The Inductive Potential of Religion Categories in Northern Ireland

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Abstract

People often behave as if category members share an essence, and essentialising a category in this way promotes inductive inference. Although natural kind categories have been predominantly studied, some social categories are essentialised and here we consider the inductive potential of religion categories for children in Northern Ireland. We asked seven-, nine- and eleven-year olds in Catholic-maintained, State-controlled and Integrated schools to decide whether pairs of children shared a property. We manipulated the degree of shared membership in religion, gender and musical categories. Overall, religion was much more inductively potent than gender, although older children and children from the Catholic-maintained school were more likely to use additional information about other categories when evaluating inferences. These results suggest that religion categories are a powerful basis for inference even in children as young as seven-years, and that religion categories may be essentialised in Northern Ireland.

Keywords: Essentialism, inductive reasoning, category-based induction, cognitive development

Introduction

One of the central functions of categories is to support inductive inference (see Murphy, 2004). For example, knowing that someone is a member of the Rotary Club may help us to predict their behavior on the basis of previous encounters with other members of that category. The strength of an inductive inference from one member of a category to another is, in part, determined by the degree to which the category is essentialised. Members of essentialised categories are believed to share an underlying, unobservable essence (Gelman, 2003; Medin & Ortony, 1989), which we often can't define, and so is sometimes thought of as a place holder (Medin & Ortony, 1989). Essentialised categories are assumed to have innate potential, fixed boundaries, deep causal properties, the capacity to be informative, and stable membership across

time (Demoulin, Leyens & Yzerbyt, 2006; Gelman, 2003). Essentialist reasoning has been found very early in childhood; preschoolers make category-based inferences even when perceptual similarity conflicts with category-membership (Gelman & Markman, 1986).

According to Gelman (2003) inductive inference is an indirect measure of essentialism; the more a category is essentialised, the greater inductive potential it will have. Although there is a very large social psychological literature on essentialised social categories (e.g. Haslam, Bastian, Bain & Kashima, 2006), there has been relatively little work on how we make inductive inferences from social categories. In this paper we will describe a large developmental study designed to investigate the inductive potential of religious categories in Northern Ireland.

Essentialised Social Categories

Evidence is accumulating to suggest that children essentialise certain socially-constructed categories (Birnbaum et al., 2010; Deeb et al., 2011; Diesendruck & haLevi, 2006; Gil-White, 2001; Hirschfeld, 1995; Kinzler & Dautel, 2012; Rhodes & Gelman, 2009; Taylor et al, 2009). Perhaps of most relevance to our goal of investigating religion categories is previous work on race and ethnicity. The degree to which race categories are essentialised has been studied in a number of ways. For example, Deeb et al. (2011, Study 3) presented Arab and Jewish participants with a questionnaire designed to investigate children's essentialised beliefs about such categories, whereas Rhodes and Gelman (2009) asked children whether categorization decisions made by an alien, most of which were inconsistent with the participants' social categories, were correct. Kinzler and Dautel (2012) asked participants whether a target child's 'race' or the language they spoke was most likely to persist into adulthood.

Although different methodologies lead to different conclusions about the developmental trajectory of

essentialist beliefs about race categories, it is clear that culture plays a role. For example, Rhodes and Gelman (2009) observed an effect of whether adolescents were from a rural or an urban background on how likely they were to treat 'race' as a natural kind. Deeb et al. (2011) showed that although essentialist beliefs about race categories appear to recede by late childhood, culture and experience play a role in determining the age at which they first begin to wane. Kinzler & Dautel (2012) found that European-American children do not treat 'race' as more predictive than language until the age of 10; whereas 5 year old African-American children privilege 'race' over language.

Other studies have examined the inductive potency of race categories. For example, Hirschfeld (1995) showed that children as young as three found race categories more inductively powerful than occupation or body build categories. In a study conducted in Israel with Jewish and Arab children, Diesendruck and haLevi (2006) compared the inductive potential of personality traits and a variety of social categories including ethnicity and gender. They found that five-year-old children treated social categories as having more inductive potential than personality traits, while adults found personality traits more powerful. However, when the children and adults made inductive inferences based on social categories only, ethnicity had the greatest inductive potential for both groups. Birnbaum et al. (2010) showed that ethnicity categories (Arab vs. Jew) had the most inductive potential for religious Jewish children by age 5 and up until 11 years of age. Birnbaum et al's study also highlights the effect of culture as neither secular Jewish children nor Arab children showed the same effect.

