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Essentialization of Social Categories Across Development in Two Cultures

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Children display an "essentialist" bias in their everyday thinking about social categories. However, the degree and form of this bias varies with age and with the nature of the categories, as well as across cultures. This project investigated the development of the essentialist bias across five social categories (i.e., gender, nationality, religious affiliation, socioeconomic status (rich/poor), and sports-team supporter) in two countries. Children between 5 and 10 years of age in Turkey (Study 1, $N = 74$) and the United States (Study 2, $N = 73$), as well as adults in both countries (Study 3, $N = 223$), participated. Results indicate surprising cross-cultural parallels with respect to both the rank ordering of essentialist thinking across these five categories and increasing differentiation among them over development.

Essentialism is a mode of thinking in which categories are assumed to have a defining *essence* that is inherent, intrinsic, immutable, and offers an inductive potential. By around 4 years of age, children perceive animal categories (and other natural kinds) in terms of such defining essences. For example, they believe that a tiger is "born that way," will be a tiger for life, has tiger "insides," and that "tigerness" will predict the animal's traits or behavior (Gelman & Wellman, 1991; for a review, see Gelman, 2003). Essentialism may facilitate learning but may also lead to problematic assumptions, especially about social categories (Gelman & Roberts, 2017; Leslie, 2013; Mayr, 1991). Theories of the development of psychological essentialism highlight the role of cultural input, as well as a cognitive bias to reason about social categories in biological terms. To examine the role of both factors, cross-cultural comparisons are needed but few have been conducted (see Diesendruck, Goldfein-Elbaz, Rhodes, Gelman, & Neumark, 2013). We assessed the development of children's essentialist thinking for five social categories (gender, nationality, religious affiliation, socioeconomic status [SES], sports-team fan) in Turkey (Study 1) and the United States (Study 2). We also measured adults' essentialist thinking in both countries for these categories (Study 3).

Essentialism

Essentialism encompasses several distinct beliefs about categories. With respect to the social domain, some researchers have proposed natural-kind essentialism—the idea that some social categories are perceived as tied to underlying causes (Haslam, Rothschild, & Ernst, 2000; Prentice & Miller, 2007). This aspect of social essentialism comprises judgments about whether category membership is biologically based, stable over time, and impervious to the environment (Keller, 2005), leading to a representation of social categories as "naturalized"

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(Haslam et al., 2000) or as "pseudo-natural kinds" (Boyer, 1993). Although natural-kind beliefs about social categories may be empirically false, as in the case of race, they influence behavior and attitudes toward various social groups (Haslam & Whelan, 2008). Therefore, understanding how social categories are essentialized has implications for moral development and intergroup cognition.

To measure natural-kind beliefs about social categories, we used a series of questions that have successfully captured variation in children's essentialist beliefs about psychological characteristics (Gelman, Heyman, & Legare, 2007) as well as beliefs and opinions (Heiphetz, Gelman, & Young, 2017). Thus, we asked questions about the *biological* basis for group differences (i.e., differences in the brain, blood, and at birth), the possibility for *change* in group membership (e.g., can a boy become a girl), and the influence of the *environment* in determining group membership. These three dimensions have been proposed as aspects of natural-kind essentialism that vary across particular categories (Gelman et al., 2007).

Cultural Variation

The ability to essentialize social categories may be universal, but in any given society, the social groups that are essentialized and the degree of essentialization that occurs can be learned. Prior research shows that adults tend to hold essentialist beliefs about gender, race, ethnicity, and social class (Haslam et al., 2000; Mahalingam, 2003; Prentice & Miller, 2007; Smiler & Gelman, 2008). Indeed, notions of social essences are evident in diverse societies (Gelman & Hirschfeld, 1999; Mauss, 1954), suggesting a universal tendency. However, culture also shapes essentialist beliefs about social categories. For example, in U.S. urban and rural communities, 5- and 7-year olds treat gender as a natural category, but urban 10- and 17-year olds show fewer essentialist beliefs about gender than their rural peers (Rhodes & Gelman, 2009). In Israel, first and fifth graders essentialize various social categories to different degrees based on whether they are from secular or religious families (Diesendruck & Haber, 2009).

Studies in different cultures also reveal different patterns with respect to the development of essentialist beliefs for specific social categories based on the salience, meaning, and social construction of those categories (Astuti, Solomon, & Carey, 2004; Birnbaum, Deeb, Segall, Ben-Eliyahu, & Diesendruck, 2010; Deeb, Segall, Birnbaum, Ben-Eliyahu, & Diesendruck, 2011; del Río & Strasser, 2011; Diesendruck & Haber, 2009; Rhodes & Gelman, 2009; Waxman, 2012). For example, essentialist beliefs about race (Black and White) decrease with age in Israel but increase with age in the United States (Diesendruck et al., 2013). Children in the United States essentialize Arab and Jewish ethnicity more with age, but in Israel the groups are essentialized from kindergarten, presumably due to the salience of the ongoing conflict between the two groups in that society.

To identify the cultural factors driving essentialist beliefs for particular social categories, direct cultural comparisons are needed. Yet, to our knowledge, the study by Diesendruck et al. (2013), described earlier, is the only study that makes such a comparison. Comparisons of cultures and categories that differ along identifiable dimensions are especially informative. In the current study, we compare five social categories (gender, nationality, religion, SES, and sports-team fan) that are likely to differ in the extent to which they are essentialized in terms of natural-kind beliefs. Turkey and the United States vary in terms of the tension between groups within some of these social categories. More specifically, they differ in terms of religion (Islam, Christianity), the history of nationalist conflict, and gender relations. Following, we consider the relevance of these differences for theories of the development and expression of social essentialism.

Turkey and the United States

Turkey is a country with a majority Muslim and ethnic Turk population (see Konda, 2011; World Values Survey Association, 2011). However, many other ethnic and religious groups are represented and there has been tension among these groups throughout Turkey's history (Kirişci & Winrow, 1997; Moudouros, 2014). An emphasis on a common national identity (being a Turk) after the establishment of the Republic of Turkey in 1923 coincided with an increase in ethnic conflict (Bozdoğan & Kasaba, 1997; Kirişci & Winrow, 1997). Nationality and ethnicity are still highly conflictual categories. Indeed, there has been a rise in nationalistic sentiment and ethnic conflict in recent years (Bilali, Celik, & Ok, 2014; Konda, 2011; Saraçoğlu, 2009). Children are exposed to an emphasis on Turkish identity and nationalistic values in their daily lives and via the educational system (Kaya, 2009). In combination, these social factors may lead to increased essentialist beliefs about nationality. Given the sensitive nature of ethnic conflict within Turkey (Turk vs. Kurd), we focused on nationality.

We used a comparable contrast in the United States. Because testing occurred before the recent rise in nationalistic sentiment in the United States, it is plausible that essentialist beliefs for this category will be lower in the United States than in Turkey.

