# Can Everyone Become Highly Intelligent? Cultural Differences in and Societal Consequences of Beliefs About the Universal Potential for Intelligence

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We identify a novel dimension of people's beliefs about intelligence: beliefs about the potential to become highly intelligent. Studies 1–3 found that in U.S. American contexts, people tend to believe that only some people have the potential to become highly intelligent. In contrast, in South Asian Indian contexts, people tend to believe that most people have the potential to become highly intelligent. To examine the implications of these beliefs, Studies 4–6 measured and manipulated Americans' beliefs about the potential for intelligence and found that the belief that everyone can become highly intelligent predicted increased support for policies that distribute resources more equally across advantaged and disadvantaged social groups. These findings suggest that the belief that only some people have the potential to become highly intelligent is a culturally shaped belief, and one that can lead people to oppose policies aimed at redressing social inequality.

*Keywords:* intelligence, culture, inequality, policy, legitimizing ideology

Which do you think is more true: (a) that nearly everyone is born with the potential to become highly intelligent, or (b) that only some people have this potential? The answer to this question may seem clear to you. However, we propose that the seemingly obvious nature of this answer may depend on your cultural background. In the present research, we investigate people's beliefs about the potential for intelligence as a culturally shaped lay theory. In Western societies, intelligence is often conceptualized as an individual difference with a significant genetic component (e.g., Herrnstein & Murray, 1994; Jensen, 1998; Rushton & Jensen, 2005; Terman, 1916), and so it might seem far-fetched to claim that everyone has the potential to become highly intelligent. In contrast, we propose that people in certain non-Western cultures, such as in India, may have a very different conceptualization of the potential for intelligence, one that is more universal in nature.

Of the many different beliefs about intelligence that people have, we investigate a previously unexamined dimension along which beliefs might vary: whether people believe that virtually everyone or only some people are born with the potential to become highly intelligent. In other words, this research examines people's lay theories about the distribution of the potential for high intelligence across the population. One lay theory would suggest that everyone has the potential for high intelligence (the *universal* theory), although of course different people may realize their potential to differing degrees depending upon their life circumstances. The alternative lay theory would suggest that not everyone has the potential for high intelligence (the *nonuniversal* theory), so that regardless of effort or education only some people are truly capable of ever attaining high intelligence.

Practices common in U.S. educational settings suggest that many people in American culture believe that not everyone has the potential to become highly intelligent. For example, many "gifted

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and talented" educational programs identify young elementary school students who they believe uniquely show promise of high intelligence and place them in special classes that continue through middle and high school. Although the idea that the potential for high intelligence varies across people might seem obviously true to many Americans, we propose that it might not be as widely held in other cultures. In the present research, we test the hypothesis that the belief that not everyone has the potential to become highly intelligent is culturally shaped, not universal.

## Cultural Variation in Beliefs About Intelligence

We elected to contrast U.S. Americans' beliefs about the distribution of the potential for high intelligence with that of Indians. We had several reasons to believe that people in Asian contexts might conceptualize intelligence differently than Americans. Past research has documented differences in the ways that Americans think about personal characteristics compared with people from Asian cultures. For example, U.S. Americans are more likely than South Asian Indians to spontaneously describe individuals in terms of personality traits, whereas Indians are more likely than Americans to spontaneously characterize others in terms of contextually situated behaviors (Daniel, 1984; Marriott, 1990; Shweder & Bourne, 1982; see also Geertz, 1975; Markus & Kitayama, 1991). Similar cultural differences have been observed between U.S. Americans and East Asians in the domain of intelligence (Heine et al., 2001; Stevenson & Stigler, 1994).

In carefully designed experimental studies, Heine et al. (2001) found that Japanese participants are more motivated than American participants to improve themselves in domains that they are weak at, and these motivations are predicted by individuals' beliefs about the utility of effort. In other words, Heine et al.'s results suggest that Japanese may be more likely than Americans to believe that high achievement is attainable by all (even by those who fail initially). In their investigation of why Japanese and Chinese perform better than U.S. students in math and science, Stevenson and Stigler (1994) found that American educators and parents emphasize inherent ability as the primary determinant of academic outcomes and accept ability as a limiting factor more often than their East Asian counterparts. We extend this body of research by directly testing people's beliefs about the distribution of the potential to become highly intelligent in these two different cultural contexts. We further test the societal consequences that a belief in the universal potential for high intelligence might have if adopted in American settings.

## Relationship Between Universal–Nonuniversal and Entity–Incremental Beliefs About Intelligence

Although extensive research in social psychology has examined people's beliefs about the nature of intelligence, this research has largely focused on beliefs about whether intelligence can be changed, not on beliefs about the distribution of the potential for high intelligence. Specifically, this research has examined whether people believe that intelligence can be increased over time (the *incremental* belief) or whether they instead believe that intelligence is fixed and cannot grow over time (the *entity* belief) and found that people's beliefs about the incremental versus entity nature of intelligence can have profound effects on their motivation and academic outcomes (for reviews, see Dweck, 1986, 1999; Dweck & Leggett, 1988). For example, compared to individuals who believe that intelligence is fixed, those who believe that intelligence can be changed show more sustained motivation in the face of difficulty (Blackwell, Trzesniewski, & Dweck, 2007) and focus more on self-improvement rather than self-defense (Niiya, Crocker, & Bartmess, 2004; Nussbaum & Dweck, 2008). In addition, when judging others, those who believe that intelligence or personal traits can be changed tend to be less likely to diagnose and comfort students for their (presumed) low ability (Rattan, Good, & Dweck, 2012), focus less on stereotypical information (Plaks, Grant, & Dweck, 2005; Plaks, Stroessner, Dweck, & Sherman, 2001), and have greater expectations for and openness to personal improvement (Chiu, Hong, & Dweck, 1997; Erdley & Dweck, 1993; Plaks et al., 2001). Past research may suggest that the incremental belief is more prevalent in East Asian cultures than in North American cultures, given the greater emphasis on effort prevalent in East Asian societies (Heine et al., 2001).

