



Social essentialism in the United States and China: How social and cognitive factors predict within- and cross-cultural variation in essentialist thinking

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Abstract

People intuitively view some social groups (such as Black people, Muslims, and women) as having biological underpinnings and discrete boundaries. Essentialist beliefs about social groups shape how people view themselves and others, leading to a number of negative social consequences. Whereas previous research has demonstrated variations in social essentialism within some Western societies, less is known about how social essentialism manifests in East Asian cultures that have well-documented differences in social values and cognitive styles from Western cultures. The current research investigated cultural variations in social essentialist thinking in the United States and China to reveal how cultural ideologies and social belief systems shape people's basic representations of the social world. Analyses revealed several cultural and social correlates of social essentialism both between and within the cultures and demonstrated the mediating role of collectivistic values in predicting cultural differences in essentialist beliefs about group coherence.

Keywords Social essentialism · Culture · Collectivism

People often believe that some kind of mysterious category “core”—a hidden and unknown “essence”—determines the identity of individual members and explains their features (Gelman, 2004; Medin & Ortony, 1989). For instance, from an essentialist perspective, an internal “dog essence” causes dogs to bark and a “bird essence” causes birds sing. Essentialist thought is widespread in people's representations of the biological world and also manifests in social thought (e.g., in people's representations of categories such as, *women*, *Black people*, or *Muslims*). There is marked cultural variation in social essentialism in that people from different Western cultures often essentialize *different* social categories to different degrees (e.g., religious categories more in some populations within Northern Ireland and Israel; race categories more in some populations in the United States, for review, see Rhodes & Mandalaywala, 2017). Yet we know less about how essentialism manifests in East Asian

cultures that have more distinct differences in social values and cognitive styles, or about the mechanisms that might underlie cultural variation in these important social representations. The goals of the present paper are to compare social essentialist beliefs in the United States and in China, as two examples of Western and East Asian societies, and to begin to identify the psychological mechanisms that underlie variation in their structure, in order to reveal how cultural ideologies and social belief systems shape people's basic representations of the social world.

Essentializing human groups

People may essentialize social groups in a number of different ways. For example, believing in an underlying essence for *criminals* leads to naïve assumptions that “criminals are born, not made” (Heiphetz, 2020) and that it is extremely difficult, if not at all impossible, for criminals to erase their criminal essence. People might also believe that criminals share many traits in common—for example, being overly impulsive—or even share similarities in their anatomical structures such as an asymmetry of the cranium (Lombroso, 1876/2006). Essentialist beliefs about social groups

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often converge on two dimensions: naturalness (the extent to which social groups are perceived as “natural kinds,” that are carved naturally at its joints, with absolute and impenetrable boundaries), and cohesiveness (the extent to which social groups are perceived as coherent, meaningful entities or kinds, that knowing someone is from a certain social group can reveal a lot of information about that person; also referred to as “kindhood”; see Haslam et al., 2000; Noyes & Keil, 2020; Rothbart & Taylor, 1992). Whereas both of these dimensions may arise from a lay belief about an underlying essence responsible for category membership and individual features, these two dimensions address two conceptually and empirically dissociable aspects of social essentialism.

Aspects of essentialist thought arise early in conceptual development. For example, young children believe that gender-stereotypical properties are biologically determined (Rhodes & Gelman, 2009; Taylor, 1996), that race is fixed at birth and immutable (Hirschfeld, 1995; Pauker et al., 2016), that an adopted child will speak the same language with their birth parents instead of adoptive parents, and that traits like language and race are stable over time (Hirschfeld, 1995; Hirschfeld & Gelman, 1997; Kinzler & Dautel, 2012). These essentialist beliefs persist into adulthood—there is an overall tendency to essentialize social categories among adults, although with considerable variation across social domains and along the two dimensions of essentialism (naturalness and cohesiveness). For example, gender, ethnicity, and race categories are often highly essentialized on the naturalness axis, whereas political affiliation, religious groups, and socio-economic status are often essentialized on the cohesiveness axis (Haslam et al., 2000). Although external motives may compel adults to assert socially desirable answers, cognitive constraints such as time pressure induced higher essentialist response patterns when reasoning about gender, suggesting the intuitive nature of essentialist thinking as a default cognitive framework for representing some social categories (Eidson & Coley, 2014).

As an important mechanism of construing the social world, social essentialism shapes the way people perceive themselves and others, thus leading to a number of social consequences. Social essentialism sets up imagined barriers for intergroup contact and promotes social prejudice and stigma (Haslam, 2017; Mandalaywala et al., 2018): Those with essentialist beliefs about race as biologically determined are more likely to endorse racial stereotypes (Bastian & Haslam, 2006) and are more reluctant to interact with outgroup members (Pehrson et al., 2009). Essentialist beliefs about social groups are also associated with support for boundary-enhancing policies (Roberts et al., 2017) and more restrictive policies on criminal offenders (Berryessa, 2020; de Vel-Palumbo et al., 2018). In addition, belief in a fixed essence as the underlying cause of social identities and personal traits ignores social structural factors that underlie

social inequalities, discouraging restorative social policies (Kraus & Keltner, 2013; Vasilyeva et al., 2018).

Cultural variation in social essentialism

Although most prior research has included children and adults from traditionally “WEIRD” samples (Western, Educated, Industrialized, Rich, and Democratic; Henrich et al., 2010), social essentialist beliefs have been documented across fairly diverse contexts. For example, children from Brazil, Israeli, Turkey, Northern Ireland, Madagascar, and Yutek Maya all engage in some kind of essentialist reasoning about human categories (Astuti et al., 2004; Atran et al., 2001; Davoodi et al., 2020; Diesendruck, Birnbaum, et al., 2013; Smyth et al., 2017; Sousa et al., 2002). Yet, these studies have also revealed considerable variation in social essentialism both within and across cultural contexts. For example, as compared with American counterparts, children in Israel were more likely to essentialize religious–ethnic categories (Diesendruck, Goldfein-Elbaz, et al., 2013), and children in Northern Ireland were more likely to essentialize religious categories (Smyth et al., 2017), suggesting a possible influence of social saliency or social conflict in intensifying perceived group boundaries. Within the U.S., older children in Hawaii, a highly diverse racial environment, showed significantly lower racial essentialism as compared with those in Massachusetts, a relatively less diverse community (Pauker et al., 2016). Likewise, children from more conservative and less diverse communities in a rural area were more likely to display essentialist beliefs about race than those from an urban area (Rhodes & Gelman, 2009). Together, these findings indicated the cognitively flexible nature of social essentialism and its sensitivity to social contextual cues and experiences.