Religion Categories

In this study we examined the development of sensitivity to the religious categories, *Catholic* and *Protestant*, in Northern Ireland. We are by no means the first to study the psychological effects of the history of sectarian conflict between Catholics and Protestants in Northern Ireland (for a relevant reviews see Trew, 2004). However, a study of the inductive potency of religion categories in Northern Ireland has the potential to add significantly to our understanding of essentialised social categories. Most obviously, whereas there are visual cues to racial or gender category membership, there are no such cues for religion category membership in Northern Ireland. Gil-White (2001) has suggested that essentialised social categories possess visual cues to category membership. In seeking to establish that social categories for which there are no visual cues can be highly inductively potent, our work will be a test of that hypothesis.

In addition, given the link that has been found between essentialism and stereotyping, prejudice and negative intergroup relations (e.g. Haslam, Bastian, Bain & Kashima, 2006; Howell, Welkum & Dyck, 2011; Pauker et al, 2010; Prentice & Miller, 2007), any tendency to essentialise religion categories may have important social implications for individuals in Northern Irish society. A review by Prentice and Miller (2007) highlighted how essentialist beliefs, such as innate potential, immutability of category membership, stability of category membership over time, and the belief that deep, hidden properties of a category give rise to its observable properties can lead individuals to stereotype another group, feel less inclined to attempt to cross category boundaries that are apparently immutable, and maintain prejudicial attitudes towards an outgroup. All of these consequences of essentialised thinking could be said to pertain in Northern Ireland, yet there has been no study of how religion-category-based reasoning develops.

The Current Study

This study aimed to examine the inductive potential of religion categories for seven-, nine-, and eleven-year-old children in Northern Ireland. The lower age group has been selected because of findings that by six to seven years of age, *Catholic* and *Protestant*, are meaningful social labels for children (Trew, 2004). Our first concern was the extent to which children are prepared to base inferences about individuals on information about the social categories to which they belong, and how that tendency changes over development. However, we were also concerned with the effects of the environment on inference-making from religion categories. One obvious environmental difference between Northern Irish children is the kind of school that they attend as in Northern Ireland there are different types of school: state-controlled (often attended primarily by children from a Protestant background); Catholic-maintained (attended primarily by children from a Catholic background); and integrated (attended by children from both communities). So as to examine effects of educational environment on inferences, we included school type as a variable in the study.

On each trial of our task we showed participants a line drawing of a child said to be a member of two categories, for example a male Protestant. Next we told participants that the child possessed a blank property (e.g. likes to play a game called *badlage*), and asked them whether they thought another male Protestant, a male Catholic, a female Protestant, and a female Catholic would also possess the feature. Unlike standard triad tasks, our method does not force participants to choose between categories as the basis for an inference. Work on ethnic categories (Deeb et al, 2011) has shown that younger and older children spontaneously mention and remember information about ethnic categories or use them as the basis for inference. Accordingly, we predicted that to the extent that religion categories are essentialised, all of the children in this study would base inferences on religion category membership. Other work (Birnbaum et al, 2010) has shown that older children take additional information into account when making inferences. Accordingly, we predicted that with development, children would use the control categories in our task as an additional basis for inference. Because Deeb et al. (2011) found that children from integrated schools were more sensitive to ethnicity categories, we predicted

that children in such schools in Northern Ireland might show greater sensitivity to religion category somewhat earlier in development than children attending other schools.

Method

Participants One hundred and thirty five (67 females and 68 males) primary school children in Northern Ireland participated. Participants were aged 6-7 (P3), 8-9 (P5) and 10-11 (P7). Participants were recruited from one integrated (33 children: 9 in P3; 10 in P5; 14 in P7); one state-controlled (45 children: 12 in P3; 11 in P5; 22 in P7); and one Catholic-maintained school (57 children: 18 in P3; 19 in P5; 20 in P7). Children were tested for ten minutes each in a quiet corner of the school.

Design The study had a 3 (School: Integrated; State-controlled; Catholic-maintained) x 3 (Year: P3; P5; P7) x 4 (Trial Type: both categories overlap; religion category only overlaps; other category only overlaps; no overlap) mixed design. Trial Type was manipulated within subjects, and school and year were between subject variables.