A question then arises: What is the relationship between these the entity–incremental and the universal–nonuniversal beliefs about intelligence? Are they related, and, if so, how? It is possible to believe that intelligence is fixed and that some people have more of it than others, with only a few people attaining high levels of intelligence; this set of beliefs would represent the confluence of the entity and the nonuniversal beliefs. Similarly, it is possible to believe that intelligence can change and that everyone can achieve a high degree of intelligence, which would represent the confluence of the incremental and the universal beliefs. If these were the only two points of connection between the beliefs, one would expect beliefs about the malleability of intelligence to be highly related to beliefs about the distribution of the potential for high intelligence. However, it is also possible to view intelligence as both fixed and distributed widely across the population (i.e., fixed at a high level for most individuals), corresponding to the confluence of the entity and the universal theories. In the same vein, people may believe that intelligence can be changed and still believe that only a few individuals have the potential to achieve high levels of intelligence. In other words, both the few who can ultimately achieve high intelligence, and the many who cannot, may still be viewed as able to change their intelligence to a meaningful degree. In this sense, intelligence is something that is amenable to development but up to differing points for different people and represents the confluence of the incremental and the nonuniversal theories. Given these possibilities, we did not expect to observe a strong correlation between the two beliefs about intelligence. Further, as indicated below, we expected these two types of beliefs about intelligence to have different implications for policy.

The current research examines a more radical belief than the idea that intelligence can be increased. We hypothesize that the idea that intelligence can be increased still leaves room for a belief in large differences among people and groups in their capacity for high intelligence. In other words, as we have described above, believing that people can increase their intelligence substantially does not preclude believing that some people still do not have the potential for high intelligence. After attempting to establish the distinctiveness of the two beliefs about intelligence, we focused on investigating how these two beliefs shape people's attitudes toward policies aimed at reducing inequality.

## Consequences of Beliefs About the Potential for High Intelligence

In Western societies, a belief in individual differences in intelligence has historically been used to legitimize the extant social hierarchy. For example, in the American scientific community of the 1800s, it was commonly believed that brain size was a reliable indicator of intelligence, and scientists published "evidence" of differences in brain size between White Europeans and other groups, such as those of Native American and African origin (Morton, 1839)—evidence that was later shown to be spurious (Gould, 1981/1996). In the 20th century, the IQ test, although not designed for this purpose, was also used to justify the social hierarchy. It formed a basis for calls to restrict education to White males and to deny immigration to certain groups (Gould, 1981/1996).

Although many Americans no longer explicitly use the concept of intelligence to legitimize the social hierarchy in today's society, and many explicitly denounce the stereotyping of certain groups as less intelligent (Plant & Devine, 1998), a version of this view may still linger in the social structures, popular culture, and even some parts of the scientific community. For example, there are still prominent scholars who argue that some social groups are destined to achieve greater intelligence than others (e.g., Herrnstein & Murray, 1994; Jensen, 1998; Rushton & Jensen, 2005; for critiques of this view, see Neisser, 1998; Neisser et al., 1996; Nisbett, 2009; Nisbett et al., 2012; Sternberg, 2004). We theorize that this belief that not everyone can become highly intelligent might have important consequences for real-world social outcomes. For example, if people believe that not all individuals have the potential for high intelligence, then allocating resources to those without this potential might appear wasteful. Thus, this belief might reduce people's support for policies that promote more opportunities for underperforming individuals, or even for those who belong to groups stereotyped as low performing. Alternatively, if Americans were to believe that more people could become highly intelligent, they might be more likely to support redistributive policies that provide more opportunities to underperforming individuals and groups stereotyped as underperforming.

To be sure, India, where a different belief about the potential for intelligence is hypothesized to be more prevalent, is also rife with social inequality between different religious and caste groups. However, it is notable that India has taken numerous steps in the past two decades in the direction of equalizing access to educational resources. For example, in the early 1990s, the government set a 52.5% quota in government jobs and government-aided educational institutions for individuals from historically disadvantaged caste groups. Although quotas were vehemently opposed by many individual Indians who stood to lose their privileged status, these policies had the support of all of the large political parties and thus may be seen as representing the prevailing ideology. Of course, many Indians continue to discriminate against stigmatized groups and perpetuate inequality, perhaps basing their beliefs on other presumed differences, such as moral character.

We propose that when people believe that most others have the potential to achieve high intelligence, they will be more likely to support policies that assume equal ability in members of underrepresented groups, such as affirmative action, and will develop more favorable attitudes toward redistributing educational resources more evenly across wealthier and poorer communities. According to the universal belief, if everyone has the potential for high intelligence, then providing more resources to some and less to others is unjust because it denies some people the chance to achieve their potential. We reasoned that in the context of the universal belief, people should be motivated to rectify this injustice (cf. Lowery, Chow, & Crosby, 2009). Therefore, we hypothesized that the universal belief will motivate people to support distributing resources more equally across different groups. In contrast, the nonuniversal belief should not spark such concerns about justice because an unequal distribution may seem reasonable if only some people have the potential for high intelligence. Therefore, we hypothesized that the nonuniversal belief would not lead to support for redistribution.

