

Cultural Context Shapes Essentialist Beliefs About Religion

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The present study investigates the processes by which essentialist beliefs about religious categories develop. Children (ages 5 and 10) and adults ($n = 350$) from 2 religious groups (Jewish and Christian), with a range of levels of religiosity, completed switched-at-birth tasks in which they were told that a baby had been born to parents of 1 religion but raised by parents of another religion. Results indicated that younger children saw religion-based categories as possible essential kinds, regardless of the child's own religious background, but that culture-specific patterns emerged across development. This work shows that cultural context plays a powerful role in guiding the development of essentialist beliefs about religious categories.

Keywords: psychological essentialism, social categorization, social-cognitive development, religion

Psychological essentialism is the belief that certain categories have an underlying nature, or “essence,” that gives rise to the members’ shared properties, and makes them fundamentally distinct from other kinds of things (Gelman, 2003; Medin & Ortony, 1989). As a general conceptual bias, essentialism facilitates learning, as members of essentialized categories can be readily used as a base for inductive inference. For example, if children believe that tigers share an unseen essence, then they can infer that if one tiger is ferocious, then other tigers will be ferocious as well, without needing to learn about each tiger individually (Gelman & Markman, 1987; Gelman & Wellman, 1991; Waxman, Medin, & Ross, 2007). These types of inferences make category-based learning quite efficient and have been well documented in both children and adults for natural kind categories such as animals (Diesendruck & Gelman, 1999; Gelman, 1988; Gelman & Coley, 1991; Keil, 1989; Rhodes & Gelman, 2009).

People also hold essentialist beliefs in the social domain, believing that certain social category boundaries represent objective, naturally occurring distinctions between people (Allport, 1954; Atran, 1990; Gelman, 2003; Haslam, Rothschild, & Ernst, 2000; Hirschfeld, 1995; Rothbart & Taylor, 1992). Social essentialism may be useful in allowing individuals to success-

fully navigate the world because social categories can support inferences about how people will behave and think. However, this process can have negative consequences: Social essentialism has been linked to stereotyping and prejudice across a range of experimental paradigms (Haslam et al., 2000; Keller, 2005; Prentice & Miller, 2007; Williams & Eberhardt, 2008). An interesting but arguably understudied category here is that of religion. Across human history, religious distinctions have been the source of violent conflict and discrimination. Yet, it is unclear whether people’s beliefs about religious groups are subject to the same psychological processes as their beliefs about essentialized social categories such as race and gender. The goal of the present work, then, is to investigate the processes by which essentialism about religious groups develops.

Regarding social essentialism more broadly, these beliefs emerge across development, resulting from the interplay between children’s own prior expectations and the cultural input that they receive. As evidence for this proposal, social essentialism has been documented across a broad range of contexts, including in various communities around the United States (Hirschfeld, 1996; Rhodes & Gelman, 2009; Taylor, Rhodes, & Gelman, 2009), among Israeli children (Birnbaum, Deeb, Segall, Ben-Eliyahu, & Diesendruck, 2010; Deeb, Segall, Birnbaum, Ben-Eliyahu, & Diesendruck, 2011; Diesendruck & HaLevi, 2006), and in communities in Chile (del Rio & Strasser, 2011), Madagascar (Astuti, Solomon, & Carey, 2004), and Brazil (Sousa, Atran, & Medin, 2002), suggesting that children may be cognitively biased to expect that some social categories reflect essential kinds. Yet, the exact categories to which children apply those beliefs depends on the input that they receive in their cultural context (Astuti et al., 2004). For example, Rhodes and Gelman (2009) documented that whereas 5-year-old American children in rural and urban communities showed similar tendencies to essentialize gender but not racial categories, this tendency changed across development depending on the cultural context in which children were raised. Furthermore, children from

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different religious communities in Israel differ in their beliefs about the stability of social category membership (Diesendruck & Haber, 2009), and in the United States, African American children view race as more stable than European American children do (Kinzler & Dautel, 2012).

Thus, cultural context shapes how essentialist beliefs are applied to specific social categories. Yet, it remains unclear exactly how these processes unfold with regard to religious groups, and whether religious essentialism is subject to the same developmental processes as essentialism about other types of social categories, such as gender and race. Religion is similar to other social distinctions in that it is a salient social category across many cultures, but people's beliefs about the source of religious identity are highly variable; some religious theologies explicitly state that membership in the group is inherited at birth (e.g., Judaism), whereas other religions require action to join the group (e.g., baptism in Catholicism).

The first question we seek to address in the present work is that of how essentialist beliefs about religious categories develop. One possibility is that these beliefs emerge slowly across development, to the extent that children are exposed to explicit essentialist theology in their cultural context. From this perspective, essentialist beliefs about religion might develop across childhood in religious Jewish children, for example, who are explicitly taught that religious identities are determined via inheritance. On this account, the development of essentialist beliefs about religion would follow the same trajectory as any other component of religious theology that children are explicitly taught; these beliefs should thus emerge over time only in children whose religion explicitly supports them.