Gender is also a highly salient category in Turkey. Although the gender hierarchy and distinct gender roles are less apparent in educated, urbanized families, contemporary Turkish society may be characterized as patriarchal (Fişek & Sunar, 2005; Kağıtçıbaşı & Sunar, 1992). According to the World Values Survey in 2011, 76% of people interviewed in Turkey agreed that, "when jobs are scarce, men should have more right to a job than women," whereas only 5.7% agreed in the United States. Likewise, 66% of respondents in Turkey agreed that, "when a mother works for pay, the children suffer," whereas only 25% agreed in the United States.

Our data were collected in Istanbul and Boston. Even in the city of Istanbul, arguably the most modern city in Turkey, attitudes toward gender differ from attitudes reported by adults in New England. Drilling into the same World Values Survey Association (2011) questions, 51% of polled residents from Istanbul agreed that, "when jobs are scarce, men should have more right to a job than women," but only 7.5% of residents of New England in the United States did so. In Istanbul, 49.7% of adults agreed that, "when a mother works for pay, the children suffer" and 62.1% agreed that, "on the whole, men make better political leaders than women do"; in New England, however, only 19.8% agreed with the former statement and only 13.2% agreed with the latter. These stark differences in attitudes toward gender are likely to make that category more salient in Turkey compared to the United States resulting in stronger essentialist beliefs about gender in Turkey.

The role of, and exposure to, religion, is also different in Turkish and U.S. urban society. Turkey is a Muslim majority country (over 90% in Istanbul, World Values Survey Association, 2011) where Sunni Islam is taught in schools (Kaya, 2009). In the United States, Christianity is the dominant religion but it accounts for only about half of the population in New England (51%, World Values Survey Association, 2011). Also, most children attend public schools with no formal religious education. Thus, compared to Turkish children, U.S. children are more likely to encounter members of different faiths. These cross-national differences in exposure to variation within the social category of religion should tend to increase essentialization among Turkish children but decrease it among U.S. children (see Deeb et al., 2011; Smyth, Feeney, Eidson, & Coley, 2017 for the role of exposure to diversity in decreasing essentialist beliefs).

Even 5-year olds essentialize differences in wealth in both Chile (del Río & Strasser, 2011) and Israel (Diesendruck & HaLevi, 2006). Children from wealthy families in Chile were more likely than poorer children to believe that wealth status is fixed, suggesting that children learn these beliefs from adults. U.S. adults tend to overestimate the possibility of upward income mobility (Kraus & Tan, 2015) and children may be exposed to these beliefs, thereby weakening essentialist beliefs about SES. Turkish parents also expect upward economic mobility according to recent survey data (Pew Research Center, 2017). Combined, the limited evidence suggests that Turkish and U.S. children will essentialize SES status less than other social categories.

Theories of Social Essentialism

In light of these cultural differences, we contrast two different theoretical approaches to the development of essentialism, one emphasizing that children will interpret particular social categories in light of their cultural and social experiences, and the other emphasizing that children will bring biologically based assumptions to their interpretation of social categories. The two approaches are not mutually exclusive, but they do focus on different mechanisms.

Cultural Salience of Categories

Cultural variability in the development of essentialist beliefs about social categories suggests that local experience helps to shape these beliefs. Hence, as children learn about social categories in their communities, they will essentialize different groups to different degrees. One possible reason for this variation concerns the existence of social anomalies (Gelman & Hirschfeld, 1999). Children will learn about the differential treatment of particular social groups (e.g., discrimination based on gender, race, or ethnicity) or about conflict between particular groups and use essentialist thinking as a causal explanation. For example, Israeli children have stronger essentialist beliefs about ethnicity (i.e., Jewish and Arab ethnicity) than U.S. children (Diesendruck et al., 2013). Also, when novel groups are presented in an experimental setting as being in competition, even 4-year olds are more likely to

view the groups as essentially different (Rhodes & Brickman, 2011). By implication, the "anomaly" of discrimination or conflict is explained by assuming that the relevant groups are inherently different, and, therefore, "naturally" in conflict with one another. In sum, the cultural salience account predicts that essentialist beliefs about specific social categories (e.g., ethnicity) will follow different developmental trajectories in different cultures when conflict or discrimination between groups within a given social category (e.g., Arab and Jew) is salient.

A different, culturally based explanation of such variation is that children are likely to make inferences based on their exposure to within-group variability and also to people changing their social group. Learning about individual differences within a given social category or exposure to shifts between groups may weaken the essentialist belief that a category is natural, immutable, or predictive. Consistent with this claim, Deeb et al. (2011) found that children attending integrated Jewish/Arab schools in Israel had weaker essentialist beliefs about ethnicity than peers attending Jewish- or Arab-only schools. Smyth et al. (2017) found similar effects for children attending Catholic/Protestant integrated schools in Northern Ireland. Presumably, integrated programs lead children to realize that people can vary within a category leading to weaker beliefs about the role of "essences" in determining category membership. Adult testimony can also influence the development of essentialist beliefs. For example, Segall, Birnbaum, Deeb, and Diesendruck (2015) documented a reliable association between parents' speech and children's essentialist beliefs about ethnicity in Israel. Smyth et al. (2017) also argued for the contribution of parental input in explaining the decrease in essentialist beliefs about religion among children attending integrated schools in Northern Ireland.

In sum, according to the *cultural salience* account, the development of specific essentialist beliefs depends on cultural and contextual factors. Hence, differences between Turkey and United States in the social salience of the categories included in our study, will impact the essentialization of those categories. Variation should be especially evident for beliefs about gender, nationality, and religion, given the cultural differences highlighted earlier.

Perception of Categories as Biologically Relevant

Other accounts of essentialism suggest that essentialism is a product of intuitive theories about the biological domain that have evolved to support biological understanding (Atran, 1998; Gil-White, 2002). A strong version of the *folk-biological* account of essentialism suggests that essentialist beliefs should apply only to those social categories where clear biological markers exist and that various dimensions of biological thinking should be triggered simultaneously. However, ample evidence shows both assumptions to be false. First, categories with no clear biological markers, such as SES and Religion, are prone to essentialist thinking in some communities (del Río & Strasser, 2011; Diesendruck & HaLevi, 2006; see Rhodes & Mandalaywala, 2017). Second, dimensions of essentialist thinking do not necessarily cohere, especially in children, at least in the case of reasoning about psychological properties (Gelman et al., 2007). Thus, essentialism is not limited to the biological representation of categories.