On each trial participants received information about two children's membership in two categories. In four trials the categories were religion and gender, in four others they were religion and musical instrument, and in a final four they were gender and musical instrument. There were two religion categories, Protestant and Catholic, two gender categories, male and female, and two musical instrument categories, piano player and guitarist. Trials were blocked by category pair and block order was counterbalanced.

Materials Each participant attempted 12 trials. A trial consisted of a base picture and a target picture. The same base picture was used for four target pictures. In one of the base pictures, information was presented about the religion and gender categories of the child. In another, information was presented about religion category and which musical instrument the child could play, and in the third base picture, information was presented about gender and musical instrument. The sets of four target pictures presented with each base depicted four different children who either shared memberships of the same two categories as the base child, shared membership of only one of the categories, or shared membership of neither category. Example pictures and trials are presented in Figure 1.

In all cases information about category membership was related orally when a picture was presented. Religion category membership was visually represented by a picture of a familiar Catholic or Protestant cathedral in Northern Ireland. Gender category was clearly discriminable from the pictures because of visual cues such as dress and hair length, and musical instrument category was depicted by the inclusion of a picture of a guitar or a piano. When gender was not varied in a trial, the child was presented in silhouette.

Three unfamiliar, novel properties were invented: 'likes to play a game called badlage'; 'knows how to use a mixtle';

'will go brooping at the weekend'. The same property was used for each of the trials associated with a particular base picture, and the order in which properties were mentioned was fixed. However, the order in which base pictures were presented was fully counter-balanced so that each property was presented with each base picture an equal number of times. We also varied the base pictures so that, for example, the base child defined by membership of a religion and a gender category was depicted equally often as a Catholic boy, a Catholic girl, a Protestant boy or a Protestant girl.

First, look at this child. This child is a boy and a Catholic. This child likes to play a game called badlage.

Now, look at this child. This child is a girl and a Protestant. Do you think this child likes to play a game called badlage?

First, look at this child. This child is a piano player and a Protestant. This child knows how to use a mixtle.

Now, look at this child. This child is a piano player and a Catholic. Do you think this child knows how to use a mixtle?
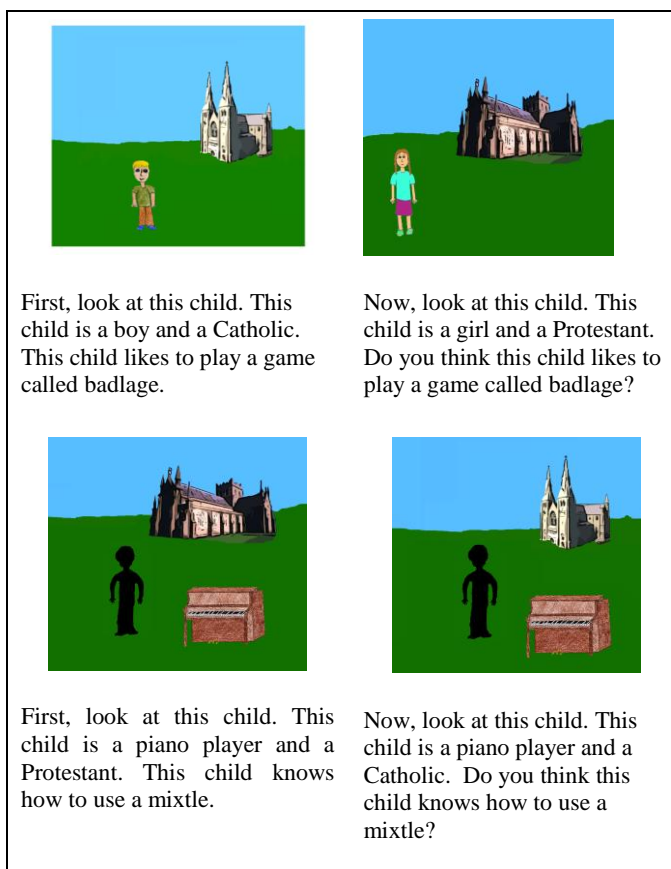
Figure 1: Example stimulus materials. The top panel illustrates how gender and religion categories were depicted. The bottom panel illustrates how religion and musical instrument categories were depicted.

Procedure Participants were tested individually at a quite location in their school. On each trial participants indicated whether the novel property was possessed by both children or by the base child only.