Probing cultural variation and its psychological and social origins

Whereas prior work has documented cultural differences in *which* categories people tend to essentialize, we know less about how the *structure* of essentialist beliefs might vary across contexts, including whether the two-dimension structure of essentialism (naturalness and cohesiveness) also manifests in contexts where people tend to have more distinct social values and cognitive styles from those of Western participants, and if so, whether cultural variation emerges along one or both of these dimensions, and what psychological and social mechanisms might account for this variation.

To address these questions, in the current study, we compared adults in the U.S. and China, as a useful test case to

reveal possible cognitive underpinnings of cultural variability in social essentialism, based on two considerations. First, there is little research, qualitative or quantitative, investigating essentialist beliefs in East Asian cultures, and especially few direct comparisons of social essentialism between the U.S. and China. Second, there are well-documented differences in a number of social and cognitive processes as cultural markers of the U.S. and China. In addition, the two countries differ drastically in many fundamental aspects of social life, including social systems, politics, religion, social diversity, and so on. These social and cognitive differences might shape the content and degree to which social categories are essentialized in both contexts, contributing to observable cultural patterns of social essentialism. Illustrating the potential of this approach, in one prior study in this area, Coley and colleagues used the social essentialism scale to measure American and Chinese adults' essentialist beliefs along a wide range of social categories (including 11 social domains such as race, gender, and religion) and found that American adults endorsed higher *naturalness* beliefs about social categories than did Chinese adults, and that these differences were mediated by cultural differences in independent social values, presumably by highlighting a fixed, immutable "true self" determined by an internal cause (Coley et al., 2019). Whereas this previous study only included one cultural measure (independent versus interdependent self-construct; Coley et al., 2019), the present study builds on this prior work to examine more comprehensively the extent and psychological underpinnings of cultural variation in essentialist beliefs across these two cultures. In particular, based on the previous literature, the current study aimed to test a number of variables as possible mediators of cultural differences in social essentialism, as described below.

Interdependent versus independent social orientation

One main cultural difference documented between the U.S. and China relates to independent versus interdependent social values: whereas the U.S. culture supports an individualist worldview addressing individual identity and uniqueness (Dean & Koenig, 2019; Hui & Triandis, 1986), the Confucian values transmitted in the Chinese culture put much emphasis on harmonious interpersonal relations (Na et al., 2010) as an important basis of social obligations and personal meanings. Different focuses on interdependent versus independent social orientation may shape essentialist beliefs about social groups; in particular, we hypothesized that interdependent values would predict stronger essentialist perceptions on group coherence and that independent values would predict stronger essentialist perceptions on group naturalness.

Holistic and analytic cognition

Another line of literature has documented cultural differences in cognitive styles: European American participants are more likely to engage in taxonomic, rule-based (analytic) cognition (e.g., taxonomic categorization, narrow focus on central objects in visual attention, dispositional attribution on individual traits) whereas Chinese participants are more likely to engage in holistic cognition (e.g., categorization judgments based on relational cues, attending to contextual visual information or situational factors in causal attribution; Chiu, 1972; Nisbett et al., 2001; Varnum et al., 2010). Conceptually, differences in cognitive styles in attention, categorization, and attribution could predict differences in essentialist thinking: Taxonomic categorization focuses on stable category boundaries assumed to result from deep underlying structure, whereas relational categorization focuses on more flexible categories that might vary across contexts. Similarly, dispositional causal attribution entails thinking that something internal and fixed in an individual causes and explains their behavior, whereas external attributions consider more flexible, situational factors. Thus, we expect higher scores on taxonomic/analytic categorization and dispositional attribution to predict higher essentialist scores on naturalness, but and higher scores on relational/holistic categorization and external attribution to predict lower essentialist scores on naturalness.

Religiosity

Religious exposure often relates to the expression of essentialist beliefs. For example, children raised in religious communities are more likely to think that boundaries between different animal species are stable and absolute (Diesendruck & Haber, 2009). Also, Jewish children raised in more religious families were more likely to think that people would match the religious identity of their birth parents, even if they are raised in a different environment (Chalik et al., 2017). A recent experiment demonstrated that children who were introduced to a made-up world and told it was made intentionally by a powerful creator were more likely to hold essentialist views of the categories than children who were told about a world that was created more randomly (Foster-Hanson & Rhodes, 2020). It is likely that creationism provides a powerful story that is consistent with essentialist reasoning (e.g., God created all categories by assigning a unique essence to each of them). However, this relationship may be particularly pronounced in Christian—but not Buddhism-dominant culture—the latter emphasizes the "emptiness of essence" that all beings have no inherent nature by themselves (Richmond, 2013). Thus, we expected religiosity to interact with cultural context in predicting social essentialism—specifically, that religiosity will relate

to stronger essentialist beliefs (on both group naturalness and cohesiveness) in the U.S., but weaker essentialist beliefs (on both group naturalness and cohesiveness) in China.

Social mobility

People from social classes with higher status have been found to endorse essentialist statements about social classes as biologically determined (Kraus & Keltner, 2013), justifying existing social gaps. Building on this, a social reality that presents huge social gaps and almost no room for social mobility might lead more generally to essentialist explanations that social classes are created by nature and are extremely hard to change. In contrast, a society with greater, fluid social mobility might present an anti-essentialist living example that, if one can easily change their roles or status in a society based on their willingness, then there must not be anything fixed or biological underlying the category identity. Thus, we hypothesized that perceptions on higher social mobility would predict lower social essentialist beliefs particularly on group naturalness (the extent to which one believes group identities are biologically inherited and immutable) in both cultures.

Social diversity

Finally, experiences with social diversity shape social essentialist beliefs. For example, children attending integrated schools are less likely to show essentialist beliefs about ethnicity (in Israel; Deeb et al., 2011) and religious categories (in Northern Ireland; Smyth et al., 2017) as compared with children attending segregated schools. American students attending college in Hawaii showed decreased racial essentialism associated with diversity exposure (Pauker et al., 2018). Also, American international students studying abroad in China were less likely to consider personal traits as inherited from birth as compared with those who study locally in the U.S. homeland (Xu et al., 2021). Therefore, we expected diversity exposure to predict lower essentialist beliefs about social groups on both dimensions and in both cultures.

The current study

In sum, the current study compared adults in the U.S. and China as a test case to explore possible cognitive mediators that might explain cross-cultural or within-cultural variation in social essentialism. Based on previous literature on cross-cultural differences between East Asian and Western societies, as well as research on contextual effects of social essentialism, we chose a list of factors as potential mediators, including independent/interdependent social orientation (self-construal, inclusion of others), analytic versus holistic

cognitive style (causal attribution, categorization), religiosity, social mobility, and social diversity.