Stepping away from a strong, domain-specific account of essentialist reasoning, social categories that are represented as having biological underpinnings may be prone to stronger essentialist beliefs with more convergence among different dimensions of essentialism. This possibility need not imply that observable biological markers (i.e., skin color, accent) must be present for essentialist reasoning to be triggered. It allows for a variety of triggers but stresses the special role of biological thinking. Indeed, testimony and linguistic cues (e.g., generics) can signal which categories *should be* understood as biologically relevant (Gelman & Roberts, 2017). When a biological marker can be used to differentiate groups, and cultural input reinforces that differentiation, a biologically based account of essen tialism predicts that relevant social groups will be highly essentialized and that various dimensions of essentialist thinking will converge. For example, gender will be highly essentialized in most cultural contexts because biological markers exist and gender is a culturally relevant social category in most modern societies. We will refer to such categories as having *biological relevance* in a given culture.

To provide evidence for this *biological relevance* account, two levels of comparison are needed. First, within cultures, a hierarchy should be observed in the strength of essentialist beliefs about different social categories: biologically relevant categories should be strongly essentialized and categories with no clear biological relevance should be weakly essentialized. Second, social categories perceived as biologically relevant should be similarly essentialized across different cultures. Third, essentialist beliefs about categories perceived as biologically

relevant should emerge around 4 years of age, when children start reasoning about biological categories as richly structured and defined by discrete boundaries (Rhodes, Gelman, & Karuza, 2014). By contrast, essentialist beliefs about categories with no clear biological relevance should emerge later in development and undergo developmental changes over time, given their dependence on cultural input. Next, we review the specific predictions made by each account.

Predictions

If the *biological relevance* account is correct, the category of gender will be essentialized more strongly than other categories in Turkey and the United States. However, given that gender is both biologically marked and culturally relevant in both countries, this account does not predict a stark cross-cultural difference in how strongly gender is essentialized. By contrast, the *cultural salience* account predicts that Turkish children will essentialize gender more strongly than U.S. children especially in the course of development, due to the greater emphasis on distinct gender roles in Turkey. Also, on the cultural salience account, cultural differences should be observed in essentialist beliefs about religion since U.S. children will be exposed to more religious diversity. Indeed, the cultural salience account predicts that gender, nationality, and religion should be highly essentialized, and possibly to the same degree, in Turkey due to social salience of all three categories via several mechanisms, including intergroup conflict in the case of nationality, and exposure to Islamic ideology and teachings in schools in the case of religion.

For nationality, the *biological relevance* account predicts high essentialization in both countries. This is due to quasi-biological markers, such as language and/or accent, reinforced by the cultural relevance of nationality, with respect to what it means to be a Turk or an American. Given these common features, there should not be a stark difference in children's beliefs about nationality in the two countries and little developmental change would be expected. By contrast, religion, SES, and sports-team fan should not be highly essentialized in either country given the paucity of biological markers. Thus, for these three categories, *the biological relevance* account predicts a low level of essentialist beliefs that remains stable over development or even a sharp decline given that these categories have no apparent biological underpinning. In contrast, for SES, the *cultural salience* account predicts greater essentialization with age in both countries as children are exposed to social and class stratification, although this may not be apparent in the age range tested. By contrast, children may initially essentialize sports-team fans but this should decrease with age as children learn that these affiliations are potentially variable.

Biologically oriented accounts of essentialism predict coherence among the different dimensions of essentialist thinking. However, because the dimensions that we measured have not been tested across the five social categories described here, we had no strong a priori predictions regarding the patterns of the dimensions for each category. We include an analysis of these dimensions in the Supporting Information to facilitate interpretation of the key results.

The Current Study

In Study 1, we compared essentialist thinking about the social categories of gender, nationality, religion, SES, and sports-team fan groups among Turkish children in Turkey. We aimed to test the predictions of the two models of essentialist reasoning regarding the relative strength and developmental trajectory of essentialist beliefs. In Study 2, we measured essentialist beliefs about the same categories among U.S. children and in Study 3, we compared adults' essentialist thinking about these categories in both countries.

Given the limited cross-cultural research on the development of social essentialism, we based the age range and sample size on Diesendruck et al. (2013), the most comparable study to date. These researchers tested children in two age groups, approximately 5–6 years of age and 9–11 years of age, in Israel ($N = 58$) and the United States ($N = 51$), and found developmental changes in both countries for certain social categories. To obtain a more detailed analysis of developmental change, we included children between 5 and 10 years of age. Our primary analyses treated age as a continuous variable, and we increased the within-country sample sizes relative to Diesendruck et al. (2013) by approximately one third. We reasoned that this increase in sample size would allow us to detect moderate age by category interactions. Thus, we planned to recruit 75 children in each country, with the ages spread as evenly as possible within the constraints of the testing sites (i.e., schools). The final child samples were $N = 74$ in Turkey and $N = 73$ in the United States.

Study 1—Istanbul, Turkey

Method

Participants

Seventy-four children between 5 and 10 years of age ($M = 7.90$, $SD = 1.55$, 43 females) participated in Study 1. An additional six children were excluded because they were a year or more older than the target age range ($N = 5$) or lacked birthdate information ($N = 1$). The final sample consisted of: 5- to 6-year olds ($N = 18$), 7- to 8-year olds ($N = 25$), 9- to 10-year olds ($N = 31$).

In Turkey, asking parents to identify their race/ethnicity is a sensitive issue and so instead we asked about languages spoken at home. We used this language information as an indirect measure of ethnicity; 66% of the parents indicated "only Turkish" or "Turkish" and another nonethnic language (e.g., English); 20% indicated a variety of languages spoken by ethnic minorities in Turkey (i.e., Kurdish, Georgian, Arabic, Russian); for 14% this information was not available.

All children lived in Istanbul and were recruited from summer school programs and cultural centers. Most came from lower-middle or middle socioeconomic backgrounds, as they visited tuition-free cultural centers in lower-middle and middle SES neighborhoods. We did not collect data from families on their religious identity, but testing took place in majority Muslim neighborhoods of Istanbul. The study was approved by a local university institutional review board.

Design

Children were tested individually in quiet rooms at cultural centers or summer school camps. They were shown five pairs of characters in a random order, for a total of five trials, each pair representing one of the five social categories of interest: Gender, Nationality, Religion, SES, and Sports-Teams Fan (see Figure S1). In addition, all children first viewed one character for a brief warm-up trial. All categories were illustrated with generic, same-gender characters (except for the category of gender), gender-matched with the participant, on a white background. All characters were referred to by letters of the alphabet to prevent prior experience with actual names influencing children's response. The letters were selected after piloting in each country. For each category, two characters representing members of two groups within that category were presented, and each character was labeled as a member of one of two groups. For gender, one character was labeled as a boy, the other as a girl. For religion, one was labeled a Muslim, the other a Christian. For nationality, one was labeled a Turk, the other a Macedonian. (Note that "Macedonian" can also refer to an ethnic group within Turkey, but when children asked, Macedonians were described as "people who live in Macedonia"). For SES, one was labeled as poor, the other as rich, and for sports team, each character was labeled as fans of one of the three most popular soccer teams in Istanbul, "Fenerbahçe," "Galatasaray," and "Beşiktaş." Slight visual variations between the characters signaled their group membership (Figure S1).