Could these outcomes be driven by other beliefs about people's intelligence? We propose that support for redistribution is a unique consequence of beliefs about the distribution of intelligence across people, and not beliefs about the malleability of intelligence across time. We reasoned that neither the incremental nor entity theory of intelligence would lead to support for redistributing resources more evenly across groups. While an incremental theory may lead to support for providing more resources to everyone, so that everyone can increase their intelligence, this belief should not lead to an increased willingness to take away from those who have greater resources. From an incremental perspective, removing any resources from those who could benefit from them may be viewed as unfair. In other words, curtailing one group's growth to foster another group's growth may be viewed as unacceptable. We also reasoned that a fixed belief about intelligence would neither lead to support for redistribution nor additional allocation of resources because, from an entity perspective, additional resources will not change anyone's intelligence. Therefore, we hypothesized that only a more universal theory of intelligence, but not a more incremental theory, would predict support for redistributing resources to those who have less.

## Overview

In Studies 1–3, we examine whether the idea that only some people have the potential to become highly intelligent is more prevalent in American contexts than in Indian contexts and explore the relationship between beliefs about the universal potential for intelligence and beliefs about whether intelligence can be changed over time. After identifying the belief in the potential for high intelligence as a lay theory that differs by cultural context, in Studies 4 and 5 we directly manipulate this belief. In these studies, we remain within the U.S. American cultural context and expose participants to the idea that everyone either has or does not have the potential to become highly intelligent. We test the impact of this manipulation on participants' support for policies that redistribute educational and occupational resources more equally across different socioeconomic groups.

Finally, Study 6 tests specific predictions about the impact of universal–nonuniversal beliefs and entity–incremental beliefs on educational policy. We predicted that the universal–nonuniversal belief would influence people's support both for policies that provide more educational resources to everyone and for policies that redistribute educational resources to reduce inequality. However, we predicted that the entity–incremental

belief would influence support only for providing more educational resources to everyone, not for redistributing resources more equally (i.e., taking resources from one group to give to another).

## Study 1a

The goal of Study 1a was to test our basic hypothesis that Americans are more likely than Indians to believe that only some individuals have the potential to become highly intelligent later on in life.

### Method

**Participants.** A total of 79 students at a university in northern California (52 women, 27 men; mean age = 19.1 years, *SD* = 1.18) and 69 students at a university in Bangalore, India (41 women, 28 men, mean age = 22.4 years, *SD* = 1.59), participated in the study. Both groups of participants attended competitive universities and came primarily from middle-class backgrounds. As English was the language of instruction at the Indian universities that we sampled in this and subsequent studies, and given that English is one of the national languages of India, we administered all questionnaires in English across all studies. There were no significant gender effects in this or any of the subsequent studies (all *p*s $> .085$).

**Measures.** Participants were presented with three pairs of statements. In each pair, one statement claimed that everyone has the potential to become highly intelligent, and the other claimed that not everyone has such potential. Participants were asked to choose the one item from each pair that they believed in more. The items are presented below:

> Pair 1: "Everyone has the inborn potential to become highly intelligent" versus "Not everyone has the inborn potential to become highly intelligent."
>
> Pair 2: "Everyone has the potential to become very intelligent if they want to" versus "Not everyone has the potential to become very intelligent, even if they want to."
>
> Pair 3: "All people have the inborn potential to become highly intelligent, but not all people end up realizing their potential" versus "Some people just don't have the inborn potential to become highly intelligent."

### Results

For each pair of items, we found that Indian participants were significantly more likely than American participants to choose the item claiming that everyone has the potential to become highly intelligent; for Pair 1, $\chi^2(df = 1, N = 151) = 6.00$, $p < .02$, $\phi = .20$; for Pair 2, $\chi^2(df = 1, N = 151) = 13.92$, $p < .001$, $\phi = .30$; for Pair 3, $\chi^2(df = 1, N = 151) = 17.77$, $p < .001$, $\phi = .34$. Whereas 53%, 80%, and 82% of Indian participants selected the item indicating that everyone has the potential to become highly intelligent across the three pairs, respectively, only 33%, 51%, and 49% of American participants did so (see Figure 1).

## Study 1b

Study 1a provided initial, supportive evidence for our hypothesis. However, it is possible that Indian and American participants could have interpreted the meaning of "high intelligence" differently. For example, perhaps Americans interpreted it to mean "someone with the intelligence of Einstein," whereas Indians interpreted it as "someone with the intelligence of a college degree holder." To address this issue, we asked participants whether they believed that everyone or not everyone can achieve the intelligence level of Einstein and that of a Nobel Prize winner, targets that are likely defined very similarly for college students in both cultures.

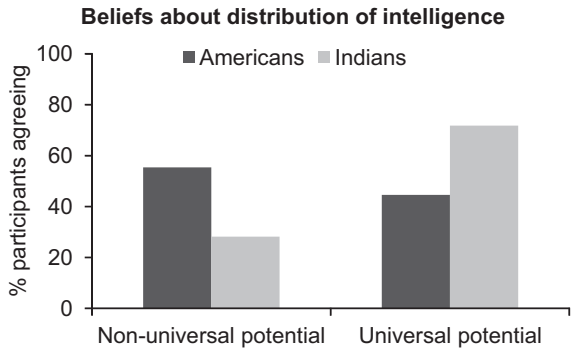


*Figure 1.* Mean percentage of participants in Study 1a endorsing the universal and the nonuniversal beliefs about intelligence, by culture (collapsing across the three items).

### Method

**Participants.** We recruited 27 European American students (18 women, 9 men; mean age = 23.1 years, *SD* = 2.61) at a university in northern California and 65 Indian students at a university in Bangalore, India (26 women, 39 men; mean age = 20.5 years, *SD* = 1.51).

