Chapter 4
Humanness and Non-Humanness in Children's Drawings of God: A Case Study from French-Speaking Switzerland

Grégory Dessart and Pierre-Yves Brandt

Abstract Past research on children's concepts of God has suggested a developmental tendency moving from anthropomorphic to non-anthropomorphic representations. Besides replication, we tested a model of *de-anthropomorphization*. *Methods*. We collected drawings of God (N = 532) from 5- to 17-year-old children in French-speaking Switzerland and constructed a model of anthropomorphism and *de-anthropomorphization*. Age, gender, and religiosity (i.e., schooling) were utilized as predictor variables in logistic regression analyses. *Results*. Consistent with past research, both age and religious schooling facilitated the occurrence of non-anthropomorphic God representations. Analyses on de-anthropomorphization revealed that age had a positive effect on most strategies (with one exception), and that schooling did not play a significant role in that regard, neither did gender. *Discussion*. The current findings move beyond binary oppositions concerning anthropomorphic God figures, which appear to be conceptually much more complex than previously anticipated. Theoretical as well as practical implications are discussed.

Keywords Anthropomorphism · Cognitive science · Religion · God concepts · Children · Drawings · Development · Content analysis · Individual differences

In the previous chapter "Children's God representations: Are Anthropomorphic God Figures *Only* Human?" (Chap. 3, this volume) we reviewed relevant scientific literature in order to formulate a revised model of anthropomorphism in children's representations of God.[1] We found that in children's drawing of God, composite

[1] Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the

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God figures predominate. More specifically, children generally represent God as both human and non-human—at the same time. This finding supports the idea that such representations can be multiple, as Gibson (2008) described in his notion of *god-schemas*. In the present case, the conceptual mixture takes place within a single drawing instance (which corresponds, in that sense, to a specific god-schema). While echoing the idea of minimal counter-intuitiveness found in religious entities (e.g., Boyer, 1994), this finding also moves the debate forward as it allows us to hypothesize that this composite quality of God concepts undergoes change with regard to its occurrence and its degree of complexity, as a function of age and (religious) education.

In this project we test our revised model on empirical data, specifically, children's drawings of God collected in French-speaking Switzerland. We describe the general rationale of this research, based on the model developed in the previous chapter. Then, we present two studies; the first replicates past findings on anthropomorphism in children's drawings of God (Brandt et al., 2009; Hanisch, 1996). The second study addresses the mixture of humanness and non-humanness of God found in in such drawings. For both studies, we provide a conceptual visualization (in the form of a tree). The general discussion section will conclude this empirical research and will serve as a follow-up to the underlying theoretical work (see Chap. 3, this volume), summarizing the findings and suggested directions for future study.

Current Research

In order to examine the anthropomorphism of God-representations, and particularly how it develops over time, the current study assessed children's drawings of God. Drawings are relevant for such an inquiry for two reasons. First, trying to explore anthropomorphic and non-anthropomorphic representations verbally could be very difficult, especially with younger children. Drawings allow children to express their visualization of God without the limitation of words, and thus it allows researchers to make comparisons across a wide range of ages. Second, drawings can be used in a free-response format and may benefit from a wider breadth of answers than strict experimental tasks would. For this project, we collected drawings of God from a predominantly Christian sample of children in French-speaking Switzerland. The sample is representative of the local religious and cultural context, participants were mostly Catholic or Protestantism (Reformed).[2]

introductive chapter of this book (Chap. 1, this volume).

[2] Switzerland, in fact, is geographically organized by cantons that are officially defined by either one or the other of these two religious denominations.

General Rationale

The first aspect that motivated this project was the need to move beyond the exclusive binaries found in past research on children's drawings of God. These binaries include oppositions such as figurative vs. non-figurative (Dandarova, 2013), symbolic vs. non-symbolic (Pitts, 1976), or—of more importance to this research—anthropomorphic vs. non-anthropomorphic (Hanisch, 1996). More generally, in the psychology of religion, anthropomorphic God representations have been opposed to abstract ones (Barrett & Richert, 2003; Gorsuch, 1988). Such a crude distinction seems to miss the great diversity to be found in children's (e.g., pictorial) representations of God. Methods based on an open-answer format, such as drawing, are useful in that respect because they help researchers to move past their own preconceived ideas and allow them start from the data. Thus, constructing a model of conceptualized God representations through the lens of anthropomorphism would be especially useful, because it would help us to identify terminological discrepancies in past research and allow us to move forward, comparing like with like.

We note that anthropomorphic God figures are not "purely" anthropomorphic; rather, they also incorporate characteristics that indicate non-humanness. It is fundamental to acknowledge this. Previous studies have emphasized the emergence of non-anthropomorphic figures, as presumably more evolved than anthropomorphic ones. It is important that researchers explore further into the anthropomorphic figures, seeking for nuances that indicate a conceptual differentiation from the human category in what appear to be otherwise human God figures. This process of conceptual differentiation, changing a human figure in various ways to indicate divinity rather than mere humanness, qualifies as *de-anthropomorphization*. This term is defined in more detail below (see Study 2). In fact, anthropomorphic God figures comprise the majority of children's drawings of God in several studies that have reported this aspect (Brandt et al., 2009; Hanisch, 1996) as well as in the current data. Additionally, researchers need to consider the drawings as multi-dimensional and thus acknowledge that children may use more than one means to deify figures; multiple strategies can co-occur. Our approach recognizes the deep richness of children's drawings of God, rather than simply placing them in "boxes". Further, if researchers adopt a developmental perspective in studying such instances of co-occurrence, a more nuanced, strategy-specific account with greater degrees of complexity may, in fact, be more readily apprehended. It is important for the reader to notice that the term *strategy* is used in this chapter in a sense that implies a potentially wide range of levels of consciousness. This view follows Bull and Scerif's (2001) understanding of strategies that: "may be spontaneous or may arise through some kind of problem-solving process" (p. 276).

A second aspect motivating this research was to verify whether or not ontological complexity in God-representations depends on schooling or gender, and particularly whether it increases as a function of age. The main idea behind this was to export Boyer's notion of *ontological violation* in religious entities (Boyer, 1994) to the Christian tradition and to adopt a developmental viewpoint, assessing

child-participants in order to trace the progression of possible patterns. While Boyer's theory relies on the assumption that the subject perceives some minimal *counter-intuitiveness* in religious entities, one may doubt that children acknowledge such adult perceptions. In fact, it could be argued that either young children fail to recognize any oddity of counter-intuitive properties of a religious entity or they find the characteristics of the entity to be intuitive. We can suggest a human-looking God with wings, flying in the sky, as an example of the latter. An adult will likely appraise this as somewhat odd, but a child, having heard that God is a man who lives in the sky, might find this image intuitive; it would be quite normal to have wings if you lived in the sky. Nevertheless, counter-intuitive or not, some characteristics may be perceived as extraordinary. In that sense, living in the sky and having wings is quite unusual for a human-looking individual, and it is that unusual quality that demarcates the figure as a representation of God—not just an ordinary human. Now, the main question is whether or not there is empirical evidence to indicate that children do perceive the extraordinary in events or characters.

There are developmental differences in the types of causal explanations children might put forth when facing a variety of phenomena. It has been shown that 4-year-olds tend to provide "magical" explanations more often than "physical" ones, unlike 5-year-olds, who are more inclined to the latter (Rosengren & Hickling, 1994). Harris et al. (1991) have noted that while 4- to 6-year-olds are capable of distinguishing between fantasy and reality when presented different types of items, it is not systematically clear to them whether an imagined creature could become real or not. Similarly, children aged 3, 5, and 7 years consistently distinguish between reality and fantasy ("magic") without necessarily discarding the possibility that fantasy could become reality (Johnson & Harris, 1994). On that basis, it has been suggested that children may not limit their classification of events to real or not real. Instead, they might judge events as unexpected, impossible, or magical (Harris, 1994).

From the above, it can be gathered that although there are fine nuances in the way children interpret unusual events, even preschool children do perceive the extraordinary aspects of certain entities or situations. Therefore, from a developmental viewpoint, it is sufficient to assume that the participants from the current study present such ability. Further, the essence of the current inquiry deals, not with the interpretation of an event, but with the active expression of an idea, the graphic representation of which might draw upon extraordinary qualities. To illustrate this point, when investigating the ways that children de-anthropomorphize figures in their drawings of God, our interest does not lie in whether or not they believe that the figure they have drawn actually exists in reality, exactly as they have drawn it, but rather we are interested in how unusual it is. The unusualness is exactly what may mark a central difference between representations of God and representations of ordinary human beings. Because young children are able to make distinctions among a variety of sub-categories within the sentient beings category (Carey & Spelke, 1994), expressing some form of non-humanness in co-occurrence with humanness in the God figure is all but trivial. Drawings that indicate a knowledge of different categories, including that of the human being, are likely to reveal some of the conceptual underpinnings of God figures, as children understand them.

The current research therefore aimed to test this. The main hypothesis formulated for Study 2 posits that non-humanness would become more acute (as a matter of frequency and complexity) with age due to conceptual refinement, rather than diminish as a result of a more accurate perception. We anticipate that this will be seen in the de-anthropomorphization of human God figures, which can conveniently be tested by analysing children's drawings, based on the strategies reported in the theoretical model ensuing from Study 1.

Going beyond the idea of ontological violations (Boyer, 1994), current research can draw upon conceptual change that occurs when categories undergo major refinements (Carey & Spelke, 1994) as well as the possibility that the concept of God may be a hybrid one (Vicente & Martínez Manrique, 2016). Based on the latter, one would assume that mixing humanness with non-humanness in a single God figure would reflect an underlying mix of conceptual networks. The assumption that such a mix might be age-incremental borrows from Piaget's notion of *distantiation* (Piaget, 1929, 1951), which states that one progressively understands the world from a less egocentric (including anthropomorphic) perspective.

Finally, along with providing a much more nuanced account of anthropomorphism in children's God figures, current research should, for the sake of credibility, attempt to reproduce previous findings relying on anthropomorphic vs. non-anthropomorphic representations, that is, Hanisch (1996) and, up to some point, Brandt et al. (2009).

Purpose of This Research

The purpose of the current research was to draw upon past research on anthropomorphism in children's drawings of God and to move the inquiry further. We conducted two studies. The first study is a replication of past findings, showing a shift from anthropomorphic to non-anthropomorphic God-figures. We also intended to bring more clarity to the hierarchical system underlying such types of drawings. We designed the second study to move beyond exclusive binaries, and specifically to explore the de-anthropomorphization strategies exhibited by human-based God figures. This is a way of acknowledging the co-occurrence of humanness and non-humanness in God figures drawn by children.

General Method

In this section, we present the data collection process and measures utilized for the current inquiry. We used the same data for both studies, so the data collection process outlined below pertains to both studies. We detail specific analyses and results for each study in their respective sections, below.

Data Collection

Participants

A total of 532 participants, 5–17 years old (*Min* = 5.64 years, *Max* = 17.24 years, *Mean* = 11.05 years, *SD* = 2.46 years, 51.3% girls), provided a drawing of God that was included in analyses for the current project. Researchers in French-speaking Switzerland met with participants either in the context of regular state (secular) instruction (43.2%) or in the context of religious instruction. The latter was divided into either a religion class at school (as in the canton of Fribourg) or an after-school activity. The primary content of religious study consisted in either Protestant or Catholic catechism, roughly equally divided in the group of participants that researchers met in the context of religious instruction.

Consent was obtained through opt-out for approximately half of the sample, and through opt-in (involving written parental consent) for the other half.

Materials

Participants received the same materials in order to respond to the drawing task: an A4 sheet of white drawing paper, an HB pencil, a ten-color set of wax pastels (yellow, orange, red, pink, purple, blue, green, brown, black, white) and an eraser. After finishing the drawing task, participants also completed a questionnaire that gauged religiosity measures.

Procedure

Researchers met with small groups of participants (about ten children at a time, together in one room) and in the presence of their teacher. All were seated in such a way intended to discourage copying from one another, and ideally, each participant had a table to him/herself. In order to preserve spontaneity, participants were not given advance notice of the task. The task was fourfold and involved: a drawing task (i.e., a drawing of God), a written recall (restatement) of the task, a written description of the participant's own drawing, and a questionnaire. Participants completed the entire task in one session of 30–50 min, although they were told that they could take as much time as they needed.

For the drawing task, we asked the children if they had ever heard the word "God" and suggested that they close their eyes to imagine what God looks like. We then asked the participants to draw God as they had just imagined. We avoided all reference to gender articles, in order not to influence the type of representation (e.g., feminine or masculine, anthropomorphic or not). More details about specific wording can be found in Dandarova-Robert et al. (2016). This task qualifies as a free-drawing task in the sense that participants were not required to perform according

to predetermined criteria, but were instead asked to provide a graphic response to an open-ended question.

Participants worked through the task quietly and individually. After we had given the drawing instructions to the group as a whole, they provided all subsequent instructions, whispered, in one-on-one interactions. Participants would raise their hand to call a member of the research team over at each step of the process, (or if they had any questions at any time). We provided directions for the next step of the task, only when the individual participants had completed the previous step. In this way, the participants were not given knowledge of the tasks in advance. This was particularly important in order to attain a complete answer in the drawing step of the task (e.g., children would thus not be tempted to spread their ideas about God throughout the different segments of the task).

We implemented the written recall of the task to ensure that the participants had a good understanding of what they were being asked to do.

We included the request that participants write a description of their drawing in order to alleviate possible ambiguities in the drawing and facilitate the identification of all elements. Some of the younger participants (5–9 years old) needed assistance with the writing process. In this situation, one of the members of the research team would transcribe the participant's explanation.

We used these explanations in the current study only to the extent that the text related to what the can actually be seen in the drawing; additional verbal elaborations were not be taken into account. We used only the portion of the explanation that related to the drawing itself, and even that portion we only used when necessary to alleviate ambiguity.

The last step in the task involved taking a measure of religiosity. Participants answered a few written questions about their own religiosity and religious socialization.

Finally, at the conclusion of a session, researchers thanked the participants and congratulated them on their drawings.

Religiosity Measures

The main religiosity measure of interest was *religious schooling*, which is described above. Researchers used the context in which the data were collected (religious or secular school setting) to determine this measure.

The questionnaire used to measure religiosity provided us with information about a participant's *religious affiliation* and *prayer practice at home*. We found that the sample was predominantly religious in the sense that 69.4% identified themselves according to at least one religious denomination, versus "does not know" (16.7%), "no religion" (2.3%), or both (0.2%). The majority of participants self-identified according to a denomination from the Christian tradition (64.7%), in descending order: Catholic (38.9%), Protestant (24.2%), Orthodox (0.4%), Evangelical (0.4%), or unspecified (0.8%). Other religious traditions represented included: Islam (3%), Buddhism (0.9%), and Judaism (0.6%). It is important to note

that some overlap occurs between religious traditions: Catholic-Muslim (0.2%). A small number of participants (1.7%) reported both being religiously affiliated and "does not know"/"no religion" (missing data = 9.8%).

Concerning prayer practice, 51.9% of this sample reported praying at home, versus not (missing data = 10.1%).

With regard to possible between-group differences, we observed that: 76.2% of the participants in the religious school group reported being religiously affiliated in contrast to 64.8% of the secular school group. Similarly, concerning prayer practice, 54% of the religious school group reported that they prayed at home as did 49.1% of the secular group. Despite the fact that the religious school group more often reported religious affiliation, both groups may be considered relatively religious.

Religious affiliation and prayer practice helped us to get a better grasp of some religiosity aspects of this sample. However, religious schooling is the only religiosity measure that we retained for the core of the current inquiry. We made this decision because, based on previous research, there is no particular incentive to consider affiliation or prayer practice when examining anthropomorphism. Additionally, we determined that, due to missing data on those measures and the nature of the statistical analyses we anticipated using, the inclusion of those two measures as independent variables would have a detrimental effect on the sample size (which would already be made smaller after narrowing down through the anthropomorphism model, as presented below).