Children's parents completed a short questionnaire, indicating their gender, favorite soccer team, age, education level, monthly income, and occupation, as well as languages (other than Turkish) spoken at home and their child's gender. Children were asked about their favorite soccer team verbally before the experiment. Questions about religion or ethnicity were not asked directly, as requested by the local collaborators and administrators where testing occurred.

The materials were first drafted in English, revised after several consultations with Turkish collaborators and finalized in English, then translated into Turkish by a graduate student living in Istanbul, fluent in both Turkish and English. The Turkish translations were then revised based on pilot testing sessions, and back-translated into English by the same graduate student and the second author. All testing was conducted with the final Turkish translations.

Procedure

Children were told that they would be shown pictures of various people and asked questions about them. Before the warm-up trial, children were also told that they could answer all the questions with "yes," "no," or "maybe." In the warm-up trial, the experimenter labeled a character with a letter name and asked children if they thought the character "goes to school" and "likes ice cream." No feedback was given, because the warm-up questions were simply to familiarize children with the range of possible answers. Children then received five trials in random order, each corresponding to one of the five social categories. For each trial, the experimenter labeled each character in the pair as belonging to a group from the relevant social category. For example, for the category of religion, the experimenter labeled one as a Muslim and the other

as a Christian. Order of labeling and left–right position was randomized. Children answered five questions about the characters, focusing on different dimensions of essentialist thinking. Prior to testing, we created 14 random orders for the five questions for use within the three age groups. Each participant received the same question order for all social categories.

The five questions were asked about two individuals belonging to two different groups. For example, in the case of individuals from two religious groups, Muslim and Christian, children were asked whether: (a) their brains are different from one another; (b) whether their blood carries information about their religious affiliation; (c) whether they were born with their religious affiliations, (d) whether they can change their religious affiliation, and (e) whether being affiliated with a certain religion is because of their environment. The five questions were based on prior research on different dimensions of the natural-kind aspect of essentialist thinking (Gelman et al., 2007; see Supporting Information for the exact wording of questions). Children received a score of 1 for every *essentialist* response. For the *born, blood,* and *brain* questions, the essentialist response is "yes"; these three questions were coded as 1 for "yes," 0 for "no," and 0.5 for "maybe." For the *change* and *environment* questions, the essentialist response is "no"; these were reverse coded (i.e., 0 for "yes," 1 for "no," and 0.5 for "maybe" response). This coding scheme is based on prior work (Gelman et al., 2007; Heiphetz et al., 2017). Responses were live-coded by the experimenter, and checked against the coding sheet by two research assistants.

After completing these five questions, children were asked two control questions about whether each character has a lot of friends. These questions were included to assess children's possible bias toward either of the two characters. They also served as fillers before questions about a new category (a new pair of characters) were asked. For each of the control questions, children received a score of 1 for a "yes" response, 0.5 for "maybe," and 0 for a "no" response.

For each participant, a total *essentialism score* for a given social group was calculated by summing up the participant's scores across the five individual essentialism questions (a range of 0–5). Results are first presented in terms of participants' total essentialism scores across the five dimensions and then in terms of the individual dimensions of essentialist reasoning.

Results

All analyses of the essentialism scores were carried out using R statistical software (version 3.4.3, R Core Team, 2017). Following, we report our primary analysis of children's essentialist beliefs for the five categories. Next, we examine the effect of age on children's differentiation between the categories, and the effect of age on children's essentialist beliefs for each category, separately. Lastly, we analyze the individual dimensions of essentialism by age and category. Whenever multiple comparisons were conducted, we used a Bonferroni adjustment as described in each section. The means and standard errors of the essentialism scores for each category within each age group are presented in Supporting Information (Table S1).

Comparing Essentialist Beliefs by Category and Age?

Figure 1a shows children's essentialist beliefs about each category over age. In order to assess how participants of all ages differentiated among the five social categories, we first ran mixed-effects, linear regression models on children's total essentialism scores, with Age (in years) as a continuous variable, Category as a categorical fixed effect, and Participant as a random effect (*nlme* package in R, Pinheiro, Bates, DebRoy, & Sarkar, 2014). The overall model showed no effect of Age, $F(1, 72) = 0.23$, $p = .63$, and a main effect of Category, $F(1, 291) = 43.82$, $p < .001$. We next compared children's essentialist beliefs about each category to their beliefs about the other categories using planned post hoc comparisons and resetting the reference level category. We used a Bonferroni correction to account for these four comparisons, $\alpha = .0125$ (note that only four models are needed to cover all possible comparisons between the five levels of Category). Controlling for age, children differentiated between all categories, with the exception of SES and religion (Table S2). Figure 1a illustrates this main effect of category: children strongly essentialized Gender, followed by Nationality, Religion/SES, and Teams.

Next, we added the interaction of Age × Category to the mixed-effects, linear regression models from above in order to compare the category effects over development. The overall model showed no main effect of Age, $F(1, 72) = 0.23$, $p = .63$, a main effect of Category, $F(4, 287) = 44.67$, $p < .001$, and a significant effect of the interaction term, $F(4, 287) = 2.42$, $p = .049$. We ran four post hoc tests to examine the interaction of Age and children's essentialist beliefs for each category. Comparing the interaction effects for each category required resetting the reference