Results

We present a number of different analyses of our results. First, we present an analysis of the eight trials where information was presented about the religion category to which the base child belonged. In four of these trials, the other category was gender, and in the remaining four the other category was musical instrument. These eight trials

may be divided into four types. In two *REL+/GM+* trials, the base and target children belonged to the same two categories. In two *REL+/GM-* trials, base and target belonged to the same religion category, but to different gender or musical instrument categories. In two REL-/GM+ trials, base and target belonged to different religion categories but to the same gender or musical instrument categories. Finally in two REL-/GM- trials, base and target belonged to entirely different categories.

We carried out a 4(Trial Type) x 3(Year) x 3(School) mixed design ANOVA on the number of times participants endorsed each type of inference. As may be seen in Figure 2, the results of this analysis contained a highly significant main effect of trial type, $F(3, 378) = 56.38$, $p < .001$. Post hoc tests revealed that each of the means involved in this effect differed significantly from every other mean. The main effect was qualified by significant interactions between School and Trial Type, $F(6, 378) = 2.27$, $p < .05$, and between Year and Trial Type, $F(6, 378) = 2.46$, $p < .05$. These interactions are shown in Figures 3 and 4 respectively.
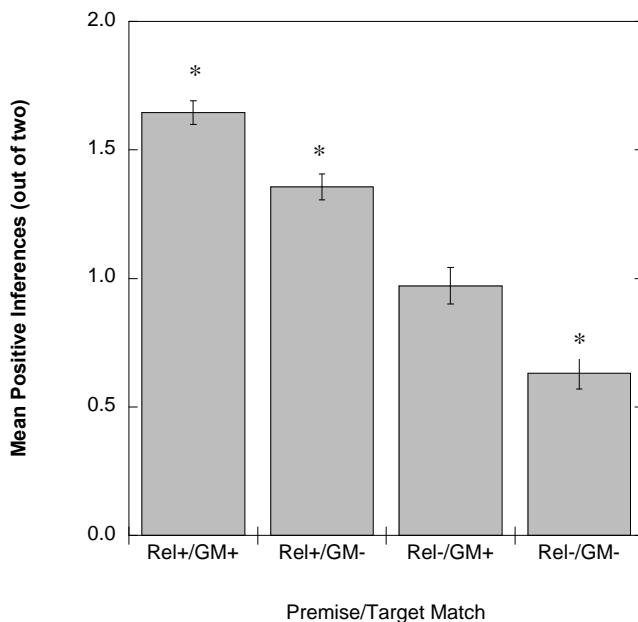

Figure 2: Mean rates of inference for each trial type. (Note that here and throughout, bars marked with an asterisk differ significantly from chance.)

An examination of Figure 3 suggests that regardless of the type of school attended, children are more willing than not to project properties once the base and target children share religion category membership. However, only children attending the Catholic-maintained school were as willing to project properties in the REL-/GM+ condition as in the REL+/GM- condition. These observations are supported by t-tests comparing the mean number of properties projected by children in each school on REL+/GM- and REL-/GM+ trials. The difference was not significant for children attending the Catholic maintained school but was significant

for the other two groups of children. Thus, the finding here is of differences due to educational context in the potency of categories other than religion.

Examination of Figure 4 suggests that something similar underlies the significant interaction between Trial Type and Age. Whereas religion appears to be the only inductively potent category for seven- and nine-year-old children, eleven-year-olds are almost as likely to project the property in REL-/GM+ trials as in REL+/GM- trials. The results of paired t-tests for each age group, comparing rates of
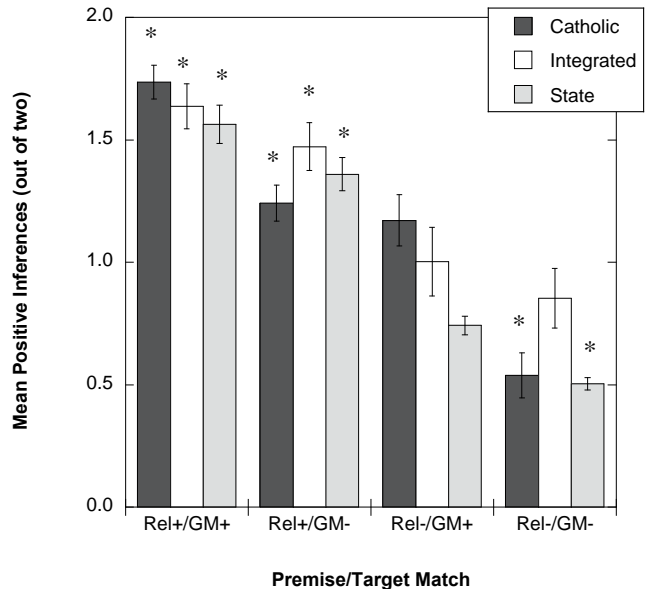