Predictor Variables

We used three predictor variables for our statistical analyses: age, gender, and schooling. Measures are reported for the total N = 532 sample. First, we recorded age as a continuous variable (using the child's exact date of birth and the date of testing): *Min* = 5.64 years, *Max* = 17.24 years, *Mean* = 11.05 years, *SD* = 2.46 years. More details about the age distribution are provided in Table 4.1.

Second, we recorded gender, whether the participant was female (273, 51.3%) or male (259, 48.7%).

Third, we recorded schooling context as secular (230, 43.2%) or religious (302, 56.8%).

Religious Affiliation and Prayer Practice

The participants answered questions regarding their own religious affiliation and whether or not they prayed at home. Among the initial N = 532 sample 379 (71.2%) children identified as religiously affiliated, 101 (19.0%) did not do so, or did not know, and for 52 (9.8%) this piece of information was missing. Regarding prayer practice, 276 (51.9%) reported praying at home, 202 (38.0%) reported not doing so, and for 54 (10.2%) this piece of information was missing. We observe that, overall, participants from this sample were rather religious, and predominately Christian:

Table 4.1 Age distribution

Age (years)	Frequency	Percent
5	1	.2
6	14	2.6
7	43	8.1
8	84	15.8
9	57	10.7
10	62	11.7
11	53	10.0
12	72	13.5
13	71	13.3
14	62	11.7
15	10	1.9
16	2	.4
17	1	.2
Total	532	100.0

Catholic Christian (38.9%), Protestant/Reformed (24.2%), Does not know (16.7%), Muslim (3.0%), Atheist (2.3%), Affiliation and Atheist/does not know, (1.7%) Buddhist (.9%), Christian/not specified (.8%), Jewish (.6%), Orthodox Christian (.4%), Evangelical Christian (.4%), Several affiliations (.2%), Atheist and does not know (.2%).[3]

As mentioned above, we decided that religious affiliation and prayer practice would not be used as predictor variables for a series of reasons. First, there was a relatively high proportion of missing data in that respect (60 cases, 11.3%), and this could become problematic when we take into consideration that sub-samples would progressively be used while reaching down to more specific strategies on the theoretical model tree. Second, we conducted a logistic regression analysis on anthropomorphic vs. non-anthropomorphic figures (outcome variable) for explorative reasons (which corresponds to the crudest anthropomorphism-related distinction in the current inquiry). The statistical model included age, gender, schooling, religious affiliation, and prayer practice as predictor variables (we filtered out missing cases). While schooling had a statistically significant effect ($p = .025$), neither religious affiliation ($p = .100$), nor prayer practice ($p = .566$) achieved statistical significance. As a result of the potential loss of participants for missing cases and the poor

[3] It is important to note that the proportion of children identifying as Muslims or Jewish was low (3.6% altogether), therefore the larger proportion of non-figurative representations of God found in the current sample could not strictly be attributed to religious denominations that discourage representations of the divine. Moreover, only one child identifying as Muslim was found to produce such an indirect representation of God (others were Christians or uncertain about their religious affiliation).

contribution of those two variables, we chose not to include them in further logistic regression analyses.

Statistical Analyses

This section of analysis concerns both Study 1 and Study 2. Given the binary nature of the outcome variables examined we decided to systematically conduct binomial regression analyses with the following predictor variables: age (continuous), gender (female coded as 0, male coded as 1) and schooling (secular coded as 0, religious coded as 1). Alpha was set at 0.05. Based on statistical analyses from both studies, and in order to balance risk for type I and type II errors, we computed and adjusted the p value with Benjamini-Hochberg's (Benjamini & Hochberg, 1995) false discovery rate method for multiple testing.

Study 1: Anthropomorphic vs. Non-Anthropomorphic God Figures: A Replication Study

Study 1: Aim, Objective, and Research Question

The aim of Study 1 was to replicate past findings on anthropomorphic vs. non-anthropomorphic God figures in children's drawings of God.

The objective was twofold. First, we had an interest in tracing roots of anthropomorphic and non-anthropomorphic God figures in relation to the whole data set. This first step would bring more clarity to anthropomorphism in relation to children's drawings of God. This clarity would be particularly useful for resolving discrepancies in the earlier literature. Second, we intended to replicate past findings on this issue using a sample from French-speaking Switzerland.

The research question was also twofold. First, could we organize the data according to a hierarchical system that relates to anthropomorphism? Second, could we replicate past findings using an anthropomorphic vs. non-anthropomorphic opposition with this sample of drawings?

Hypotheses

Based mainly on Hanisch (1996), and Brandt et al. (2009), we hypothesized that both age and religious schooling would have a positive effect on the occurrence of non-anthropomorphic God figures, but that gender would have no effect.

Construction of a Model of Anthropomorphism in God Representations

We proposed a basic model to capture and discriminate between anthropomorphic vs. non-anthropomorphic God representations. Below we provide general considerations about the construction of that model, followed by the ensuing classification system employed to categorize the data.

Classification Procedure

The first author, who was particularly familiar with the data, examined them thoroughly. The classification system that ensued is based on both expectations (top-down) and observations in the data (bottom-up). Indeed, we realized that an anthropomorphic vs. non-anthropomorphic distinction within the data was only reasonable if carried out with caution. For that reason, conceptual differentiations were made prior to reaching this anthropomorphic vs. non-anthropomorphic distinction. This will be presented below.

The drawings of God, themselves, served as the object of study. Raters did have access to a participant's written description of their own drawing, but the raters only used this material to clarify their understanding of ambiguous aspects. We established the condition stating that raters should only assess what is visible in a drawing, so if the text added extra information that was not in the drawing then that extra information was not considered in the classification process. We made this choice in order to limit over-interpretation. Similarly, despite their obvious religious connotation, raters evaluated drawings for the time point of the drawing (e.g., a scene would be considered for itself, independently of anterior or posterior events known in the religious tradition concerned). Thus, we minimized the impact of the rater's theological knowledge in order to avoid potential biases due to speculations about the participant's own knowledge or intentions.

Classification System in the Model

We achieved a data-driven classification of drawings by placing our main focus on anthropomorphic representations of God. A model of this system appears below (Fig. 4.1). It starts with the N = 532 sample of children's drawings of God from the French-speaking Swiss sample. We arrived at this number after we removed ten drawings from consideration because they were not useable for research; they did not respond to the task (i.e., they were unrelated to the topic) or they lacked interpretability.

Working with the usable sample, we first categorized the drawings based on whether the representations of God were direct (figurative) or indirect (non-figurative). We deemed it important to consider this aspect at the very start of the model given that the anthropomorphic qualities of a God figure could only be appreciated if such a figure had been depicted. For example, some participants turned in

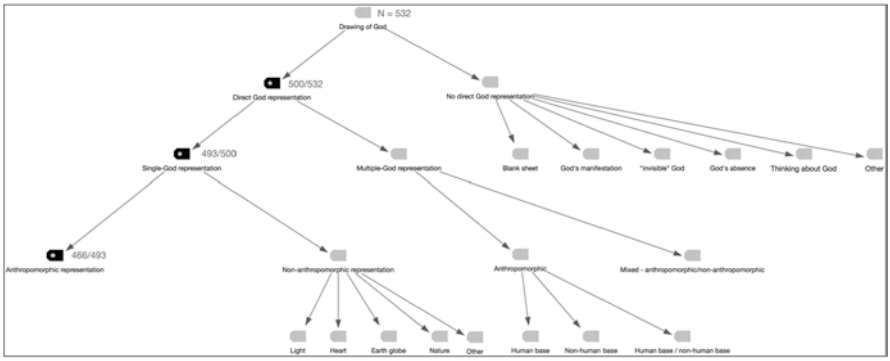

Fig. 4.1 A data-driven model of anthropomorphic God representations tracing hierarchical ramifications

blank sheets of paper (submitted as an actual, intentional response to the task), or depictions of nature highlighting God's creation. These did not qualify as direct representations of God, but qualify instead as indirect God representations. Dandarova (2013) made a similar differentiation, using the same labels and Brandt et al. (2009) used the terms *relation/narration*. This step, distinguishing between direct and indirect representations of God, immediately brought clarity to the classification systems used in past research, and it helps to situate figures in relation to anthropomorphism. That is to say, the direct/indirect distinction serves as a greater hierarchical differentiation when classifying drawings of God.

Another major classification lay in whether the representation of God held a single figure or multiple figures. We deemed it important, for both conceptual and methodological reasons, to distinguish between drawings in which one figure represents God and drawings in which several figures represent God. We made this distinction because in the case of representations that include multiple figures, anthropomorphic and non-anthropomorphic figures may be mixed together. Moreover, anthropomorphic figures may be de-anthropomorphized to various extents; and this can complicate attempts to compare drawings systematically on the basis of one particular dimension (as we show in Study 2, below). One may argue that such decisions create bias in favour of a monotheistic understanding of God representations. Only seven such (multiple figure) drawings were found in this sample. This aspect (i.e., single vs. multiple) has not been addressed in past research, although familiarity with data from Brandt et al. (2009) and Dandarova (2013) allows us to affirm the presence of multiple-figure representations in other samples, including those drawn from an environment that is not predominantly Christian.

Within the category of single-figure God drawings, we made a final distinction between "Anthropomorphic representation" and "Non-anthropomorphic representation." This differentiation is the one that we used as an outcome variable for empirical testing in this study. In order to qualify as non-anthropomorphic, a figure could not exhibit any human feature (e.g., eyes in the sky) or even recall the spatial

organization of human characteristics (e.g., three clouds organized as though the form a pair of eyes and a mouth).

At this stage, even before conducting our statistical analyses, we noticed that non-anthropomorphic representations could not account for much of the data, and it became clear that it was necessary to examine further the predominant (anthropomorphic) type of God figures (see Study 2, below).

Results

Alpha was set at 0.02 (Benjamini–Hochberg correction).

The outcome variable was binary and was based on the distinction between anthropomorphic and non-anthropomorphic (single) God figures. The N = 493 sample was split into these two groups: non-anthropomorphic God representations (27 occurrences, (5.5%) and anthropomorphic God representations (466 occurrences, 94.5%). The logistic regression model was statistically significant, $\chi 2(3) = 17.129$, $p = .001$. The model explained 9.9% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 94.6% of cases. Only schooling remained a statistically significant predictor ($p = .012$, respectively) after alpha correction. Nonetheless, age reached near-significance and was a statistically significant predictor before alpha correction ($p = .027$). Religious schooling and increased age were both associated with an increased likelihood to produce a non-anthropomorphic God representation.

Anthropomorphic vs. non-anthropomorphic God representations overall as well as based on schooling are presented in Figs. 4.2, 4.3, and 4.4. For each figure, percentages are reported by age in order to present a visual representation of the actual proportion of anthropomorphic and non-anthropomorphic God figures. Figure 4.2 indicates such a proportion on the overall (N = 493) sample. From the initial N = 532, 39 cases had already been removed either as unusable or as indirect representations. Figures 4.3 and 4.4 show such a proportion in the following groups, respectively: the secular school group (N = 221, with 9 cases removed), and the religious school group (N = 272, with 30 cases removed). The separate reports for the two groups based on schooling (religious or secular) are provided because schooling is a significant predictor variable and because a similar approach has been taken in previous studies, such as Hanisch (1996) or Brandt et al. (2009).

We can make some observations about developmental patterns. There is a progressive increase across age years for the emergence of non-anthropomorphic God figures overall. There is no sudden "bump" to indicate an actual shift. Instead, we see evidence of a progression that begins at age seven, and becomes more marked after age ten. In the secular schooling group, the use of non-anthropomorphic figures to represent God begins later, at age ten. Although the developmental tendency, with increased age, appears to move toward the uses of more non-anthropomorphic figures, it is not straightforward, and there are a few leaps around 10, 13, 15 and 16 years. However, this last observation might be misleading; we must recall that in

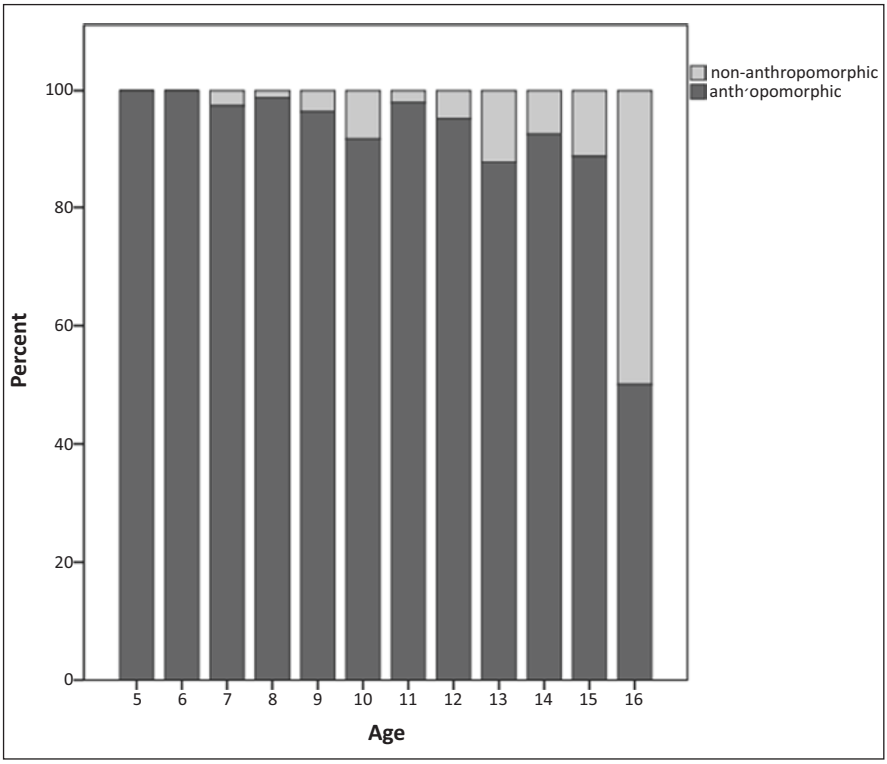

Fig. 4.2 Anthropomorphic vs. non-anthropomorphic God representations overall

this sample, the only participants appearing in that age bracket are drawn from the religious school group.

In order to further the analyses of developmental patterns, we conducted inferential statistics between five age groups: 5–6, 7–8, 9–11, 12–14, and 15–16 years. The use of age groups helped avoid multiplying analyses, and the consequential alpha correction was maintained at an acceptable level of severity. We also split the sample into two groups based on the type of schooling, i.e., religious or secular. We compared age groups by pairs, in an incremental fashion. More specifically, we only compared age groups that were adjacent to one another. No significant difference was found. It is worthwhile to note that the comparison between the 5–6 years and 7–8 years age groups could not be computed in the secular school group due to an absence of non-anthropomorphic figures. Similarly, we could not compute the comparison between the 12–14 years and 15–16 years age groups in the secular school group due to the lack of drawings in the last age range for that group. The general absence of statistical significance may result from the fact that age was a significant contributor overall only. However, it was no longer significant after alpha correction. Therefore, observations about developmental patterns must be made with much caution as they might represent trends rather than actual differences. It is worthwhile to note that for most crosstab comparisons, analyses relied on fewer

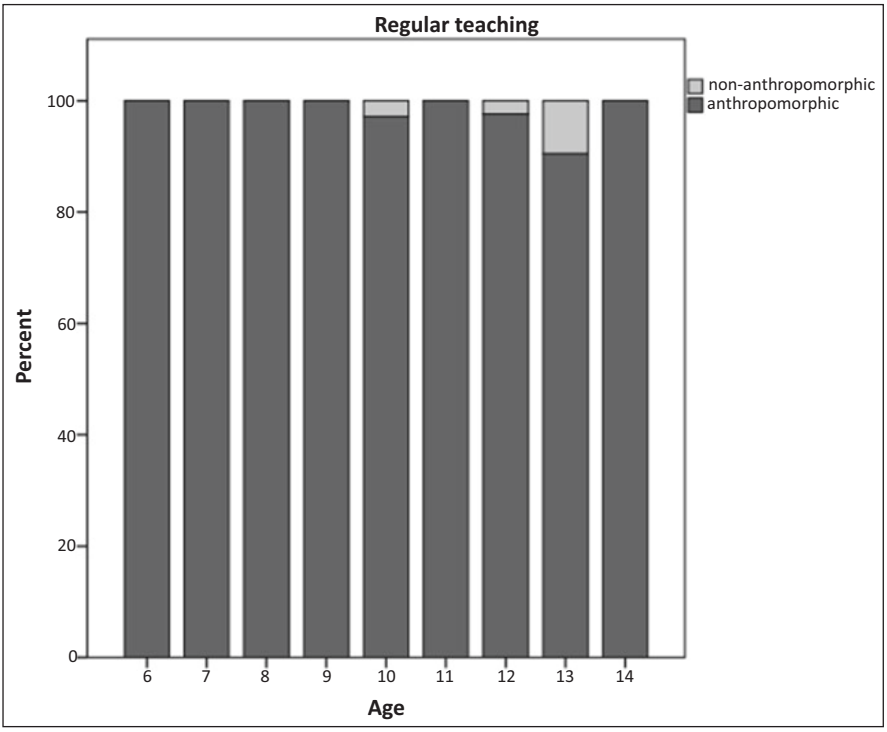

Fig. 4.3 Anthropomorphic vs. non-anthropomorphic God representations in regular teaching

than five cases in about 50% of scenarios, which is due to the lower amount of non-anthropomorphic God figures.