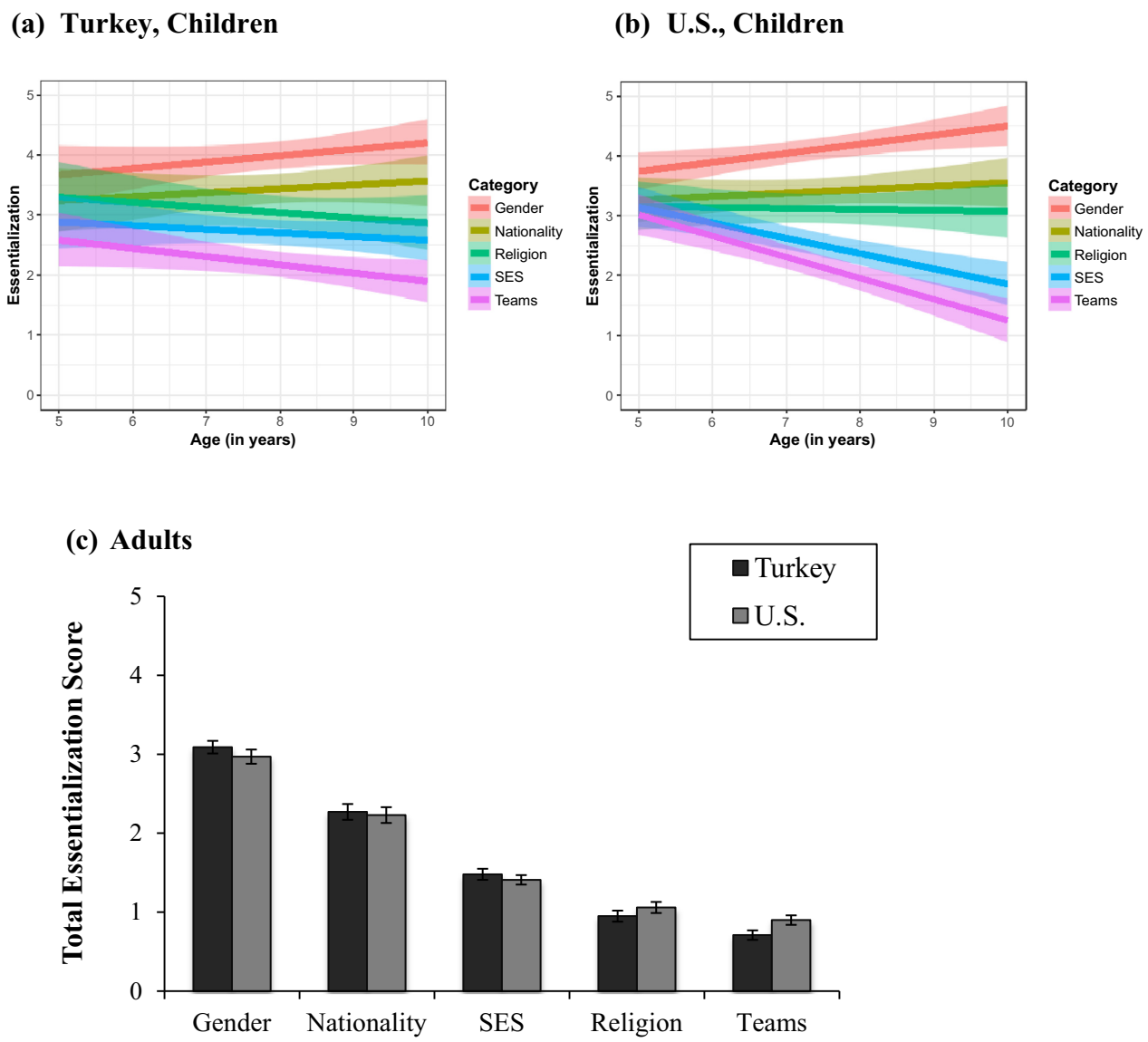

Figure 1. Total essentialism scores for children by age and social category—Turkey (a) and United States (b), and adults' (c) total essentialism scores by social category and country. SES = socioeconomic status.

level for Category four times. We used a Bonferroni correction to account for these four tests, $\alpha = .0125$. The results (Figure 1a and Table 1) showed that children increasingly differentiated between certain categories in terms of the degree of essentialization. Specifically, the difference between the most highly essentialized category (Gender) and the least essentialized category (Teams) increased with age. No other interaction contrasts were significant.

Do Essentialist Beliefs About Each Category Change With Age?

The models in Table 1 show the relative effect of age on children's essentialist beliefs for each category compared to a reference category. To examine the effect of age on children's essentialism scores for each category, we ran five linear regression models, one for each social category, with Age (in years) as a continuous predictor. For all regression models, we mean-centered Age; the intercept can be interpreted as the expected essentialism score at the mean age of our sample (7.90 years). Because we ran five separate models, we used a Bonferroni adjustment and compared observed p values against $\alpha = .01$. Age did not predict children's essentialism scores for any of the categories separately (see Table S3 for model parameters of each category). Thus, the conservative interpretation is that essentialism scores for each category

Table 1
The Effect of Age, Category, and Age × Category Interaction Term on Children's Essentialist Beliefs in Turkey

	Reference level for category			
	Gender	Nationality	Religion	SES
Intercept	3.13 (.61)***	2.92 (.61)***	3.73 (.61)***	3.15 (.62)***
Age	0.11 (.07	0.06 (.07)	−0.09 (.07)	−0.06 (.08)
Category				
Nationality	−0.22 (.76)			
Religion	0.59 (.76)	0.81 (.76)		
SES	0.02 (.77)	0.23 (.77)	−0.58 (.77)	
Teams	0.13 (.76)	0.35 (.76)	−0.46 (.76)	0.12 (.77)
Interaction				
Age × Nationality	−0.04 (.10)			
Age × Religion	−0.19 (.09)	−0.15 (.09)		
Age × SES	−0.16 (.09)	−0.12 (.09)	0.03 (.09)	
Age × Teams	−0.24 (.09)*	−0.20 (.09)	−0.05 (.09)	−0.08 (.09)
Number of observations	369			
Number of groups	74			
Conditional R^2	.44			

Note. Bonferroni adjustments were applied. All fixed effects shown here vary among models because they are compared to the reference level for category, which is different in each model. SES = socioeconomic status.
*$p < .0125$. ***$p < .0001$.

considered separately remained stable with age in Turkey.

We also investigated the extent to which different dimensions of essentialist beliefs converge or diverge in the course of development for each category. However, due to space limitations, these analyses are presented in Supporting Information (Additional Analyses, Part B).

Discussion

The results from the Turkish sample allow an initial assessment of the two theories of social essentialism outlined earlier. Children demonstrated strong essentialist beliefs about gender, followed by nationality, religion, SES, and teams. Furthermore, with age, children differentiated between gender and the least essentialized category, teams. The dimensions of essentialist reasoning were more likely to converge over development for the categories of gender, nationality and, to some extent, religion than for the categories of SES and teams.

These findings are only partially consistent with the predictions of the cultural salience account. Beliefs about the categories of gender and nationality were highly essentialized and remained so across age, but children did not differentiate essentialist beliefs about religion from other categories and no increase occurred with age. Essentialist beliefs about teams were stable but specific beliefs about being born a fan of a particular team declined markedly with age.

The results align more closely with the predictions of the biological relevance theory. In particular, religious groups were essentialized less than gender and nationality, which both have quasi-biological features. In addition, the most essentialized category (gender) and the least (teams) became more differentiated with age. Children may conceive of the category of gender as having a stronger biological underpinning than sports-team affiliation, a category that is based on personal preferences. Such biologically oriented thinking would lead to high levels of essentialist belief for gender at all ages (see Gil-White, 2002 for a related argument about ethnicity). Indeed, the individual dimensions cohered more strongly for gender than for other categories, and remained highly essentialized over development. Nationality, which can be marked by quasi-biological cues such as language or accent, was also more highly essentialized than the other categories and the dimensions of essentialism cohered more strongly than for Teams. For teams, the dimensions of essentialism also diverged with age.

To further assess the two theoretical views, we conducted Study 2 with children in the United States, using the same social categories and measure of essentialism. As noted in the introduction, the United States and Turkey differ in terms of historical and contemporary tensions between groups

within particular social categories. For example, gender and religion are less salient categories in the United States than Turkey. However, if some categories are conceived as biologically relevant, children in both countries should essentialize those categories (e.g., gender and nationality) more strongly than others.

