11 | .37** | |
| P-R-C | -.05 | .08 | .18* | .02 | .01 | -.12 | .33** | .07 |

Note. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; CA = Child Anthropomorphism; PA = Parent Anthropomorphism; C-I-E = Child Instrumental-External; C-I-I = Children Instrumental-Internal; C-R-C = Child Ritual-Communicative; P-I-E = Parent Instrumental-External; P-I-I = Parent Instrumental-Internal; P-R-C = Parent Ritual-Communicative.

Children's anthropomorphism of God was significantly positively correlated with parents' anthropomorphism, $r = .23$, $p < .01$, and with parents' endorsement of instrumental-external functions to prayer actions, $r = .23$, $p < .01$. Of note is that children's anthropomorphism of God was not significantly correlated with their own views of the functions of prayer actions. However, children who were more likely to endorse instrumental-internal functions for prayer actions had parents who were significantly less anthropomorphic, $r = -.16$, $p < .05$.

Prayer Action Functions

We were interested in the extent to which parents may endorse one function of prayer actions over other functions of prayer actions. To this end, we conducted a cluster analysis of the parents' prayer action function variables. A K-means cluster analysis set to determine two clusters divided parents into two groups based on the pattern of responses to the three prayer functions questions (see Table 4). In Cluster 1 ($n = 92$), parents had a relatively high endorsement of the instrumental functions of prayer actions, but also had some moderate endorsement of the ritual-communicative functions of prayer actions. Thus, we have termed this cluster 'Instrumental + Ritual'. In Cluster 2 ($n = 60$), parents had a relatively stronger endorsement of the instrumental-internal functions in contrast with the strong lack of endorsement of the instrumental-external and ritual-communicative functions of prayer actions. Thus, we have termed this cluster 'Instrumental-Internal'.

TABLE 4 Cluster analysis of prayer action functions

| | Cluster | | | | | |
|----------------------------|---|-----------|---|-----------|------------------|------------|
| | Instrumental + Ritual (<i>n</i> = 92) | | Instrumental – Internal (<i>n</i> = 60) | | Between clusters | |
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>F</i> | η_p^2 |
| Parent I-E Function | 0.71 | 0.69 | -1.03 | 0.88 | 185.50*** | .55 |
| Parent I-I Function | 0.78 | 0.77 | 0.31 | 1.02 | 10.38** | .07 |
| Parent R-C Function | 0.14 | 1.12 | -1.18 | 0.99 | 55.46*** | .27 |
| Parent Anthropomorphism | -0.88 | 0.77 | -1.23 | 0.58 | 8.69** | .06 |
| Child I-E Function | 0.42 | 0.82 | 0.47 | 0.77 | 0.10 | .00 |
| Child I-I Function | 1.26 | 1.15 | 1.42 | 1.12 | 0.68 | .01 |
| Child R-C Function | 0.45 | 0.69 | 0.70 | 0.94 | 3.70† | .02 |
| Child Anthropomorphism | 0.18 | 1.05 | -0.35 | 0.98 | 9.81** | .06 |

Note. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

There were no differences in mean age for children who had parents that fell into the Instrumental + Ritual ($M = 4.66$, $SD = 0.70$) cluster or the Instrumental-Internal ($M = 4.83$, $SD = 0.66$) cluster. Examination of the clusters revealed that Protestant and Catholic parents were significantly more likely to fall into the Instrumental + Ritual cluster, and Muslim parents were significantly more likely to fall into the Instrumental-Internal cluster (Instrumental + Ritual: $n = 92$, 70% of Protestants, 78% of Catholics, 40% of Muslims. Instrumental-Internal: $n = 60$, 30% of Protestants, 22% of Catholics, 60% of Muslims. $\chi^2 = 17.73$, $df = 2$, $p < .001$). There was a small but significant effect of cluster on parent anthropomorphism, such that parents in the Instrumental-Internal cluster were less anthropomorphic than parents in the Instrumental + Ritual cluster. In terms of children's views on prayer actions, there were no significant differences between the clusters in children's attributions of instrumental-external or instrumental-internal functions to prayer actions. However, there was a trend toward a small effect of cluster on children's attributions of ritual-communicative functions, such that children in the Instrumental-Internal cluster were somewhat more likely to claim ritual-communicative functions for prayer actions.

