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The Development of Essentialist Reasoning Based on Gender, Race and Language in a Sample from Turkey

Türkiye'den Bir Örneklemde Cinsiyet, Irk ve Dile Dayalı Esasçı Düşüncenin Gelişimi

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ABSTRACT

Developmental studies suggest that children think in essentialist terms about social categories and view social category membership as natural and stable. This study aims to examine 6-to-10-year-old children's essentialist views about gender, race, and language in a sample from Turkey. These are all categories with underlying perceptual markers, but they are likely to differ in terms of their cultural relevance within this context. In addition to these categories, essentialist beliefs about sports team fans were also examined as a reference category. A measure that captures different aspects of essentialist thinking including biology, change, and environment, and was previously used to study essentialist beliefs about different social categories in the same cultural context with a similar age group, was used. The results showed that around the age of 6 years, children did not distinguish among various social categories in their essentialist reasoning; however, with age, they gradually distinguished among some categories. Despite the differences in their cultural relevance within the context of Turkey, gender and race showed very similar patterns in how they were essentialized over age, both overall, and also with respect to different individual dimensions related to essentialist thinking. Essentialist thinking about both of these categories remained relatively stable across age. In terms of language, while overall essentialism scores remained stable across age, a substantial decrease in beliefs about capacity for changing one's group membership was observed across age, when membership is based on language. Finally, children's essentialist thinking about sports team fans decreased considerably with age. These findings are discussed in light of previous studies focusing on these categories in contexts, where the cultural saliency of the categories likely differ, in an attempt to offer a better understanding of the mechanisms contributing to the development of social essentialism.

Keywords: Social cognition, social essentialism, social groups

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ÖZ

Gelişimsel çalışmalar çocukların sosyal kategorilere dayalı esasçı bir düşünce tarzı benimsediklerine ve sosyal kategori üyeliğini doğal ve kalıcı olarak gördüklerine işaret etmektedir. Bu çalışmanın amacı Türkiye'den 6-10 yaş aralığındaki çocukların oluşturduğu bir örneklemde cinsiyet, ırk ve dile dayalı esasçı düşüncenin gelişiminin incelenmesidir. Bu sosyal kategorilerin hepsi algısal olarak ayırt edilebilir kategoriler olup, bir yandan da toplumdaki vurguları açısından farklılıklar göstermektedir. Bu kategorilere ek olarak referans oluşturması için ayrıca futbol takımı taraftarlığına dayalı sosyal kategorilere dair esasçı görüşler de incelenmiştir. Bu kapsamda esasçı düşüncenin biyoloji, değişim ve çevre gibi farklı boyutlarını kapsayan ve daha önce benzer yaş aralığındaki çocuklar ile aynı kültürel bağlamda farklı sosyal kategorileri incelemek için kullanılmış olan bir ölçüm kullanılmıştır. Çalışmanın sonuçları, altı yaşındaki çocuklarda farklı sosyal kategorilere dayalı esasçı çıkarımların birbirinden ayrışmadığını, ancak yaşla birlikte çocukların bu kategorileri giderek daha fazla ayrıştırdıklarını göstermiştir. Türkiye bağlamında beklenen kültürel geçerliliklerindeki farklara rağmen, cinsiyet ve ırka dayalı esasçı çıkarımlar hem genel olarak hem de esasçı çıkarımların farklı boyutları açısından yaşla birlikte oldukça benzer bir eğilim göstermiş ve bu iki kategoriye dayalı esasçı düşüncede yaşla birlikte önemli oranda değişiklik gözlenmemiştir. Dile dayalı esasçı çıkarımlar da genel anlamda yaşla birlikte değişmezken, bir kişinin dile dayalı grup üyeliğinin değişiminin mümkün olup olmadığına dair esasçı görüşün yaşla birlikte önemli derecede azaldığı gözlenmiştir. Son olarak, takım taraftarlığına dayalı esasçı düşüncenin yaşla birlikte azaldığı gözlenmiştir. Bu sonuçlar, benzer sosyal kategorilere dayalı esasçı düşüncenin gelişimini bu kategorilerin kültürel öneminin farklılaştığı bağlamlarda inceleyen önceki çalışmalar ışığında tartışılarak sosyal kategorilere dayalı esasçı düşüncenin gelişiminde rol oynayan mekanizmaların daha iyi anlaşılması amaçlanmıştır.

Anahtar Kelimeler: Sosyal biliş, sosyal esasçılık, sosyal grup

Humans organize the social world into groups and categories using diverse criteria, including age, race, ethnicity, gender, social class, and language. Social categorization allows us to learn and generalize information about the category members in an efficient manner, yet it also has potential negative implications such as stereotypes and inter-group biases (Allport, 1954). A growing body of evidence suggests that such implications of social categorization are evident early in life. Children exhibit intergroup biases from an early age (e.g., Bigler & Liben, 2007; Rutland, Killen, & Abrams, 2010) and think in *essentialist* terms about social categories (see Gelman, 2003). Specifically, children consider social categories as natural kinds, perceive membership in certain social categories as determined biologically and stable across the lifespan, and they use their understanding of social categories as such to make various inductive inferences about individual members' attributes and behaviours (Gelman, 2004; Medin & Ortony, 1989). While the developmental research provides a wealth of evidence on these tendencies, the role of different factors contributing to the development of essentialist biases about social categories, such as the physical and psychological saliency of these categories, are not entirely known. The aim of the current study is to examine the development of essentialist views in a Turkish sample, focusing on the categories of gender, race, and language. All of these are prominent social categories with underlying perceptual markers, yet they are likely to differ in their psychological saliency to children within this cultural context. These similarities and differences among the categories provide insight into the role of different mechanisms through which essentialist beliefs develop.

Essentialism in young children is usually assessed with a *switched-at-birth* task, which was originally developed to examine young children's intuitions about animal species (Gelman & Wellman, 1991). In this task, children are introduced to an animal that was born into a family of one animal category (e.g., cows), yet was raised by a family from a different animal category (e.g., pigs). Subsequently, children are asked to make various predictions regarding the category membership, as well as physical and behavioural attributes of the baby animal when it grows up (e.g., Atran et al., 2001; Sousa, Atran, & Medin, 2002; Waxman, Medin, & Ross, 2007). These studies have shown that by the age of 4 years, children consider animal category membership as inherited, constant, and inductively powerful; in other words, they essentialize animal species.