**Measures.** Participants were asked rate their agreement with two statements, "Every child can become an Einstein if they receive a good education and work very hard" and "Every child can become a Nobel Prize winner if they receive a good education and work very hard," on 6-point scales ranging from 1 = *strongly disagree* to 6 = *strongly agree*.

### Results

Independent-samples *t* tests found that Indian participants (*M* = 2.89, *SD* = 1.51) were more likely than American participants (*M* = 2.21, *SD* = 1.40) to believe that everyone can become an Einstein, $t(91) = 2.03$, $p < .05$. Similarly, Indians (*M* = 3.32, *SD* = 1.62) were more likely than Americans (*M* = 2.46, *SD* = 1.35) to believe that everyone can become a Nobel Prize winner, $t(91) = 2.46$, $p < .02$, replicating the key finding of Study 1a with reference to well-known targets characterized by their high intelligence.

## Study 2

Studies 1a and 1b indicate that beliefs about the distribution of the potential for high intelligence vary across cultures. However, are these beliefs different from the entity–incremental beliefs about intelligence that have been shown to be differentially prevalent across different cultures (Heine et al., 2001)? The goal of

Study 2 was to replicate the findings of Studies 1a and 1b while also exploring the relationship between people's beliefs about the distribution of the potential for high intelligence and previously studied beliefs about the entity versus incremental nature of intelligence (Dweck, 1986; Dweck & Leggett, 1988). We hypothesized that although the two beliefs about intelligence would be correlated, they would represent distinct constructs.

## Method

**Participants.** Fifty students at a university in northern California (15 women, 35 men; mean age = 20.5 years, *SD* = 1.49) and 50 students at a university in Bangalore, India (20 women, 26 men, 4 unreported; mean age = 20.8 years, *SD* = 1.50), participated in the study. As before, both groups of participants were recruited at competitive universities and came from largely middle-class backgrounds.

**Measures.** Participants were asked to respond to two questions. In the first question, they were asked, "Think about intelligence. Do you believe that almost all newborn babies have the potential to become highly intelligent later on in life, or that only some newborn babies have the potential to become highly intelligent?" They were provided with a rating scale ranging from 1 to 20, with 1 labeled as *almost all babies have the potential to become highly intelligent* and 20 labeled as *only some babies have the potential to become highly intelligent*. In the second question, participants were asked, "In general, how much do you think people can change their intelligence over time? Do you believe that people can change their intelligence a lot over time, or that people cannot change their intelligence a lot over time?" They were provided with a rating scale with 1 labeled as *intelligence cannot be changed much over time* and 20 labeled as *intelligence can be changed a lot over time*.

## Results

We reverse scored participants' responses to the first question such that higher values indicated a greater belief in the universal potential for intelligence. With these revised measures, people's beliefs on these two dimensions were significantly, but not highly, correlated ($r = .24$, $p < .02$), indicating that those who believed that everyone has the potential to become highly intelligent were also more likely to believe that intelligence can be increased over time. Additional analyses showed that this correlation held primarily for Americans ($r = .28$, $p < .05$), but not for Indians ($r = -.03$, $p > .85$). These results again support the idea that although the two lay theories about intelligence may be related, they still represent distinct constructs.

In support of our primary hypothesis, an independent-samples *t* test revealed that Americans ($M = 8.59$, $SD = 5.67$) were significantly more likely than Indians ($M = 14.20$, $SD = 5.91$) to believe that only some newborn babies have the potential to become highly intelligent, $t(98) = 4.85$, $p < .0001$, $d = 0.97$. Further, although not specifically predicted, Americans ($M = 10.04$, $SD = 5.31$) were significantly less likely than Indians ($M = 14.22$, $SD = 6.48$) to believe that intelligence can be changed over time, $t(98) = 3.53$, $p < .001$, $d = 0.71$ (see Figure 2).

In additional analyses, we tested whether the cultural difference in each belief held after controlling for the other belief. A regression found that even after controlling for the entity–incremental belief, culture still predicted significant differences in the universal–nonuniversal belief, $B = 5.16$, $t(97) = 4.29$, $p < .001$, while entity–incremental beliefs did not, $B = .11$, $t(97) = 1.09$, $p > .27$. Another regression found significant cultural differences in the entity–incremental belief, $B = .23$, $t(97) = 2.14$, $p < .05$, even after controlling for the universal–nonuniversal belief, which was not a significant predictor, $B = .01$, $t(97) = 1.07$, $p > .28$.

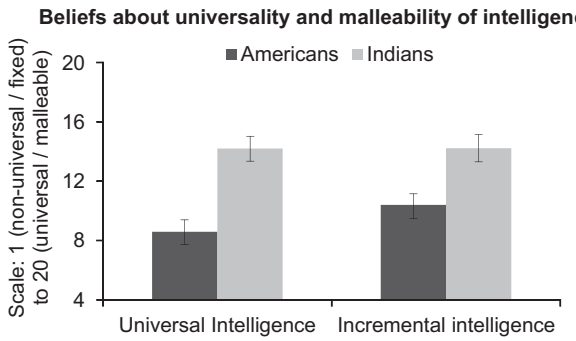


*Figure 2.* Extent to which participants in Study 2 believed in the universal potential for intelligence and whether intelligence can be changed, by culture. Error bars represent standard error of the mean.