Discussion

In this study, we aimed to replicate past findings on anthropomorphic vs. non-anthropomorphic God figures in children's drawings of God (Brandt et al., 2009; Hanisch, 1996) in a French-speaking, Swiss sample. This replication was supported to some degree: older participants who were receiving religious schooling were more likely to draw a non-anthropomorphic God figure. However, age was not significant after alpha correction for multiple testing. It must be considered that the model proposed in this study departs from Hanisch (1996) by not considering indirect representations of God to be among non-anthropomorphic God figures. We anticipate that non-figurative depictions of God, lying higher in the tree of the model, would be more likely to be produced by older participants, as observed in Dandarova (2013). Grouping them together with direct representations of God that we identified as non-anthropomorphic in the current research may have led to a

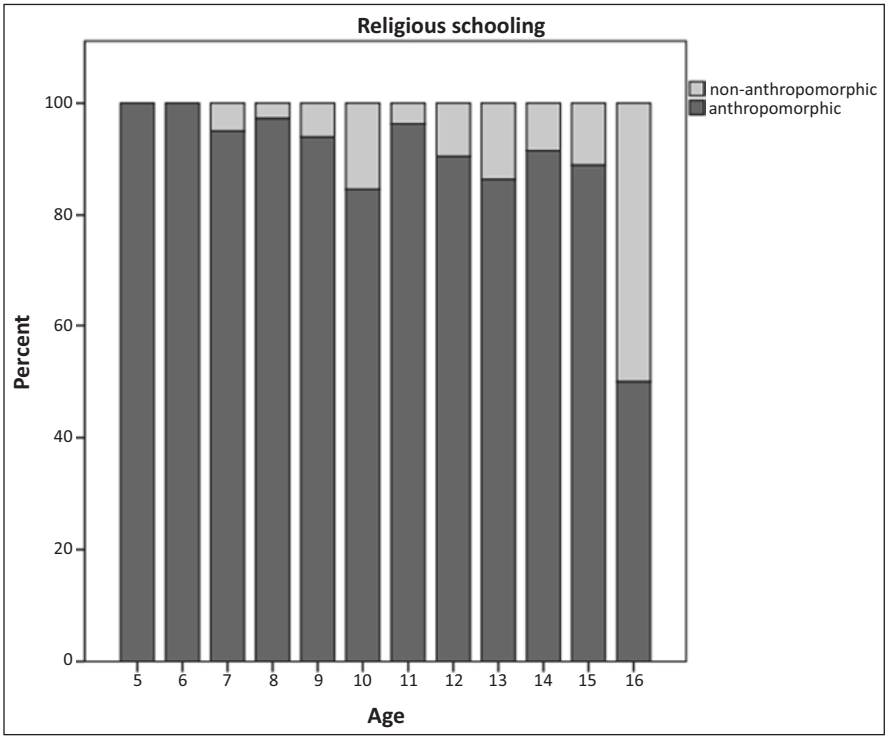

Fig. 4.4 Anthropomorphic vs. non-anthropomorphic God representations in religious schooling

stronger effect of age. Overall, taking into account developmental patterns on the basis of religious or secular schooling, our findings are similar to the trends found in Hanisch (1996) and Brandt et al. (2009), that is, non-anthropomorphic God figures occur earlier among children receiving religious schooling and progress in a more sustained manner as age increases. We will discuss this replication in two steps: first, by age and cognitive development, and second, by schooling. However, before we address this concern about the "behaviour" of the data in relation to independent variables, we will take a quick look at the representativity of anthropomorphic God figures in previous central studies (Brandt et al., 2009; Hanisch, 1996).

The proportion of non-anthropomorphic God figures in this sample is quite small: 5.5%. Of course, as the classification system starts prior to the anthropomorphic vs. non-anthropomorphic distinction, this number might be misleading. Anthropomorphic God figures represent in total 87.6% of the N = 532 sample. This equates almost perfectly with the proportion (87.5%) reported by Hanisch (1996) in his non-religious group. However, this percentage is much greater than the proportion of anthropomorphic God figures in his religiously socialized group: 57.8%. When examining the different types identified by Brandt et al. (2009) in a Japanese sample, about 86.62% of the drawings could be judged to be anthropomorphic. They have not used a dichotomous distinction, so for this estimation we considered

the following types non-anthropomorphic: *non-anthropomorphic entity*, *relation/narration*, *light*. Once again, this gets close to the percentage found in the non-religious group by Hanisch (1996). This points to two types of considerations. First, there are historical differences between his study and others that are more recent. In an increasingly secularized society, the religious group from the current study somehow behaves like the non-religious group in Hanisch's study. It is also possible that children from his religious group (Heidenheim, West Germany) were receiving a more intensive teaching. Second, it might, be necessary to consider his results in the religious group with caution; he calculates a particularly low proportion of anthropomorphic God figures. When considering both his groups together (i.e., religious and non-religious), anthropomorphic God figures compose 74.14% of the entire sample (N = 1889). It is worthwhile to note that age ranges were roughly similar: 5–17 years in the current study, 7–16 years in Hanisch (1996) and 8–14 years in Brandt et al. (2009). We now move on to general considerations about the role of the independent variables.

Generally, cognitive development may enable children to grasp the potentially complex notion of God through non-anthropomorphic forms as the result of increased ability to *distantiate* oneself from an anthropomorphic understanding of the world (Piaget, 1929, 1951). This understanding differs from an explanation that has recurrently been put forth in several studies, in which anthropomorphic God representations in children are placed in opposition to "abstract" representations (Barrett et al., 2001; Pitts, 1976) or "symbolic" representations (Ladd et al., 1998; Pitts, 1976) as though they (the abstract or symbolic representations) were more mature. Within a Piagetian framework, a graphic representation of God cannot be considered formal but only concrete because it does not deal with an abstract language. Therefore, non-anthropomorphic figures should not be counted as abstract, but should be considered more distant from oneself, instead. Following this line of thought, the representations should exhibit a decreasing *egocentrism* (Piaget, 1951). As for so-called symbolic God representations, it appears misleading to label (only) that which is *not anthropomorphic* as *symbolic*. Indeed, a human figure can also stand for particular qualities perceived in God. For example, we found, through reading the participants' written descriptions, that the presence of sense organs can sometimes highlight or symbolize extrasensory perception. Additionally, one participant acknowledged (during an exploratory qualitative interview belonging to another part of the current project) that she had drawn God as a male individual although she did not limit her own understanding of God to male; it was simply easier to mark God's presence that way. Thus, characterizing representations of God as *symbolic* pertains more to the use of metaphorical thinking than to indicating the opposite of anthropomorphism. Unfortunately, with regard to the drawings, it is difficult to make such a distinction without having access to the participant's intentions.

It is interesting that Hanisch's (1996) study was conducted in Germany, and exposure to religion was predominantly Christian, while Brandt et al.'s (2009) study was carried out in Japan and a portion of his participants received religious instruction in the context of Buddhist traditions. Taken together, the findings from those two studies may provide a more nearly universal explanation of the production of

non-anthropomorphic God figures. More specifically, if we assume that religious schooling has a similar effect as age and facilitates the emergence of such types of representations, it should influence those representations in a way that makes them more "mature" (i.e., aligned with a developmental shift observed to move from anthropomorphic figures to non-anthropomorphic ones). In that sense, the effect produced would be that religious schooling would lead to a more developed God concept, presumably by means of intensive and repeated thinking about that concept. Nevertheless, this broad anthropomorphic vs. non-anthropomorphic distinction may be somewhat basic and lack precision. For that reason, we examined finer de-anthropomorphization strategies. After considering those strategies, we will again take up the thread of the presumed role of religious schooling and provide another interpretation.

We also intended, through this study, to situate anthropomorphic and non-anthropomorphic God figures among the sample. Our initial idea was that sorting drawings of God into those two camps was not so straightforward, and that it might be more effective to employ another level of classification (i.e., direct-indirect) prior to the anthropomorphic/non-anthropomorphic distinction. The construction of a hierarchical system of classification has brought to light the ramifications of using anthropomorphic/non-anthropomorphic as the central distinction in grouping drawings of God. Through tracing the categorization process, we were able to apprehend some of the discrepancies found in past research and to situate them in the model. For example, Dandarova (2013) uses the distinction of figurative vs. non-figurative, rather than anthropomorphic vs. non-anthropomorphic. We now see that that those categorizations were in fact compatible, and that Dandarova addressed an issue that lies higher in a hierarchical system of classification. The same cannot be said, however, of the anthropomorphic vs. symbolic or the anthropomorphic vs. abstract dichotomous constructions. The use of the terms (*symbolic*, *abstract*) in past research on drawings of God (Ladd et al., 1998; Pitts, 1976) was applied not only to the God figure, but also to any elements in the drawings. This may have led to some methodological incompatibility between those studies and studies, like this one, that focus primarily on the God figure. Study 2 will show that this nuance is more complex than just a point of focus, as the background and other elements in the drawings will also be taken into consideration, *but only insofar as it brings information about the God figure*. It is this point that makes the difference between the different methodological approaches and their related rationales. Ladd et al. and Pitts have shown a broader interest in addressing the development of a certain type of "language" in drawings of God. Their use of the terms *symbolic* or *abstract* appear to pertain to an acute use of metaphorical language overall, even prior to the process of classifying God representations.

Overall, we find that the anthropomorphic vs. non-anthropomorphic distinction can be useful up to a certain point, after which more nuance is required in order to move beyond the sole use of dichotomous categorization. One possibility is to step away from further pursuit of exclusive categories, and instead, to identify various graphic scenarios that exhibit a combination of humanness and non-humanness in their representation of God. We will address this in Study 2.

Study 2: Beyond Binaries: Empirically Testing Children's Utilization of De-Anthropomorphization Strategies

Aim, Objective and Research Question

This study relates directly to Study 1 as it follow-up on anthropomorphic God figures in children's drawings of God.

Our main aim was to explore how human-based God figures may exhibit characteristics that make them not merely human, that is, how some *otherness* may be indicated—in addition to *sameness*—with regard to the human being. We investigate the anthropomorphic issue in children's drawings of God much more thoroughly, by moving beyond an exclusive dichotomous anthropomorphic vs. non-anthropomorphic opposition. Consider this simple example: an angel is not *only* anthropomorphic, due to its wings, as well as to the celestial background upon which it is typically shown. This illustrates how a God figure that is predominantly human (i.e., human-based) may exhibit de-anthropomorphization through various graphic aspects. The results of de-anthropomorphization suggest a degree of *otherness* (through one or more supra-human qualities); through de-anthropomorphization, a child can convey the idea that God is "not only human." Arguably, despite such great ontological nuances (i.e., combined sameness-otherness with the human being) human-based God figures may have all been sorted into the anthropomorphic category in past research.

Our objective was twofold. First, we intended to move beyond exclusive binaries and propose a model of strategies that make human God figures "not only human." The underlying idea was that such strategies could potentially co-occur in drawings, and we needed to find a model that would accommodate this, unlike the previous strict categorical system (see Study 1). Second, we would place a special focus on de-anthropomorphization strategies, which would be tested empirically.

The research question was also twofold. First, what specific strategies might children apply to human-based God figures to convey a sense of otherness from the human being? Second, what are the respective contributions of age, gender and religious schooling to the utilization of de-anthropomorphizing strategies?

Hypotheses

Concerning the second part of the research question, in the light of previous research, we hypothesized that de-anthropomorphization strategies should be positively associated with age (see Brandt et al., 2009; Ladd et al., 1998; Pitts, 1976) and religious schooling (see Brandt et al., 2009), but not with gender. Similarly, the complexity of utilization (understood as co-occurrence of strategies) would depend on age and religious schooling.

Method

Assessment and Analyses

We used the inventory resulting from Study 1 in order to conduct group comparisons based either on types of God representations or on de-anthropomorphizing strategies. Drawing upon the notion of de-anthropomorphization, defined in the previous chapter (Chap. 3, this volume), we defined different forms of de-anthropomorphizing strategies that we could test empirically, using our dataset (see General Method, above).

Familiarization with the Data, Inventorying and Sampling Down

In order to conduct this study, it was necessary for the researchers to become deeply familiar with the data so that they could start identifying different case scenarios revolving around anthropomorphism. Because it was our aim to move beyond binaries, we chose to look at all God figures that could qualify as anthropomorphic, that is, all that had any human features in them. However, before moving forward, we also made an important decision with regard to drawings that showed several gods (e.g., several anthropomorphic God figures, or a mix of anthropomorphic and non-anthropomorphic God figures). Because the drawings with several gods were rare cases, we decided to consider only the single-God drawings in our quantitative approach.

Among the single-God drawings, some depicted a God figure that was anthropomorphic and others showed a God figure that was not anthropomorphic at all (e.g., a light, a cloud). Scrutinizing those anthropomorphic figures, it we observed that the majority of them were based on the representation of an ordinary human being (we use the term *human-based*) whereas a few drawings were based on a figure that was non-anthropomorphic (e.g., a cloud) but that also exhibited some human features (e.g., eyes and mouth). At this stage, we faced another important decision: Should both types of figures be analysed together, or should they be distinguished from one another? In order to compare like and like when identifying de-anthropomorphizing strategies, and given that de-anthropomorphizing should rely on an initial human model, we chose to examine only the human-based figures for this study.

It is essential to understand the essence of these choices. They focus the scope of this study, allowing us to consider and compare similar data for a specific type of strategy that moves beyond binary distinctions. By no means do our choices for analysis at this level deny the richness and complexity of other types of drawings that were not examined for this particular study.

Looking at the anthropomorphic human-based God figures, we immediately noticed that a striking majority of them had something that made them look different from an ordinary human. The first author started to explore the sample and to seek for possible variations in the way those God figures displayed otherness (appeared as not-only-human).

Our inventory of strategies began with a broader perspective and a more ambitious goal. We targeted recurring scenarios involving anthropomorphism in general. In order to focus on the strategies used in the process of de-anthropomorphization, we did not analyse strategies that moved in the opposite direction. We did not focus on how non-human elements (e.g., a cloud) were anthropomorphized, or how inanimate elements usually associated with the human being (e.g., clothes) were depicted in the absence of a human figure. We also considered analysing the level of complexity of the human God figures; however, we later judged the element of complexity to be a function of a participant's graphic skills rather than a reflection of the perceived characteristics of divinity, per se. For the sake of feasibility, we restricted the focus of this study to de-anthropomorphization. The strategies that we retained for analysis, we now be present in detail.