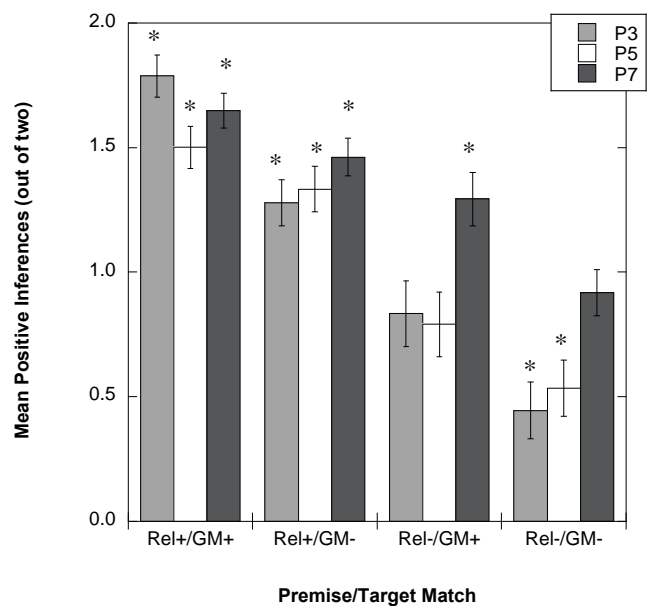Figure 3: Interaction between school and trial type. (Bars marked with an asterisk differ significantly from chance).

Figure 4: Interaction between year and trial type. (Bars marked with an asterisk differ significantly from chance).

inference in each of these trial types, tended to support this interpretation. It is also apparent from Figure 3 that the oldest participants were more likely to project properties in REL-/GM- trials, but we have no explanation for this unexpected finding.

Thus far, we have collapsed gender and musical instrument categories together. It is clear from the analysis we have just described that overall, when information about religion category membership is present, religion categories are inductively more powerful than either musical instrument or gender categories. However, these analyses do not include trials where information about religion category was not present.

To examine the relative potency of all three types of category manipulated in this experiment, we calculated an index for each one reflecting the number of times a property was projected when there was overlap on that category type or relation. For example, the Gender index included G+/REL+, G+/REL-, G+/M+, and G+/M- trials. A 3(Relation) x 3(Year) x 3(School) mixed design ANOVA on scores on these indices revealed a highly significant main effect of Relation, $F_{(2, 250)} = 40.43$, $p < .001$, and a significant interaction between Relation and School, $F_{(4, 250)} = 3.05$, $p < .02$. The mean score on the Religion index (M = 3.00) was just higher than the mean score on the Music index (M = 2.96), but not significantly so. Both of these means were significantly higher than mean scores on the Gender index (M = 2.21), and scores on all three indices were significantly greater than chance ($p < .005$).

The interaction with School is displayed in Figure 5 where it appears that music is more inductively potent for children in the Catholic maintained school than is religion, whereas these two categories are equally potent for children in the Integrated school, and religion is more potent than music for

Figure 5: Interaction between Relation and school. (Bars marked with an asterisk differ significantly from chance).

children in the State controlled school. A t-test confirmed that the difference between music and religion categories was statistically significant for children in the Catholic school. However, the difference between music and religion was not significant (p = .11) for children in the State-controlled school. Scores on the Gender index were significantly lower than scores on both of the other indices for all three groups.

Discussion

These results show that by age seven, children in Northern Ireland use religion categories—or at least the labels *Catholic* and *Protestant*—to guide inferences about non-obvious properties. These categories promote stronger inferences than other social categories (musicality, gender), and do so for children across a diverse range of school environments. Together, these findings suggest religion is essentialised by school children in Northern Ireland.

Although religion-based inferences were universal, we did see differences in the use of other social categories. Specifically, the musical instrument played by a child was a more potent guide for inferences for children in the Catholic school than the Integrated school, and more so for the Integrated school than the State school. Additionally, children in the State-controlled school were less likely than others to base inferences on gender. These findings suggest that culture or school may emphasize certain social categories over others, leading to differences in inductive potential for those categories. To children in Catholic-maintained schools, information about multiple social categories may be important, whereas to children in State-controlled schools, religion categories may be most salient. An alternative explanation is that ability levels differed between the schools, and that the use of information about more than one category to evaluate an inference requires additional cognitive resources. Further experimental work will need to be carried out in order to discriminate between these possibilities.