Study 2—Boston, United States

Method

Participants

Seventy-three children between 5 and 10 years of age (M = 7.34, SD = 1.70, 39 females) participated in the study. Two additional children were excluded either because they did not complete the study (N = 1) or were a year older than the target age range (N = 1). The final sample was as follows: 5- to 6-year olds (N = 25), 7- to 8-year olds (N = 25), 9- to 10-year olds (N = 23).

Sixty-two percent of the parents identified their children as "White—not of Hispanic origin," 4% as "Black/African American," 4% "Hispanic," 3% as Asian/Pacific Islander, 3% as South Asian/Indian, 14% were identified as mixed-race ("White" and other), 5% "Other," and 4% chose not to answer this question. Children in the United States were visitors to a science museum in Boston, recruited from a local school, or tested in a university lab. Most children were tested at the museum and came from lower-middle to upper-middle SES backgrounds (Soren, 2009).

Design

Children were tested in a quiet area of the museum, school or lab. Parents completed a questionnaire indicating their child's gender, ethnicity, religion, and favorite baseball team, and their own education level, occupation, ethnicity, religion, and favorite baseball team.

The design of the study was the same as in Study 1. The same characters were used with the exception of the sports-team fans, who were illustrated wearing the jerseys of two relevant baseball teams (see Figure S2). For the categories of gender, religion, and SES, the characters were labeled as in Study 1. For nationality, the characters were labeled as American and British in order to present the same kind of contrast as in Study 1: people who look similar, but are labeled differently in terms of their nationality. For the category of sport-team fans, the characters were labeled as fans of two popular baseball teams, the Red Sox and the Yankees.

Procedure

All procedures were the same as in Study 1. The first author was present during all testing sessions in both studies to ensure that the same procedures were used.

Results

Comparing Essentialist Beliefs by Category and Age?

The data were analyzed in the same way as in Study 1, using mixed-effects, linear regression models. Figure 1b shows the developmental pattern of U.S. children's total essentialism scores for the five social categories tested (see Table S4 for means and standard errors for each Age group). To assess how children differentiated among the five categories in terms of essentialist beliefs, we first ran mixed-effects, linear regression models with Age and Category as fixed effects, and Participant ID as a random effect. The overall model showed a near significant effect of Age, $F(1, 71) = 3.77$, $p = .056$, and a main effect of Category, $F(4, 288) = 64.54$, $p < .001$. As in Study 1, we ran four post hoc models resetting the reference level category, using a Bonferroni correction to account for these four comparisons, $\alpha = .0125$. As shown in Table S5, controlling for age, children differentiated between all categories, with the exception of Nationality and Religion (Table S5). As confirmed by Figure 1b, children strongly essentialized Gender, followed by Nationality/Religion, SES, and Teams.

Next, we included the Age × Category interaction term in the models to investigate how children differentiate between the categories over development. Table 2 shows the parameters of the model when setting each level of Category as a reference and applying a Bonferroni correction. As shown in Figure 1b, children increasingly differentiated among certain categories with age. Specifically, children increasingly differentiated Gender, Nationality and Religion from SES and Teams with age but the relationship between SES and Teams did not change.

Do Essentialist Beliefs About Each Category Change With Age?

To test whether essentialist beliefs varied with age, we ran five mixed-effects regression models,

Table 2
The Effect of Age, Category, and Age × Category Interaction Term on Children's Essentialist Beliefs in the United States

	Reference level			
	Gender	Nationality	Religion	SES
Intercept	2.98 (.46)***	2.97 (.46)***	3.23 (.46)***	4.41 (.46)***
Age	0.15 (.06)	0.06 (.06)	−0.02 (.06)	−0.26 (.06)***
Category				
Nationality	−0.01 (.52)			
Religion	0.25 (.52)	0.26 (.52)		
SES	1.43 (.52)*	1.44 (.52)*	1.18 (.52)	
Teams	1.79 (.52)**	1.80 (.52)***	1.54 (.52)*	0.36 (.52)
Interaction				
Age × Nationality	−0.09 (.07)			
Age × Religion	−0.17 (.07)	−0.07 (.07)		
Age × SES	−0.41 (.07)***	−0.31 (.07)***	−0.24 (.07)**	
Age × Teams	−0.50 (.07)***	−0.41 (.07)***	−0.33 (.07)***	−0.10 (.07)
Number of observations	365			
Number of groups	73			
Conditional R^2	.63			

Note. Bonferroni adjustments were applied. All fixed effects shown here vary among models because they are compared to the reference level for Category, which is different in each model. SES = socioeconomic status.
*$p < .0125$. **$p < .001$. ***$p < .0001$.

one for each social category, centering Age (in years). Table S6 in Supporting Information shows the parameters. A Bonferroni correction was applied to account for the five tests. From 5 to 10 years of age, children's essentialist beliefs significantly increased for Gender ($B = .15$, $SE = .05$, $p < .01$), decreased for SES and Teams, ($B = -.26$, $SE = .06$, $p < .001$ and $B = -.35$, $SE = .06$, $p < .001$, respectively) and remained unchanged for Religion and Nationality.

Finally, we investigated the extent to which different dimensions of essentialist beliefs converge or diverge in the course of development for each category included in our study. These analyses are presented in Supporting Information (Additional Analyses, Part B).

Comparison of Turkey and United States

As suggested by Figures 1a and 1b, there were striking similarities, as well as some noteworthy differences, between Turkey and the United States in the development of children's essentialist thinking about the five social categories. To compare these effects across countries, we ran five linear regression models, one for each social category, investigating the effect of Country, Age, and the Country × Age interaction term (see Table S9). The results revealed no main effects or interaction effects between Country and Age for any of the categories, with Bonferroni corrections applied. Thus, despite the apparent differences in Figures 1a and 1b, children's essentialist beliefs (all dimensions combined) about the five categories were not statistically different between the two countries.

Discussion

The results of Study 2 reveal striking similarities between the United States and Turkey. In both countries, the rank order of the categories was similar, children essentialized gender more than other categories and differentiation among the categories occurred over development, although this pattern was more evident in the United States. This pattern supports the biological relevance account: some categories will be highly essentialized due to apparent biological markers which can be further endorsed by cultural factors. In support of this interpretation, the individual dimensions of essentialist beliefs about gender and nationality cohered more strongly in both countries compared to the least essentialized category of sports-team fan. In addition, the pattern of essentialization for religion was similar in the two countries, despite clear cultural differences in religious diversity and salience.

In Study 3, we compared essentialist beliefs about the same five categories among adults in Turkey and the United States If children essentialize the categories of gender and nationality more than

others because they appear to reflect a biological essence, then U.S. and Turkish adults should also essentialize these categories more than other social categories.