However, because essentialism stems from basic conceptual biases, children sometimes construct essentialist beliefs on their own, and apply them to categories that even adults in their communities do not view in essentialist terms. For example, Astuti, Solomon, and Carey (2004) found that in the Vevo fishing village in Madagascar, children saw social group identity as inherited at birth, whereas adults in the same community saw identity as dependent on the social group in which an individual was raised. Furthermore, Hirschfeld and Gelman (1997) documented that preschoolers in the United States see the language that a person speaks as fixed at birth, even though this belief is not held by the adults around them. Thus, a more likely possibility regarding the development of religious essentialism is that younger children, regardless of their own religious background, might be *more* likely than older children or adults to consider religious categories in essentialist terms, and any increase or decrease in these beliefs should emerge across age depending on the child's environment. In accordance with this account, we hypothesize that younger children will show relatively high levels of essentialism across the board whereas more culture-specific patterns in these beliefs will emerge in the older age groups.

The second question that we seek to address concerns the scope of the impact of cultural input on social essentialism. In particular, cultural input might shape the development of essentialist beliefs about a type of category. On this account, children who essentialize a type of category should show similar tendencies for many specific categories within that type—that is, if children essentialize religion, they should essentialize religious groups in general, even beyond those specific religions to which they are exposed in their own cultural context. Alternatively, culture might shape beliefs

about the specific categories to which children are exposed—if this is the case, then children should hold essentialist beliefs particularly about specific familiar religious groups (Diesendruck, Goldfein-Elbaz, Rhodes, Gelman, & Neumark, 2013), but not about less familiar religious groups. In accordance with this second account, we hypothesize that any cultural variation that emerges in essentialist beliefs across development will emerge primarily with respect to familiar religions, and less so (or not at all) for novel religions.

The present work uses a switched-at-birth task, in which children are told about a baby that was born to parents who belong to one category and raised by parents who belong to another, to investigate the above issues. Switched-at-birth tasks have been used in a great deal of prior research on essentialism and have been a successful way to investigate whether children see category membership, as well as the properties stemming from that membership, as being inherited and stable (Taylor et al., 2009). Because we were interested in how social essentialist beliefs emerge across development, we used participants in three age groups: 5-year-olds, 10-year-olds, and adults. We used these ages because social essentialist beliefs have been documented as early as the preschool years, but undergo substantial developmental change across the elementary school years (Rhodes & Gelman, 2009). Furthermore, because looking at distinct groups within a broader community has been a fruitful approach to studying cultural variation in past research, we recruited participants from two religious communities (Christian and Jewish) in the United States, with varying levels of religious observance within those groups. As we were interested in whether cultural input causes essentialist beliefs to be applied to an entire category type, versus just the specific categories to which individuals are exposed, we asked participants about two different types of religions: familiar ones (Judaism and Christianity) and novel ones. By investigating the extent to which people in each of these groups essentialize different types of religious categories, we examined the role that cultural context plays in shaping essentialist beliefs about religion. We hypothesized that younger children would essentialize religious groups at higher levels than older children and adults, and that cultural input would either weaken or strengthen those beliefs across development.

Method

Participants

Participants included 79 five-year-olds (M age = 5.52, range = 4.90–6.45, 47 female), 44 ten-year-olds (M age = 9.86, range = 8.69–11.33, 20 female), and 227 adults (M age = 35.32, range = 19.00–71.00, 131 female). Participants were 73% White, 5% African American, 7% Hispanic, 4% Asian, 7% mixed, and 4% Other/unreported. Child participants were recruited either at the Children's Museum of Manhattan, through schools in New York City, or through an online database of families. For children recruited at the museum, parents were approached by researchers on the museum floor and invited to participate in research studies; they provided consent and children were tested immediately in a quiet room in the museum. For children recruited through schools, parents received per-

mission slips in the mail and returned them through school administrators, and children were tested in a quiet room at their school. For children recruited through the online database, parents were contacted via email and children were tested either at their homes or in the lab. Adult participants were recruited through Amazon's Mechanical Turk and completed the study online. An additional 33 five-year-olds were tested but excluded from analysis because of distractions in the testing environment ($n = 8$), because they did not speak English ($n = 1$), because of experimenter error ($n = 5$), because they failed to complete the entire study ($n = 2$), or because their parents did not provide demographic information about their religious background ($n = 17$). An additional seven 10-year-olds were tested but excluded from analysis because their parents did not provide demographic information about their religious background. An additional 32 adults were tested but excluded from analysis because they failed to correctly answer attention check questions.¹

All participants filled out a demographic form to indicate their religious background and level of religiosity (for child participants, this information was provided by the children's parents). For children, religiosity was measured based on the frequency with which children attended religious school, attended religious services, participated in personal prayer, performed religious rituals, discussed religious topics with friends or family members, and spoke with a religious leader; for each question, participants were given a score from 0 (*never*) to 3 (*daily*). The scores were then summed and divided by the total possible number of points to create a proportion. For adults, religiosity was measured in the same manner, with the exception that attending religious school was not included. The 5-year-old sample consisted of 19 Jews (M religiosity = .53, range = .00–1.00) and 60 Christians (M religiosity = .44, range = .00–.83). The 10-year-old sample consisted of 14 Jews (M religiosity = .68, range = .06–1.00) and 30 Christians (M religiosity = .51, range = .06–.89). The adult sample consisted of 131 Jews (M religiosity = .42, range = .00–1.00) and 100 Christians (M religiosity = .40, .00–1.00).²