De-Anthropomorphizing Strategies

Following this phase of familiarization, characterized by exploring the data and making decisions regarding scope and analysis, we settled on a limited set of central strategies with which to move ahead. These strategies are representative of the current sample and can be conceptualized in a way that is relevant beyond the strict format of drawings. Future research may pick up this thread and examine these strategies with regard to the use of other formats or media.

As explained earlier in this article, researchers found evidence that participants achieved de-anthropomorphization either through the God figures themselves, or through the background. We describe each relevant strategy below (for additional relevant illustrations, see Appendix Figs. 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, and 4.25).

First, with respect to de-anthropomorphization of the God figure through that figure, three main types of strategy emerged: cross category, within the human category, and scission.

Cross-Category

Structural In this strategy non-human features are affixed directly to the God figure's human body (e.g., a pair of wings, or a tail replacing the legs), in a way that conveys the idea that they compose that figure. It may also happen that non-human element(s) occur as though they are inextricable from the human ones. For example, the color yellow, when used to fill in the body, may be intended to indicate that the body is "made of light."

Associated In this strategy, non-human features are associated with the God figure but are not strictly part of body, itself. Examples of this strategy include a halo, an aura, or coloured rays emanating from the God figure. We observed in the data that rays of color drawn near the figure or touching it may indicate power.

The main difference between the structural strategy and the associated strategy lies in whether or not the non-human features are attached (i.e., structural) to the figure or are more loosely related to it (i.e., associated). The latter characterizes the figure from without, unlike the former, which serves to compose it.

Within-the-Human-Figure Category: Features

Incomplete (Head or Face) The God figure may appear ordinarily human in all other aspects, yet have its face or head missing (i.e., incomplete). Because our focus was on God representations and not on artistic skill, we only considered a figure incomplete if the face or head was missing. Incomplete hands or missing fingers, for example, could be misleading as they are likely to be missing in children's drawings in general—unlike a head or a face. One scenario (found in the current data) shows the God figure missing half of its head and face (i.e., with only the bottom of the head and a nose). This strategy may tap into an aspect similar to that which was measured by Pitts (1976) through the use of an A-score, accounting for the anthropomorphic completeness of figures on the basis of human features being present or not. The current measure allowed us to be more cautious about graphic skills, only accounting for the obvious. We avoided using an assessment that would lead unintended deletions to be considered as contributing to de-anthropomorphization. For example, it would be typical of young children to draw a human being with missing fingers or ears, but this would not tell us anything about actual de-anthropomorphization.

Surcomplete In this strategy, the God figure is human-based, but the participant has added extra human features, such as two additional pairs of arms, to those typically found on a human being. We did not inventory instances of this strategy, due to their very low occurrence in the data set. Nevertheless, we report it here for its conceptual pertinence and to leave it as a potentially relevant option for other types of samples (e.g., among Buddhist or Hinduist children).

Scission-Combination

Duality By duality of the God figure, we mean that the figure is conceptually divided into two separate beings. Most typically, such a figure consists of two distinct halves that represent two different human beings. Often, gender will be evoked, and the figure represent half a man and half a woman. We did not test this strategy in Study 2 for two reasons. As a de-anthropomorphizing strategy, it is arguably less straightforward than other strategies having recourse to cross-category. Moreover, it strongly relates to gender-typing issues and would be more suitably addressed in that context.

Second, with respect to de-anthropomorphization of the God figure through the background, we found two strategies used: non-terrestrial setting and God figure relative to other human figures.

Through the Background

Non-Terrestrial In this strategy, the human-based God figure is placed in relation to something that is uncommon for an ontologically typical human being (e.g., on a cloud, in the sky, in outer space). This may also concern finer spatial arrangements (e.g., floating).

Relative to Other Human Figures The presence of other human figures in the background can communicate aspects of the nature of God figure that is not strictly human. For instance, the God figure might appear abnormally large in relation to the other figures in the drawing.

These strategies ensue from part of the sample that falls under the label "De-anthropomorphized." That branch stems from "*Human base"* and the reader may notice the following parallel branch "*Not de-anthropomorphized human figure*" that breaks into two sub-branches: "*Ordinary human figure*" and "*Non-ordinary human figure*." Although we do not address these sub-branches in the current study, it seems important to supply the reader with some clarification about this area of the model. The former (i.e., ordinary human figure) consists in God figures that could not be differentiated from regular human figures. That is, nothing in the drawing permits the viewer to distinguish the God figure from an ordinary human figure. The God figure may be a drawn figure that does not simply display generic characteristics of a human being that would normally appear in children's drawings of a person. Instead, there is something, either on the figure, or in the background, that endows the figure with special characteristics. Those characteristics may pertain to identity and social status (e.g., priest, king, surrounded by other figures), which does not depend on the presence of de-anthropomorphizing features. This particular aspect bears similarity to the de-anthropomorphization strategy "abnormally bigger" for they may both convey an idea of power over other human characters. This is a shared metaphorical meaning. Nevertheless, combining such meaning with a more literal perception of what was depicted in the drawing, abnormally bigger may be regarded as relaying some particularity that is more ontologically significant and could not be found as such in real life; while children in their social environment daily witness power-attributes. We will reflect on this in the Discussion section; it did not receive more attention in the current study because it deals with a finer and arguably less basic approach to characterizing the otherness of a human God figure, when compared to some of the other de-anthropomorphization strategies.

Overall, it is worth noticing that for each branch of the tree in the model, the label *"*Other*"* has been added in order to leave space for further refinements of the model, as well as for a possible generalization to other samples of drawings of God.

Constructing a Model of De-Anthropomorphization

The model that we are using to report and articulate de-anthropomorphization strategies takes directly after the model constructed in Study 1 (see Fig. 4.1), and continues on as a second part of it. It follows the logic of the preliminary sorting of drawings from the sample into exclusive categories (Fig. 4.1) and begins here with the "Anthropomorphic representation" node (Fig. 4.5). It does not, however, propose exclusive categories, but uses dimensions instead, apart from human based and non-human based. Those dimensions can theoretically occur simultaneously in a same drawing.

When inventorying de-anthropomorphization strategies, we started at the last subdivision between human based and non-human based. When defining *de-anthropomorphization*, below, we explain our reasons for making such a distinction. For now, we supply an illustration of this point in a drawing from the current sample, which depicts God as a rabbit "behaving" as though it were human (in a form similar to that of comic strips). Considering this type of drawing (a rabbit-based figure rather than a human-based figure) for the degree of de-anthropomorphization of God would be problematic. This adds a practical explanation for our methodological choice. It is worthwhile to note that altogether, those two categories (i.e., human based and non-human based) equate to 399 drawings, although there are 466 anthropomorphic representations. The difference lies in the drawings that we utilized to train the two raters, within the framework of inter-rater reliability.

Therefore, the most important part of this model stems from the human base node. Here we report a series of possible strategies used to de-anthropomorphize the God figure. Several strategies may, in theory, overlap. This conceptual difference within the model is indicated by the presence of an axis on the right side showing where one part begins or ends. Each strategy of interest (strategies tested in Study 2) has been described above. Nevertheless, the model provides a richer breadth of strategies; it includes several in addition to the ones that we tested in Study 2. The construction of the model has been an ongoing process throughout the assessment

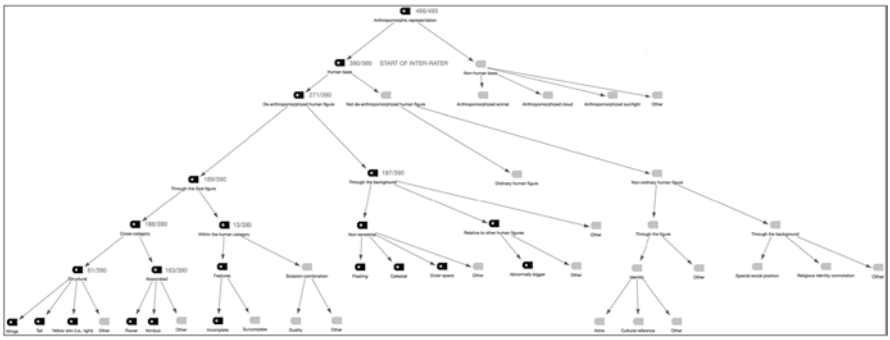

Fig. 4.5 Model of human-based God representations exhibiting otherness from the human being, with a particular focus on de-anthropomorphization strategies

of the drawings, based on the specific strategies that they exhibit; hence, some components of the model emerged during the process of analysis and were added afterward rather than before. A conceptually substantial addition pertains to God figures that could not exactly be judged as de-anthropomorphized at an ontological level, but which still endorse characteristics that make the (single, anthropomorphic, human-based) God figure somewhat extra-ordinary, such as when it is shown with clerical clothing. Although we did not include this in the inventory for this study, we expect that a substantial proportion of the figures display such characteristics.

Figure 4.5 shows the different categories of drawings, as well as the de-anthropomorphization strategies. Components from this model that were tested in this study are presented in bold typeface and their respective frequencies are reported to the side.

Samples

Different parts of the initial sample of drawings (N = 532) were used for statistical analyses depending on the specific purpose, guided by which branches of the theoretical model tree were concerned. The theoretical model under consideration is presented in the next subsection. Starting with the initial sample, there were different types of drawings/God representations: direct God representation (N = 500), single-God representation (N = 493), anthropomorphic representation (N = 466). The anthropomorphic representation drawings were independently assessed by two raters, leading to a decrease of sample size (N = 399) due to inter-rater training-testing differences. The most essential part of the current study, dealing with de-anthropomorphization, used the portion of the sample (N = 390) that qualified as human-based God representations. The complexity of de-anthropomorphization was measured on a sub-sample of those drawings. The drawings in the sub-sample (N = 271) display at least one de-anthropomorphizing strategy mentioned above. The sub-divisions are based on the outcome from Study 1 and sub-samples are shown in the model on Fig. 4.1.

Scoring Procedure

Two raters (the first author and a graduate student in psychology) scored the drawings independently. The student rater was blind to the hypotheses of this research. We assessed the following strategies: human based, cross-category structural, cross-category associated, within the human category—features—incomplete, and through the background. Drawings that were considered from the initial N = 532 sample were all drawings connected to the node anthropomorphic (N = 466) from the model tree shown in Study 1. We used a randomly selected sample of 67 drawings for the purpose of training the raters in order to ascertain that the scoring procedure was clear and that they could correctly identify particular strategies. As in Study 1, we focused on the drawings as the object of study, and resorted to the

accompanying written descriptions only when necessary to resolve ambiguities about what was actually depicted in drawings.

Following the training phase, the raters independently assessed a testing sample of N = 399 drawings, seeking instances of the strategies previously identified for analysis in this study. This same sample was then used in the related statistical analyses. Inter-rater reliability was estimated by using Cohen's kappa coefficients for each of those strategies. The average kappa was 0.78 (the lowest was .70 for human based, and the highest was .88 for cross-category associated), and reliability ranged from substantial agreement to almost perfect agreement (Hallgren, 2012). Disagreements were resolved through discussion. We chose to assess the de-anthropomorphization strategies through inter-rater examination (unlike categories in Study 1) because they are more prone to ambiguity. This is due to the conceptual precision of de-anthropomorphization strategies (compared to the exclusive classification system used in Study 1, where the categories are more mixed).

Sample Characteristics

Due to the sub-sampling used in order to analyse de-anthropomorphization strategies, we deemed it necessary to verify that the participants' age, schooling, and gender were similar between the N = 390 sub-sample and the larger N = 532 sample in order to rule out the presence of biases when interpreting the results. In this sub-sample, participants' ages ranged from 5.65 to 16.07 years (mean 10.83 years, SD = 2.35 years, for additional details see Table 4.2). Female participants made up 52.3% of the sample, which is equivalent the larger sample (51.3%). Participants seen during religious schooling composed 52.6% of this sub-sample, next to 56.8% in the larger sample.

Table 4.2 Age distribution

Age (years)	Frequency	Percent
5	1	.3
6	9	2.3
7	31	7.9
8	69	17.7
9	47	12.1
10	51	13.1
11	41	10.5
12	49	12.6
13	50	12.8
14	36	9.2
15	5	1.3
16	1	.3
Total	390	100.0

Overall, there is no reason to suspect any differences regarding age, schooling or gender between those two samples. Consequently, no selection bias should be expected from sampling down from N = 532 to N = 390, and the latter may be considered representative of the larger sample.

Results

Hypotheses Testing

As in Study 1, alpha was set at 0.02 (Benjamini–Hochberg correction). We organized the results according to each hypothesis.

Testing Hypothesis 1

A series of de-anthropomorphization strategies were used as binary outcome variables and a logistic regression analysis was carried out for each, testing for the possible effects of age, gender, and religious schooling. The sample assessed was composed of N = 390 drawings. As previously mentioned, the de-anthropomorphization strategies consist in scenarios that may co-occur in a drawing to various degrees, and they do not serve to categorize a drawing in a single "box". In order to test this hypothesis, we first addressed de-anthropomorphization overall, then turned to specific strategies.

De-Anthropomorphization

A first outcome variable consisted in addressing whether there was any de-anthropomorphization displayed by the (human-based) God figure. It included all possible strategies identified in the model presented in this study. The N = 390 sample was split into two categories: no de-anthropomorphization 119 cases (30.5%); de-anthropomorphization 271 cases (69.5%). The logistic regression model was statistically significant, $\chi 2(3) = 27.178$, $p < .001$. The model explained 9.5% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 69.5% of cases. Only age was a statistically significant predictor ($p < .001$). Increased age was associated with an increased likelihood to draw a de-anthropomorphized (human-based) God figure.

Structural

After we analysed the sample by means of this broad approach, we carried out a more specific analysis of de-anthropomorphizing strategies. As a first step, we examined a series of de-anthropomorphizing strategies operating "Through the God figure." A second outcome variable measured whether the God figure was

de-anthropomorphized using a structural strategy (stemming from the cross-category strategies). The N = 390 sample was split into two groups: no structural de-anthropomorphization (329 cases, 84.4%), structural de-anthropomorphization (61 cases, 15.6%). The logistic regression model was not statistically significant and no predictor variable was found to have a statistically significant effect.

Cross-Category

A third outcome variable was used to measure whether the God figure was de-anthropomorphized using an associated strategy (stemming from the cross-category strategies). The N = 390 sample was again split into two groups: no associated de-anthropomorphization (227 cases, 58.2%), associated de-anthropomorphization (163 cases. 41.8%). The logistic regression model was statistically significant, $\chi 2(3) = 43.845$, $p < .001$. The model explained 14.3% (Nagelkerke R2) of the variance in anthropomorphism of representation and correctly classified 65.9% of cases. Only age was a statistically significant predictor ($p < .001$). Increased age was associated with an increased likelihood to draw a human-based God representation with associated characteristics that de-anthropomorphize it.

Within-the-Human-Figure Category: Incomplete (Head or Face)

A fourth outcome variable addressed whether the God figure was de-anthropomorphized using an incomplete strategy, stemming from the features group which branches out from the within-the-human category. As noted above, we only used the designation of incomplete to identify figures lacking a head or a face. The N = 399 sample was split into two groups: complete face and/or head (377 cases, 96.7%); incomplete face and/or head (13 cases, 3.3%). The logistic regression model was statistically significant, $\chi 2(3) = 19.716$, $p < .001$. The model explained 19.5% (Nagelkerke R2) of the variance in anthropomorphism of representation and correctly classified 96.7% of cases. Only age was a statistically significant predictor ($p = .007$). Gender of participants reached near significance (.057). Increased age was associated with an increased likelihood to draw a human-based God representation without a head and/or a face; females were also more likely to draw an incomplete God figure.