Methods

Participants

Based on the effect sizes regarding cultural differences in essentialism from Coley et al. (2019), we determined a total sample size of 320 (160 per group) for a desired power of 0.80 at the alpha level of 0.05 for an independent-sample *t*-test analysis. A total of 161 American adults ($M_{\text{age}} = 30.8$; 47.8% male, 50.9% female; 78.9% White, 14.9% Black, and 0.09% other minorities) recruited from the Prolific platform (www.prolific.co) for cash reward of \$7 USD and 165 Chinese adults ($M_{\text{age}} = 19.0$; 23.6% male, 76.4% female; 87.3% of Han ethnicity and 12.7% of minority ethnicities) recruited from a psychological research pool in a public university in Central China for course credit completed the study. Data were collected in late summer of 2020, during the global pandemic of COVID-19.

Materials and design

The study was preregistered online (<https://osf.io/zde42>). In order to investigate the relationship between cultural characteristics and social essentialism, we used a battery of cultural measurements established and validated in previous research as classic social and cognitive signatures differentiating traditional East Asian and Western cultures (Markus & Kitayama, 1991; Na et al., 2010; Nisbett et al., 2001; Triandis et al., 1988). These measurements included (1) a 10-statement task that invites participants to answer the question “Who am I?” in 10 short statements (shortened TST; Kuhn & McPartland, 1954), where responses referring to relational (e.g., I am a mother) or collective identities (e.g., I am a Catholic) were coded as “0,” and responses referring to subjective, individualized traits were coded as “1” (e.g., I am creative), and TST index was generated by adding up the total scores across the 10 trials as an indicator of the independent self (higher scores expected to predict higher naturalness ratings); (2) an independent versus interdependent self-construal scale (SCS; Singelis, 1994) that asks participants to rate their agreement with a list of independent statements about self (e.g., I do my own things, regardless of what others think) and a list of interdependent statements about self (e.g., If my brother or sister fails, I feel responsible), where an independent-self index was calculated by averaging ratings on the independent items (higher score expected to predict higher naturalness ratings), and an interdependent-self index was calculated by averaging ratings on the interdependent items (higher score expected

to predict higher cohesiveness ratings); (3) an inclusion of others scale (IOS; Aron et al., 1992) that asks participants to visually represent their relational closeness with family, friends, and other people in general, choosing circles presenting the most overlap to no overlap, where an IOS index reflecting perceived overlap with others was calculated by averaging scores across the three trials (family, friends, and others in general; higher score expected to predict higher cohesiveness ratings); (4) a neglect of external demand scale (NED; Scopelliti et al., 2017) that measures the extent to which participants attribute outcomes of social events to personal traits, where a NED index reflecting tendency to make internal attributions was calculated by averaging ratings across the five trials (higher score expected to predict lower naturalness ratings); and (5) a triad categorization task (Chiu, 1972) that measures participants' categorization preferences based on taxonomic (e.g., associating *cow* with *rabbit*, as they are both mammals) versus thematic or relational cues (e.g., associating *cow* with *grass*, as they have contextual relevance), where a triad relational score was calculated by adding the numbers of times categorization judgments were made upon relational cues (higher score expected to predict lower naturalness ratings). All of the full-scale items are available online (https://osf.io/f32n8/?view_only=8a754ad6eaa34883b3551983319f83f3).

We used a shortened version of the social essentialism scale developed by Haslam et al. (2000) to measure participants' essentialist beliefs about *race* (Black, White, Asian), *gender* (men, women), *nationality* (American, Chinese), *social class* (rich, poor), and *religion* (Christian, Buddhist). This scale has been validated in previous research (Haslam, et al., 2000) and successfully replicated in American and Chinese adult samples (Coley et al., 2019). Participants were asked to rate their agreement with six essentialism statements on each social category on a 9-point Likert scale. Three of the essentialism statements describe social categories as discrete, immutable natural kinds (the "naturalness" aspect of social essentialism), and three statements describe social categories as homogeneous, informative entities (the "cohesiveness" aspect of social essentialism). All items were blocked by essentialism statements. The six essentialism blocks, and 11 social categories listed within each block were presented in a random order for each participant. Two essentialism indexes (naturalness and cohesiveness) were computed on each social category by averaging ratings on the corresponding items.

In addition, we generated for each participant a religiosity score by averaging their ratings on an adapted religiosity scale (e.g., My religion is very important to me; Huber & Huber, 2012; Mathur, 2012), a social mobility score by averaging their ratings on a shortened Belief about Social Mobility Scale (e.g., Everyone can significantly change their status in a society; Browman et al., 2017), and a diversity exposure

score by averaging the estimated proportions of people from a different social background (race, gender, nationality, social class, and religion) in their daily interaction (Piekut & Valentine, 2016). We expected higher religiosity score to predict higher essentialist ratings on both dimensions; higher mobility scores to predict lower essentialist ratings on group naturalness; and higher diversity scores to predict lower essentialist ratings on both dimensions. Participants also reported basic demographic information such as race, gender, age, highest educational attainment, annual household incomes, and political attitudes.

Procedure

The English version of the study was programmed on Qualtrics (Qualtrics, Provo, UT), and the Chinese version of the study was programmed on Sojump (<http://www.sojump.com/>), two popular online survey platforms in the U.S. and China. Participants first completed the cultural measures, followed by the religiosity, mobility, and diversity scales, and then completed the social essentialism scale. Lastly, they reported demographic information. It took approximately 30 minutes to finish the study.

Results

As planned, we compared American and Chinese participants' responses on the cultural and essentialism measures and examined the correlations between the two. We then conducted mediation analysis to identify mediators of cultural effects in essentialist thinking.

Cultural patterns

We first compared participants' responses on the set of cultural measures across the two samples. Relative to Chinese participants, American participants gave more independent responses on the 10-statement task ($p < .001$), had higher independent ($p < .001$) and lower interdependent scores ($p = .014$) on the self-construal scale, had lower scores on the inclusion of others in self scale ($p = .05$), showed higher neglect of external demand ($p < .001$), and gave more relational scores on triad categorization task ($p = .028$; see Fig. 1). All of these patterns were consistent with prior work and hypotheses, with the exception of the triad categorization task. In addition, American adults reported significantly higher religiosity ($p < .001$), lower belief in social mobility ($p < .001$), and overall higher exposure to social diversity ($p < .001$).

Principal component analysis with varimax rotation replicated the two-factor framework of social essentialism with high fidelity in both cultural samples (see Table 1).