Studies using different versions of this task for investigating children's beliefs about human social categories, such as gender, race, and language, showed that these social cate-

gories are also essentialized by children (e.g., Hirschfeld, 1995, 1996; Hirschfeld & Gelman, 1997; Taylor, Rhodes, & Gelman, 2009). For instance, using the switched at birth paradigm, studies showed that pre-schoolers think that a child would belong to the same racial group as their biological parents, rather than the parents whom they grew up with (Gimenez & Harris, 2002; Hirschfeld, 1995). Hirschfeld (1995, 1996) showed that when asked which of the two children would represent an adult's former self as a child, pre-schoolers consistently ignore various other perceptual features common between the adult and the child characters, and choose instead, the child who matches the adult's racial group membership. Similar findings were observed when children's essentialist views were assessed for gender and language (e.g., Hirschfeld & Gelman, 1997; Taylor et al., 2009).

Later studies on the development of essentialist beliefs have shown that children think in essentialist terms about many other social categories, including ethnicity, nationality, social class, and religion (e.g., Birnbaum, Deeb, Segall, Ben-Eliyahu, & Diesendruck, 2010; Davoodi, Soley, Harris, & Blake 2020; del Río & Strasser, 2011; Diesendruck & HaLevi, 2006; Hussak & Cimpian, 2019). Further, the degree to which different social categories are essentialized varies depending on the socio-cultural context. For example, teenagers from rural areas in the U.S. view gender and race as natural categories to a greater extent than their peers from urban cities (Rhodes & Gelman, 2009), 5-12 year-old religious Jewish children in Israel perceive ethnicity as inductively more powerful than their Muslim Arab or secular Jewish peers (Birnbaum et al., 2010), and African American kindergarteners in the U.S. expect race to be more stable than language across lifespan, whereas their European American peers show the opposite expectations (Kinzler & Dautel, 2012). Cultural context also influences the developmental course of essentialist views about various social categories (Astuti, Solomon, & Carey, 2004; Birnbaum et al., 2010; Deeb, Segall, Birnbaum, Ben-Eliyahu, & Diesendruck, 2011; del Río & Strasser, 2011; Diesendruck & Haber, 2009; Kinzler & Dautel, 2012; Pauker, Xu, Williams, & Biddle, 2016; Rhodes & Gelman, 2009). For instance, in the U.S., children's essentialist views about race tend to increase with age (Diesendruck, Goldfein-Elbaz, Rhodes, Gelman, & Neumark, 2013; Mandalaywala, Ranger-Murdoch, Amodio, & Rhodes, 2019; Pauker et al., 2016; Rhodes & Gelman, 2009; Roberts & Gelman, 2016), whereas in Israel (Diesendruck et al., 2013) and in Hawaii (Pauker et al., 2016), essentialist views about race tend to decrease over development, patterns that are consistent with the level of salience and relevance of the category, race, in each cultural context.

Evidently, social categories vary in terms of whether they have observable biological markers (e.g., skin colour) as well as their psychological salience within cultural contexts, and these differences might contribute to how strongly a given category is essentialized. For instance, social categories might become psychologically more salient when their importance is reinforced by cues like conflict between certain groups in the society, explicit labelling, or implicit use of the category, such as socially segregated environments (e.g., Bigler & Liben, 2007; Gelman & Hirschfield, 1999; Rhodes, Leslie, & Tworek, 2012). In line with this, past research showed that children growing up in more homogenous environments exhibit higher degrees of essentialist thinking about a given social category (Pauker et al., 2016; Rhodes & Gelman, 2009; Smyth, Feeney, Eidson, & Coley, 2017) and that verbal cues, such as the use of generic language, are shown to influence the development of essentialist beliefs in children (Rhodes et al., 2012; Segall, Birnbaum, Deeb, & Diesendruck, 2015). Importantly, the role of each of these variables over and above the others may not be always easily discernible, given that they might tend to co-vary (Davoodi et al., 2020b). For instance, parents might use explicit labelling and generics more frequently when talking about social categories that have biological underpinnings (e.g., girls like dolls).

The present research

The current study aims to investigate the development of essentialist beliefs in a Turkish sample, focusing on the categories of gender, race, and language. All of these are major social categories with underlying perceptual markers, yet they are likely to differ in their psychological importance to children within this cultural context. These similarities and differences among the categories might allow us to have a better insight into the sources of essentialist biases.

Given its notable racial homogeneity, Turkey presents an interesting case for examining essentialist beliefs about race. Although Turkey comprises many ethnic groups, it is racially quite homogenous, and children are rarely exposed to individuals from different racial groups. Growing up in a racially uniform environment might implicitly contribute to the saliency of this category, upon encountering individuals of a different race. On the other hand, explicit labelling is unlikely to be a factor contributing to children's essentialist beliefs about race in Turkey, given that it is not a culturally relevant category. This provides a contrast with the category of gender. Turkey ranks among the lowest countries in terms of gender equality (Inglehart & Norris, 2003).

Children in Turkey likely get both explicit and implicit saliency cues in their daily lives through labels used by individuals around them as well as distinct gender roles and gender-segregated environments (e.g., school bathrooms, play groups). Thus, while both gender and race are biologically marked categories, only gender is culturally relevant in the context of Turkey. Language, as a marker of social category, even though not necessarily marked morphologically as in the cases of gender and race, can be considered as a semi-biological marker with consistent links to categories such as ethnicity and nationality (e.g., Gil-White, 2002). Turkey is relatively homogenous in terms of language as well. About 85% of the population is estimated to have Turkish as a native language, followed by Kurdish with about 12%, and Arabic with about 1% of the population (KONDA, 2006). The ethnic diversity of Turkey is not fully represented in public life linguistically, due to government regulations that have repressed teaching and the use of the ethnic languages (Kaya, 2009). In recent years, however, with the increase in the Syrian refugee population in Turkey (The UN Refugee Agency, 2020), an increase in exposure to Arabic might be expected, particularly for children who attend schools where Syrian students are admitted. Additionally, most children learn a second language (usually English) in school, typically starting in second grade (around the age of 6 or 7 years). Thus, language, as a social category, can be considered as culturally relevant to some extent within the current context of Turkish society, mainly because of its role in marking ethnic groups in conflict (e.g., Bilali, Çelik, & Ok, 2014) as well as shifts in demographics with the recent waves of immigration (The UN Refugee Agency, 2020).