Through the Background

As a second step, de-anthropomorphizing strategies operating through the background in the drawing were examined altogether. We did not distinguish between these, but instead tested them as a whole because the differentiation process was conceptualized after the inter-rater scoring process. Consequently, the best level of precision for analysis in this study lies at the level of whether or not the God figure is de-anthropomorphized through the background. The N = 390 sample was split into two groups: no de-anthropomorphization through the background (203 cases, 52.1%), de-anthropomorphization through the background (187 cases, 47.9%). The

logistic regression model was statistically significant, $\chi 2(3) = 12.078$, $p = .007$. The model explained 4.1% (Nagelkerke R2) of the variance in anthropomorphism of representation and correctly classified 56.9% of cases. Only age was a statistically significant predictor ($p = .001$). Increased age was associated with an increased likelihood to draw a background that had a de-anthropomorphizing effect on the human-based God figure. This strategy also produces an effect leading to an extraordinary human figure, but it is not as straightforward with respect to the process of de-anthropomorphizing.

Testing Hypothesis 2

We created an additional outcome variable in order to assess the degree of complexity in the utilization of de-anthropomorphizing strategies, as in the instance of co-occurring strategies. Two types of strategies were retained: (1) through the God figure and (2) through the background. We identified the outcome variable criteria as simple (only one type of strategy) or combined (both being used simultaneously), accounting for a low vs. high degree of complexity, respectively.

The sub-sample used for comparisons was drawn from the N = 390 sample. It was composed of N = 271 drawings, all exhibiting some de-anthropomorphization. The logistic regression model was statistically significant before alpha correction: $\chi 2(3) = 7.837$, $p = .049$. The model explained 3.9% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 62.4% of cases. Only age was a statistically significant predictor ($p = .007$). Increased age was associated with an increased likelihood to use greater complexity (i.e., figure and background) to de-anthropomorphize the God figure.

Hypothesis 1 was supported for most de-anthropomorphizing strategies—with the exception of structural—but only for age, not for schooling. Hypothesis 2 was also supported only for age, not for schooling. It is important to note that, as predicted, gender was not found to play any significant role in either of the analyses.

Developmental Patterns

Figures 4.6, 4.7, 4.8, 4.9, and 4.10 provide a visualization of de-anthropomorphization strategies based on age in years. Percentages refer to proportion within a same year. (We did not report the structural strategy here because age did not have a statistically significant effect, even before alpha correction.). Below we provide a few observations based on the figures:

Figure 4.6 shows the developmental pattern for the utilization of any de-anthropomorphization strategy on the N = 390 sample. Figure 4.7 shows the developmental pattern for the utilization of the associated de-anthropomorphization strategy on the N = 390 sample. Figure 4.8 shows the developmental pattern for the utilization of the within-the-human category—incomplete (through the head or face of the God figure) de-anthropomorphization strategy on the N = 390 sample.

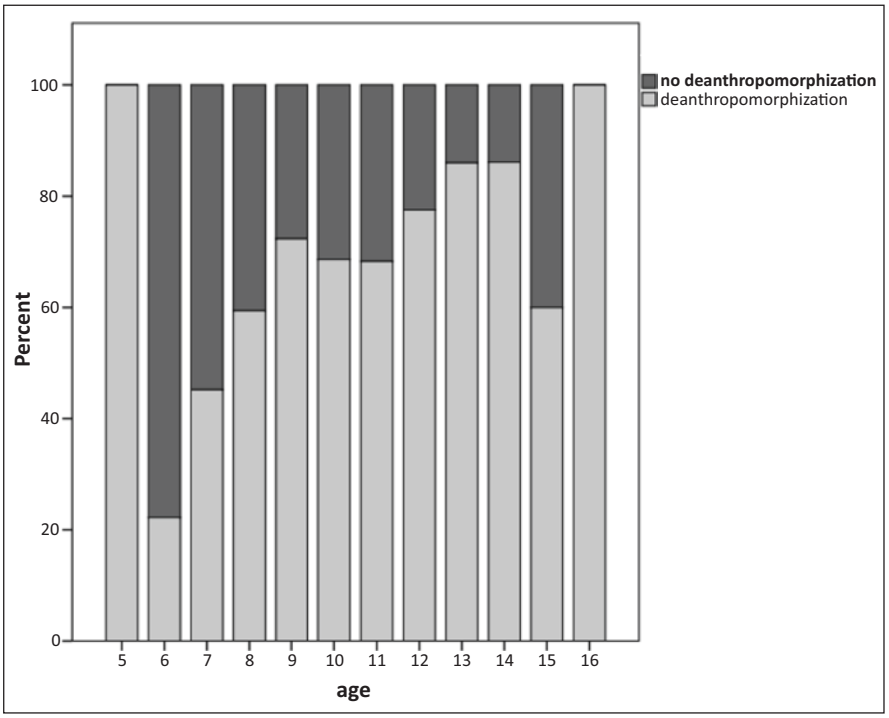

Fig. 4.6 De-anthropomorphization

Figure 4.9 shows the developmental pattern for the utilization of no background de-anthropomorphization strategy on the N = 390 sample. Figure 4.10 shows the developmental pattern for the degree of complexity as assessed through the utilization of through-the-God-figure or/and through-the-background de-anthropomorphization strategies (N = 271). In this analysis the term *simple* deals with the use of only one type of such strategy, and the term *combined* concerns the simultaneous use of both.

De-anthropomorphization, in general, increases with age. It goes up until the age of 9 years to reach a plateau that continues until 11 years. It increases again between 12–13 years, then freezes, drops at 15 years and rises again at 16 years. We see two plateau phases in development: the first at age 9–11 and the second at age 13–14.

Concerning specific de-anthropomorphization strategies, the associated strategy approaches an age-incremental pattern, and starts from as early as age five, the youngest group in this sample. The incomplete features strategy tends to be used rarely, although there is some evident climb in usage between 12 and 15 years. The through-the-background strategy appear to undergo three major peaks: at 9 years, at 12–14 years, then again at 16 years.

As for complexity, utilizing de-anthropomorphization strategies to a higher degree (combined) almost follows an age-incremental pattern, although there seems to be a frank increase between age 7 and 9, then again from age 13 up to 16. Overall, de-anthropomorphizing a human-based God figure occurs early in development

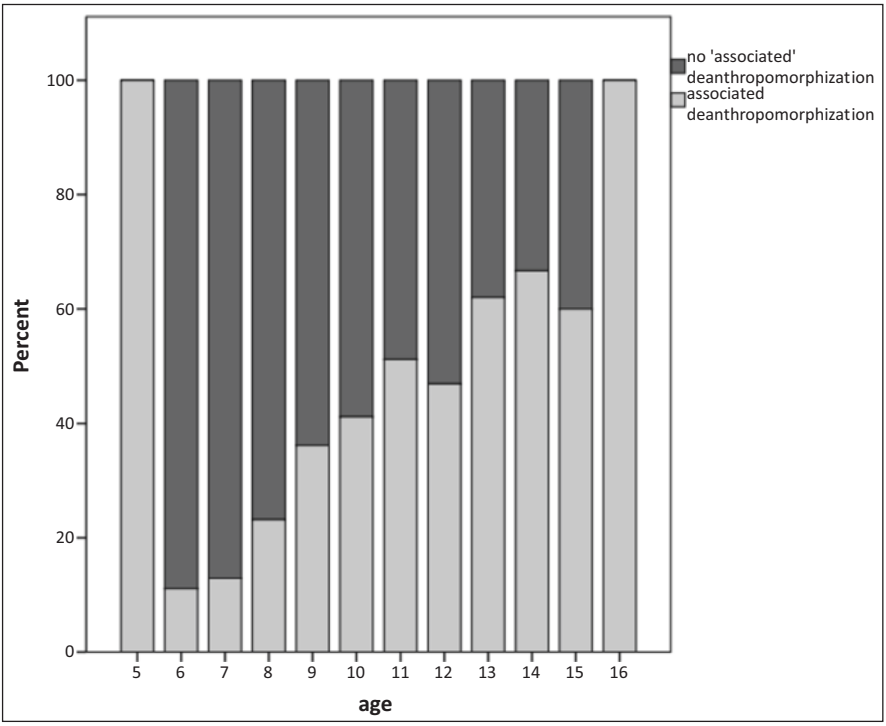

Fig. 4.7 Associated de-anthropomorphization strategy

(between 5 and 8 years of age). Age tendencies differ depending on the specific strategy, but there seems to key developmental points around ages 9 and 13 respectively.

We conducted inferential statistics to further the analyses of developmental patterns and figure out whether significant differences existed between age groups. Similar to Study 1, five age groups: 5–6, 7–8, 9–11, 12–14, 15–16 years. Groups were compared when they were adjacent, that is, in an incremental fashion, from the youngest to the oldest. In order to avoid an alpha correction that is too severe, comparisons were only carried out on the presence or absence of de-anthropomorphization. Two group differences were significant: 7–8 vs. 9–11: significant ($\chi^2(1) = 5.491$, $p = .019$,), 9–11 vs. 12–14: significant ($\chi^2(1) = 6.573$, $p = .10$).

Additional Considerations: Fundamental Graphic Techniques

While constructing the model, we took an interest in the fundamental graphic techniques that children resort to in order to communicate non-anthropomorphic properties to a human figure. We focused mainly on the content of the compositions, and

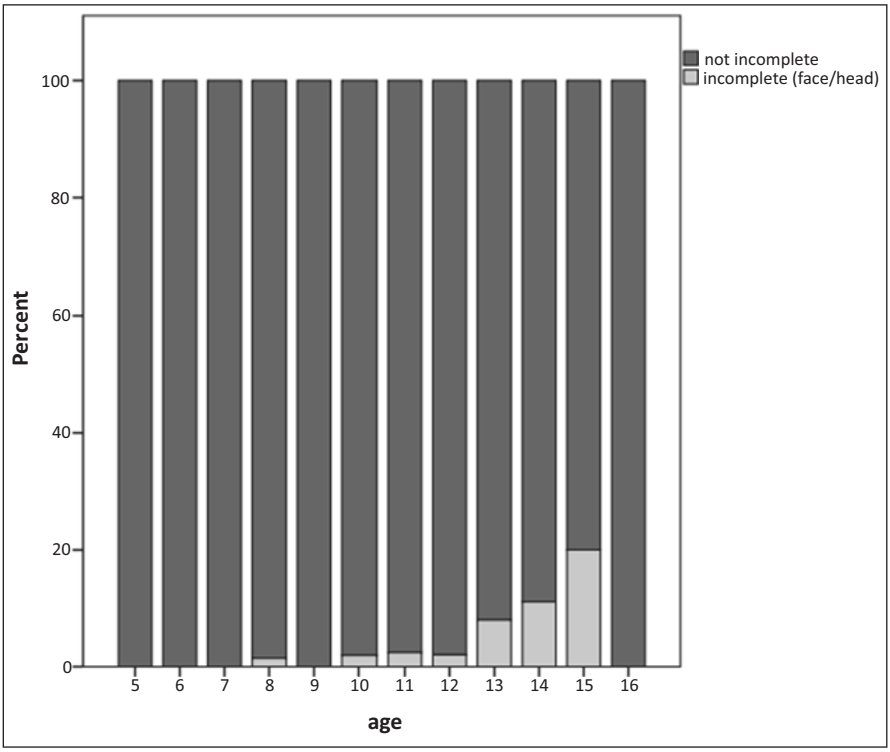

Fig. 4.8 Within-the-human category—incomplete de-anthropomorphization strategy

found that children seem to rely primarily on two central techniques that may be called, respectively: *addition* and *removal*. The former consists in adding elements that are extraneous to the human category, either on the figure itself as part of its structure (e.g., wings), or as directly associated with it (e.g., nimbus), or in the background (e.g., clouds, planets, relatively tiny human figures). The latter consists in removing elements that constitute an ordinary human figure, such as drawing a headless or faceless figure.

In addition to these basic graphic techniques, we identified two additional techniques: *replacing* and *fusing*. Replacing means that a human body feature has been replaced by a non-human one (e.g., a tail instead of a pair of legs). Fusing implies that a human body feature has been combined with a non-human one in a way that they are inextricable, as though completely overlapping (e.g., a round and plain yellow light in place of the head). The main difference between the former and the latter pertains to the latter allowing for two different labels to apply to the same graphic object.

Although such graphic aspects were not directly assessed in this study, it was important to provide a list of them in order to provide a better insight into the main graphic foundations of drawings of God, based on the content of composition in the

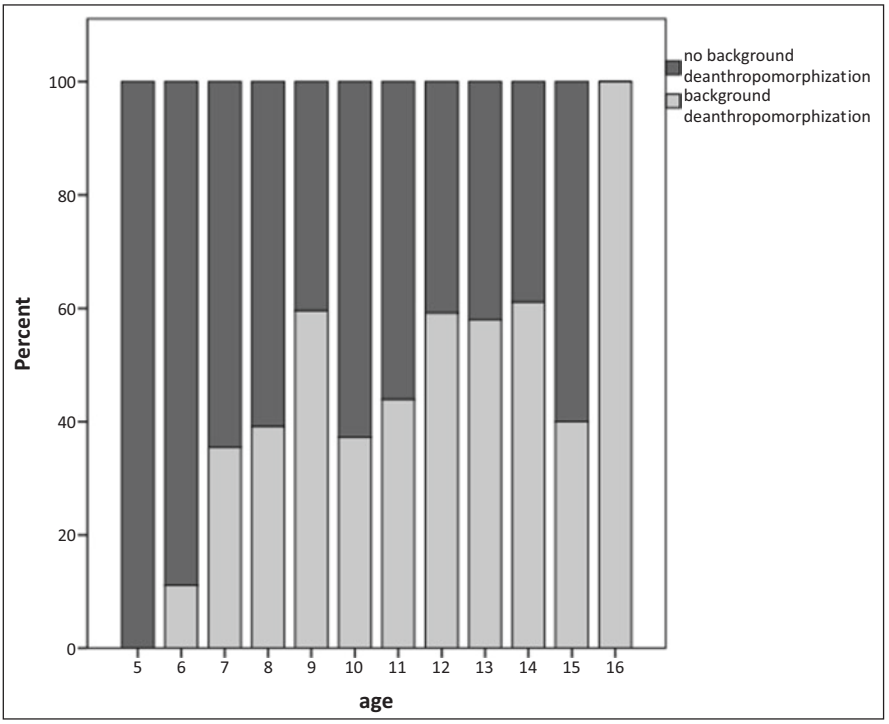

Fig. 4.9 Through-the-background de-anthropomorphization strategy

current sample of data. Nevertheless, we make such observations with the caveat that they translate some assumed corresponding mental procedures.

Discussion

Study 2 drew information from Study 1, but it moved beyond an exclusive categorical system based on binaries (i.e., anthropomorphic vs. non-anthropomorphic). We focused primarily on human-based God figures and the way such figures may display non-humanness alongside their humanness. We constructed a model from the data in order to conceptualize strategies that might have been used by the participants. The advantage of this new model over previous models based on more basic, binary differentiations is twofold. First, it offers much more diversity and incorporates those previous systems (e.g., figure vs. no figure, anthropomorphic vs. non-anthropomorphic) within a net of inter-relations. Second, and of utmost importance, it conceptualizes *de-anthropomorphizing* strategies that may co-occur in a given drawing. In that sense, this new model has moved not only beyond previous basic

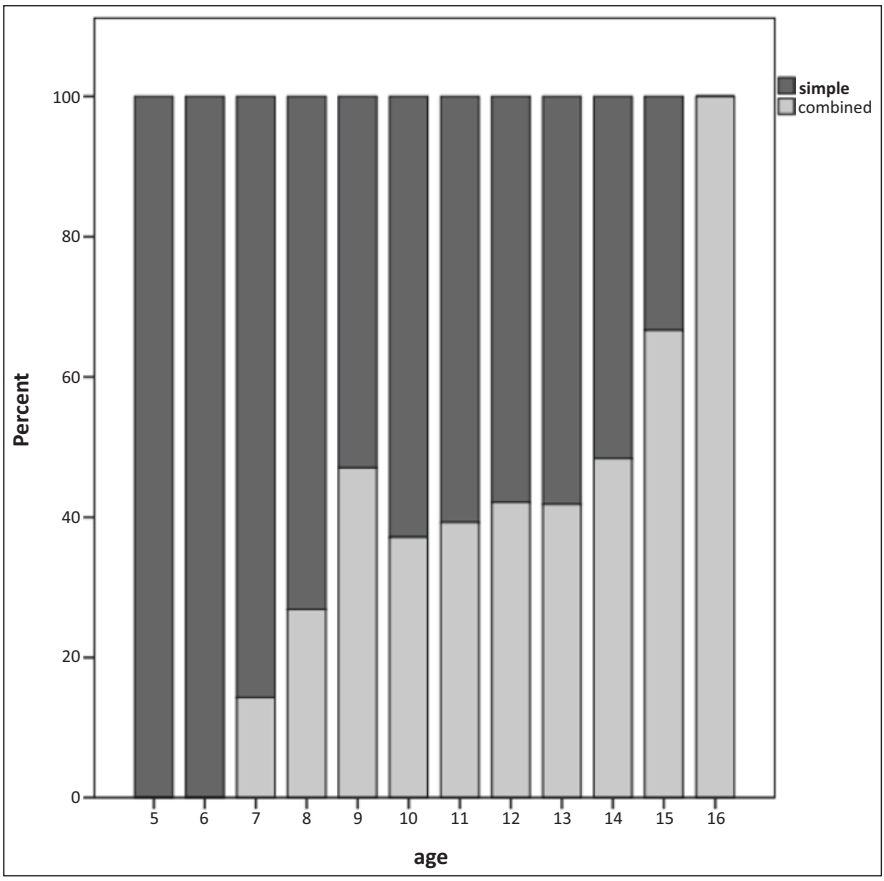

Fig. 4.10 Simple or combined de-anthropomorphization

binaries, but also beyond an entirely exclusive categorical system by taking into account the possibility that more than one strategy may be used simultaneously.