Finally, a 2×2 ANCOVA examined children's anthropomorphism of God by cluster and gender, with age and parent anthropomorphism as covariates. Confirming correlational analyses above, there was a moderate significant main effect of age, $F(1,147) = 18.39, p < .001, \eta_p^2 = .11$, and a small significant effect of parent anthropomorphism, $F(1,147) = 7.76, p < .01, \eta_p^2 = .05$. There was also a small main effect of gender, $F(1,147) = 6.04, p < .05, \eta_p^2 = .04$. Finally, there was a small, but significant, main effect of parent cluster, $F(1,147) = 3.88, p < .05, \eta_p^2 = .03$. Children who had parents who fell into the Instrumental + Ritual cluster were more anthropomorphic than children of Instrumental-Internal parents.

Discussion

In this study, we examined whether children's and parents' views that conventional prayer actions served instrumental or ritual functions (Legare & Nielsen, 2015) was related to their attribution of anthropomorphic traits to God (Heipnitz et al., 2015). Participants were children and parents from three religious backgrounds (Protestant Christian, Roman Catholic, and Muslim), and we measured varying levels of influence (Bronfenbrenner, 1988), including individual level factors (child's age and beliefs about prayer actions), micro-system level factors (parents' anthropomorphism and beliefs about prayer actions), and macrosystem level (religious group affiliation) influences.

Individual Level Influences

At the individual level, age was negatively related to child anthropomorphism and positively related to children's views that prayer actions had instrumental-internal and ritual-communicative functions. Consistent with past research on anthropomorphism of God, older children in this study attributed less human-like attributes to God than younger children (Shtulman, 2008). Additionally, although prior research has suggested children primarily view prayer as a form of communication (Long et al., 1967; Woolley & Phelps, 2001), children did not view conventional prayer actions as being in the service of communication with God. Instead, children were most likely to indicate that prayer actions helped the person who is praying to think about God. Other research has suggested children have a more inflexible view regarding conventional prayer actions after they have achieved false belief understanding in humans, but their views on flexibility in prayer are unrelated to the attribution of false beliefs to God (Shaman et al., 2016). Together, these findings suggest that children may

view prayer as a form of communication with God but may view the specific actions of prayer as communicating to others, rather than to God, the intention to be praying.

Although not hypothesized, analyses also revealed that girls had more anthropomorphic views of God than boys. Given recent findings suggesting no gender differences in children's anthropomorphizing generally (Severson & Lemm, 2015), these findings point to the need for more research examining the role of gender in children's developing concept of God. One possible explanation is that girls and boys are socialized differently to think about God. Adult women tend to be more religious than men and are more likely than men to believe that God plays a role in personal decision-making (Gallup, 2002). One possibility is that girls' more anthropomorphic view of God emerges early in development, and that this more anthropomorphic view of God in early childhood supports a more personal relationship with God for women in adulthood. However, given that children in the preschool years are more likely to learn from same-sex than opposite-sex informants (e.g., Taylor, 2013), another possibility is that girls could be socialized differently in their concepts of God early in life. Consistent with a Vygotskian view of concept formation (Vygotsky, 1934/1986), girls may learn (either implicitly or explicitly) from adult women about the importance of God's involvement in one's personal life, and this view could be promoted by a view of God as being more human-like (and therefore more relatable). As there is mixed evidence about whether adult woman may be more anthropomorphic generally than men (Severson & Lemm, 2015), future research should examine gender differences in anthropomorphism of God.

Microsystem Level Influences

At the microsystem level, parents were less likely than children to claim that prayer actions could serve a ritual-communicative function, and both parents and children more commonly endorsed the instrumental-internal (e.g., meditative) function of prayer actions. However, although children's views on God were correlated with parents' views on God, children's views on prayer were not correlated with parents' views on prayer. It is useful here to consider whether parents' responses reflected their explicit, 'theologically-correct' concept of God/prayer or their implicit representations that may be more likely to be triggered in real-time use without conscious reflection (Barrett & Keil, 1996). These findings suggest that parents' explicit reflections on how they view the actions of prayer may not be the messages about the conventional actions of prayer they communicate to children in real-time interactions.