We also split participants' responses to the two questions at the midpoint of the scale in order to examine the majority opinion within each cultural context. After splitting the items at the midpoint of the scale, we tested whether the majority response in each culture was significantly different from chance (50%). We reasoned that this would shed light on the presence versus absence of systematic differences in the majority opinion within each culture. We found that whereas a significant majority of Americans, 66% ($z = 2.26$, $p < .02$), tended to believe that only some babies can become highly intelligent, a significant majority of Indians, 74% ($z = 3.39$, $p < .001$), tended to believe that almost all babies can become highly intelligent, $\chi^2(df = 1, N = 100) = 16.10$, $p < .001$. Further, a nonsignificant majority of Americans, 58% ($z = 1.13$, $p > .26$), indicated that intelligence cannot be changed much over time, whereas a significant majority of Indians, 70% ($z = 2.93$, $p < .005$), indicated that intelligence can be changed a lot over time, $\chi^2(df = 1, N = 100) = 7.95$, $p = .005$.

## Discussion

Study 2 replicated cultural differences in beliefs about the universal potential for intelligence—Americans were substantially less likely than Indians to believe that everyone has the potential for attaining high intelligence. Study 2 also found that beliefs about the universal potential for high intelligence are distinct from beliefs about whether intelligence can be changed over time, although the two constructs are correlated.

# Study 3

Study 3 was designed to address some of the limitations of Studies 1–2. First, whereas the universal belief measure in Study 2 referred to inborn potential, the incremental belief measure did not, so perhaps the correlation between the two beliefs was weakened

by this slight difference in measures. In the present study we removed references to inborn potential. Second, the cultural difference observed in the previous studies could be due to general cultural differences in the conception of the person, and not due to cultural differences in conceptions of intelligence per se. If differences in Americans' versus Indians' general conception of the person (i.e., as defined by personality characteristics vs. characteristic behaviors, respectively; Daniel, 1984; Marriott, 1990; Shweder & Bourne, 1982) account for the differences in beliefs about the universality of intelligence, then we would also expect systematic differences in Americans' versus Indians' beliefs about the distribution of the potential for other person characteristics, such as athletic ability and musical talent. In contrast, it is possible that cultural differences in the concept of the person are manifest in beliefs about universality of personal characteristics only when those characteristics are socially significant. Intelligence is a unique personal characteristic that has been used as a basis for sorting individuals and groups into hierarchies in the United States (Gould, 1981/1996) but not in India. Given that neither athletic ability nor musical talent have been widely used to sort groups into hierarchies in either culture, it is possible that cultural differences would be evident only with reference to beliefs about the universality of intelligence, not with respect to musical talent and athletic ability. We tested these competing predictions in the present study.

## Method

**Participants.** We recruited 130 participants from http://www.mturk.com, 66 residing in the United States (37 women, 28 men, 1 unreported; mean age = 37 years; 31 nonreligious, 29 Christian, 6 other religions; 12 high school graduates, 12 with incomplete college, 9 with an associate's degree, 24 with a bachelor's degree, 8 with a master's degree, and 1 with a doctoral degree) and 64 residing in India (27 women, 37 men; mean age = 30 years; 41 Hindu, 15 Christian, 7 Muslim, 1 Jain; 2 high school graduates, 5 with incomplete college; 34 with a bachelor's degree; 22 with a master's degree, 1 with a doctoral degree), for a paid online study.

**Measures.** Participants were asked three questions about their beliefs about individuals' potential to achieve high intelligence, athletic ability, and musical talent and three questions about their beliefs about whether individuals can change their intelligence, athletic ability, and musical talent. For the universal–nonuniversal questions, we defined *becoming highly intelligent* as "attaining the capacity to acquire knowledge and skills at the highest level possible, for example attaining the knowledge and skills of a Nobel Prize winner"; *becoming highly athletically skilled* as "attaining the capacity to excel at sports at the highest level possible, for example attaining the sports ability of an Olympics winner"; and *becoming highly musically talented* as "attaining the capacity to excel at music at the highest level possible, for example attaining the musical ability of a national musical award winner."

Participants responded to each item on 20-point scales. For the universal–nonuniversal items, 1 = *almost all people have the potential to become highly intelligent/athletically skilled/musically talented* and 20 = *only some people have* . . .. For the entity–incremental items, 1 = *intelligence/athletic ability/musical talent cannot be changed much over time* and 20 = . . . *can be changed a lot over time*. Participants then answered demographic questions.

## Results

We reverse scored participants' responses to the universal potential items such that higher values indicated a greater belief in the universal potential for intelligence. Preliminary analyses indicated that participants' education level and their socioeconomic status (measured by mother's education attainment; Liberatos, Link, & Kelsey, 1988) were significant predictors for some of the measures (i.e., universal potential for intelligence, universal potential for musical talent), so we controlled for these in all analyses.

We ran a 2 (culture: U.S. vs. Indian) × 2 (type of belief: universal or incremental) × 3 (domain: intelligence, athletic ability, musical talent) repeated-measures analysis of covariance (ANCOVA). The main effects of culture, type of belief, domain, and the Type of Belief × Domain interaction were not significant ($ps > .30$). We found three two-way interactions, Type of Belief × Culture, $F(1, 126) = 8.82$, $p < .005$; Domain × Culture, $F(2, 252) = 4.46$, $p < .02$; and Type of Belief × Domain, $F(1, 252) = 2.54$, $p = .08$. The three-way interaction was not significant ($p > .70$).

To clarify the pattern of results, we computed separate one-way ANCOVAs with belief in each of the six items as the dependent variable and culture as the independent variable. Further replicating the results of Studies 1–2, we found that Indians were significantly more likely than Americans to believe that everyone has the potential to become highly intelligent, $F(1, 126) = 4.54$, $p < .05$, U.S. $M = 8.92$, $SE = 0.68$ versus India $M = 11.11$, $SE = 0.71$.[1] However, there were no cultural differences in beliefs about the potential for attaining high athletic ability, $F(1, 126) = 2.10$, $p = .15$, U.S. $M = 7.33$, $SE = 0.60$ versus India $M = 8.64$, $SE = 0.62$, or for achieving high musical talent, $F(1, 126) = 0.02$, $p > .90$, U.S. $M = 8.17$, $SE = 0.63$ versus India $M = 8.29$, $SE = 0.65$ (see Figure 3), indicating that a belief in greater potential is not generalized across all domains within Indian culture.