We statistically tested the possible influence of age, religious schooling, and gender, Hypothesis 1, supposing that de-anthropomorphization strategies would be positively associated with age and religious schooling, was mostly supported for age, but not for religious schooling. Hypothesis 2 predicted that the complexity of de-anthropomorphization, as a matter of combination of strategies, would be more likely with increased age and with religious schooling. It was confirmed for age, but not for religious schooling. Hypothesis 3 assumed that gender would not play a significant role in any regard. This was statistically confirmed.

A few scientific implications ensue from those results. First, the expression of combined sameness-otherness (Guthrie, 1993) in human-based God figures appears to be eminently cognitive and those figures may undergo conceptual changes across development mainly following the progression of an individual's cognitive abilities. Study 2 was more convincing than Study 1 in showing that the emphasis placed by

participants on God's non-humanness (in this case, through de-anthropomorphization) is age-bound.

Second, such conceptual blending points to the possibility that God is a hybrid concept, according to the notion discussed by Vicente and Martínez Manrique (2016). It is possible that the human category bears less salience with increasing age, also that other conceptual elements become more dominant. It is likely that for those non-anthropomorphic elements to enter the working memory, sufficient cognitive inhibition (of anthropomorphic figures) and flexibility (helping the selection of alternatives) are required. Both of these develop with age. Similarly, through conceptual change (Carey & Spelke, 1994), the God figure may embrace categories other than that of the human being, and those categories may become more prominent as this concept evolves at an individual level, progressively drawing away from the human being.

Third, from observing developmental patterns for evidence of de-anthropomorphization, there seemed to be key developmental points for conceptual change in human-based God figures around 8–9 years and 11–12, 13 years. Those points in development indicate phases of increased use of de-anthropomorphization. This observation was supported by inferential statistics. The de-anthropomorphizing of God figures emerged, overall, rather early, and did not indicate shifts happening late in development. This sets the ground for future research in this area; researchers can investigate the contribution of specific cognitive abilities in that regard. The second phase of significant change may correspond to reaching the Piagetian formal operational stage. This would be consistent with the more complex use of elements from different ontological categories to represent an entity that children have not seen. By doing so, older children may reach out to a larger set of potential solutions to a complex problem than younger children do. However, the increase observed between 8 and 9 years of age does not lend itself to that stage theory.

Fourth, the absence of the effect of religious schooling does entail that no environmental input should be expected in the way children may represent God in their drawings. Indeed, children do not live in a vacuum. Nevertheless, these findings suppose that it is not through formal teaching that this concept endorses ontological nuances, drawing away from the human being. Characterizing God through both its humanness and its non-humanness would be communicated widely across the cultural environment of children from the current sample. Thus, it is not surprising, in the end, that participants attend to it by means of de-anthropomorphization, regardless of the type of schooling they receive. Additionally, distinguishing participants based on the religious vs. secular teaching they were receiving might, in the case of this sample, not be so clear-cut. Indeed, children receiving religious schooling were not attending boarding school, for example. Therefore, we can reasonably say that they shared a general socio-cultural background with other children from the sample. This contrasts with the observations previously made by Hanisch (1996), whose sample was more clearly divided based on religious education, and which reflected the geographical and social separation between West and East Germany that had been enforced by the Berlin Wall.

Overall, these observations may point to the different roles of cognitive development and religious schooling. The child's decision to choose a non-anthropomorphic God figure instead of an anthropomorphic one may mostly proceed from the ability to reach beyond standard models to alternative options. In that respect, better cognitive abilities (acquired with age) may help switch between representations. Religious schooling may help, instead, with the actual content of those alternatives. For example, a child may often hear that "God is our light," and start integrating this representation into her/his growing repertoire of possible God figures. In summary, this means that while religious schooling might aid in facilitating alternative forms (i.e., non-human ones), only sufficient cognitive abilities seem to permit children to combine humanness-non-humanness. Seemingly, the latter requires that children are aware of separate components composing the mixture they mobilize.

This explanation is particularly appealing when taking into account results in connection with de-anthropomorphizing strategies. Schooling was never close to playing a significant role in the utilization of such strategies in the current research, although it did influence the anthropomorphic vs. non-anthropomorphic opposition. One possible way to make sense of this is to say that looking into combined sameness-otherness with the human being through de-anthropomorphization taps more precisely into the conceptual underpinnings of a God figure and fine changes. Those strategies revolve around what makes a God figure an ordinary and/or an extra-ordinary human rather than focusing on a strict differentiation from the human being. Those strategies require some conceptual complexity because they mix different ontological categories, while non-anthropomorphic figures do not necessarily present such blending. For example, a non-anthropomorphic God, as often observed in the current data, may just be a light, which is not particularly complex at a conceptual level. On the contrary, adding wings or a nimbus to a human figure, or placing it in a non-typically human context is presumably more cognitively demanding. Nevertheless, both non-anthropomorphic God figures and de-anthropomorphization processes were observed to have peaks roughly around 8–9 and 11–13 years of age. This similarity may indicate that major conceptual changes take place in those two particular points in development. Regarding non-anthropomorphic figures, those peaks are more visible among children receiving non-confessional schooling. Developmental patterns observed in Study 1, however, have to be regarded with great caution, given the significance of age group comparisons.

In addition to theoretical considerations about children's representations of God, it might be helpful to relate a few qualitative observations made during the current research with regard to graphic techniques employed by children in other types of tasks. Some participants utilized a feature-based system (i.e., either added, removed, replaced, or fused) as well as more aesthetically determined gestures, such as aspects based on figure-background relationships (e.g., effect of the size of the figure) to convey de-anthropomorphization of God. In this regard, techniques are reminiscent of those found in Karmiloff-Smith's (1990) research. Karmiloff-Smith asked children to draw a known entity (e.g., house, man, animal) in an imagined situation. In that study, she observed that very young children (5-year-olds) were employing a cross-category strategy. It was, thus, easily accessible to children.

Based on her theory of *Representational Redescription* (Karmiloff-Smith, 1990), it would be fruitful for psychological researchers working on concept development to carry out comparisons between topics that children have never perceived directly (e.g., God). For example, structural changes were rare in the current study, and did not depend on age, although they are usual and found to depend on age in the Karmiloff-Smith task. In a similar fashion, the types of analogies used by children could be examined in connection with past scientific literature on different matters. For example, Spiro (1988) has described eight types of analogies, from which the following four appear to be applicable to de-anthropomorphized God figures: supplementation, correction, alteration, and enhancement. Other types, i.e., perspective shift, competition, and sequential collocation, may instead explain incidences of nonhuman figures in children's drawings of God. Identifying the presence of multiple analogies within a same drawing could provide a better understanding of symbolic development in relation to depicting God by visual means. It would also be valuable to tease apart the different possible meanings children attach to similar analogies.

General Discussion

The main objective of the current study was to develop further the issue of anthropomorphism in God representations. The approach was developmental and involved a large age range (5- to 17-year-olds) of young participants (N = 532) from French-speaking Switzerland. The objects of study were drawings of God produced by the participants for this project. We conducted two studies. In Study 1, we replicated past findings (Brandt et al., 2009; Hanisch, 1996). Study 2 helped look into children's finer strategies with regard to anthropomorphism. Both studies proposed a visual conception of anthropomorphic and non-anthropomorphic drawings of God. Study 2 explored strategies used to de-anthropomorphize God, strategies that can combine anthropomorphic and non-anthropomorphic aspects, illustrating that in the eye of the participant, God may be both.

This empirical inquiry was based on a revised model, explained in the previous chapter: "Children's God representations: Are Anthropomorphic God Figures Only Human?" (Chap. 3, this volume) We contended that God representations might be based on other domain-specific concepts, such as the human being. While broad categorical delineations (such as sentient being, human being, artefact, animal) may occur at an early age (e.g., Carey & Spelke, 1994); the conceptual specifications of God may undergo a long period of conceptual refinements. Such refinements may involve an increasing distance from the human being, either through the fusion of several categories of beings or by means of decreased human characteristics, as shown in the current study through the participant's use of de-anthropomorphization strategies. Despite the increasing distance from the human, God representations retain strong dependency on other concepts. This is in line with the claim that religious beliefs exploit domain-specific cognitive abilities that are either evolved

adaptations or "painstakingly acquired expertise" (Sperber & Hirschfeld, 1999, p. 117). The dependence on other concepts may be mostly due to the absence of a real-life encounter with that concept, that is, the lack of first-hand observations. This goes against the claim of Barrett et al. that children would be naturally wired to conceive of God (Barrett, 2000; Barrett & Richert, 2003). Instead, it requires sufficient acculturation and sufficient cognitive abilities. Certain early differentiation between God and other concepts has led researchers to call children "intuitive theists" (Kelemen, 2004). Again, the current research speaks of the major role that age plays in creating fine conceptual differentiation from the initially predominant humanness. Those aspects will be discussed as part of the (second and third) main contributions of this research, below.

The current research made three main contributions to the scientific understanding of God representations in children. First, it has helped move beyond the anthropomorphic vs. non-anthropomorphic opposition by exploring within the majority of anthropomorphic God figures. In that regard, the notion of de-anthropomorphization was particularly useful. For the most part, by looking more precisely into figures that past research had labelled as "anthropomorphic" some notable nuances have been unveiled. In light of discrepancies in past research regarding methodologies and terminologies, the current inquiry helps to situate previous studies to facilitate comparison and contrast. By constructing a model emphasizing de-anthropomorphization strategies, we have shown that combined sameness-otherness with the human being is pervasive in human-based (anthropomorphic) God figures drawn by children. This supports the ideas expounded by Guthrie (1993) that such an ontological blend should be found in the God representations of many religious traditions, including Christianity. This research has shown that children do tend to communicate their God representations in the same way—but not only in the same way—and that they do so by employing a broad variety of graphic scenarios (specifically, strategies). Furthermore, and most important to this research, we found that making use of such combinations of sameness and otherness is profoundly developmental and changes as age increases. We constructed a model on both a categorical system accounting broadly for both anthropomorphism (as shown in Study 1), and a dimensional logic covering strategies of combined sameness-otherness (especially de-anthropomorphization). We provide the whole model in the Appendix (Fig. 4.25).

Second, age played a major role in the utilization of de-anthropomorphization strategies although schooling (as well as gender) did not at all. The fact that using such strategies was positively associated with age indicates the eminently developmental foundations of God representations. It further indicates that conceptual change is likely to take place while calling on several ontological categories, including the human being. The absence of the effect of religious schooling likely shows that when it comes to mixing categories together, education cannot lead to more "advanced" God representations. In fact, such representations, presumably, should not be considered more developed, but should simply be considered as evidence of more advanced cognitive abilities and conceptual construction. These findings are even more powerful, given the supposedly more accurate perception of ontological

variations and categorical belonging becoming finer with age. This emphasizes the participant's action of intentional altering God's humanness by ascribing nonhumanness to it as well. Such type of ontological alteration consists in conceptually *un-doing* the human base that had been set. The act of un-doing is tied to an individual's cognitive development, and appears to be more endogenous than based on socialization. Stating this does not discard the possibility that children may resort to culture-specific symbols to achieve de-anthropomorphization, but it does means that what drives them to make that effort most likely reflects their own cognition.

Third, by digging deeper into specificities related to nonhumanness, and in particular with the concept of de-anthropomorphization, the current research has challenged the universal assumptions that could be brought forth based on the combined observation of Hanisch (1996) and Brandt et al. (2009). If age plays a role in the occurrence of such types of representations, religious schooling is not likely to contribute to them by supplying a more developed concept. Instead, it is more plausible that religious schooling, given its non-significant effect on specific de-anthropomorphization strategies, plays a part as a provider of alternatives to the representation of the human figure. It may operate through exposure to a variety of representations of God that may be more acute as a result of religious schooling. This is essential information for understanding the conceptual underpinnings of God representations and the ways that they may develop across childhood through to adulthood. The idea that non-anthropomorphic God representations are somewhat more "mature" or "advanced," and that this can be proven through similar contributions of religious teaching and cognitive development, must be dropped. This notion only made sense until anthropomorphic figures were scrutinized more carefully through this scientific work. A logical consequence of this research is the understanding that de-anthropomorphization occurring on human-based God figures throughout childhood does not represent a gradual change towards completely non-anthropomorphic figures. The phenomenon is more intricate than that; there are many factors to consider. Both de-anthropomorphization and non-anthropomorphic figures are found more frequently as children get older. On top of this, de-anthropomorphization becomes more complex with age and does not depend on religious schooling. Further, both occur early on (around 7 years of age), and follow a somewhat similar developmental course, which eliminates the possibility that one of them occurs only at a later stage in development. De-anthropomorphization qualifies as an indicator of conceptual complexity, and the absence of anthropomorphism (i.e., using non-anthropomorphic representations) may be better referred to as a measure of divergence or distantiation from the central concept of the human being on which the divine seems to be based.

This contrast between the effect of age and religious education across the two studies carried out for this research deserves additional attention. Although one could argue that children's representations of God may naturally evolve with age—or even that they are naturally equipped in that regard (Barrett & Richert, 2003; Kelemen, 2004), the socio-cultural background surrounding a child must not be neglected. This element may serve more effectually than religious education as a provider of alternatives to traditional representations. The way children come to

conceive of certain notions may be greatly influenced by different testimonies that are claimed around them (Harris & Koenig, 2006; Harris et al., 2006). Past research has shown that such an influence on religious ideas is likely to be visible from as early as 6 years of age (Evans, 2001). For example, during religious class, children are likely to hear claims such as "God is the light," "God is our guide." Indeed, children receiving religious schooling were found, in Study 1, to provide non-anthropomorphic forms of God in their drawings. However, such forms did not imply any conceptual mixture. Instead, they necessitated that children choose forms that are alternatives to the more central human reference. Study 2 addressed specifically anthropomorphic God figures that are composite (not only human) or lack basic human characteristics. In these drawings, children combined the human category with other ontological categories. If we can expect that children will be guided by testimonies about a human-like God possessing wings and a halo, living in the sky, and so on, we also suppose that they possess a sufficient level of cognitive ability. More specifically, children need to have developed advanced domain-specific knowledge. One could argue that basic conceptual domains are grasped rather early in development, at an age younger than that of the current sample (Carey & Spelke, 1994). Nevertheless, depicting God in a way that is conceptually composite or that lacks basic properties may require more than having acquired basic domain-specific knowledge. With an exclusive age-dependency, results from Study 2 suggest the ability for children to recognize conceptual mixture (or a lack of basic features) is at stake. The older the child is, the more likely they are to insert such an oddity in their drawings. However, while developmental patterns were generally consistent, they were not strictly incremental by age.