Procedure

We used a switched-at-birth task, in which children are told about a baby that was born to parents of one category and raised by parents of another category (e.g., Taylor et al., 2009), to investigate whether children see religion as an essential kind. All children completed two blocks of switched-at-birth questions in counterbalanced order: one about familiar religions, and one about novel religions. For the familiar religions block, the experimenter first showed pictures of two sets of parents, one described as Jewish and one described as Christian. The experimenter then told children a story in which one set of parents had a baby, but the baby was raised by the other set of parents. A hidden picture—a colorful square described as hiding a picture of the baby—was presented to depict the baby. Children were then told to imagine what the baby would be like as a big kid, and were asked questions about what the baby would be like in the future. These questions asked about specific properties associated with religion that the child might hold (for full text, see Appendix A): beliefs (believing in the Torah or the

Gospels), obligations (having to eat kosher food or being allowed to eat nonkosher food), norms (going to synagogue or church on weekends), and customs (celebrating Passover or Easter). For each of these questions, the property was described for each set of parents, then children were asked which property was true of the baby (e.g., “These Jewish parents believe in a book called the Torah. These Christian parents believe in a book called the Gospels. When the baby is a big kid, does she believe in the Torah, like the Jewish parents, or does she believe in the Gospels, like the Christian parents?”). Children were also asked about the baby's future religious identity (“When the baby is a big kid, is she Jewish, like the Jewish parents, or Christian, like the Christian parents?”). The order of the four properties questions was counterbalanced according to a balanced Latin square design, and the question about religious identity always came last. Children could answer the questions verbally or by pointing to the relevant set of parents. Children were also asked to give an open-ended explanation after the identity question (e.g., “How come the baby is Jewish like the Jewish parents?”), but preliminary analyses revealed that these answers were not informative (the vast majority of children simply repeated the relevant part of the story for their answer), so they were not included in our main analyses. The religion of the birth parents and the lateral position of the answer choices were counterbalanced across participants, to ensure that children were not simply responding based on whether the birth parents' religion matched their own. Children were given a score of 1 every time they indicated the birth parents as their answer, and a score of 0 every time they indicated the adoptive parents as their answer. Responses are presented as probabili-

¹ Our use of attention check questions lead to a higher number of adults being excluded from analysis than is typical for these types of studies. To ensure that these exclusions did not systematically alter our findings, we reran all of our main analyses with these 32 adults included. Every one of these analyses yielded patterns highly similar to those found in our main analyses.

² Because we tested our child participants in museum and school settings, we allowed all interested families to participate during the times that the study was being run. Because the population from which we were drawing was imbalanced in terms of religion, this method of sampling led to an imbalance in sample size across the groups included in our final sample. Furthermore, because we collected our adult data online, we had access to greater numbers of subjects in each religious group than we had for children. Yet, when we began data collection, it became clear that there was much more variation in religiosity for Christian adults than for Jewish adults. To make up for this imbalance, we collected additional data from Jewish adults through social networking websites. This method of subject identification led us to include more Jewish adult participants than Christian ones. Although these recruitment methods led to an imbalance in our sample sizes across age groups (in both child age groups, we had more Christian participants than Jewish ones), they allowed us to have comparable degrees of variation in religiosity within each religion and age group that we tested. We employed two methods to ensure that the sample size imbalance was not responsible for our pattern of findings. First, we conducted a post hoc power analysis on the first interaction tested; The odds ratio for this interaction was so high that even using the most conservative estimates and accounting for the unequal cell sizes, the power for detecting an effect was still high. Second, we reran our main analyses, but first equalized our child sample sizes based on our smallest group of participants: Jewish 10-year-olds. This group contained 14 children, so we now included only the first 14 5-year-olds and 10-year-olds tested from each religion. These analyses all yielded patterns highly similar to those found with the full sample.

ties that children expected the baby to hold the birth parent's properties or identity, so that probabilities closer to 1 represent a higher degree of essentialism.³

The novel religions block was identical to the familiar religions block with the exception that the religions in question (and the properties associated with them) were fictional. The experimenter first showed pictures of two groups of people and described each as a make-believe religion (e.g., "Look at these people. They are a religion called Flurpish. They believe Flurpish things, follow Flurpish rules, go Flurpish places, and celebrate Flurpish holidays"), then continued with the same general script that was used in the familiar religions block. Full scripts can be found in [Appendix A](#).

Adults completed the exact same questions as children but without pictures. These questions were followed by an essentialism scale to assess the extent to which adults endorsed essentialist beliefs about religion as a broad category. This scale was adapted from the Race Conceptions Scale, developed by [Williams and Eberhardt \(2008\)](#), and the full list of items can be found in [Appendix C](#). Participants rated how much they agreed with each item on the scale from 1 (*strongly disagree*) to 7 (*strongly agree*), and their responses were averaged so that higher scores indicate a more essentialist conception of religion.