We then explored whether there were also cultural differences in people's entity–incremental beliefs across domains. There were no cultural differences in beliefs about people's capacity to change their intelligence, $F(1, 126) = 0.34$, $p > .96$, U.S. $M = 13.20$, $SE = 0.67$ versus India $M = 12.62$, $SE = 0.69$, or athletic ability, $F(1, 126) = 0.31$, $p > .58$, U.S. $M = 13.70$, $SE = 0.58$ versus India $M = 12.41$, $SE = 0.61$, although Americans were significantly more likely to believe that people can change their musical talent, $F(1, 126) = 13.11$, $p < .001$, U.S. $M = 13.86$, $SE = 0.62$ versus India $M = 10.46$, $SE = 0.65$ (see Figure 3).

A secondary goal of this study was to further explore the relationship between beliefs about potential and beliefs about change across these domains. As found in Study 1, participants' beliefs about the universal potential for high intelligence and the ability to change one's intelligence were significantly, but not strongly, correlated in the United States ($r = .27$, $p < .05$) and

[1] This cultural difference held ($p < .05$), even after controlling for the belief about the malleability of intelligence, which was not a significant predictor ($p > .07$).

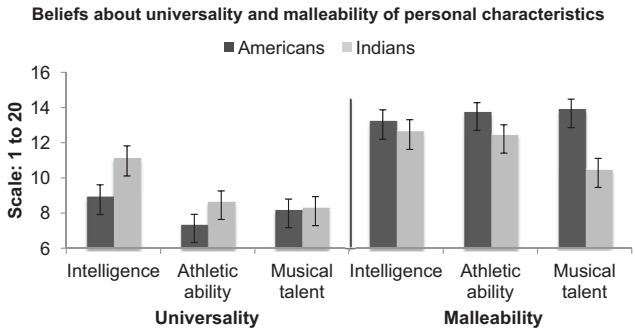


*Figure 3.* Extent to which participants in Study 3 believed that everyone has the potential to achieve the highest level of different personal characteristics, by culture, and believed that people can develop different personal characteristics, by culture. Error bars represent standard error of the mean.

uncorrelated in India ($r = .07$, $p > .57$). Again, this finding indicates that although the two types of beliefs about intelligence may be related, they also seem to be tapping distinct constructs. Beliefs about the universal potential for and the ability to change athletic ability were uncorrelated in both cultures (for U.S., $r = .13$, $p > .29$; for India, $r = -.16$, $p > .20$). Beliefs about the universal potential for and the ability to change musical ability were correlated in the United States ($r = .28$, $p < .05$) but uncorrelated in India ($r = -.04$, $p > .77$).

## Discussion

Study 3 found that cultural differences in beliefs about the universal potential for intelligence are not due to general cultural differences in attributional tendency—Indians were not more likely than Americans to believe that everyone has the potential to achieve the athletic ability of an Olympic winner or the musical talent of a national award winner but were significantly more likely to believe that everyone can achieve the intelligence of a Nobel Prize winner. Notably, we replicated the key cultural difference of Studies 1–2 with a heterogeneous nonstudent sample from both cultures. In both Studies 2 and 3, we found a small correlation between universal and incremental theories about intelligence in the United States, but not in India. The lack of a correlation between these types of beliefs in Indian culture may suggest that people in Indian contexts make more distinctions between the two dimensions of beliefs about intelligence than do Americans. These differing correlations could also suggest that the universal–nonuniversal and incremental–entity beliefs are organized differently across cultures.

# Study 4

Studies 1–3 demonstrate that there are cultural (and individual) differences in whether people believe that everyone has the potential to become highly intelligent. Although both beliefs were present in both cultures to some degree, the more prominent belief in U.S. American culture was that the potential for high intelligence is unequally distributed across people. The next two studies directly exposed American participants to either the universal belief or the nonuniversal belief about the distribution of intelligence and measured its consequences for social policy. Whereas the cross-cultural comparisons in the first three studies were critical for establishing a belief in the potential for high intelligence as a psychological variable that varies across cultures, in the remaining studies, we shift from a between-culture to a within-culture analysis that directly examines the consequences of this belief. Specifically, we tested whether the belief that not everyone has the potential for high intelligence influences people's support for policies addressing social inequality.

Many resources in the United States, including education and employment opportunities, are unequally distributed across different groups in society. For example, in the Gini index, a measure of income inequality, the United States ranks 93rd of 134 countries for which data are available, lower than all European nations and in the immediate company of Cameroon and Uruguay, whereas India ranks 56th (Central Intelligence Agency, 2009). Particularly in the domain of education, unlike Canada and many European countries, the U.S. school funding system can be seen as contributing to social inequality (Augenblick, Myers, & Anderson, 1997). In many states, U.S. schools are primarily funded by local property taxes rather than by state revenue, leading to large disparities in the educational resources that are available for children growing up in rich versus poor communities. To take a concrete example, in the 2000–2001 school year, the largest elementary school in Sausalito, California (a high-income town), had $16,583 available per student per year, whereas the largest elementary school in Compton, California (a low-income town), had only $5,741 available per student per year (Darling-Hammond, 2004).