Although most parents strongly disagreed with the view that prayer actions had ritual-communicative functions, some parents did attribute a ritual-communicative function to prayer actions. A cluster analysis revealed two clusters of parents: parents who only endorsed an instrumental-internal function of prayer actions and parents who indicated some level of possibility that prayer actions could serve a ritual-communicative function. Children of the latter parents had significantly more anthropomorphic views of God. These findings suggest that although parents rarely viewed the function of prayer actions as communicative, when this view of prayer actions was incorporated to some degree in parents' concept of prayer, their children had a more anthropomorphic view of God.

Adding a dimension to this explanation, children who observe religious practices are likely to internalize the intentions of the ritual actors (Tomasello, Kruger, & Ratner, 1993). In suggesting the importance of the prayer actions for communication with God, parents may imply for children that God *needs* the actions to be performed that way in order to understand the person's prayer. The implication that God cannot (or will not) hear a person's prayers without these conventions could be incorporated as anthropomorphic attributions in children's God concepts during these 'pseudoconcept' years (Vygotsky, 1934). In light of the fact that few parents attributed communicative functions to prayer actions at all, these findings suggest that if parents provide even minimal indication that conventional prayer actions are required for God to hear the person praying, children may quickly and easily incorporate this information implying humanlike limitations into their concept of God.

Macrosystem Level Influences

At the macrosystem level, Muslim parents had less anthropomorphic conceptions of God than Protestant and Catholic parents. Given findings that suggest that Christians who use religious imagery in their worship have more anthropomorphic views of God (Barrett & VanOrman, 1996), and that Islam does not condone the use of anthropomorphic imagery to represent God, these findings offer support for the relationship between iconic imagery and anthropomorphic representation of God. Additionally, Muslim parents were more likely than Protestant and Catholic parents to place particular emphasis on the reflective functions of prayer actions. The combination of these factors at the macrolevel probably contributed to the fact that Muslim children were significantly less anthropomorphic in their God concepts than Protestant and Catholic children, and unlike Protestant and Catholic children, did not anthropomorphize God much at all. This pattern of findings points to the critical need for incorporating participants from diverse religious belief systems and

practices into research on cognition and religion before drawing broad conclusions about the nature of religious thinking.

Limitations

One limitation of the current study is that in focusing on the conventional actions of prayer, we limited the scope of functions that parents and children could report. It is likely that parents' and children's views of prayer are multi-dimensional and may not be particularly related to the specific actions involved in prayer. Thus, future research should consider the ways in which other aspects of prayer (e.g., the specific content of children's prayers, the difference between ritualized and spontaneous prayers, the extent to which prayer promotes religious identity and social cohesion) may be related to children's views on God.

A second limitation is that this study was limited to inferring the connection between parents' explicit endorsement of the functions of prayer and the messages about prayer they communicate to their children. Even though parents endorsed a particular view of prayer after explicit contemplation, they may act and talk as if prayer has a different function in the presence of their children during everyday activities. Indeed, parents' and children's views of prayer were unrelated in the current study, showing evidence of this type of dissonance. Future research should examine parents' and children's naturalistic interactions to more accurately assess the messages children receive regarding prayer and God.

Conclusion

Despite these limitations, the actions involved in prayer are a part of the context in which children learn about communicating with God. Children's familiarity with prayer and the relationships between views on prayer and views on God indicate prayer provides a common context through which parents, perhaps implicitly, structure the ways in which their children think about and interact with the supernatural and thereby structure children's concepts of God. Engagement in prayer in the preschool years is one foundation upon which concepts of God are built. Prayer provides a context in which children are encouraged to think about God (by, and with, their parents), and these findings indicate that the actions involved in prayer are incorporated into children's concepts of God in early childhood. The implication is that these features may remain a part of implicit representations of God throughout development and into adulthood, suggesting the fundamental role of prayer not only for religious experience but also for religious cognition.