There are theoretical implications to this contrast between the effects of schooling and of age. First, testimonies told by adults to children are very likely to have an influence on forms of the divine that are non-anthropomorphic, and to facilitate endorsement by children in the context of religious schooling at an earlier age (8 years of age in the group receiving religious schooling instead of 10 years of age in the regular schooling group). This underscores the potentially important role of communities and proximal socio-cultural backgrounds. Why the emphasis on proximal? Because we can assume that, apart from religious schooling, children were all acculturated to similar socio-cultural backgrounds in French-speaking Switzerland. Therefore, the more distal background must have certainly played a part in the religious orientation of the data: through predominantly Christian references, common to most of the sample. The acculturation to non-anthropomorphic forms was not exclusive to the religious schooling group; it just occurred later in the other group. This suggests that religious ideas pervade culture and that older children may be somewhat more sensitive to them. Second, cultural representations are ideas that are often taken for granted; their origin can be forgotten at times, to the extent that they are processed as a whole, through analogical thinking (Kaufmann & Clément, 2007). This may be true of individuals having reached adulthood— but it might not be true of children. Indeed, the exclusive effect of age on conceptual mixture or lack of central characteristics point in another direction: children need to be cognitively capable of understanding such an oddity to reproduce it in their drawings. Such

reproduction proved, in Study 2, to be expressed both more often and with more complexity in older children. Without undermining the role played by analogical thinking in the integration and repetition of cultural and religious ideas, the current research suggests that God representations cannot be simply replicated without first being understood from a domain-specific perspective.

The current stance serves to put into perspective God representations as concerned both with domain-specific knowledge, on the one hand, and with analogical thinking, on the other hand. With regard to the former, it has been proposed that religious entities necessarily display minimally counterintuitive properties, which makes them efficient, attention-grabbing, socially transmittable representations (e.g., Boyer, 1994). Such ontological violations (Boyer, 1994; Boyer & Walker, 2000) are mostly meant to be evocative, as they are semi-propositional (Sperber, 1996), being understood in the form of "seeing as" rather than "seeing that" (Kaufmann & Clément, 2007). They imply an analytical, domain-specific understanding. The latter underlies the taken-for-granted and, in fact, intuitive nature of such representations (Kaufmann & Clément, 2007). Both viewpoints might be true. Following the current findings, we suggested that, in the same way that cultural representations have been historically developed and socially transmitted, children must focus on their domain-specific mixture producing that attention-grabbing effect. Concurrently, at the time being, and for older (e.g., adult) individuals, representations of God from one's socio-cultural environment might have become intuitive and are processed by analogy to other concepts.

Eventually, we must ask whether or not the God representations, as children draw them, actually correspond to the children's idea of God. There are several aspects to take into account. First, it could be misleading to consider drawings of God in a literal sense without having access to the *emic* discourses made by their authors about them (Günter-Heimbrock, 1999). Instead, they stand as visual productions reflecting both the symbolic articulation carried by their authors and the surrounding socio-cultural context.

Second, as cultural representations may be semi-propositional (Sperber, 1996); it might be meaningless to claim any direct relation between the child's mind and the graphic composition that formed on the page. Some drawings might have to be taken literally, while others bear metaphorical qualities. Their commonality should be the social significance they have gained within a given background. Their conventionalization having progressively led to the omission of their original analogical meaning, they end up being taken for granted (Johnson, 1981; Miller, 1979). If the nature of the drawing task proposed to the participants does not allow us to determine the exact individual status of a drawn God representation, it seems sufficient to call forth certain symbolic arrangements that have been learned and developed through acculturation. These may testify to some form of *positional belief* (Tuomela, 1995), which reflects a collective belief taken on by the participant, depending on the specific situation. Insofar as drawings resulting from a themed task are meant to communicate to someone an idea about a specific topic, the mobilization of a common language is supposed to be at work. The drawing production process that takes place is likely based on an accurate *theory of picture* (Freeman,

1998). This theory states that the child will take into consideration not only their own intentions, but also (1) the potential beholder, (2) the place of the picture, and (3) the world (or in this case, the socio-cultural background) as interconnected parts of a net of intentions (Freeman & Sanger, 1995).

Third, given their highly complex nature, God representations expressed by an individual at a specific time are likely to correspond to one god-schema called forth in the moment (Gibson, 2008). We can suppose, however, that children's drawings of God still reflect the symbolic abilities of their authors. Having all this in mind, we argue that the current analysis of children's drawings of God is relevant, for it shows a certain level of articulation between children's cognitive abilities, concept development, mastery of culturally learned symbols, and testimonies provided in their socio-cultural environment.

Limitations and Future Research

We recognize a few limitations in the current study. A principal limitation concerns its cross-sectional design, and thus the impossibility to determine causal relationships between variables. Another limitation follows from the very strength the method itself. Although a free-drawing task addressing God representations allows for creativity and is bound to produce very rich data, it also lacks the experimental qualities that other research designs may have. Most participants came from a Christian background, and while this is representative of the Swiss context where the data were collected, there is a need to conduct similar studies on a broader variety of religious denominations. More comprehensive measures of religiosity that also encompass spirituality, could have been used (e.g., Brief Multidimensional Measurement of Religiousness/Spirituality by Holder, Coleman, & Wallace, 2010). However, adding extra measures can easily become costly on quantitative studies.

Future research should certainly address the child's own reflection on the end product (the drawing), which is, in that sense, a sort of phenotype guided by mostly unseen motivations (Günter-Heimbrock, 1999). In-depth qualitative assessments of children's hand-drawn God representations, especially with respect to de-anthropomorphization, is likely to move our current understanding even further. Interviews with the participants may reveal intricate connections between mental representations and drawings. Particularly, it would be beneficial to map how children make meaning of resorting to anthropomorphic traits when drawing God, considering literal and metaphorical levels. Indeed, at this stage, our findings do not permit us to decide whether the ontological variations observed faithfully reflect underlying conceptual alterations, or if they demonstrate increased abilities for using a metaphorical language.

Moreover, other branches of the theoretical model proposed in this study should be examined. One such possibility lies in unpacking anthropomorphism even further. In particular, we need to explore the sub-branch of non-ordinary human figures. Another possible path to follow pertains to examining more closely the

non-anthropomorphic God figures and other types of drawings situated higher in the model constructed in this research.

Eventually, within-subject comparisons should be conducted, investigating possible relationships between drawn God figures and other topics (e.g., superheroes) or other types of tasks (e.g., a Karmiloff-Smith kind of task).

Practical Implications

Religious Education

As suggested by Pitts (1977) educators of religion need to adapt their teaching to the stage of the child's cognitive development and not use language or metaphors they cannot yet grasp. Borrowing more specifically from insightful research on analogical reasoning, confusion could be limited and the learning process improved by working on different types of analogies, in a way similar to applications in medical studies (Spiro, 1988). This is suggested by the substantial references to ontological categories (other than the human being) observed in the current study. Therefore, it might occur spontaneously to a child that while the human being represents a solid support for understanding an intentional agent such a God, conceptual clarification is also increased by symbolic ways of ontological differentiation from it. This perspective goes far beyond depicting God as a light, for example, to evoke guidance in one's life. Instead, it posits that the educator's interest should lie in children's *emic* construal of the divine and should attempt to rebound on the metaphoric language they use themselves, as shown in their drawings of God.

General Teaching

More than providing a mere humanized perception of the world, anthropomorphism may act as a very useful scaffolding to understanding a variety of notions, besides God. Stimulating anthropomorphic explanations of different phenomena may assist the acquisition of new concepts, with the caveat these need to be understood as metaphors only, and that under certain (unfortunate) conditions these may cause difficulties in the novice's mind, in science (Kallery & Psillos, 2004) or programming (Robins et al., 2003). Zohar and Ginossar (1998) have provided evidence that while it might be easier for children to apprehend novel notions in an anthropomorphic language, as a "prop", it does not mean that they will be misled to reason in an anthropomorphic way. Developing this idea further, based on Spiro (1988), we could use anthropomorphism as a base and encourage the addition of other ontological categories when deemed fit to better map the underlying structure of a complex notion to be learned, be it God or another concept. Based on the observation in

the current data that as a child's age increases, he/she will mix ontologies more often and in more complex ways, we could even suggest that conceptual refinements would eventually happen even when a notion is taught by employing anthropomorphic metaphors.

Conclusion

We have proposed a data-driven model attempting to conceptualize various graphic scenarios concerning anthropomorphism in children's drawings of God in French-speaking Switzerland. As previously observed, we were able to replicate a developmental tendency towards non-anthropomorphic God figures and a similar effect of religious schooling. However, we have placed a particular focus on de-anthropomorphization strategies, following an incentive to move past a binary anthropomorphic vs. non-anthropomorphic opposition. A substantial part of the data was found to endorse de-anthropomorphization, and a positive effect of age could be observed almost systematically. Overall, the current findings point to much more complexity in connection to anthropomorphism. Additionally, they support the idea the God concept undergoes fine conceptual changes, progressively drawing away from the human being, rather than following a sudden non-anthropomorphic shift.

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Appendix

Here we present a few drawings to illustrate anthropomorphization strategies as well as the non-anthropomorphic type of drawing in order to provide the viewer with a better sense of what was entailed in the current article. Even though it was not part of the analyses in Study 2, for the sake of clarity, illustrations for "Non-human base" have been provided as well.

Fig. 4.11 Associated (http://ark.dasch.swiss/ark:/72163/1/0105/aW3A7U8xSeGQJ80vWs4nIg5.20180702T163857453Z)

Fig. 4.12 Associated and through-the-background (non-terrestrial) (http://ark.dasch.swiss/ark:/72163/1/0105/2ZjLocZSRiiIaCu5hc7eWgP.20180702T1641301812)

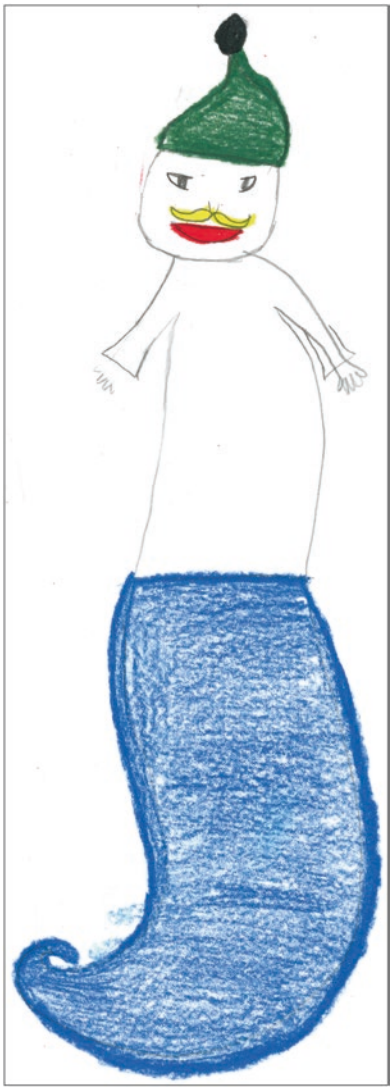

Fig. 4.13 Structural (http://ark.dasch.swiss/ark:/72163/1/0105/Tbu8MDzkRzmfsNmXPsCM6Qu.20180702T162538382Z)

Fig. 4.14 Structural—incomplete (http://ark.dasch.swiss/ark:/72163/1/0105/KA_Pz9bdSDGSNHPWMCNz2Q8.20180702T163708303Z)

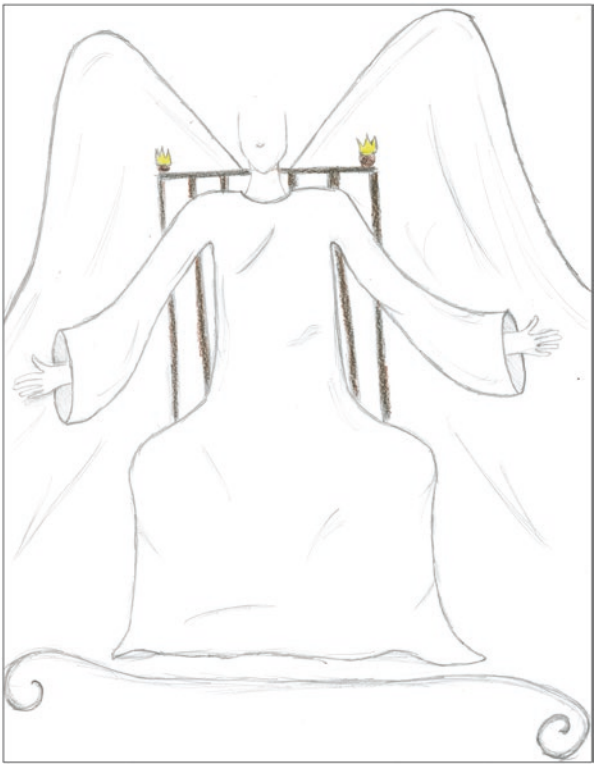

Fig. 4.15 Structural—incomplete (http://ark.dasch.swiss/ark:/72163/1/0105/P2YXUrEjT5CGc5UalxkVEQd.20180702T163005404Z)

Fig. 4.16 Through the background (terrestrial) (http://ark.dasch.swiss/ark:/72163/1/0105/mjRyC5XWRnKOJjC9qkhipQs.20180702T165310528Z)

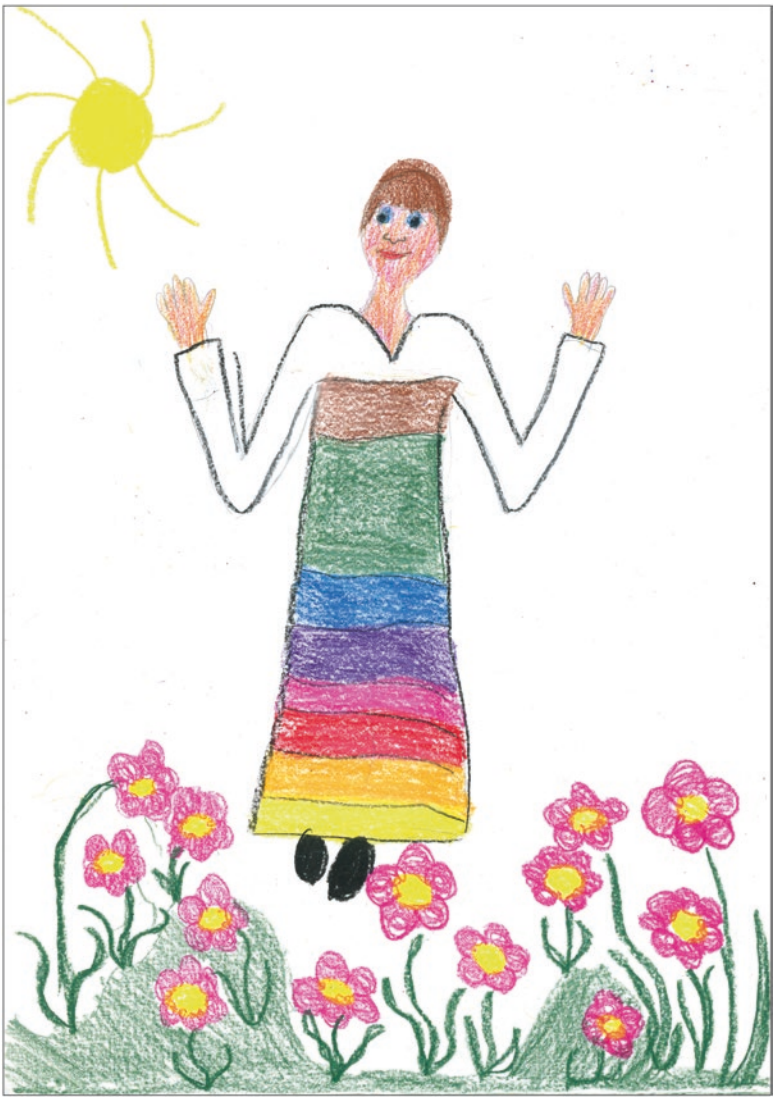

Fig. 4.17 Through the background (non-terrestrial) (http://ark.dasch.swiss/ark:/72163/1/0105/yl4vFkVDQeydVGaZqY_lUgE.20180702T164531789Z)