Previous research shows that people often use cultural ideologies—such as the Protestant work ethic (Levy, West, Ramirez, & Karafantis, 2006; Quinn & Crocker, 1999), a belief in meritocracy (Kluegel & Smith, 1986; McCoy & Major, 2007), a preference for inequality between groups (i.e., social dominance orientation, Pratto, Sidanius, Stallworth, & Malle, 1994), the belief that existing social systems are legitimate (i.e., system justification; Jost, Banaji, & Nosek, 2004; Kay et al., 2009), the colorblind ideology (Apfelbaum, Pauker, Sommers, & Ambady, 2010; Knowles, Lowery, Hogan, & Chow, 2009; Markus, Steele, & Steele, 2000), and beliefs about choice (Savani & Rattan, in press)—to justify intergroup differences in outcomes and, thereby, to justify intergroup differences in the allocation of resources. The idea that some individuals simply do not have the potential to become highly intelligent might also provide a justification for distributing educational resources unequally—it may seem unreasonable to expend as many educational resources on the members of certain groups if it is believed that they simply do not possess the potential to become highly intelligent. On the other hand, the idea that everyone has the potential to become highly intelligent might make an unequal distribution of resources appear inequitable and therefore generate greater motivation to reallocate resources more equally between groups.

To examine this question, we exposed Americans to either the idea that not everyone has the potential to become highly intelligent or to the idea that nearly everyone has the potential to become highly intelligent and looked at the impact of this exposure on participants' support for changing current policies that lead to inequality in educational resources. In other words, we asked whether exposing Americans to a belief in universally high potential would encourage them to endorse policies that equalize edu-

cational resources, for example, by taking educational funds from wealthier schools and distributing them to less wealthy schools (and thus to students who may be underperforming relative to their high potential; see Walton & Spencer, 2009).

## Method

**Participants.** A total of 53 European American participants (22 women, 31 men; mean age = 38.2 years) from a nationwide subject pool administered by a university in northern California participated in an online study for pay. Participants were randomly assigned to either the universal intelligence or the nonuniversal intelligence conditions. We recruited only European American participants in this study because they represent the dominant group that typically has access to more educational resources than other groups in the country and would thus stand to lose the most (on average) if redistribution of educational resources were to occur. We also measured participants' socioeconomic status (SES) as an indicator of whether their group would stand to lose resources if the proposed policy were to be passed.

**Manipulation.** We exposed participants to one of the two target beliefs using a biased questionnaire manipulation (e.g., Job, Dweck, & Walton, 2010). Participants in the universal-intelligence condition were presented with eight items claiming that most people have the potential to become highly intelligent, while those in the nonuniversal intelligence condition were presented with eight items claiming that not everyone can do so (see the Appendix for all the items). Participants were asked to rate their agreement on a 5-point scale with 1 = *do not agree*, 2 = *slightly agree*, 3 = *somewhat agree*, 4 = *moderately agree*, and 5 = *strongly agree*. These scale response options were biased because there were four "agree" options and only one "disagree" option, thus nudging participants to indicate some degree of agreement with the presented items.

**Dependent measure.** Thereafter, participants were presented with three policies[2] that would provide more educational resources to low-income groups, which would have the consequence of decreasing the resources available for higher income communities. The first was a proposal for a federal law to fund a 25% increase in compensation as an incentive for fully qualified teachers to teach in schools serving low-income communities. The second was a proposal for a federal policy to use a large sum of money to hire teachers who would provide educational remediation to those housed in existing juvenile delinquent facilities in the hope of reducing recidivism. The third was a proposal for a federal law to pool all property taxes allotted for educational expenses into a common fund and to distribute it evenly across school districts based upon the number of students in each school. We also presented participants with information to clearly indicate that the policies would be redistributive in nature. For example, for the third policy, participants were told that, "Opponents of the law argue that taxes generated from a community should be used to support students from that community. They argue that using that money to support students elsewhere would be unfair." Participants were asked to rate their agreement with these policies on a 6-point scale ranging from 1 = *do not support at all* to 6 = *support strongly*. Following this, participants indicated their political background on a 7-point scale ranging from 1 = *strongly conservative* to 7 = *strongly liberal* and completed a demographic questionnaire that also assessed their educational attainment on a 7-point scale ranging from 1 = *less than high school* to 7 = *doctoral degree*.

## External Manipulation Check

To ensure that this manipulation would prime the targeted theory, a separate sample of American participants from http://www.mturk.com ($N$ = 109; 57 women, 51 men, 1 unreported; mean age = 35.64 years, $SD$ = 13.4) were randomly assigned to either the universal or the nonuniversal condition. After the manipulation, all participants were given a four-item scale measure of universal–nonuniversal theories (e.g., "Everyone has the potential to become very intelligent if they really want to," 1 = *strongly disagree* to 6 = *strongly agree*; $\alpha$ = .92). Those in the universal condition ($M$ = 3.53, $SD$ = 1.35) rated the potential for high intelligence as being significantly more universal than did those in the nonuniversal condition ($M$ = 3.0, $SD$ = 1.35), $t(107) = 2.04$, $p < .05$, thus validating our manipulation.

## Results

**Manipulation.** The eight items in each biased questionnaire (intended to induce a belief in either universal intelligence or nonuniversal intelligence) were highly intercorrelated, $\alpha$s = .92 and .95, respectively, so we averaged participants' responses across all items. An independent-samples $t$ test revealed that participants agreed with the items significantly more in the nonuniversal condition than the universal condition, $t(51) = 3.12$, $p < .005$, nonuniversal $M$ = 3.76, $SD$ = 1.01 versus universal $M$ = 2.85, $SD$ = 1.09. This difference could be either because the universal manipulation was weaker than the nonuniversal manipulation or because participants were less likely to believe in the universal theory at baseline (as indicated by Studies 1–3). To control for variation in participants' agreement with the items across conditions, we included this variable as a covariate in our analyses.