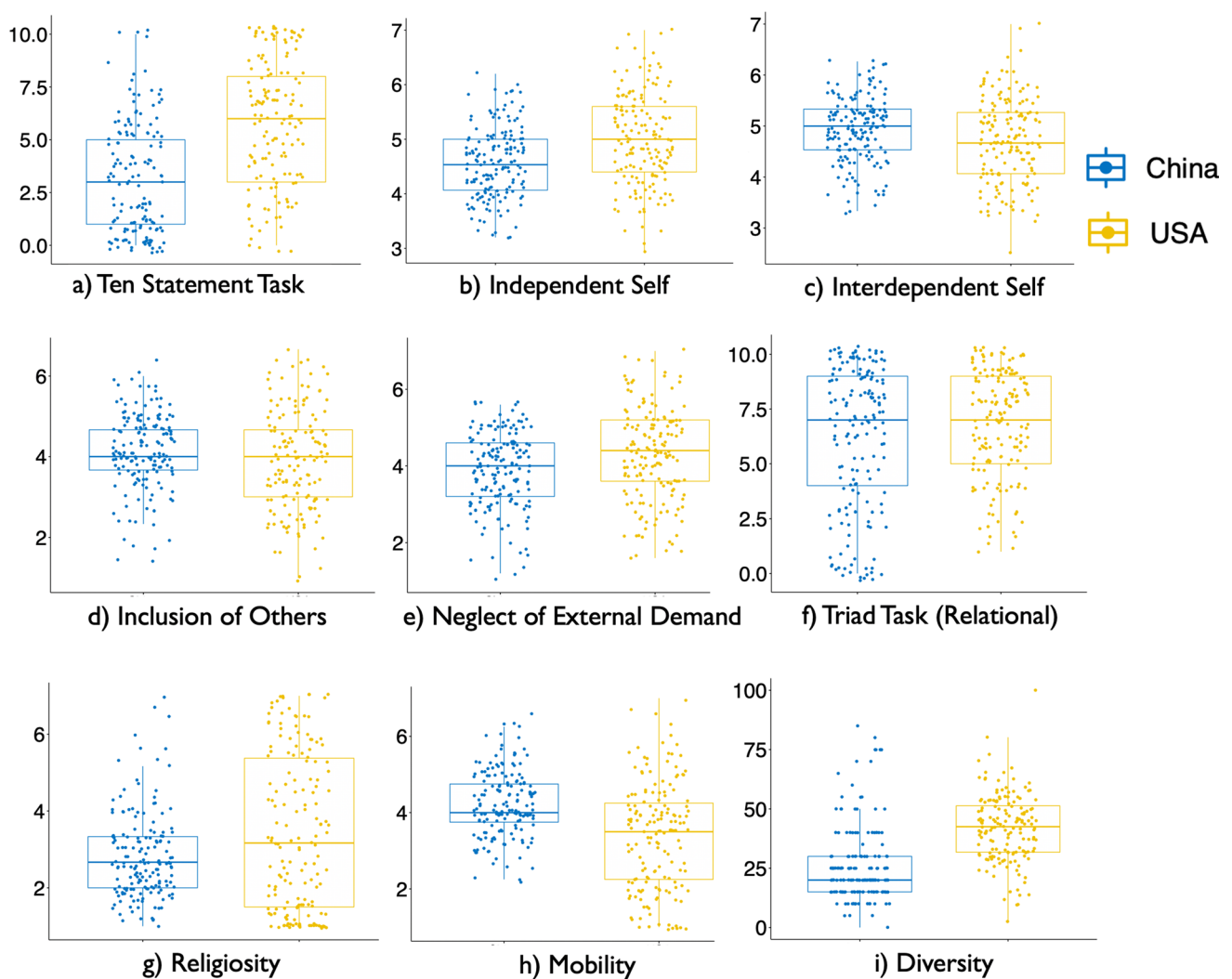


Fig. 1 Group differences on social and cognitive measures (boxplots). **a–d** Independent vs. interdependent social orientation. **e–f** Holistic vs. analytic cognitive style. **g–i** Demographic factors. (Color figure online). Due to technical differences between the two survey plat-

forms, the Social Diversity Scale (0–100; Fig. 1i) was presented on a continuous scale in the U.S. sample but on a discrete scale (increasing in units of 5) in the Chinese sample

Table 1 Varimax-rotated loadings on essentialism subcomponents in the two cultural samples

Essentialism Sub-components	Factor 1: Naturalness		Factor 2: Cohesiveness	
	U.S.	China	U.S.	China
Naturalness	0.935	0.967		
Discreteness	0.938	0.934		
Immutability	0.766	0.935		
Uniformity			0.904	0.859
Inherence			0.969	0.948
Informativeness			0.931	0.799
% Variances	60.1%	48.2%	32.9%	38.2%

We then computed a mean naturalness and cohesiveness score by averaging the corresponding essentialism items per social domain and per participant, and conducted a 2 (culture: U.S., China) \times 2 (essentialism component: naturalness, cohesiveness) \times 5 (social domain: race, gender, nationality, social class, religion) mixed analysis of variance (ANOVA), followed by post hoc contrasts with Bonferroni corrections. Results showed a significant three-way interaction between culture, essentialism component, and social domain, $F(4, 1296) = 4.513, p = .001, \eta_p^2 = 0.014$ (see Table 2). As shown in Fig. 2, Chinese participants rated all social categories except for religion as more cohesive than did American participants ($ps < .01$),

Table 2 Results of the three-way ANOVA on essentialist ratings

Predictors	<i>F</i>	<i>p</i>	η_p^2
Participant culture	22.769	<.001	0.066
Social domain	175.939	<.001	0.352
Essentialism dimension	106.623	<.001	0.248
Culture \times Domain	2.949	.019	0.009
Culture \times Dimension	15.013	<.001	0.044
Domain \times Dimension	302.344	<.001	0.483
Culture \times Domain \times Dimension	4.513	0.001	0.014

whereas ratings for category naturalness did not vary by culture ($ps > .5$).

Correlations among essentialism and cultural measures

We further examined the relationships between cultural variables and social essentialism scores both between and within our cultural samples. In the combined sample, higher naturalness ratings correlated with higher scores on inclusion of others, $r(314) = .167, p = .003$, and neglect of external demand, $r(326) = .109, p = .050$. This cross-cultural pattern was not entirely identical with correlations found within the U.S. and China sample respectively (see Fig. 3 and Table S1 for details). Scores on inclusion of others, $r(161) = .265, p = .001$, and neglect of external demand, $r(161) = .177, p = .024$, were both correlated with naturalness ratings in the U.S. but not China ($ps > .5$). Although we cannot rule

out the possibility that the differences in correlational patterns between the combined and separate samples resulted from the reduction of statistical power when examining the two samples separately; descriptively, the natures of these relationships do appear distinct across the two contexts, as shown in Fig. 3. In addition, higher religiosity scores correlated with higher naturalness beliefs in the U.S., $r(161) = .259, p < .001$, and but lower naturalness beliefs in China, $r(165) = -0.154, p = .049$. This divergent pattern was consistent with our hypothesis and may contribute to the null correlational finding in the combined sample between naturalness beliefs and religiosity.