To this date, only one study examined children's essentialist views of human social categories in Turkey. This study examined essentialist beliefs about gender, nationality, religion, socio-economic status, and sports teams among 5-to-10-year-old children and adults in Turkey and in the U.S. (Davoodi et al., 2020b). The results of the study showed notable similarities across the two cultures. In both cultures, children's essentialist beliefs were strongest for gender, followed by nationality, religion, socio-economic status, and sports teams. Further, an increasing level of differentiation among these categories was observed with age. The measure used by Davoodi et al. (2020b) includes three dimensions that capture different aspects of natural-kind essentialist beliefs across categories (Gelman et al., 2007). These are the biological basis for the differences between different category members, the possibility of changing category membership, and the

role of the environment in determining category membership. This measure allows rank ordering different social categories in terms of children's essentialism scores and provides insight into the degree to which each category is essentialized in relation to one another. Further, it also allows examining each of the individual dimensions of essentialist thinking within each category. The present study adopted this method for assessing children's essentialist beliefs about gender, race, and language. Following Davoodi et al. (2020b), essentialist beliefs about sports team fans, a category with no biological marker, were also assessed, to serve as a baseline.

Building on previous studies, we predicted that with age, the social categories tested would be increasingly differentiated in terms of children's essentialism scores (e.g., Davoodi et al., 2020b). Second, as a category with a biological basis and cultural relevance, gender would be essentialized to a greater degree than race and language and would remain highly essentialized across age. We did not have a specific prediction regarding the rank ordering of race and language in terms of children's essentialism scores; however, we predicted that both would be essentialized to a greater degree than sports team fans across age. Further, we expected that children's essentialist beliefs about this category would be relatively stable across age. On the other hand, we predicted an overall decline in essentialist beliefs about language, particularly given that children start acquiring a second language in second grade. We also conducted exploratory analyses on the individual dimensions of each category across development.

METHOD

Participants

Participants were 6-to-10-year-old children attending public schools in Istanbul, Turkey. A total of 81 children participated in the study. Nine children were later excluded from the analyses due to being outside the intended age range (N = 4), having a native language other than Turkish (N = 2) or due to experimenter error (N = 3). The final sample included 72 monolingual Turkish speaking children (42 female; M_{age} = 8 years 2 months, Range between 6 years to 9 years 11 months). According to the parental report, 57 of these children were not exposed to different languages other than Turkish or any individuals from other ethnic/racial groups. Among the remaining 15 children, 4 were exposed to other languages/ethnicities at home (Kurdish N = 2, Uzbek N = 1, Russian N = 1), Six were exposed to other languages/ethnic groups in school through their class-

mates (Arabic /Syrian), four children were exposed to other ethnicities but these were not specified, and one child's data was missing. The study was approved by the ethics board at Boğaziçi University on 16.02.2015 (Application number: 2015/14).

Materials

Stimuli. Warm up stimuli consisted of two same gender drawings of white children, each presented individually against a white background. The test stimuli consisted of four pairs of drawings of children, each pair representing one of the four social categories of interest. These categories were gender, race, language, and sports-teams. The drawings were presented on a white background and were separated from each other by approximately 10 cm. For the category of gender, the display consisted of drawings of two white children, one male and one female. For the category of race, the display consisted of drawings of two same gender children, one black and one white. For the category of language, the display consisted of two same gender, white children. One of these children was paired with a voice clip in Turkish and the other was paired with a voice clip in Spanish, but the voice clips had the same content. These voice clips were recorded by children, who are native speakers of one these two languages. They were ~3 s in length and had neutral content (i.e., butterflies have colourful wings and children play in the park). For the category of sports-team fans, the display consisted of two same gender, white children, wearing jerseys of two of the three popular soccer teams in Istanbul (Beşiktaş, Fenerbahçe, and Galatasaray). The drawings of children had generic faces, but different coloured-clothing and hair styles. For all trials, except for the gender trial, the gender of the characters was matched with the participant's gender. Thus, two different sets of stimuli were used, depicting only male or female characters, except for the gender trial displays.

Socio-demographic Form. Before testing, parents were asked to fill out a questionnaire that included demographic questions as well as questions about the child's exposure to different languages and ethnic/racial groups. On this questionnaire, parents were also asked to indicate their child's favourite soccer team.

Procedure

Children, whose parents gave consent for their participation, were individually tested in a quiet room of their schools. In the beginning of the session, the experimenter told the children that they would be introduced to new individuals and asked some questions about them and that they could answer these questions by saying *yes*, *no*, or *may-*

be. The experimental session started with two warm up trials. On each of these trials, the experimenter showed a drawing of a child (male or female depending on the participant's gender), labelled the child with a letter of the alphabet (e.g., this is L), and asked children if the character would go to school or like ice cream. These questions aimed at familiarizing children with the procedure and the possible answers. Characters in the stimuli set were introduced with letters, rather than names, to avoid priming associations that participants may bear to mind with common names.

Following this, children received four test trials, each corresponding to one of the four social categories. On each trial, children saw a pair of own gender characters (except for the gender trial, where children saw one male and one female character), and the experimenter pointed to each character in the pair, labelled it with a random letter of the alphabet, and indicated its group membership. For gender, one of the characters was identified as a girl and the other was identified as a boy (e.g., this is K, K is a girl and this is T, T is a boy). For race, one character was identified as black and the other character was identified as white. For language, one character was identified as speaking Turkish and the other speaking Spanish. For sports-team, each character was identified as a fan of one of the three popular soccer teams in Istanbul, Beşiktaş, Fenerbahçe, or Galatasaray. One of the teams was chosen randomly and the other was the child's favourite sports team. In case no team was reported by the parent, we choose two random teams ($N = 3$). Children were then asked five questions about the two characters, focusing on different dimensions of essentialist thinking. These questions were whether the brains of the characters were different from one another, whether one could tell their category membership from examining their blood, whether the characters were born as members of these categories, whether it was possible to change their category membership, and whether their environment was the reason for the characters being members of the respective categories. These questions were previously used for assessing different aspects of essentialist thinking (Davoodi et al., 2020b; Gelman et al., 2007). After answering these five questions regarding essentialist thinking, children were asked whether each character has a lot of friends. With this control question, the aim was to test whether children had a bias toward one of the two characters.