Fig. 4.18 Through the background (relative to others and non-terrestrial) (http://ark.dasch.swiss/ark:/72163/1/0105/bV6ThBusTMuoBthIQOE6Dg6.20180702T164858956Z)

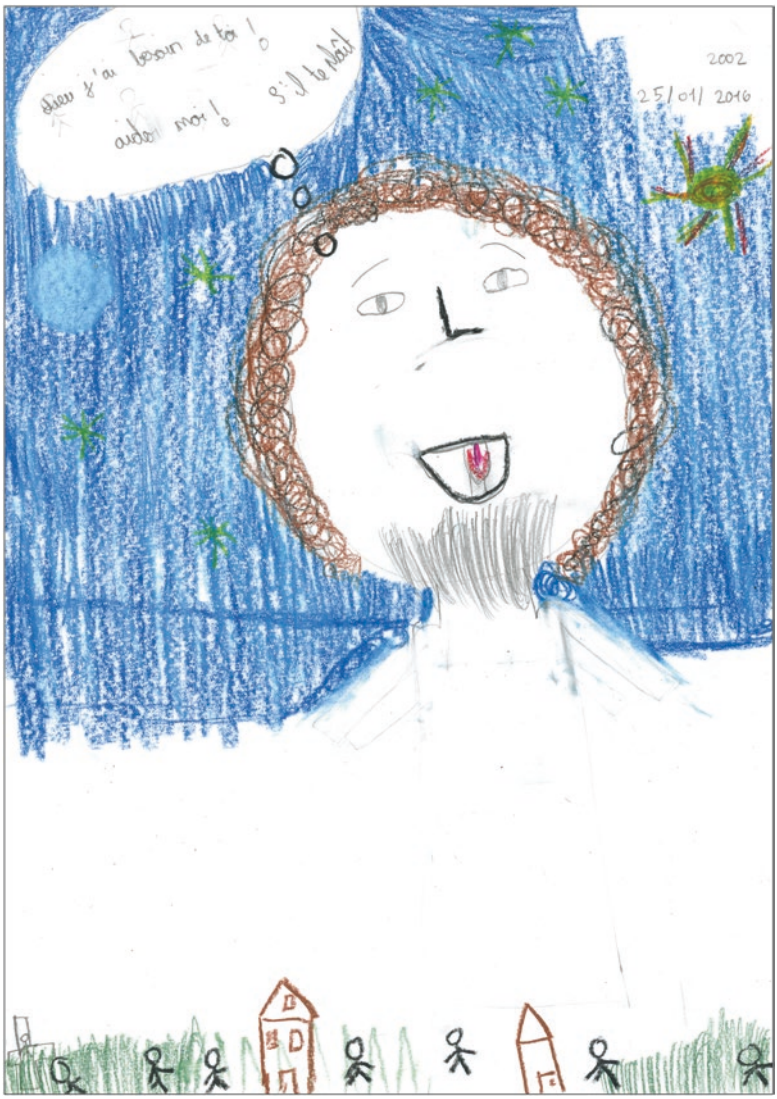

Fig. 4.19 Through the background (relative to others) (http://ark.dasch.swiss/ark:/72163/1/0105/wZpTOcCdSYSugpJBvFIktw0.20180702T162843521Z)

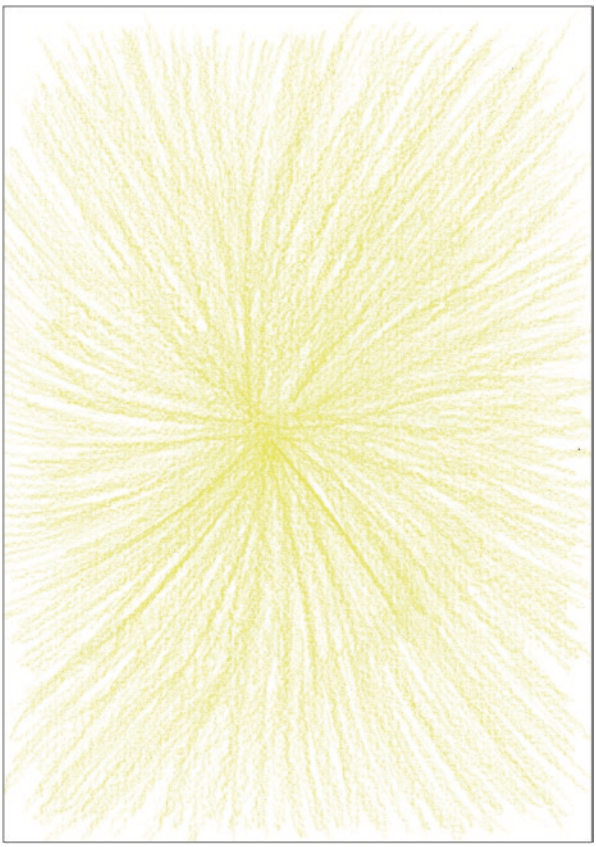

Fig. 4.20 Non-anthropomorphic (http://ark.dasch.swiss/ark:/72163/1/0105/F9qgHhf4RXKoDsySEcALNwy.20180702T164012282Z)

Fig. 4.21 Non-anthropomorphic (http://ark.dasch.swiss/ark:/72163/1/0105/56YYUxWgRoucmGaJc4CVkwG.20180702T163836298Z)

Fig. 4.22 Non-anthropomorphic (http://ark.dasch.swiss/ark:/72163/1/0105/ttKXrsR7QJeq6vyrvj8JpAf.20180702T160938765Z)

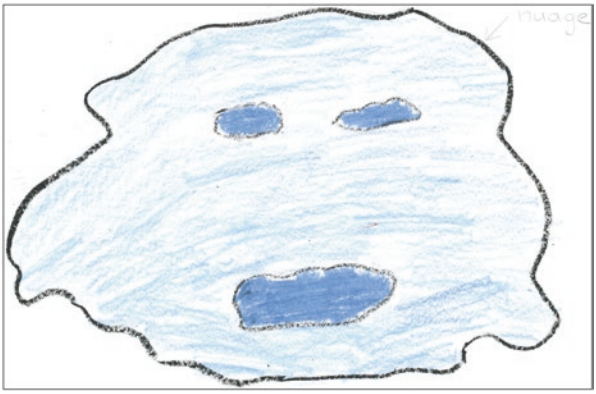

Fig. 4.23 Non-human base (http://ark.dasch.swiss/ark:/72163/1/0105/ND3Rh1qOTUqmVd3ElV0LAwd.20201018T10485193395Z)

Fig. 4.24 Non-human base (http://ark.dasch.swiss/ark:/72163/1/0105/UNPf3ZqOT7utcqATFCIlTQx.20180702T164152758Z)

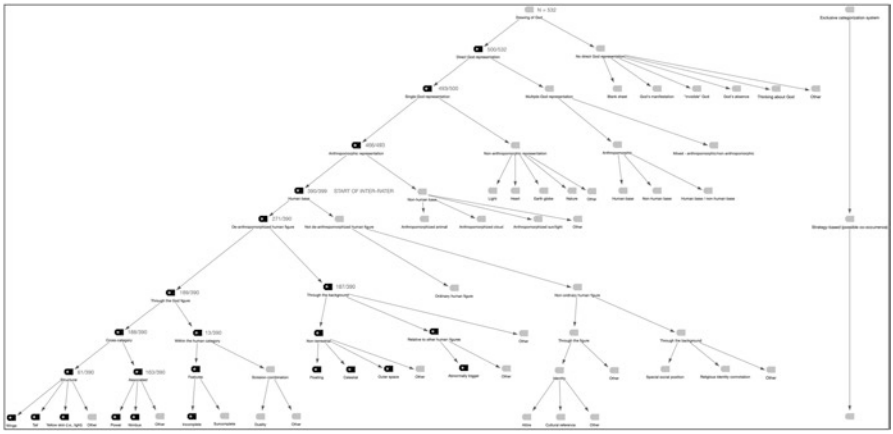

Fig. 4.25 On the basis of Study 1 and Study 2, we generated a comprehensive model. It combines a strictly categorical system (until "Anthropomorphic representation) with a dimensional one (designed to identify sameness-otherness with the human being on human-based God figures—especially de-anthropomorphization)

References

Barrett, J. L. (2000). Exploring the natural foundations of religion. *Trends in Cognitive Sciences, 4*(1), 29–34.

Barrett, J. L., & Richert, R. A. (2003). Anthropomorphism or preparedness? Exploring children's God concepts. *Review of Religious Research, 44*(3), 300–312.

Barrett, J. L., Richert, R. A., & Driesenga, A. (2001). God's beliefs versus mother's: The development of nonhuman agent concepts. *Child Development, 72*(1), 50–65.

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, 57*(1), 289–300.

Boyer, P. (1994). Cognitive constraints on cultural representations: Natural ontologies and religious ideas. In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 391–411). Cambridge University Press.

Boyer, P., & Walker, S. (2000). Intuitive ontology and cultural input in the acquisition of religious concepts. In K. S. Rosengren, C. N. Johnson, & P. L. Harris (Eds.), *Imagining the impossible: Magical, scientific, and religious thinking in children* (pp. 130–156). Cambridge University Press. https://doi.org/10.1017/CBO9780511571381.006

Brandt, P.-Y., Kagata Spitteler, Y., & Gillièron Paléologue, C. (2009). La représentation de Dieu: Comment les enfants japonais dessinent Dieu. *Archives de Psychologie, 74*, 171–203.

Bull, R., & Scerif, G. (2001). Executive functioning as a predictor of children's mathematics ability: Inhibition, switching, and working memory. *Developmental Neuropsychology, 19*(3), 273–293.

Carey, S., & Spelke, E. (1994). Domain-specific knowledge and conceptual change. In L. A. Hirschfeld & S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 169–200). New York: Cambridge University Press.

Dandarova, Z. (2013). Le dieu des enfants: Entre l'universel et le contextuel. In P.-Y. Brandt & J. M. Day (Eds.), *Psychologie du développement religieux: Questions classiques et perspectives contemporaines* (pp. 159–187). Labor et Fides.

Dandarova-Robert, Z., Dessart, G., Serbaeva, O., Puzdriac, C., Khodayarifard, M., Zardkhaneh, S. A., et al. (2016). A Web-based database for drawings of gods. *Archive for the Psychology of Religion, 38*, 345–352. https://doi.org/10.1163/15736121-12341326

Evans, E. M. (2001). Cognitive and contextual factors in the emergence of diverse belief systems: Creation versus evolution. *Cognitive Psychology, 42*(3), 217–266.

Freeman, N. (1998). Drawing on the imagination in young children. In *Drawing and Visualisation Research (Proceedings of Drawing Across Boundaries)* (pp. 1–10). Tracey, Loughborough.

Freeman, N. H., & Sanger, D. (1995). Commonsense aesthetics of rural children. *Visual Arts Research, 21*(2), 1–10.

Gibson, N. J. (2008). Chapter 11. Measurement issues in god image research and practice. *Journal of Spirituality in Mental Health, 9*(3–4), 227–246.

Gorsuch, R. L. (1988). Psychology of religion. *Annual Review of Psychology, 39*(1), 201–221.

Günter-Heimbrock, H. (1999). Images and pictures of God: The development of creative seeing. *International Journal of Children's Spirituality, 4*(1), 51–60.

Guthrie, S. (1993). *Faces in the clouds: A new theory of religion*. Oxford University Press.

Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutorials in Quantitative Methods for Psychology, 8*(1), 23.

Hanisch, H. (1996). *Die zeichnerische entwicklung des Gottesbildes bei kindern und jugendlichen*. Calwer/Evangelische Verlagsanstalt.

Harris, P. L. (1994). Unexpected, impossible and magical events: Children's reactions to causal violations. *British Journal of Developmental Psychology, 12*(1), 1–7.

Harris, P. L., Brown, E., Marriott, C., Whittall, S., & Harmer, S. (1991). Monsters, ghosts and witches: Testing the limits of the fantasy—reality distinction in young children. *British Journal of Developmental Psychology, 9*(1), 105–123.

Harris, P. L., & Koenig, M. A. (2006). Trust in testimony: How children learn about science and religion. *Child Development, 77*(3), 505–524.

Harris, P. L., Pasquini, E. S., Duke, S., Asscher, J. J., & Pons, F. (2006). Germs and angels: The role of testimony in young children's ontology. *Developmental Science, 9*(1), 76–96.

Johnson, C. N., & Harris, P. L. (1994). Magic: Special but not excluded. *British Journal of Developmental Psychology, 12*(1), 35–51.

Johnson, M. (1981). *Philosophical perspectives on metaphor*. University of Minnesota Press.

Kallery, M., & Psillos, D. (2004). Anthropomorphism and animism in early years science: Why teachers use them, how they conceptualise them and what are their views on their use. *Research in Science Education, 34*(3), 291–311.

Karmiloff-Smith, A. (1990). Constraints on representational change: Evidence from children's drawing. *Cognition, 34*(1), 57–83. https://doi.org/10.1016/0010-0277(90)90031-E

Kaufmann, L., & Clément, F. (2007). How culture comes to mind: From social affordances to cultural analogies. *Intellectica, 46*(2–3), 221–250.

Kelemen, D. (2004). Are children "intuitive theists"? Reasoning about purpose and design in nature. *Psychological Science, 15*(5), 295–301.

Ladd, K. L., McIntosh, D., & Spilka, B. (1998). Children's God concepts: Influences of denomination, age and gender. *International Journal for the Psychology of Religion, 8*, 49–56.

Miller, E. F. (1979). Metaphor and political knowledge. *American Political Science Review, 73*(1), 155–170.

Piaget, J. (1929). *The child's concept of the world*. Routledge & Kegan Paul.

Piaget, J. (1951). Pensée égocentrique et pensée sociocentrique. *Cahiers Internationaux de Sociologie, 10*, 34–49.

Pitts, V. P. (1976). Drawing the invisible: Children's conceptualization of God. *Character Potential: A Record of Research, 8*, 12–25.

Pitts, V. P. (1977). Drawing pictures of God. *Learning for Living, 16*(3), 123–129.

Robins, A., Rountree, J., & Rountree, N. (2003). Learning and teaching programming: A review and discussion. *Computer Science Education, 13*(2), 137–172.

Rosengren, K. S., & Hickling, A. K. (1994). Seeing is believing: Children's explanations of commonplace, magical, and extraordinary transformations. *Child Development, 65*(6), 1605–1626.

Sperber, D. (1996). *Explaining culture: A naturalistic approach*. Blackwell.
Sperber, D., & Hirschfeld, L. (1999). Culture, cognition, and evolution. In R. Wilson & F. Keil (Eds.), *MIT encyclopedia of the cognitive sciences* (pp. 111–132). MIT Press.
Spiro, R. J. (1988). Multiple analogies for complex concepts: Antidotes for analogy-induced misconception in advanced knowledge acquisition. *Similarity and Analogical Reasoning, 2*, 2–23.
Tuomela, R. (1995). *The importance of us: A philosophical study of basic social notions*. Stanford University Press.
Vicente, A., & Martínez Manrique, F. (2016). The big concepts paper: A defence of hybridism. *The British Journal for the Philosophy of Science, 67*(1), 59–88. https://doi.org/10.1093/bjps/axu022
Zohar, A., & Ginossar, S. (1998). Lifting the taboo regarding teleology and anthropomorphism in biology education—heretical suggestions. *Science Education, 82*(6), 679–697.