References

- Barrett, J.L., & Keil, F.C. (1996). Conceptualizing a non-natural entity: Anthropomorphism in God concepts. *Cognitive Psychology*, *31*, 219–247. doi:10.1006/cogp.1996.0017.
- Barrett, J.L., & VanOrman, B. (1996). The effects of the use of images in worship on God concepts. *Journal of Psychology and Christianity*, *15*, 38–45.
- Bronfenbrenner, U. (1988). Interacting systems in human development: Research paradigms, present and future. In N. Bolger, A. Caspi, G. Downey, & M. Moorehouse (Eds.), *Persons in context: Developmental processes*. Cambridge: Cambridge University Press.
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science*, *333*, 959–964. doi:10.1126/science.1204529.
- Gallup, G.H., Jr. (2002, December 17). Why are women more religious than men? Retrieved from <http://www.gallup.com/poll/7432/why-women-more-religious.aspx>.
- Heiphetz, L., Lane, J.D., Waytz, A., & Young, L.L. (2015). How children and adults represent God's mind. *Cognitive Science*, *39*, 1–24. doi:10.1111/cogs.12232.
- Hood, R.W., Jr., Morris, R.J., & Watson, P.J. (1989). Prayer experience and religious orientation. *Review of Religious Research*, *31*, 39–45. doi:10.2307/3511022.
- Kelemen, D. (1999). Function, goals and intention: Children's teleological reasoning about objects. *Trends in Cognitive Science*, *3*, 461–468. DOI: [http://dx.doi.org/10.1016/S1364-6613\(99\)01402-3](http://dx.doi.org/10.1016/S1364-6613(99)01402-3).
- Legare, C.H., & Nielsen, M. (2015). Imitation and innovation: The dual engines of cultural learning. *Trends in Cognitive Sciences*, *19*, 688–699. doi:10.1016/j.tics.2015.08.005.
- Long, D., Elkind, D., & Spilka, B. (1967). The child's conception of prayer. *Journal for the Scientific Study of Religion*, *6*, 101–109. doi:10.2307/1384202.
- Pew Research Center. (2009). Prayer in America. Retrieved from <http://www.pewresearch.org/2009/05/07/prayer-in-america/>.
- Richert, R.A., & Granqvist, P. (2013). Religious and spiritual development in childhood. In R.F. Paloutzian & C.L. Park (Eds.), *Handbook of the psychology of religion and spirituality* (2nd ed., p. 2013). New York, NY: Guilford Press.
- Severson, R.L., & Lemm, K.M. (2015). Kids see human too: Adapting an individual differences measure of anthropomorphism for a child sample. *Journal of Cognition and Development*. published online. doi:10.1080/15248372.2014.989445.
- Shaman, N.J., Saide, A.R., Lesage, K.A., & Richert, R.A. (2016). Who cares if I stand on my head when I pray? Ritual inflexibility and mental-state understanding in preschoolers. *Research in the Social Scientific Study of Religion*, *27*, ##–##pages.
- Shtulman, A. (2008). Variation in the anthropomorphization of supernatural beings and its implications for cognitive theories of religion. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34*, 1123–1138. doi:10.1037/0278-7393.34.5.1123.
- Spilka, B., & Ladd, K.L. (2013). *The psychology of prayer*. New York, NY: Guilford Press.

- Taylor, M.G. (2013). Gender influences on children's selective trust of adult testimony. *Journal of Experimental Child Psychology, 115*, 672–690. doi: 10.1016/j.jecp.2013.04.003.
- Tomasello, M., Kruger, A.C., & Ratner, H.H. (1993). Cultural learning. *Behavioral and Brain Sciences, 16*, 495–511. doi: 10.1017/s0140525x0003123x.
- Vygotsky, L.S. (1934/1986). *Thought and language*. Cambridge, MA: MIT Press.
- Woolley, J.D., & Phelps, K.E. (2001). The development of children's beliefs about prayer. *Journal of Cognition and Culture, 1*, 139–166. doi: 10.1163/156853701316931380.