Eight different orders were created, and the categories of gender, race, language, and sports teams were presented to children in these orders. Children were randomly assigned to one of these pre-determined order conditions. The order in which the five essen-

tialism questions were asked was varied randomly across trials as well as across children. The lateral positions of the characters and the order in which they were introduced were counterbalanced across children.

Data Analyses

The coding scheme of prior work was followed (Davoodi et al., 2020b; Gelman, Heyman, & Legare, 2007; Heiphetz, Gelman, & Young, 2017). According to this coding scheme, for the control questions, children received a score of 1 if responded *yes*, 0.5 if responded *maybe*, and 0 if responded *no*. For the essentialism questions, children received a score of 1 if they answered *yes* to the *born, blood,* and *brain* questions and *no* to the *change* and *environment* questions, as these answers would indicate essentialist thinking. Accordingly, children received a score of 0, if they answered *no* to the *born, blood,* and *brain* questions and *yes* to the *change* and *environment* questions. Children received 0.5 for *maybe* responses to all essentialism questions. Children's responses were noted by the experimenter during the experimental session and later checked by a second researcher.

Children's scores were summed up across five questions, and each child received a total *essentialism score* for each social category ranging from 0 to 5. The results are presented both in terms of these total essentialism scores calculated for each category as well as in terms of the individual dimensions of essentialist reasoning within each category.

RESULTS

Essentialism Scores Across Social Categories and Age

Figure 1 shows participants' total essentialism scores for each social category over age. Inspection of Figure 1 suggests little to no change in the extent to which children essentialize gender, race, and language categories from 6 to 10 years of age whereas this tendency seems to decrease with age for judgments sports team fans.

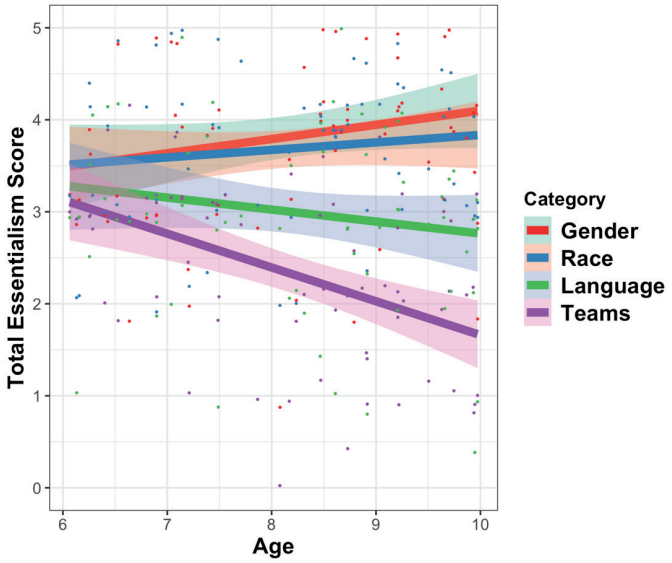

Figure 1. Total Essentialism Score (0-5) With Participants Age (in years) and Social Category.

To statistically confirm these patterns, mixed-effects linear regression models using the *lme* function of the *nlme* package in *R* were conducted (R Core Team, 2019). All models included the Total Essentialism Score as the outcome variable and Age, Category, and the interaction term between Age and Category as fixed effects, with a random effect defined as Category varying over Subject ID. Because we were interested in differences, with Age, among all five categories, we ran four regression models, each time changing the reference level of Category. For all significant results, effect sizes from mixed-effects models were estimated using the *lme.dscore* function from *EMAtools* package. This function calculates Cohen's D for each effect in *nlme* models. For linear models, effect sizes were estimated using the *modelEffectSizes* function from the *lmSupport* package. This function calculates partial eta squares based on sums of squares metrics. Table 1 shows the parameters of each model. A glance at Figure 1 suggests that essentialist beliefs about members of gender, race, and language groups follow different trajectories with age, as compared to the trajectory of beliefs about members of sports-team fans. To statistically test whether the effect of Age on beliefs about gender, race, and language are actually different from the effect of Age on beliefs about sports-teams, we turned to the interaction terms from Table 1 between Age and Category when gender, race, and language are each compared to sports-teams. As shown in Table 1, while Age

significantly interacts with Category when comparing both gender and race to sports-teams, this interaction is not significant when comparing language to sports teams. Therefore, the developmental trajectory of beliefs about sports-teams diverges from beliefs about gender and race but not language. To further investigate the simple effect of age on beliefs about each category separately, we conducted regression models on essentialist beliefs about each category with Age as the only predictor.

Indeed, as suggested by Figure 1, essentialist beliefs about gender, race, and language did not undergo any significant changes ($B = 0.15$, $SE = 0.09$, $t = 1.65$, $p = 0.10$, $B = 0.08$, $SE = 0.08$, $t = 0.97$, $p = 0.34$, and $B = -0.13$, $SE = 0.10$, $t = -1.34$, $p = 0.18$, respectively). Essentialist beliefs about sports-team fans significantly decreased with age ($B = -0.37$, $SE = 0.08$, $t = -4.30$, $p < 0.001$, $\eta_p^2 = 0.21$). Thus, children's essentialist beliefs about members of sports-team fan groups increasingly diverge from beliefs about gender, race, and language categories when qualitatively comparing the isolated effect of Age on essentialist reasoning among 6-10-year-olds. of age. However, as already noted, statistical models investigating how Age interacts with essentialist beliefs of each category, as compared to the other categories, confirms that although the trajectory is different when comparing both gender and race to sports-team, it is not statistically different when comparing language to sports-team (see Table 1). Furthermore, although the observation that Age does not have a significant main effect on essentialist beliefs about gender, race, or language suggests that beliefs about these three categories follow similar developmental trajectories, statistical models comparing the moderating effect of Age among the categories only partially supports this. While the effect of Age is not different when comparing essentialist beliefs about race to beliefs about either gender or language, beliefs about gender are significantly different from beliefs about language (see Table 1). Thus, although the developmental trajectory of beliefs about gender and race are not different and the trajectory of beliefs about race and language are not significantly different, beliefs about gender and language do follow different developmental trajectories (see Figure 1).

Table 1. Regression Model Coefficients, Standard Errors (in parentheses), Effect Sizes for Significant Effects [in brackets], and Significance Level, Investigating The Effect of Age, Category, and Category X Age on The Total Essentialism Score.