Study 3—Adults

In Study 3, we tested adults in Turkey and the United States. We asked if: (a) the high degree of essentialization for gender and nationality observed among children in both countries would be found in adulthood; (b) the differentiation among categories would be more marked; and (c) the rank order of categories in terms of the degree of essentialization would be the same. We tested students at the two universities affiliated with the study. This choice limits any comparison of the child and adult samples, since they did not necessarily come from equivalent backgrounds. However, the adult samples in the two countries were comparable, as described next.

Method

Participants

In Turkey, 117 adults (88 females) and in the United States, 106 adults (79 females) participated in Study 3. In Turkey, participants were students of psychology and other courses at a public, English-language, secular university in Istanbul. The university recruits from a range of socioeconomic backgrounds, since entrance is mainly dependent on nation-wide, examination-based ranking. The students are more Westernized than the average adult in Istanbul because they are young adults, fluent in English and studying at a university with an American academic system. In the United States, participants were psychology students at an urban, secular university.

Design and Procedures

We used the same stimuli, questions, and coding system as in Studies 1 and 2 but participants were presented with the stimuli and questions online through a Qualtrics program. Before testing began, adults read a statement describing the survey as "child-friendly" and explaining that answers would be compared to children's answers to the same questions. Participants in Turkey responded in Turkish, and U.S. participants responded in English.

Results

Figure 1c shows the pattern of essentialist thinking by Turkish and U.S. adults for the five categories (see Table S10 for means and standard errors). As illustrated, adults essentialized the categories to a similar degree in both countries. To compare adults' beliefs across the two countries, we ran a regression model for each social category on adults' essentialism scores with Country as the sole predictor. Given that five models were run, Bonferroni corrections were applied. Country did not predict adults' essentialism score for any category (see Table S11).

As shown in Table S10, the rank order of essentialist thinking about the categories is quite similar across the two countries. To statistically test patterns of differentiation between the categories, we ran mixed-effects, linear regression models on adult's composite essentialism scores with Category as a fixed effect and Participant ID as a random effect, in each country. To compare between all categories, we reset the reference level for Category each time, resulting in four models. To account for multiple comparisons, we applied Bonferroni corrections ($\alpha = .0125$). Both in Turkey and the United States, adults held the strongest essentialist beliefs about gender, followed by nationality, SES, religion, and sports teams. Turkish adults differentiated among all categories, and U.S. adults differentiated among all categories except religion and teams (Table S12). Thus, adults' differentiation among the categories was similar to that of the oldest children in each country. The rank order of essentialization of the categories was similar for the adults in both countries, but differed from the rank order for children in one respect. Children essentialized Religion more than SES, but adults essentialized SES more than Religion.

For an analysis of adults' responses to the individual questions in the essentialism, see the Supporting Information (Figure S5, Table S15, and Additional Analyses, Part B-III).

Discussion

Just as children in Turkey and the United States showed similar overall patterns of essentialist thinking for the five social categories, adults in both countries also looked strikingly similar. Like the older children, adults differentiated between almost all categories, although they held weaker essentialist beliefs about religion than SES, whereas children essentialized religion more than SES. The strong

essentialist beliefs about gender and nationality among adults in both countries further support the hypothesis that some, but not all, social categories are essentialized to a high degree because they appear to reflect important biological differences between people.

General Discussion

The results of the three studies allow us to revisit the hypotheses outlined in the introduction. We proposed two possible patterns of development in the United States and Turkey based on the two theoretical proposals we described. The *cultural salience* account focused on the role of culture-specific realities, such as conflict and discrimination, in making certain categories salient and triggering an essentialized conception of those categories. Based on cultural differences between the two countries, we predicted that the categories of gender, nationality and religion would be more highly essentialized in Turkey than in the United States. These differences did not emerge from the analyses. In fact, all categories were essentialized at comparable levels and in the same rank order in both countries for both children and adults.

The cross-national similarity in the overall pattern is particularly striking for those categories for which, in principle, cultural differences might have affected essentialist beliefs. If essentialist thinking is mainly a response to the social salience of the category through mechanisms such as conflict between social groups, then differences between the United States and Turkey would be expected for gender and nationality. Indeed, we predicted that stronger gender hierarchies and nationalistic values would lead to higher essentialization of these categories in Turkey. However, the two countries proved more similar than different for both categories. For religion, we predicted that Turkish children in Turkey would have stronger essentialist beliefs than U.S. children about differences between Muslims and Christians since Turkish children are rarely exposed to non-Muslims and receive religious instruction in school. However, religion was similarly essentialized in Turkey and the United States and showed a marked decline by adulthood.

The *biological relevance* account emphasized the degree to which categories are conceived as similar to biological categories. Thus, in both cultures, categories that initially appear to have a biological basis will be essentialized earlier and more strongly, than categories that do not. The level of essentialist thinking for particular categories should decline with age as children come to question their biological bases. This account allows for cultural influences but suggests a greater resistance to change in the initial biological conception of a given category. The pattern of results across ages and countries appears to fit this account quite closely.

Both in Turkey and the United States, gender was the most highly essentialized category among children and adults. The developmental pattern was also similar, even if some differences did emerge. For example, in Turkey, children had strong, essentialist beliefs about gender throughout development. Arguably, their early tendency to conceive of gender as a biologically relevant category is reinforced by their continued exposure to a pronounced gender hierarchy and the prevalence of segregated gender roles (e.g., Fişek & Sunar, 2005; Kağıtçıbaşı, 1982). In the United States, although essentialist beliefs were already strong among the younger children, there was a developmental increase in essentialist thinking about gender. This unexpected age change could be due to increased gender stereotyping later in development, especially in the school setting. Nevertheless, in both countries, gender was the most essentialized category, controlling for age, and there were no quantitative differences between the countries in the development of essentialist beliefs about gender (see Table S9). Thus, the results suggest a universal tendency to essentialize gender in terms of biology with some influence from cultural experiences.

Consistent with the biological relevance account, essentialist thinking about categories with no clear biological underpinning decreased with age. In both countries, the category of sports-teams fan was essentialized less than gender by children and adults. Presumably, in both countries, children and adults realize that supporting a specific sports team is a personal choice with no biological basis. In fact, when asked about changing one's favorite sports team, children offering an explanation usually said that if a team becomes more "famous" or "wins" more often, one may change one's preferences. Essentialist beliefs about SES were also low in both countries suggesting an awareness that wealth status can change, even if the direction of change is unclear. Interestingly, essentialist beliefs about religion did not undergo significant changes during childhood in either country, but they had declined considerably by the onset of adulthood.

The evidence suggests that some, but not all, social categories are prone to a biological or pseudo-biological representation in human

cognition. These categories become prime candidates for essentialist beliefs, especially in the early years, but cultural experience can influence specific aspects of essentialist beliefs. Here, the case of nationality is interesting. There has been little systematic research on children's essentialist views about nationality (although see Cimpian & Hussak, 2017), but children may tune into quasi-biological cues, such as language, accent, or other perceptible markers (see Kinzler & Dautel, 2012). Anecdotally, in explaining their answers regarding nationality, children often appealed to the characters being "born that way," or speaking "different languages." Gil-White (2002) argued for a biological conception of ethnicity, and children's and even adults' concepts of "nationality" may closely match their concepts of "ethnicity," with both concepts including supposedly biological characteristics.