Results

Religious Identity

Our main question of interest was whether participants from different religious groups and age groups saw religion as an essential kind. Thus, our main analyses focused on participants' answers to the question about religious identity—whether the baby would hold the religious identity of the birth parents or the adoptive parents. If religious essentialism stems from the same basic conceptual biases as other forms of social essentialism and is refined in culture-specific ways across development, then children should see religious categories as possible candidates for essential kinds, but cultural input should strengthen, maintain, or pare down this intuitive bias across development. By this account, 5-year-olds should show high levels of essentialism across the board, and these beliefs should show more culture-specific patterns in the older age groups. Alternatively, if religious essentialism emerges slowly across development as a result of exposure to explicit essentialist theology, then levels of essentialism should be low early in life, before being shaped in culture-specific ways as children grow older. To analyze participants' responses, we performed a binomial logistic regression with age (5-year-olds, 10-year-olds, or adults), participant religion (Jewish or Christian), and religion type (familiar or novel) as fixed factors and tested for all possible main effects and interactions. We found a three-way interaction, $\chi^2(2) = 7.51, p < .05$ (see [Figure 1](#)), suggesting that participants' religion had a differential effect across development on their essentialism of familiar versus novel religions. To break down this interaction, we analyzed responses for familiar and novel religions separately, using age (5-year-olds, 10-year-olds, or adults) and participant religion (Jewish or Christian) as fixed factors, and testing for both possible main effects and an interaction.

For familiar religions, there was an interaction between age and participant religion, $\chi^2(2) = 6.79, p < .05$ (see [Figure 1](#)), indicat-

ing that Jewish adults were much more likely to essentialize religious identity than Christian adults, $\chi^2(1) = 8.37, p < .005$, whereas for both 5- and 10-year-olds, Jewish and Christian participants responded similarly ($ps > .05$). There was also a main effect of age, indicating that younger participants displayed more essentialism than older participants, $\chi^2(2) = 27.67, p < .001$.

For novel religions, there was no interaction, but there was the same main effect of age as for familiar religions: Younger participants displayed more essentialism than older participants, $\chi^2(2) = 41.87, p < .001$. There was also a marginally significant main effect of religion, indicating that Jewish participants displayed more essentialism than Christian participants, $\chi^2(1) = 3.41, p = .07$.

We also hypothesized that in addition to participants' religion influencing whether they would develop essentialist beliefs about religious groups, the degree of their own religiosity within their religion would also have an effect. To examine whether this was the case, we repeated the above analyses, but added religiosity as a covariate, and tested for main effects of age, participant religion, and religiosity, as well as any possible interactions.

For familiar religions, we found a three-way interaction between age, participant religion, and religiosity ($\chi^2(2) = 9.87, p < .01$; see [Figure 2](#)). For Jewish participants, there was an interaction between age and religiosity: For Jewish 5-year-olds, religiosity had no effect, but for Jewish 10-year-olds and adults, more religious participants were more essentialist (10-year-olds, $\chi^2(1) = 2.956, p = .086$; adults, $\chi^2(1) = 17.523, p < .001$; Age \times Religiosity interaction, $\chi^2(2) = 7.33, p < .05$). For Christians, there were no main or interactive effects of religiosity.

For novel religions, there was no interaction, but there were main effects of age and religiosity. Consistent with the previous analysis, the effect of age indicated that younger participants displayed more essentialism than older participants, $\chi^2(2) = 19.78, p < .001$. The effect of religiosity indicated that more religious participants were more essentialist, $\chi^2(1) = 4.16, p < .05$. Exploratory analyses revealed that this effect was driven by Jewish 10-year-olds and adults: When participants were split by religion and age group, these were the only two groups for whom religiosity had an effect: 10-year-olds: $\chi^2(1) = 3.32, p = .07$; adults: $\chi^2(1) = 4.32, p < .05$.

³ As a second measure of essentialist beliefs, after every question, children were asked about the flexibility of their responses—if they thought that the alternate answer could be true as well (e.g., "Do you think the baby might want to also be Jewish, like the Jewish parents?"). For these questions, children were given a score of 1 every time they answered "no," and a score of 0 every time they answered "yes." We used this scoring because answering "no" indicates that the child believes that the baby cannot be a member of two categories at the same time—thus, "no" responses are in line with essentialist beliefs. Yet, preliminary analyses indicated that children may not have interpreted the flexibility questions in a consistent way: If a child answered "no," this could mean that they think the baby cannot be a member of both categories, or it could mean that the baby can be a member of both categories, but simply doesn't want to be. Prior research has investigated children's flexibility ratings by asking them explicitly whether an individual can be a member of the alternate category (e.g., [Taylor et al., 2009](#)). Because we did not use this more explicit wording, we concluded that we cannot interpret children's answers to these questions as a clear measure of essentialist beliefs, and we did not include answers to these questions in our main analyses. Mean responses to these questions can be found in [Appendix B](#).