	Reference level for Category		
	Gender	**Race**	**Language**
Intercept	2.55 (0.75)***	3.02 (0.75)***	4.07 (0.75)***
Age	0.15 (0.09)	0.08 (0.09)	-0.13 (0.09)
Category			
Race	0.46 (0.90)		
Language	1.51 (0.90)	1.05 (0.90)	
Sports-Team	2.78 (0.90)	2.31 (0.90)* [0.57]	1.26 (0.91)
Interaction (Age X Category)			
Age X Race	-0.07 (0.11)		
Age X Language	-0.28 (0.11)** [0.62]	-0.21 (0.11)	
Age X Sports-Team	-0.52 (0.11)*** [0.66]	-0.45 (0.11)*** [0.57]	-0.23 (0.11)
Number of Observations	288		
Number of Groups	72		
Conditional R-Squared	0.93		

Note. Reference level for Category is shown on top and Bonferroni adjustments were applied to account for three comparisons (each time changing the reference level for Category). All fixed effects shown here vary among models because they are compared to the reference level for Category, which is different in each model. * $p < 0.015$, ** $p < 0.01$, *** $p < 0.001$.

Individual Dimensions of Social Categories

Inspection of Figure 2 further suggests similarities in the trajectory of children's essentialist beliefs about gender and race categories. Specifically, while essentialist beliefs about gender and race groups in terms of the individual dimensions measured by our questions do not seem to go through drastic changes with age, beliefs about language and sports-team fan groups do seem to more drastically change with age, at least in terms of some of the dimensions. To confirm these patterns, mixed-effects linear regression models for the essentialism score in each category with Dimension, Age, and the interaction between Dimension and Age as fixed effects, and allowing for Dimension to vary with Subject ID as a random effect, were conducted.

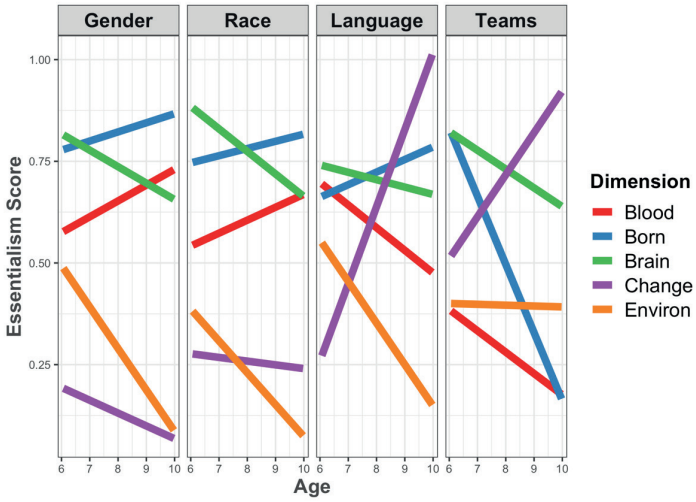

Figure 2. Essentialism Score (0-1) For Each Individual Dimension in Each Social Category Over Age.

For the essentialism score in the gender category, there was no interaction between Age and Dimension ($F(4, 280) = 1.69$, $p = 0.15$). Consequently, the interaction was dropped from the model, and only Age and Dimension were included as main effects. This model revealed a main effect of Dimension ($F(4, 284) = 3.29$, $p = 0.01$) but no effect of Age ($F(1, 70) = 2.72$, $p = 0.10$). To further investigate into the main effect of Dimension, all five dimensions were compared. Only essentialist beliefs in terms of Blood were different from beliefs in terms Change ($B = 0.21$, $SE = 0.07$, $t = 3.21$, $p < 0.01$, $d = 0.77$) after applying Bonferroni adjustments for multiple comparisons (critical alpha level for our comparisons is 0.0125 to account for four comparisons). There were no significant differences among any of the other dimensions. This suggests a level of consistency between the different dimensions of essentialist beliefs about gender groups in their imperviousness to changes with age.

For the essentialism score in the race category, similar to beliefs about gender, there was no interaction between Age and Dimension ($F(4, 280) = 1.43$, $p = 0.22$). We consequently dropped the interaction term, and the model revealed no main effects of Dimension ($F(4, 284) = 2.22$, $p = 0.07$) or Age ($F(1, 70) = 0.82$, $p = 0.37$). Similar to beliefs about gender, there seems to be a level of consistency in how essentialist beliefs about racial groups in terms of different dimensions stay robust over 6-10 years of age.

For the essentialism score in the language category, a significant interaction between Dimension and Age was observed ($F(4, 280) = 6.34$, $p < 0.001$). To follow up on this interaction, how Age might affect the score in terms of one dimension differently from its effect on the other dimensions was investigated. The effect of Age was different on the essentialism score in terms of the Change dimension, as compared to all other dimensions, with the exception of Blood (Age X Dimension – Change vs. Born: $B = 0.22$, $SE = 0.06$, $t = 3.61$, $p < 0.001$, $d = 0.33$; Change vs. Brain: $B = 0.17$, $SE = 0.06$, $t = 2.80$, $p < 0.01$, $d = 0.24$; Change vs. Environment – $B = 0.29$, $SE = 0.06$, $t = 4.77$, $p < 0.001$, $d = 0.97$). In fact, children's essentialist beliefs in terms of Change significantly decreased with age ($B = -0.19$, $SE = 0.04$, $t = -4.83$, $p < 0.001$, $d = 1.16$) whereas Age was not a significant predictor for any of the other dimensions. This suggests that children's essentialist beliefs about members of a language group do not form a consistent construct over 6-10 years of age but diverge in terms of individual dimensions.