In the combined sample, higher cohesiveness ratings correlated with higher scores on interdependent self, $r(326) = .315, p < .001$, inclusion of others, $r(314) = .231, p < .001$, neglect of external demand, $r(326) = .236, p < .001$, and religiosity, $r(325) = .223, p < .001$. All these variables correlated with cohesiveness beliefs in the U.S. ($ps < .001$), but only interdependent self remained significant in the Chinese sample, $r(165) = .260, p < .001$. As with the correlations on the naturalness ratings, it is not possible to determine conclusively which differences in findings between analyses of the combined and separate samples might reflect reductions in power when examining the samples separately, and which are due to more meaningful variation. But as shown in Fig. 4, it appears descriptively that the relation of inclusion of others, and neglect of external demand did indeed relate positively to cohesiveness in the United States, but not in China. Additionally, higher scores on independent self also correlated with higher

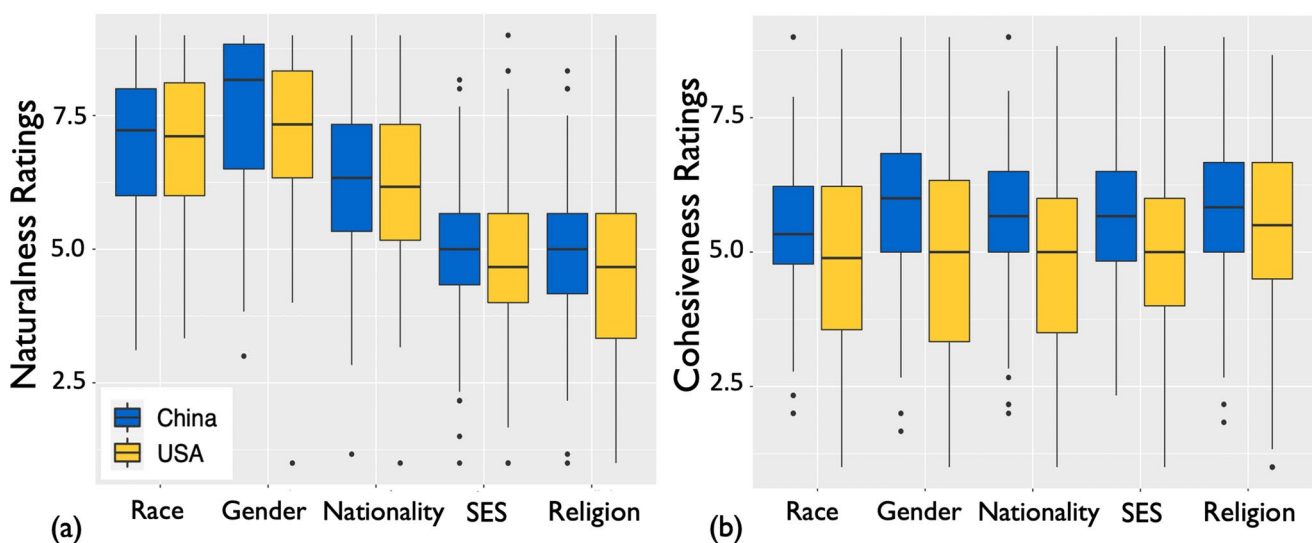


Fig. 2 Group differences on essentialist beliefs by social domain. **a** Naturalness beliefs. **b** Cohesiveness beliefs. (Color figure online)