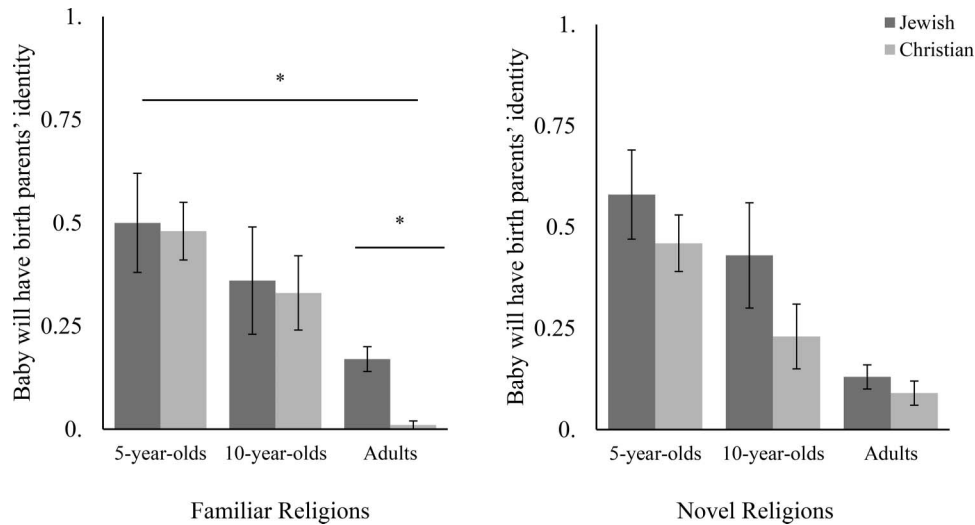


Figure 1. Participants' essentialism of religious identity, separated by age and religion. Error bars represent one standard error of the mean. * $p < .05$.

Religious Properties

Because essentialist beliefs focus on the underlying nature and identity of an individual, rather than on surface features, participants' responses about religious identity were more relevant to our research questions than their responses about religious properties. However, for exploratory purposes, we also investigated whether participants would essentialize properties stemming from religion. We combined participants' responses to the four questions about religious properties (beliefs, obligations, norms, and customs) and subjected them to a binomial regression with age (5-year-olds, 10-year-olds, or adults) and participant religion (Jewish or Christian) as fixed factors, testing for both possible main effects and an interaction. We again performed this analysis separately for participants' responses to the familiar religions and the novel religions. Mean responses to these questions are presented in Table 1.

For familiar religions, there was a main effect of age group, indicating that younger participants again displayed more essentialism than older participants, $\chi^2(2) = 79.22$, $p < .001$. There were no main or interactive effects of participant religion. The same was true for novel religions: 5-year-olds displayed more essentialism than 10-year-olds and adults, $\chi^2(2) = 47.66$, $p < .001$, and religion had no effect.

As with religious identity, we were interested in whether the degree of participants' own religiosity within their religion might also have an effect on their essentialist beliefs about religious properties. To examine whether this was the case, we again repeated the above analyses, but added religiosity as a covariate, and tested for main effects of age, participant religion, and religiosity, as well as any possible interactions.

For familiar religions, there was a main effect of age group, indicating again that younger participants displayed more essentialism than older participants, $\chi^2(2) = 40.18$, $p < .001$, and a main effect of religiosity, indicating that more religious participants displayed higher levels of essentialism, $\chi^2(1) = 5.28$, $p < .05$. Exploratory analyses revealed that the effect of religiosity was driven by Jewish adults; when the data were split by religion and

age group, Jewish adults were the only participants for whom religiosity had an effect, $\chi^2(1) = 11.96$, $p = .001$. For novel religions, there was still only a main effect of age: 5-year-olds displayed more essentialism than 10-year-olds and adults, $\chi^2(2) = 14.44$, $p = .001$.

Essentialism Scale

We also investigated whether adults' responses to the essentialism scale were associated with their religiosity and their responses to the switched-at-birth questions. Scores on the essentialism scale were positively correlated with religiosity, $r = .162$, $p = .001$, as well as with participants' responses to the religious identity questions, $r = .208$, $p < .001$.

Discussion

The present work examines a number of open questions regarding how essentialist beliefs about religious categories develop. By testing participants at various ages and levels of religiosity within two different religious groups, we investigated the trajectory by which essentialist beliefs about religion develop, and the power of cultural input in shaping those beliefs. Across development, cultural context played an important role in specifying how people map essentialist beliefs onto the religious categories in their environment.

Our main question regarded the trajectory by which religious essentialism develops. Do these beliefs involve refinement of a basic conceptual bias toward essentialism, or do they result more from exposure to explicitly essentialist theology? Overall, essentialist beliefs about religious categories declined across the age groups that we tested, and with age, culture-specific patterns emerged. In particular, 5-year-olds from all backgrounds tested here showed the highest levels of essentialism about both novel and familiar religions, but by adulthood, this pattern changed: Jewish adults held more essentialist beliefs for familiar religions than Christian adults.