For the essentialism score in the sports-team category, there was no significant interaction between Age and Dimension ($F(4, 280) = 2.29$, $p = 0.06$). Consequently, the interaction term was dropped, and a main effect of Dimension ($F(4, 284) = 15.18$, $p < 0.001$) and a main effect of Age ($F(1, 70) = 14.64$, $p < 0.001$) were found. To follow up on the main effect of dimension, all dimensions were compared. The score in terms of the Blood dimension was significantly different from the score in terms of the Born ($B = 0.19$, $SE = 0.07$, $t = 2.65$, $p < 0.01$, $d = 0.31$), Brain ($B = 0.45$, $SE = 0.07$, $t = 6.14$, $p < 0.001$, $d = 0.73$) and Environment ($B = 0.33$, $SE = 0.07$, $t = 4.54$, $p < 0.001$, $d = 0.54$) dimensions. Additionally, the score in terms of the Born dimension was significantly different from the Brain ($B = 0.26$, $SE = 0.07$, $t = 3.50$, $p < 0.001$, $d = 0.41$) and Change ($B = -0.20$, $SE = 0.07$, $t = -2.74$, $p < 0.01$, $d = 0.66$) dimensions. The score in terms of the Change dimension was also different from both Brain ($B = 0.46$, $SE = 0.07$, $t = 6.24$, $p < 0.001$, $d = 1.49$) and the Environment ($B = 0.34$, $SE = 0.07$, $t = 4.63$, $p < 0.001$, $d = 0.55$) dimensions. Overall, essentialist beliefs about sports-team fan groups seem to decrease in terms of most dimensions (with the exception of beliefs about the role of the environment), suggesting a more consistent construct than the case of beliefs about language groups.

DISCUSSION

The present research examined 6-to-10-year-old children's essentialist beliefs about gender, race, language and sports team, in Turkey. To summarize the findings, although

around age 6, children seem to not distinguish among various social categories in their essentialist reasoning, with age, they gradually distinguish among some categories, such that by age 10, there is a clear rank-order in how they essentialize various social categories (see Figure 1). Specifically, with age, children differentiated between gender and the least essentialized categories, language, and teams. Moreover, children also distinguished between race and sports-teams but not between race and language or between language and sports-teams. For the categories of gender and race, the results showed very similar overall essentialism scores across ages and a similar developmental pattern for essentialist thinking. Essentialist thinking about neither category changed with age unlike the trajectory of essentialist thinking about sports teams. Moreover, gender and race also showed very similar patterns in how they were essentialized over age, with respect to the individual dimensions. Unlike gender and race, although essentialist thinking about language did not change significantly with age when Age was included as the sole predictor of essentialist beliefs about language, the developmental trajectory of beliefs about language did not differ from that of beliefs about sports-teams, after Bonferroni adjustments were made. However, for language, although most of the individual dimensions remained the same across ages, a considerable decrease in essentialism in terms of the capacity for change was observed. Finally, the negative effect of age on essentialist beliefs about sports-teams suggests that by age 10, overall, children essentialize team membership only to a small degree as their essentialist thinking about sports-team fans significantly decreased with age. The most substantial decrease with age was observed in the individual dimension about being born a fan.

While gender and race are categories with observable biological markers, they likely differ in terms of their cultural relevance within the context of Turkey. Arguably, children are exposed to a significant degree of explicit and implicit cues including gender segregation, sex roles, and the use of generic language, that likely increase psychological saliency of gender, given the particularly low-ranking status of the country in terms of gender equality (Inglehart & Norris, 2003). However, both categories were highly essentialized and remained so across development. Further, both categories followed very similar patterns in terms of each of the individual dimensions of essentialist thinking. Past research suggests that children in the U.S., where race is a culturally relevant social category, tend to essentialize race to a lesser degree than gender but their essentialist views of race increase with age (Mandalaywala et al., 2019; Rhodes & Gelman, 2009; Roberts &

Gelman, 2016). However, these studies also show variability in children's essentialist thinking about race, with stronger essentialist beliefs observed as children get exposure to less racially diverse environments and attitudes (Mandalaywala et al., 2019; Rhodes & Gelman, 2009; Roberts & Gelman, 2016). Racially diverse environments might facilitate outgroup contact (e.g., Tropp & Pettigrew, 2005), which, in turn, might allow children to develop more nuanced views about individuals as opposed to using category membership to make inductive inferences about them (e.g., Mandalaywala et al., 2019). In light of these, in the current study, children's strong essentialist beliefs about race across development might be attributed to the notable racial homogeneity in Turkey. Nevertheless, it is remarkable that lack of diversity, with the combination of biological relevance (e.g., Atran, 1995), has a powerful impact on whether race is viewed in essentialist terms to the same degree as gender across development in a context where race is considerably less relevant and different racial groups less often encountered.

Like gender and race, differences in language are perceptually available to children. Further, young children consider language as inherited and stable (Hirschfeld & Gelman, 1997; Kinzler & Dautel, 2012), similar to their beliefs about gender and race (e.g., Hirschfeld, 1996; Taylor et al., 2009). However, children in the current study showed a different developmental pattern in terms of their essentialist beliefs about language, compared to their beliefs about gender, but not race. Specifically, between 6 and 10 years of age, children's beliefs about gender and language follow different developmental trajectories, and while they tend to decrease for language, they remain largely stable for gender. It is also important to note that although, within each category, these trends were not significant, the differences in the trajectories between the categories of language and gender are reflected in a significant interaction effect between Age and Category when comparing essentialist beliefs about language to those about gender.

Previous research contrasting children's essentialist views about race and language suggests that children's perception of the relative stability of these dimensions changes across development. For instance, when asked which of the two adults would represent a child's future self, European American 5-6-year-olds choose the adult who is speaking the same language as the child but who is from a different racial group rather than the adult who matches the child in terms of race but not language (Kinzler & Dautel, 2012). Nine-10-year-olds, on the other hand, choose the adult that matches the child in terms of race but speaks a different language. Thus, between 6 and 10 years, majority-race child-

ren in the U.S. come to think that language would be more likely to change than race across lifespan (Kinzler & Dautel, 2012). While the results of the current study showed that over development, the general trajectory of beliefs about race and language were not different, the individual dimension of "change" showed a significant increase for language but not for race. In other words, children became more likely to perceive language but not race to *change* over development, paralleling prior work with majority-race children in the U.S. (Kinzler & Dautel, 2012).

The finding that the overall level of essentialist beliefs about language did not significantly change across development is notable, particularly because, in Turkey, most children start learning a second language in school around the age of 6 or 7. As mentioned above, one exception to this trend was the individual dimension *change*, where a significant decrease in essentialist beliefs about language was observed: With age, children were more likely to think that one could speak a different language if they wanted to, and this could be explained by children's acquisition of a second language in school. Nevertheless, while the majority of the participating children was learning a second language in school, taught by a native speaker of Turkish, they were not exposed to individuals speaking other languages than Turkish in their daily lives. Future studies should investigate whether these two kinds of experiences with foreign languages might influence children's essentialist thinking about linguistic groups differently. It might also be interesting to see whether exposure to a foreign language (via different mechanisms) influences individual dimensions of essentialist views about language differently. For example, learning a foreign language might change how children perceive the environment's role in shaping one's language while beliefs about the biological aspects may not be impacted much.