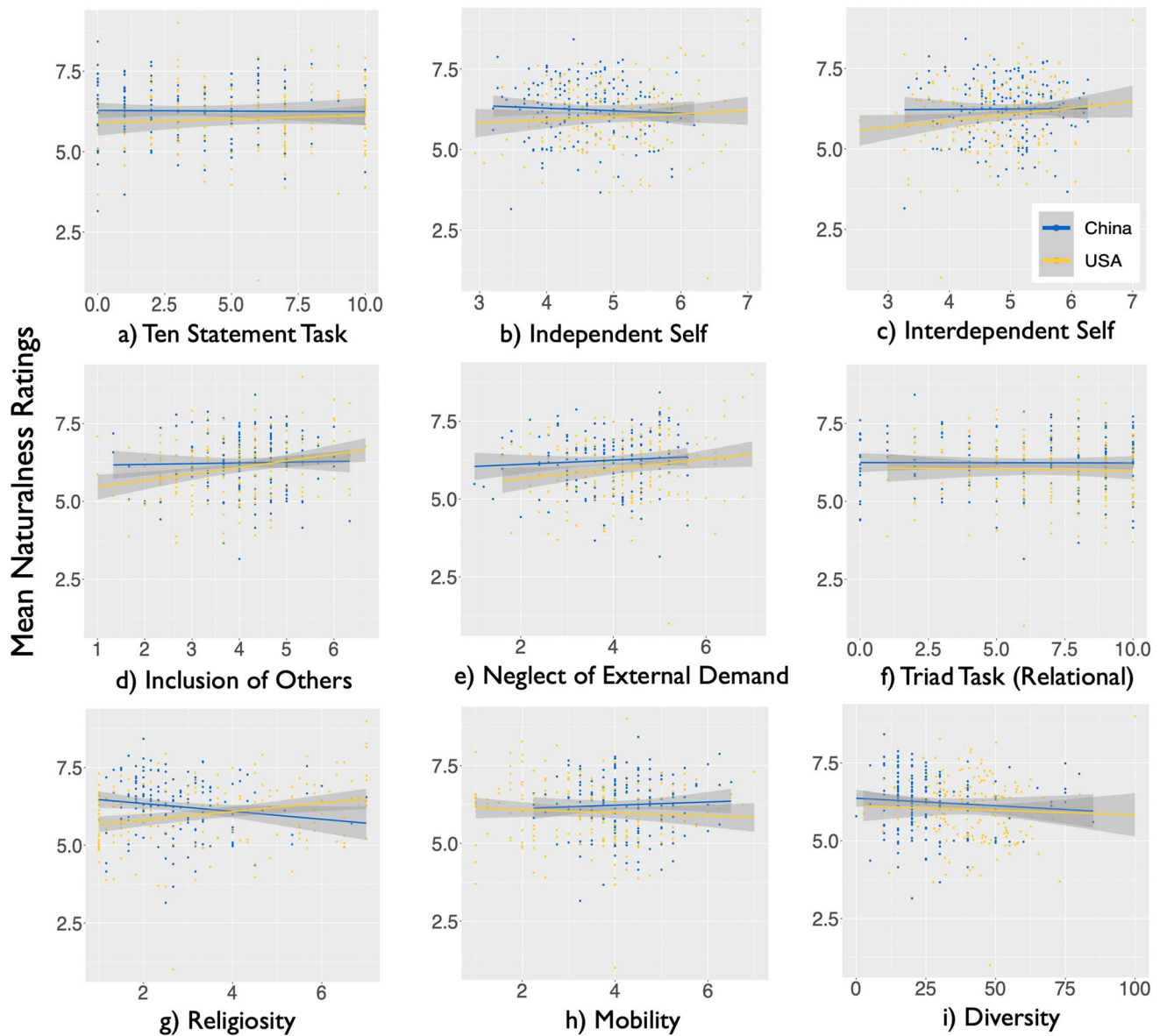


Fig. 3 Social and cognitive predictors on naturalness beliefs in the U.S. and China. **a–d** Independent vs. interdependent social orientation. **e–f** Holistic vs. analytic cognitive style. **g–i** Demographic factors. (Color figure online)

cohesiveness beliefs in the U.S., $r(161) = .245$, $p = .002$ (see Fig. 4).

Mediation analysis

Since our sample revealed significant cultural differences on the cohesiveness dimension, we further explored possible mediators on this path. According to the recommended steps for mediation analyses by Zhao et al. (2010), we first used bootstrapping procedures ($n = 500$) to test the indirect effects between culture and cohesiveness beliefs via a list

of potential mediators (ten statement task, independent and interdependent self, inclusion of others, neglect of external demand, triad task, religiosity, mobility, and diversity). Bootstrapping results indicated significant indirect effects through four variables: independent self ($axb = 0.140$, 95% CI [0.041, 0.270], $p = .008$), interdependent self ($axb = -0.108$, 95% CI [-0.211, -0.030], $p < .001$), neglect of external demand ($axb = 0.155$, 95% CI [0.051, 0.260], $p < .001$), and religiosity ($axb = 0.159$, 95% CI [0.056, 0.280], $p < .001$). We then fitted structural equation models by entering all these mediators simultaneously controlling for the

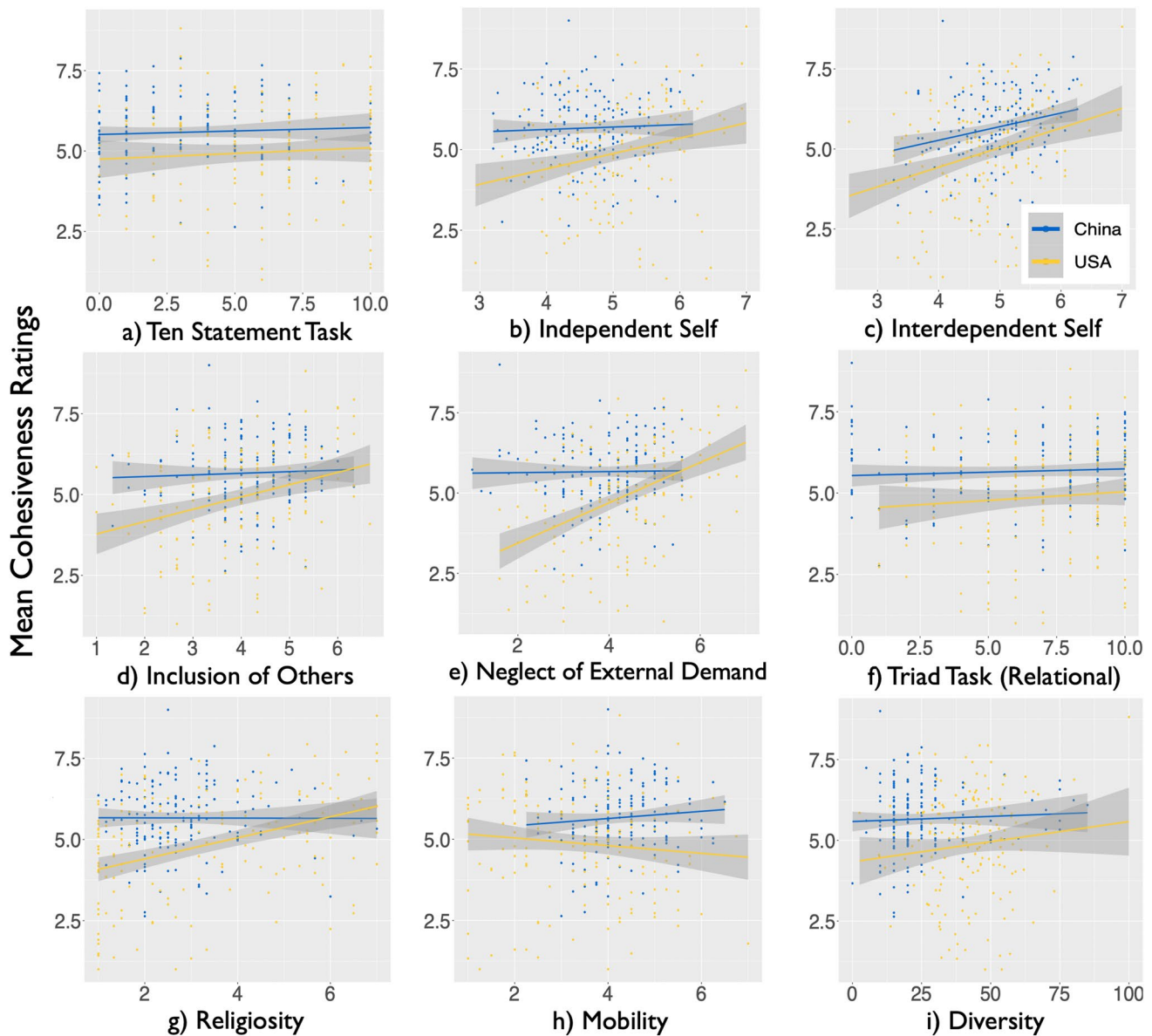


Fig. 4 Social and cognitive predictors on cohesiveness beliefs in the U.S. and China. **a–d** Independent vs. interdependent social orientation. **e–f** Holistic vs. analytic cognitive style. **g–i** Demographic factors. (Color figure online)

covariances. We also retained the inclusion of others score ($\text{axb} = -0.063$, 95% CI $[-0.136, 0.000]$, $p = .052$) in the model. The first unconstrained model (M1) showed significant indirect effects by neglect of external demand ($p = .013$) and religiosity ($p = .033$) (see Table 3). We then tested a second unconstrained model (M2) after removing the independent self and inclusion of others from Model 1; however, we chose to retain the interdependent self ($p = .06$; see Table 3). This second model showed the lowest AIC and revealed significant indirect effects of all the three mediators: interdependent self ($p = .042$), neglect of external

demand ($p = .007$), and religiosity ($p = .014$), see Fig. 5. Chi-square difference tests suggested that the second model (M2) was better fitted than the first model ($p < .001$), and a constrained model (M3) where equal indirect effects were specified ($p < .001$).