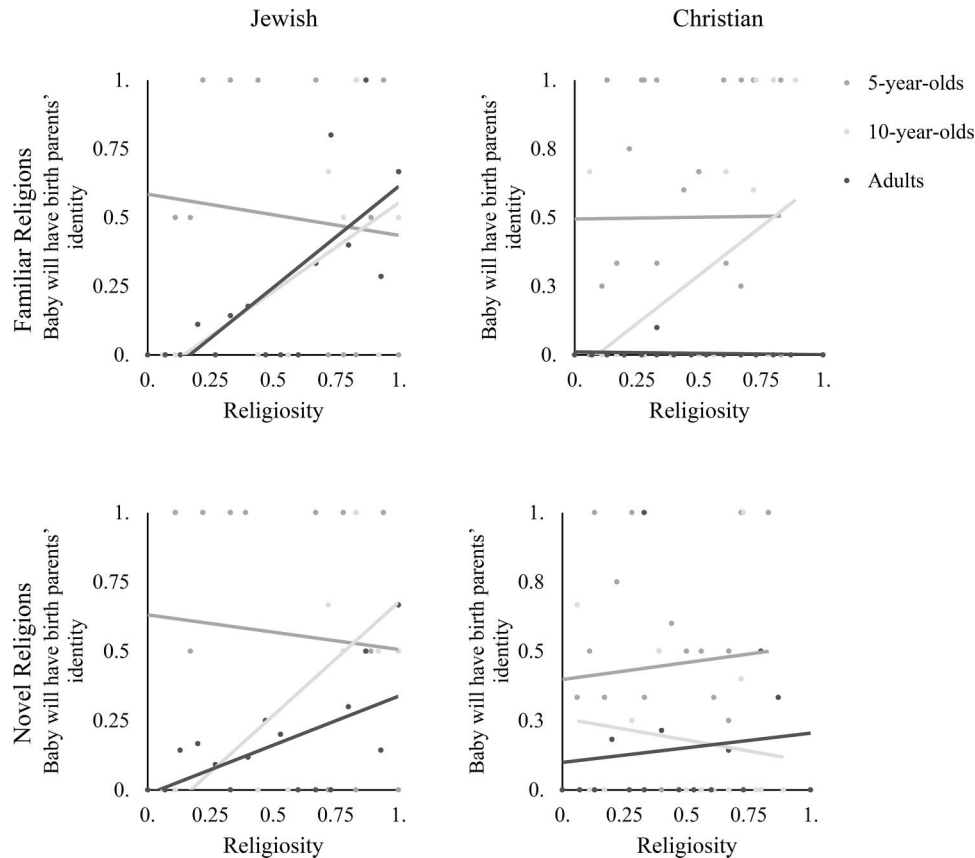


Figure 2. The effect of religiosity on Jewish and Christian participants' essentialism of religious identity for familiar and novel religions, separated by age group.

Despite the variation in participants' responses to the questions about religious identity, it is important to note that overall levels of essentialist responses on these measures were quite low, especially among adults, and even among those most likely to hold explicitly essentialist theology—religious Jews. The switched-at-birth measure assesses a particularly strong form of essentialism—the belief that despite absolutely no exposure to a religion in a child's environment, the child would be member of that religion solely by virtue of their birth. Thus, even if participants might think that a child should be a member of the religion of the birth parents, or perhaps even really is (e.g., in a spiritual sense), they might respond with a nonessentialist answer on these questions because

they consider practical features of the story (e.g., that perhaps the child wouldn't even know the religion of the birth parents, and so would have no ability to identify as such). Given that fairly strong essentialist beliefs are needed to override these practical features of the story, it is striking that participants endorsed essentialist responses at all, and that participants' responses to these items were predicted by their religion and level of religiosity. The validity of these findings is further underscored by adults' responses to the religious essentialism scale. Adults' responses on this scale were associated with both their own religiosity and their responses to the religious identity questions, suggesting (a) that people with more exposure to religious theology hold higher levels of essentialism regarding religious categories in general, and (b) that the switched-at-birth task was successful in capturing adults' essentialist beliefs, despite the fact that most prior work using switched-at-birth tasks has focused on children's judgments (e.g., Taylor et al., 2009).

We also asked how powerful cultural input is in shaping social essentialist beliefs: Does cultural input shape beliefs about a type of category in general, or about the specific categories to which children are exposed? Among the youngest participants, essentialist beliefs about novel religions were comparable to essentialist beliefs about familiar religions. By adulthood however, participants of both religions showed very low levels of essentialism for novel religions (although among Jewish 10-year-olds and adults,

Table 1
Mean Responses to Religious Property Questions

Religion type	Participant religion	5-year-olds	10-year-olds	Adults
Familiar	Jewish	.50 (.10)	.16 (.09)	.06 (.01)
	Christian	.43 (.05)	.13 (.04)	.03 (.01)
Novel	Jewish	.43 (.09)	.16 (.09)	.08 (.02)
	Christian	.37 (.05)	.05 (.02)	.10 (.03)

Note. Means represent probabilities that participants expected the baby to hold the birth parent's properties, so that probabilities closer to 1 represent a higher degree of essentialism. Standard errors are presented in parentheses.

more religious participants did show slightly higher levels of essentialism than less religious participants, even for novel religions), whereas essentialism now varied by participant religion for familiar religions. These findings suggest that young children consider religious categories—in general—as possible candidates for essentialized kinds. By adulthood, however, cultural input leads people to view specific categories in essentialist terms, but not necessarily to generalize those beliefs to other new categories of the same type.

The present work suggests that cultural experiences shape the development of essentialist beliefs about religion, but does have some limitations that leave open questions for future work.