Language is closely linked to the categories of nationality and ethnicity. Indeed, our findings about language seem to be in line with previous findings regarding children's essentialist views about nationality in Turkey (i.e., Turk vs. Macedonian) (Davoodi et al., 2020b). Specifically, nationality was highly essentialized and remained so across development, but it was essentialized to a weaker degree compared to gender (Davoodi et al., 2020b). It is also worthwhile to note that in the current study, the language groups contrasted were Turkish and Spanish. Spanish was chosen because it is not one of the languages that mark ethnic groups in Turkey and it is not one of the languages commonly taught in schools as a second language. The aim with this contrast was to make the

language category culturally less relevant and, in that aspect, to make it more comparable to the category of race. On the other hand, children might reason about language more in biological terms when contrasted groups are more clearly linked to social groups with biological markers such as ethnicity (e.g., Gil-White, 2002). In other words, language might be essentialized more if the contrasted languages are, for instance, ethnic languages representing conflicting ethnic groups within a given cultural context.

Another interesting future direction would be to examine how the majority/minority group status would influence children's language-based essentialist views. Being from a minority group might lead to sensitivity to the sources of the factors that set individuals apart as a minority (e.g., Davoodi et al., 2020a). Previous research suggests, for instance, that minority-race children in the U.S. develop beliefs about the stability of race across lifespan earlier than majority-race children (Kinzler & Dautel, 2012; Roberts & Gelman, 2016). Accordingly, when language demarcates minority status, children growing up in linguistic minority groups may reflect more on the sources of their distinctive language, which might draw their attention more to both biological factors, such as being born a certain way (because of being born to parents who speak the respective language) but also to environmental factors (as the sources may be perceived as adults in their respective environments).

These findings contribute to the growing literature on the development of social essentialism in children. In addition to examining children's essentialist views about race and language for the first time in the context of Turkey, another contribution of the current study is to compare essentialist beliefs about gender, race, and language with a comprehensive measure that captures different aspects of essentialist thinking in children. Using similar measures, future studies should further examine children's essentialist beliefs about these categories in different cultural contexts where the saliency and the meaning of these categories differ. Systematic investigations across various cultures can inform our understanding of the universal and culture-specific mechanisms underlying the development of social essentialism and might shed light on possible links from the essentialist bias to negative inter-group attitudes.

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References/Kaynakça

Allport, G. (1954). The nature of prejudice. Reading, MA: Addison-Wesley.

Astuti, R., Solomon, G. E., & Carey, S., (2004). Constraints on conceptual development: A case study of the acquisition of folkbiological and folksociological knowledge in Madagascar. *Monographs of the Society for Research in Child Development*, *69* (3, Serial No. 277).

Atran, S. (1995). Causal constraints on categories and categorical constraints on biological reasoning across cultures. In Sperber, D., Premack, D., & Premack, A., (Eds), *Causal cognition: A multidisciplinary debate* (pp. 205-233). Oxford: Oxford University Press.

Atran, S., Medin, D., Lynch, E., Vapnarsky, V., Ek, E. U., & Sousa, P. (2001). Folkbiology doesn't come from folkpsychology: Evidence from Yukatek Maya in crosscultural perspective. *Journal of Cognition and Culture, 1*, 3–42. doi: 10.1163/156853701300063561

Bigler R. S., & Liben, L. S. (2007). Developmental intergroup theory: Explaining and reducing children's social stereotyping and prejudice. *Current Directions in Psychological Science, 16,* 162–166. doi: 10.1111/j.1467-8721.2007.00496.x

Bilali, R., Celik, A. B., & Ok, E. (2014). Psychological asymmetry in minority–majority relations at different stages of ethnic conflict. *International Journal of Intercultural Relations*, *43*, 253–264. doi: 10.1016/j.ijintrel.2014.09.002

Birnbaum, D., Deeb, I., Segall, G., Ben-Eliyahu, A., & Diesendruck, G. (2010). The development of social essentialism: The case of Israeli children's inferences about Jews and Arabs. *Child Development*, *81*(3), 757–777. doi: 10.1111/j.1467-8624.2010.01432.x

Davoodi, T., Cui, Y. K., Clegg, J. M., Yan, F. E., Payir, A., Harris, P. L., & Corriveau, K. H. (2020a). Epistemic justifications for belief in the unobservable: The impact of minority status, *Cognition, 200*, 104273. doi: 10.1016/j.cognition.2020.104273

Davoodi, T., Soley, G., Harris, P. L., & Blake, P. (2020b). Essentialization of social categories across development in two cultures. *Child Development, 91*(1), 163–178. doi: 10.1111/cdev.13209

Deeb, I., Segall, G., Birnbaum, D., Ben-Eliyahu, A., & Diesendruck, G. (2011). Seeing isn't believing: The effect of intergroup exposure on children's essentialist beliefs about ethnic categories. *Journal of Personality and Social Psychology*, *101*(6), 1139. doi: 10.1037/a0026107

del Río, M. F., & Strasser, K. (2011). Chilean children's essentialist reasoning about poverty. *British Journal of Developmental Psychology*, *29*(4), 722–743. doi: 10.1348/2044-835X.002005

Diesendruck, G., & Haber, L. (2009). God's categories: The effect of religiosity on children's teleological and essentialist beliefs about categories. *Cognition*, *110*(1), 100–114. doi: 10.1016/j.cognition.2008.11.001

Diesendruck, G., & haLevi, H. (2006). The role of language, appearance, and culture in children's social category-based induction. *Child Development*, *77*(3), 539–553. doi: 10.1111/j.1467-8624.2006.00889.x

Diesendruck, G., Goldfein-Elbaz, R., Rhodes, M., Gelman, S., & Neumark, N. (2013). Cross-cultural differences in children's beliefs about the objectivity of social categories. *Child Development*, *84*(6), 1906–1917. doi: 10.1111/cdev.12108

Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. New York: Oxford University Press.