Exploratory analysis

Additionally, we examined whether essentialism ratings were predicted by participants gender, age, racial majority versus minority status, education level, annual household

Table 3 Structural equation models on cohesiveness beliefs

	Dependent variable: Cohesiveness beliefs		
	Model 1	Model 2	Model 3
Independent self	0.035 (0.043)		
Interdependent self	-0.059 (0.032) [†]	-0.073 (0.036)*	0.064(0.022)**
Inclusion of others	-0.014 (0.017)		
Neglect of external demand	0.106 (0.043)*	0.119 (0.044)**	0.064(0.022)**
Religiosity	0.080 (0.150)***	0.098 (0.040)*	0.064(0.022)**
Observations	326	326	326
Log likelihood	-2,646.375	-1,972.221	-1,983.444
AIC	5,346.750	3,972.441	3,990.887
BIC	5,447.898	4,025.415	4,036.293

Note. Entries represent estimate of indirect effects and standard errors (in the parentheses).

[†] $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

incomes level, as well as political attitudes. Results showed that the only demographic factor that significantly predicted essentialism scores in the U.S. sample was political conservatism ($p = .032$ on naturalness and $p < .001$ on cohesiveness; see Fig. 6 and Table S2 in the supplementary material for more details).

Discussion

Although previous research has shed light on how different social categories are essentialized across some Western cultures, little is known about how social essentialism manifests in East Asian cultures where values of group unity and

attention to external cues are particularly salient. The current research compared essentialist beliefs along five important social domains in the U.S. and China and explored underlying psychological mechanisms that might explain cross- and within-cultural variations in social essentialism. As hypothesized, Chinese adults perceived higher group cohesiveness than American adults. Consistent with previous findings in American and Chinese adults' essentialist thinking about nationality (Xu et al., 2021) and a wide range of social categories (Coley et al., 2019), the current finding suggested a possible influence of traditional Chinese cultural values in highlighting group coherence.

We found no cultural differences, however, on the naturalness dimension in the current sample, although previous research has indicated that American adults tend to have stronger naturalness beliefs than Chinese adults on social groups in general (Coley et al., 2019). It is important to note that compared with Coley et al., (2019), the current study included a much smaller range of social categories (21 vs. 11), focusing on the most salient social domains (e.g., race, gender, nationality), which tend to be the most essentialized in both contexts. Some key social domains that had elicited higher naturalness ratings in the U.S. than in China in the previous study (e.g., sexual orientation, age, and physical appearance) were not included in the current study. In addition, the current findings may reflect differences in the social and political contexts in both countries, given the timing of data collection for the present study in relation to prior work. For example, the increasingly tightened social and political environment in mainland China, with an increased emphasis on nationalism, could contribute to increased perception of group conflicts, confrontational ideology, and narrower mindsets, and thus increase naturalness beliefs in the social realm. On the other hand, recent antiracism and antisexism activities in the United States, including the Black Lives

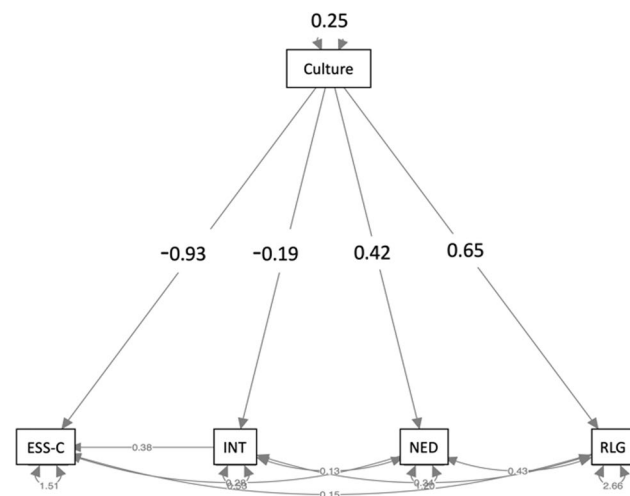


Fig. 5 Interdependent self-construal, neglect of external demand, and religiosity mediating cultural effects on cohesiveness beliefs. Ess-C = cohesiveness ratings; INT = interdependent self-construal; NED = neglect of external demand; RLG = religiosity