For example, the current method cannot reveal the underlying processes by which cultural input operates. One possibility is that cultural input refines the development of essentialism by facilitating the communication of explicitly essentialist ideas (although explicit essentialist content cannot be solely responsible for the emergence of religious essentialism, because 5-year-olds showed the highest levels of essentialism regardless of their religion). In prior work, the role of linguistic content (as distinguished from linguistic form) has been understudied (Gelman, Taylor, & Nguyen, 2004; but see Waxman et al., 2007), but religion is a uniquely suitable category with which to test this issue because in some religions, essentialism is built into the explicit theology (e.g., Jewish theology contains explicitly essentialist ideas, whereas Christian theology does not; Diesendruck & Haber, 2009; Segev, Bergman, & Diesendruck, 2012; Toosi & Ambady, 2011)—thus, children in some religious communities likely do hear explicitly essentialist content. The fact that religiosity was associated with essentialism for Jewish 10-year-olds and adults, but not for any of the Christian groups, could suggest that exposure to explicitly essentialist ideas is one feature of living in a religious community that might encourage the development of essentialism. The present work did not manipulate the content that children heard, and thus is not a direct test of this idea, but further research should more directly examine this possibility (including examining the content that children are exposed to in other religions, such as Islam). Future work should also investigate other possible features of religious environments that might give rise to essentialist beliefs, such as holding minority status, living in a somewhat isolated society, maintaining certain norms of dress and speech, and regularly performing religion-specific rituals.

Another limitation of the present work is that it is possible to view religion as confounded with culture, because the role of religious identity varies markedly across different cultural contexts. For example, in Israel, religion is highly confounded with ethnicity and is one of the primary ways in which society groups people, whereas in the United States, other social distinctions such as race are more salient (Diesendruck et al., 2013). For this reason, in the present work, we chose to study two different religious groups within the same broader culture (Jews and Christians living in an American city), so that the broader cultural beliefs about the role of religious identity would be relatively similar among the groups that we tested. Still, it is possible that our two religious groups differed in how they each define their own religious identity (e.g., American Jews may view their own religion as more of a cultural identity than American Christians do). Yet, this point does not invalidate our main findings. When we refer to essentialist beliefs about religious groups, we are focused on how a broader

culture defines religion, which should be relatively similar across the two groups that we tested. When we draw conclusions about the mechanisms that underlie the development of those beliefs, we are focused on the fact that people's cultural background (in this case, their religious background) informs how they map essentialist beliefs onto the religious groups in their environment. In this respect, the effect that we have found is one of culture, although the *target* of that effect is beliefs about religion.

We have thus shown that across development, the degree to which people map essentialist beliefs onto religious categories depends on the cultural input that they are exposed to. Specifically, we asked whether essentialist beliefs about religion emerge slowly across development as a result of exposure to explicit essentialist theology, or whether these beliefs come from a basic conceptual bias toward essentialism that is refined in culture-specific ways across development. Our findings provide support for the latter possibility: The youngest children that we tested saw religious categories as possible candidates for essentialism, and cultural input pared down this intuitive bias as they grew older. In other words, cultural context shapes the development of religious essentialism. Thus, by specifying some of the ways in which cultural context interacts with essentialist biases across development, this work has expanded our understanding of how essentialism about religion, and social essentialism more broadly, develops. Given that essentialist beliefs about religion can have a range of problematic social consequences (e.g., prejudice and stereotypes; Haslam et al., 2000), it will be important in future work to explore the mechanisms that underlie these cultural effects.

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(Appendices follow)

Appendix A

Full Study Text

Introduction: Familiar Religions

Look at these parents. They are Jewish.

Look at these parents. They are Christian.

One day, these Jewish parents had a baby. That means that the baby came out of this mommy's tummy. Here is a picture of the baby, but it is a surprise for later. Right after the baby was born, it went to live with these Christian parents. These parents took care of the baby, played with the baby, fed the baby, and loved the baby. The baby grew up with these Christian parents and never saw these Jewish parents again.

Introduction, Novel Religions

Look at these people. They are a religion called Flurpish. They believe Flurpish things, follow Flurpish rules, go Flurpish places, and celebrate Flurpish holidays.

Now look at these people. They are a religion called Zazzian. They believe Zazzian things, follow Zazzian rules, go Zazzian places, and celebrate Zazzian holidays.

Can you point to the Flurpish people?

Can you point to the Zazzian people?

Now, Look at these parents. They are Flurpish.

Look at these parents. They are Zazzian.

One day, these Flurpish parents had a baby. That means that the baby came out of this mommy's tummy. Here is a picture of the baby, but it is a surprise for later. Right after the baby was born, it went to live with these Zazzian parents. These parents took care of the baby, played with the baby, fed the baby, and loved the baby. The baby grew up with these Zazzian parents and never saw these Flurpish parents again.

Attention Check Questions 1

Can you point to the baby?

Can you point to the Jewish parents?

Can you point to the Christian parents?

Which mommy had the baby in her tummy?

Which parents took care of the baby?

Test Questions

Now, I have another picture to show you. This is a picture of the baby now that she is a big kid. This picture is a surprise for later, but I want you to think about what the baby is like now that she is a big kid, and I'm going to ask you some questions.