Gelman, S. A. (2004). Psychological essentialism in children. *Trends in Cognitive Sciences*, *8*(9), 404–409. doi: 10.1016/j.tics.2004.07.001

Gelman, S. A., Heyman, G. D., & Legare, C. H. (2007). Developmental changes in the coherence of essentialist beliefs about psychological characteristics. *Child Development*, *78*(3), 757–774. doi: 10.1111/j.1467-8624.2007.01031.x

Gelman, S. A., & Hirschfeld, L. A. (1999). How biological is essentialism. In D. L. Medin & S. Atran (Eds.), *Folkbiology* (pp. 403–446). Cambridge, MA: The MIT Press..

Gelman, S. A., & Wellman, H. M. (1991). Insides and essences: Early understandings of the non-obvious. *Cognition*, *38*(3), 213–244. doi: 10.1016/0010-0277(91)90007-Q

Gil-White, F. J. (2002). The cognition of ethnicity: Native category systems under the field experimental microscope. *Field Methods*, *14*(2), 161–189. doi: 10.1177/1525822X02014002003

Gimenez, M., & Harris, P. L. (2002). Understanding constraints on inheritance: Evidence for biological thinking in early childhood. *British Journal of Developmental Psychology, 20,* 307–324. doi: 10.1348/026151002320620262

Heiphetz, L., Gelman, S. A., & Young, L. L. (2017). The perceived stability and biological basis of religious beliefs, factual beliefs, and opinions. *Journal of Experimental Child Psychology*, *156*, 82–98. doi: 10.1016/j.jecp.2016.11.015

Hirschfeld, L. A. (1995). The inheritability of identity: Children's understanding of the cultural biology of race. *Child Development, 66*, 1418–1437. doi: 10.2307/1131655

Hirschfeld, L.A. (1996). *Race in the making: Cognition, culture, and the child's construction of human kinds.* Cambridge, MA: The MIT Press.

Hirschfeld, L. A., & Gelman, S. A. (1997). What young children think about the relationship between language variation and social difference. *Cognitive Development, 12*, 213–238. doi: 10.1016/S0885-2014(97)90014-9

Hussak, L., & Cimpian, A. (2019). "It Feels Like It's in Your Body": How Children in the United States Think About Nationality. *Journal of Experimental Psychology: General, 148*(7), 1153–1168. doi: 10.1037/xge0000567

Inglehart, R., & Norris, P. (2003). *Rising tide: Gender equality and cultural change around the world*. Cambridge: Cambridge University Press.

Kaya, N. (2009). *Forgotten or assimilated? Minorities in the education system of Turkey.* London: Minority Rights Group International. Retrieved from http://www.minorityrights.org/?lid=7732.

Kinzler, K. D., & Dautel, J. B. (2012). Children's essentialist reasoning about language and race. *Developmental Science*, *15*(1), 131–138. 10.1111/j.1467-7687.2011.01101.x

Kirişci, K., & Winrow, G. M. (1997). *The Kurdish question and Turkey: An example of a trans-state ethnic conflict*. London: Frank Class.

Konda (September, 2006). Toplumsal Yapı Araştırması: Biz Kimiz? Retrieved from https://konda.com.tr/wp-content/uploads/2017/02/2006_09_KONDA_Toplumsal_Yapi.pdf

Mandalaywala, T. M., Ranger-Murdock, G., Amodio, D. M., & Rhodes, M. (2019). The nature and consequences of essentialist beliefs about race in early childhood. *Child Development*, *90*(4), e437-e453. doi: 10.1111/cdev.13008

Medin, D. L., & Ortony, A. (1989). Psychological essentialism. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179–195). New York: Cambridge University Press.

Pauker, K., Xu, Y., Williams, A., & Biddle, A. M. (2016). Race essentialism and contextual differences in children's racial stereotyping. *Child Development, 87,* 1409–1422. doi: 10.1111/cdev.12592

R Core Team (2019). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org/.

Rhodes, M., & Gelman, S. A. (2009). A developmental examination of the conceptual structure of animal, artifact, and human social categories across two cultural contexts. *Cognitive Psychology*, *59*(3), 244–274. doi: 10.1016/j.cogpsych.2009.05.001

Rhodes, M., Leslie, S. J., & Tworek, C. M. (2012). Cultural transmission of social essentialism. *Proceedings of the National Academy of Sciences*, *109*(34), 13526–13531. doi: 10.1073/pnas.1208951109

Roberts, S. O., & Gelman, S. A. (2016). Can White children grow up to be Black? Children's reasoning about the stability of emotion and race. *Developmental Psychology*, *52*(6), 887–893. doi: 10.1037/dev0000132

Rutland A., Killen, M., & Abrams, D. (2010). A new social-cognitive developmental perspective on prejudice: The interplay between morality and group identity. *Perspectives on Psychological Science, 5*, 279–291. doi: 10.1177/1745691610369468

Segall, G., Birnbaum, D., Deeb, I., & Diesendruck, G. (2015). The intergenerational transmission of ethnic essentialism: How parents talk counts the most. *Developmental Science*, *18*(4), 543–555. doi: 10.1111/desc.12235

Smyth, K., Feeney, A., Eidson, R. C., & Coley, J. D. (2017). Development of essentialist thinking about religion categories in Northern Ireland (and the United States). *Developmental Psychology*, *53*(3), 475. doi: 10.1037/dev0000253

Sousa, P., Atran, S., & Medin, D. L. (2002). Essentialism and folk biology: Evidence from Brazil. *Journal of Cognition and Culture, 2*, 195–223. doi: 10.1163/15685370260225099

Taylor, M. G., Rhodes, M., & Gelman, S. A. (2009). Boys will be boys; cows will be cows: Children's essentialist reasoning about gender categories and animal species. *Child Development*, *80*(2), 461–481. doi: 10.1111/j.1467-8624.2009.01272.x

The UN Refugee Agency (April, 2020). *UNHCR Syria Regional Refugee Response - Turkey*. Retrieved from https://data2.unhcr.org/en/situations/syria/location/113

Tropp, L. R., & Pettigrew, T. F. (2005). Differential relationships between intergroup contact and affective and cognitive dimensions of prejudice. *Personality and Social Psychology Bulletin, 31,* 1145–1158. doi: 10. 1177/0146167205274854

Waxman, S. R., Medin, D. L., & Ross, N. (2007). Folkbiological reasoning from a cross-cultural developmental perspective: Early essentialist notions are shaped by cultural beliefs. *Developmental Psychology, 43*, 294–308. doi: 10.1037/0012-1649.43.2.294