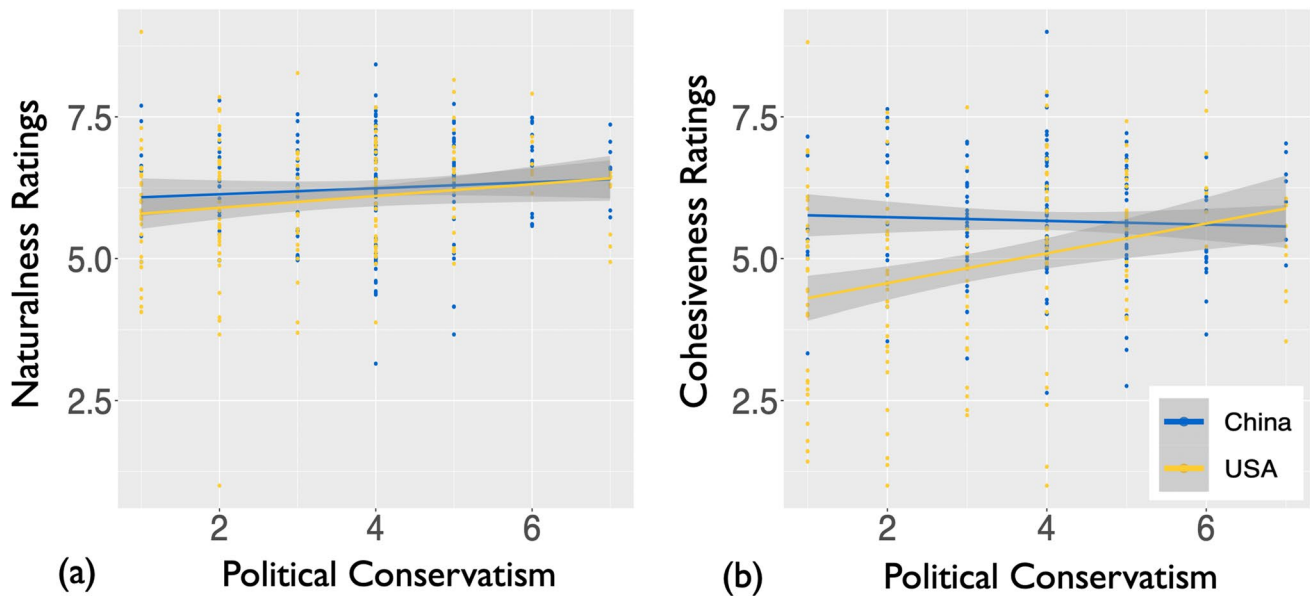


Fig. 6 Political conservatism predicted essentialist beliefs in the U.S. but not China. **a** Naturalness beliefs. **b** Cohesiveness beliefs. (Color figure online)

Matter and #MeToo movements, could have decreased, to some extent, American adults' essentialist beliefs about these salient social categories, or at least discouraged some people from explicitly endorsing such beliefs, leading to a drop in naturalness beliefs in American adults (or at least, among some populations of American adults) in relation to prior work. Closer examinations of how essentialist beliefs are shaped by shifting social dynamics are beyond the scope of the current research but is an important area for future studies.

A main contribution of the current research is the exploration of underlying psychological mechanisms that might explain variations in social essentialism between the U.S. and China. Based on previously documented cross-cultural evidence as well as the theoretical frameworks of social essentialism, we tested a list of cultural variables reflecting differences in social value and belief systems, cognitive styles, as well as social environmental factors such as daily diversity exposure. Our findings demonstrated several cultural correlates of social essentialism: for example, both social values (inclusion of others) and cognitive attribution (neglect of external demand) related to increased naturalness and cohesiveness beliefs in the combined sample. However, these patterns were not entirely identical within each cultural context. Although neglect of external demand was significantly correlated with both naturalness and cohesiveness beliefs in both the combined sample and the American sample, it had no relationship with essentialism outcomes in China. The relation of religiosity to essentialism varied by context; religiosity related to more essentialism in the United States and to less in China. Also,

political conservatism was positively correlated with naturalness and cohesiveness beliefs in the U.S. only, but not in China or the combined sample. As argued by previous researchers, cultural differences found at the group level may not always be accompanied by the same individual patterns within groups (Na et al., 2010). By identifying varying correlates of social essentialism between and within two cultural samples, the current findings address the importance of examining contextual effects on social essentialism in diverse social and cultural settings.

The current research further identified several mediators explaining cultural differences on cohesiveness beliefs. Building on previous findings that Chinese adults had higher cohesiveness ratings than American adults (Coley et al., 2019; Xu et al., 2021), here, we examined what might underlie this difference by testing the extent to which these differences are mediated by collectivistic values. Using bootstrapping and structural equation modeling, we tested indirect effects of several potential mediators separately and simultaneously, confirming the theorized mediating role of collectivistic values and cognitive preferences (interpersonal connectedness and external causal attribution) in shaping essentialist perceptions on social groups. In other words, the mediation analyses support the proposal that Chinese adults endorse more essentialist beliefs for the coherence dimension because of increased interdependent self-construals and increased attention to how the environment shapes social behavior. The current results, together with previous findings that independent self-construct mediated cultural differences in naturalness beliefs (Coley et al., 2019), adds important

cross-cultural evidence to the literature, revealing possible origins of cultural differences in social essentialism.

The present findings, by showing how culturally situated values and cognitive styles relate to essentialist beliefs, highlight the malleability of social essentialism and how it can be shaped by dynamic cultural surroundings one interacts with in their day-to-day life. Although here we have attempted to identify what underlies cultural differences in essentialism, it is important to note that these differences reflect malleable cultural and contextual factors—not fixed or inalterable differences between the two populations. Indeed, the current findings also speak to cultural commonalities across how people from these different contexts think about the social world. Consistent with previous research (Coley et al., 2019), the current results successfully replicated the two-component framework of social essentialism in both the U.S. and China, suggesting a common cognitive ground underlying essentialist thinking in the social domain. In addition, although we found average differences in the extent to which participants from the U.S. and China essentialized four of the five social domains that we tested, the distributions were highly overlapping across the two contexts (as they were on our measures of cultural values and cognitive styles). Thus, the current findings indicate both cultural commonalities (e.g., in terms of *in what structure* social groups are essentialized across cultural contexts) and cultural variations (e.g., in terms of *the degree to which* social groups are essentialized in each of those dimensions).

The present study used different sampling strategies within each country, and sampling approaches yielded convenience samples that were not fully representative of the full populations of each country—important limitations that should be addressed in future work. For example, the Chinese sample was composed of college students (from a single campus), and the U.S. sample, though more geographically diverse within the country, was primarily White. There is likely a great deal of variation in the values and beliefs studied here within each country—more so than was captured in the present research (e.g., Na et al., 2010, found that within the United States, working class American participants were significantly more interdependent than were middle-class participants). Therefore, future research should include aim to increase the extent to which samples reflect the overall populations, to allow for closer examination of within- and between- cultural differences in social essentialism. In addition, the two samples were not matched to one another with respect to age or gender; although preliminary analyses showed no effects of either of these participant characteristics (see SOM for more details), future research should also seek to address this limitation.

As an initial exploration of cultural mediators in social essentialism, the current research did not establish causal effects of social values systems on essentialist beliefs. To

depict a full picture of how social contextual factors influence the formation of social essentialism, it is critical to investigate the emergence of essentialist beliefs in early childhood, and how variations in social value systems and cognitive preferences predict its developmental trajectory. Experimental methodologies and multiple measures of social essentialism should also be applied to further look into cultural variations in each component of essentialism (e.g., strict boundary, category inheritability, causal explanation etc.) and whether manipulating cultural values would lead to different levels of essentialist responses in short- and long-term settings.

In conclusion, the findings presented above documented meaningful variation in social essentialism between the U.S. and China and demonstrated several correlates of social essentialism both between and within the cultures. Consistent with previous research, Chinese adults showed an overall stronger tendency than American adults to essentialize social groups as homogenous entities. The current research provided further evidence confirming the mediating role of interpersonal values and external causal attribution in predicting cohesiveness beliefs, addressing both the cultural pervasiveness and contextual sensitivity of social essentialism.

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