Belief. These [Jewish/Christian/Flurpish/Zazzian] parents believe in a book called the [Torah/Gospels/Pingle/Blicket]. These [Christian/Jewish/Zazzian/Flurpish] parents believe in a book called the [Gospels/Torah/Blicket/Pingle]. When the baby is a big kid, does she believe in the [Torah/Gospels/Pingle/Blicket], like

these [Jewish/Christian/Flurpish/Zazzian] parents, or does she believe in the [Gospels/Torah/Blicket/Pingle], like these [Christian/Jewish/Zazzian/Flurpish] parents?

Do you think she might also want to believe in [opposite of first response]?

Obligations. These [Jewish/Christian/Flurpish/Zazzian] parents [have to/are allowed to] eat a kind of food called [kosher/non-kosher/daxy/modie] food. These [Christian/Jewish/Zazzian/Flurpish] parents [have to/are allowed to] eat a kind of food called [non-kosher/kosher/modie/daxy] food. When the baby is a big kid, [does she have to/is she allowed to] eat [kosher/non-kosher/daxy/modie] food, like these [Jewish/Christian/Flurpish/Zazzian] parents, or [does she have to/is she allowed to] eat [non-kosher/kosher/modie/daxy] food, like these [Christian/Jewish/Zazzian/Flurpish] parents?

Do you think she might also want to eat [opposite of first response]?

Norms. These [Jewish/Christian/Flurpish/Zazzian] parents go to a place called a [synagogue/church/binto/donash] on the weekends. These [Christian/Jewish/Zazzian/Flurpish] parents go to a place called a [church/synagogue/donash/binto] on the weekend. When the baby is a big kid, does she go to a [synagogue/church/binto/donash], like these [Jewish/Christian/Flurpish/Zazzian] parents, or does she go to a [church/synagogue/donash/binto], like these [Christian/Jewish/Zazzian/Flurpish] parents?

Do you think she might also want to go to a [opposite of first response]?

Customs. These [Jewish/Christian/Flurpish/Zazzian] parents celebrate a holiday in the Spring called [Passover/Easter/Zarpie/Kinter]. These [Christian/Jewish/Zazzian/Flurpish] parents celebrate a holiday in the Spring called [Easter/Passover/Kinter/Zarpie]. When the baby is a big kid, does she celebrate [Passover/Easter/Zarpie/Kinter], like these [Jewish/Christian/Flurpish/Zazzian] parents, or does she celebrate [Easter/Passover/Kinter/Zarpie], like these [Christian/Jewish/Zazzian/Flurpish] parents?

Do you think she might also want to celebrate [opposite of first response]?

Identity. When the baby is a big kid, is she [Jewish/Christian/Flurpish/Zazzian], like these [Jewish/Christian/Flurpish/Zazzian] parents, or is she [Christian/Jewish/Zazzian/Flurpish], like these [Christian/Jewish/Zazzian/Flurpish] parents?

Do you think she might also want to be [opposite of first response]?

Attention Check Questions 2

Now, can you remind me which mommy had the baby in her tummy?

And which parents took care of the baby?

(Appendices continue)

Appendix B

Mean Answers to Flexibility Questions on Familiar Religions and Novel Religions

Religions	5-year-olds		10-year-olds		Adults	
	Jewish	Christian	Jewish	Christian	Jewish	Christian
Familiar religions						
Identity	.28 (.46)	.32 (.48)	.50 (.52)	.43 (.51)	.46 (.50)	.64 (.48)
Properties	.33 (.42)	.24 (.38)	.50 (.38)	.43 (.36)	.54 (.41)	.64 (.38)
Novel religions						
Identity	.39 (.50)	.28 (.46)	.36 (.50)	.50 (.52)	.46 (.50)	.67 (.47)
Properties	.36 (.44)	.28 (.41)	.50 (.44)	.54 (.43)	.53 (.42)	.67 (.41)

Appendix C

Religious Essentialism Scale Items (Adapted from Williams & Eberhardt, 2008)

Scale item
1. If a Jewish American family traveled around the world, people they met would probably think of them as Jewish, too.
2. The same religious groups have pretty much always existed.
3. It's impossible to determine what religion a person will be by examining their DNA. (R)
4. No one can change his or her religion - you are who you are.
5. If a Christian American family traveled around the world, people they met would probably think of them as Christian, too.
6. It's natural to notice the religious group to which people belong.
7. How a person is defined religiously depends on the social context. (R)
8. Siblings born to the same parents will always be of the same religion as each other.
9. Young children probably learn about which people fall into which religious groups automatically, without much help from adults.
10. A person's religion is fixed at birth.
11. The political climate can dictate whether someone is categorized as Jewish or Christian. (R)
12. In 200 years, society will use basically the same religious categories.
13. There's agreement across cultures about which religious groups people fall into.
14. Religious categories haven't always existed in the world. (R)
15. Religious groups are primarily determined by biology.
16. It's possible to be a full member of more than one religion. (R)

Note. Participants rated items on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). When the scale is scored, a higher score indicates a more essentialist conception of religion. (R) indicates a reverse-coded item.

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