In addition to the universal potency of religion categories, we observed a developmental increase in the inductive potency of other social categories; 11-year-olds were more likely than younger children to base inferences on shared membership in non-religious categories. One interesting methodological point about the pattern of results that we have just described is that it would not have been detected by a standard triad task. To illustrate, Birnbaum et al. (2010) presented participants with trials where, for example, a child was said to belong to two social categories (e.g. a male Arab child) and participants were asked whether this base child was more likely to share a property with a male Jewish child or a female Arab child. Using this method, one can underestimate the age at which a certain type of social category begins to become important as well as the period for which it is important. Because our method did not force participants to choose between categories as a basis for their inference, we were able to observe that religion categories continued to be important at eleven-years of age but that
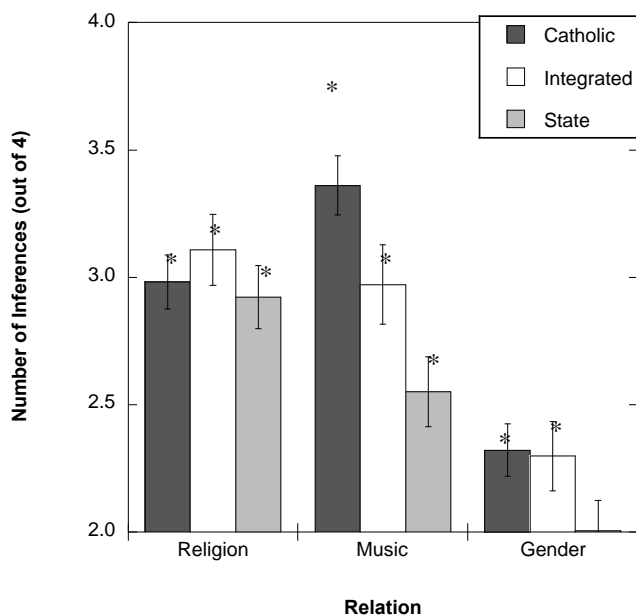
other categories had also become more important by that age. Had we used a triad task we might have observed a tail-off in the apparent use of religion categories by older participants.

Of particular interest in this study is the performance of children from the Integrated school; by virtue of their contact with children from the "other" religious category they might display sensitivity to religion category earlier than children attending other schools. Deeb et al. (2011) reported such an effect for Jewish children attending integrated schools in Israel. We did not find an equivalent effect of school type here, although because we did not ask participants to disclose their religion, we cannot perform the same analysis as Deeb et al. (2011). Perhaps Catholic and Protestant children attending the same Integrated school behave differently, and we are currently carrying out a study designed, in part, to examine whether this is the case.

Consideration of children attending Integrated schools is useful when thinking about the relationship between a category's inductive potency and the degree to which that category might be essentialised. One possible relationship is that social categories are inductively potent to the degree that they are essentialised, as argued by Gelman (2003). Another possibility is that a social category could be inductively strong even when it is not strongly essentialised. For example, Deeb et al (2011) reported a negative correlation between scores on a questionnaire designed to measure the extent to which children essentialise ethnic categories, and children's tendency to recall information about ethnic category membership from an early description. Participants who essentialised ethnic categories less, recalled more information about ethnicity. This analysis collapsed across school type, so the result may have been driven entirely by children from the integrated sector. In any case, the result raises the possibility that children from different school sectors might perform similarly with respect to religion categories on an inductive inference task, but essentialise the categories to different extents. Members of a society divided on religious lines may not believe that members of the same religion category share an essence, but may still recognize the usefulness of information about religion category membership when making predictions about individuals.

Thus far, our work has concerned children growing up in a society that is still divided along religious lines. To properly assess the inductive potency of religion categories and the effects of culture on potency, there is a need for cross-cultural work comparing children in Northern Ireland to children from a society where religion is less divisive. For example, had we run this study in such a society we would have expected to find that gender categories are more inductively potent for children than are religion categories. We are currently collecting data to test this hypothesis.

We are at the beginning of a large project designed to investigate the extent to which religion categories support inferences differently across culture, across environment and across development. The results we have presented here suggest that for children developing in a culture where religion categories are highly important, regardless of educational environment, those categories are inductively potent relatively early in development and continue to be so at least until late childhood.

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