Despite the evidence for the biological relevance account, a plausible alternative explanation focuses on the role of language. Children learn a great deal from the verbal testimony of others around them (Harris & Koenig, 2006). In particular, adults' use of generic language conveys information about an entire category (Gelman, 2004). Generics thus serve as a well-established mechanism for the cultural transmission of social essentialist beliefs (Rhodes, Leslie, & Tworek, 2012). The cross-cultural similarities we observed may be linked to cross-cultural similarities in the language used to describe social categories. For example, generic language is often used to describe gender categories (e.g., "boys play football") and similar usage likely occurs in both Turkey and the United States. However, language seems unlikely to be the sole driver of social essentialism for the other categories tested. Notice, for example, that similar language is used to describe different nationalities (e.g., "Americans love basketball"), religious groups (e.g., "Muslims fast during Ramadan"), SES (e.g., "rich people go to fancy restaurants"), and sports teams (e.g., "Yankees are losers"). Arguably children are exposed to generic language describing some categories, such as gender, more often than others, and this could lead to variation in essentialist thinking. However, this begs the question of why generic language is used more frequently for some categories than others. A more comprehensive model would emphasize the interplay between generic language and conceptual representation of social categories. For example, given that information conveyed in generic language is central to children's reasoning about biological concepts (Cimpian & Markman, 2009), it is possible that generic language is used more often to describe social categories that are represented as biologically relevant. It would be worth examining how this tendency extends to reasoning about social categories in children and adults. Importantly, the *biological relevance* account does not ignore the role of cultural input in leading to variation in the biological perception of social categories, but it emphasizes the role of biological concepts in the essentialization of social categories, notwithstanding the mechanisms responsible for those biological concepts.

One key limitation of the current study concerns the specific measure of essentialism we used. The question measure focuses primarily on the natural-kind aspect of essentialist reasoning, which refers to the tendency to perceive social categories as having underlying natural causes. It remains an open question whether the same cross-culturally similar patterns would be observed for other aspects of social essentialism, such as the extent to which a category is represented as inductively powerful, coherent, homogeneous, or meaningful, aspects related to *entativity*. Entativity and natural-kind essentialism do not necessarily correlate in the perception of human categories (Haslam et al., 2000; Haslam et al., 2002; but see also Yzerbyt, Corneille, & Estrada, 2001). Therefore, the patterns we observed might change using a measure of entativity. Another limitation of our study is possible cultural differences between the two societies that might impact data collection. For example, in comparison to American samples who typically express individualistic and independent views, in societies where conformity is emphasized as a cultural norm, children's interactions with adults may center on harmony and assimilation (see Nisbett, 2007). Turkish children may be exposed to such a collectivist orientation, but this did not appear to lead to major differences in the results compared to U.S. children.

Lastly, we consider how the biological relevance account might align with the development of essentialist beliefs about race. Children's essentialist beliefs about race tend to be lower than for gender and they increase with age (Mandalaywala, Ranger-Murdock, Amodio, & Rhodes, 2018; Rhodes & Gelman, 2009; Roberts & Gelman, 2016). The biological relevance account is not inconsistent with these results. Specifically, we share with other researchers the intuition that reasoning about categories with biologically significant markers (e.g., gender and nationality) may be constrained by intuitive biases given the evolutionary significance of these categories (see Cosmides, Tooby, & Kurzban, 2003). Reasoning about race, however, is related to

children's specific experiences with group membership, social interactions and attitudes, as well as their exposure to diversity. These experiences can include belonging to a racial minority group (Kinzler & Dautel, 2012), age-based and racial group interactions (Roberts & Gelman, 2016), exposure to out-group members and diverse racial attitudes (Mandalaywala et al., 2018), and rural versus urban cultural experience (Rhodes & Gelman, 2009). In directly comparing the development of essentialist beliefs about race and gender, Rhodes and Gelman (2009) argue that gender is viewed by young children and adults as a natural category, whereas views about race interact with age and cultural context (see also Diesendruck et al., 2013). These patterns underline the sensitivity of concepts about race and the relative imperviousness of concepts about gender to cultural differences (Rhodes & Mandalaywala, 2017).

In drawing these distinctions, we underline the theoretical implications of our model and those that view essentialism as folk-biological concept that can be transferred to the social domain under some conditions (see Atran, 1998). The biological relevance model does not imply that essentialism is a domain-specific module. By contrast, the domain-specific account implies that when essentialist thinking is triggered for reasoning about nonbiological categories, various dimensions of essentialist reasoning will cohere. Our dimension-level analysis shows this not to be the case. Moreover, the domain-specific account does not explain variation in the essentialization of different social categories throughout development. We show that when comparing a range of social categories, cultural variability in essentialist beliefs is low for those social categories that are conceived as biologically relevant and that the same rank order exists in the two cultures we tested. We believe that this is consistent with domain-general accounts of the development of social essentialism as proposed by Gelman (2004), Gelman and Hirschfeld (1999), and Rhodes and Mandalaywala (2017), defining essentialism as a causal-explanatory framework that helps children make sense of their environment. Nevertheless, in using this framework, children are constrained by their basic conceptual biases. Thus, if children conceive of a given social category as having a biological underpinning, the causal-explanatory framework of essentialism may fit their theory of that social category. In stressing the role of biological thinking, the biological relevance account does not ignore the role of cultural input. In fact, the model can illuminate the impact of culture on the degree of biological thinking about social categories. Future research should study the mechanisms impacting children's conception of social categories as relatively biological as well as the influence of culture.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Figure S1. Stimuli Used in Turkey to Represent Each Category (for Girls)

Figure S2. Stimuli Used in the United States to Represent Each Category (for Girls)

Figure S3. Turkish Children's Essentialist Responses With Age in Terms of the Individual Questions for Each Category

Figure S4. U.S. Children's Essentialist Responses With Age in Terms of the Individual Questions for Each Category

Figure S5. Adults' Essentialist Answers in Terms of Individual Questions in Each Category in Turkey (a) and United States (b)

Table S1. Turkish Children. Means and Standard Errors of Total Essentialism Scores by Age Group and Each Social Category

Table S2. Turkish Children. Results From Mixed-Effects, Linear Regression Models With Children's Age and Category as Predictors for Essentialist Beliefs

Table S3. Turkish Children. Results From Linear Regression Models With Children's Age (in Years) as the Predictor for Essentialist Beliefs About Each Social Category

Table S4. U.S. Children. Means and Standard Errors of Total Essentialism Scores by Age Group and Social Category

Table S5. U.S. Children. Results From Mixed-Effects, Linear Regression Models With Children's Age and Category as Predictors for Essentialist Beliefs