**Dependent measure.** Participants' support for the three educational policies was highly intercorrelated ($\alpha$ = .71), so we averaged the ratings. Given that political ideology generally correlates with attitudes toward social policies, especially in the context of governmental regulation (Kravitz et al., 2000), and given that our policies involved transferring resources from high-income communities to low-income communities, we controlled for participants' political orientation and SES, as indicated by their educational attainment.

Thus, to explore our main hypothesis, we conducted an ANCOVA with support for policies as the dependent variable; experimental condition as the independent variable; and political orientation, educational attainment, and agreement with the intelligence items used in the manipulation as covariates. As expected, the results of this model showed that across both conditions, more liberal participants were more supportive of the policies, $F(1, 48) = 30.47$, $p < .001$, $\beta$ = .44; more educated participants were less supportive, $F(1, 48) = 4.11$, $p < .05$, $\beta$ = –.22; and partic-

[2] Please contact the first or second author for copies of the complete materials for this or the other studies.

ipants who were more likely to agree with the manipulation items were less supportive, $F(1, 48) = 3.91$, $p = .05$, $\beta = -.27$. Even when controlling for these effects in the model, we found a main effect of condition, $F(1, 48) = 6.54$, $p = .01$, indicating that participants in the universal intelligence condition ($M = 4.20$, $SE = 0.20$) supported the redistributive policies to a greater extent than those in the nonuniversal condition ($M = 3.44$, $SE = 0.21$, $d = 0.56$). Another ANCOVA including interaction terms between condition and all three covariates confirmed that condition did not interact with political orientation, education, or agreement with the intelligence items ($ps > .18$).

## Discussion

Merely exposing participants to the idea that most people have the potential to become highly intelligent significantly increased their support for policies that invest in the education of low-resource groups in the country. These were rather far-reaching proposals, such as distributing property taxes evenly across school districts and investing in the education of juvenile delinquents. These findings suggest that the belief that many individuals (especially those from worse-off groups) lack the potential for intelligence may play a role people's support for policies that maintain an unequal distribution of educational resources across different groups in the United States.

# Study 5

The goal of Study 5 was to extend the findings of Study 4 in two meaningful respects. First, we wanted to test whether a belief in the universal potential for intelligence might influence people's support for even stronger redistributive policies, such as quotas for underperforming and discriminated against minority groups in educational and occupational settings. We used this measure because affirmative action and quotas are often unpopular among U.S. American majority group members (Schuman, Steeh, Bobo, & Krysan, 1997; Sears, Henry, & Kosterman, 2000; Sniderman & Tetlock, 1986), as evidenced by recent referenda banning affirmative action in state-funded institutions in California, Washington, Michigan, and Nebraska. Moreover, research shows that White Americans generally view even the weakest affirmative action policies as redistributive in nature, as taking resources and opportunities away from one group and allocating them to another, and view stronger policies like quotas as even more redistributive (Lowery, Chow, Knowles, & Unzueta, 2012). If one of the important causes of this opposition is the idea that minority groups do not possess the potential for becoming highly intelligent, then exposing people to the alternate belief that the potential for becoming highly intelligent is distributed more widely in the population might increase their support for quotas.

Second, whereas Studies 2 and 3 showed that people's beliefs about whether everyone can become highly intelligent and whether intelligence can be changed over time are not the same construct, it may be the case that these beliefs do not lead to unique outcomes. In other words, it is possible that individuals who believe that intelligence can be increased over time might also be more supportive of quotas for currently underperforming groups. Although people's beliefs about the entity–incremental nature of personality have been shown to influence intergroup judgments and behavior (e.g., Plaks et al., 2001, 2005; Rattan & Dweck, 2010), to our knowledge, beliefs about the entity–incremental nature of intelligence have not yet been tied to intergroup outcomes. Therefore, in the present study, we manipulated both beliefs about the distribution of intelligence and beliefs about whether intelligence can be changed to explore how both sets of beliefs influence these intergroup judgments.

## Method

**Participants.** A total of 96 European American participants (48 women, 48 men; mean age = 29.9 years) from a nationwide online subject pool participated in an online study for pay. Participants were assigned to one of four conditions: the universal intelligence, nonuniversal intelligence, entity intelligence, or incremental intelligence conditions. As in Study 4, we recruited only European American participants because they represent the dominant, majority group that is typically most opposed to such policies.

**Manipulation.** For the universal intelligence and nonuniversal intelligence conditions, we used the same biased questionnaire manipulation as in Study 3 (see Appendix). To create an analogous entity–incremental manipulation, we adapted the eight-item Theories of Intelligence Scale from Dweck (1999, p. 178). This scale consists of four items claiming that people's intelligence cannot increase over time (e.g., "You have a certain amount of intelligence and you can't really do much to change it") and four items claiming that people's intelligence can increase over time (e.g., "You can change even your basic intelligence level considerably"). Using these items as stems, we created eight statements claiming that intelligence cannot increase over time and eight items claiming that intelligence can increase over time, staying as close to Dweck's original items as possible (see Appendix for all the items). Participants were thus presented with one of the four questionnaires, containing eight items either about the universal, nonuniversal, entity, or incremental beliefs about intelligence. They were asked to rate their agreement on 5-point biased response scales with 1 = *do not agree*, 2 = *slightly agree*, 3 = *somewhat agree*, 4 = *moderately agree*, and 5 = *strongly agree*. As in Study 4, because only one response option allowed participants to indicate a disagreement, the scales nudge participants toward agreeing with the presented items.

**Dependent measure.** After the manipulation, participants were provided with a description of an island nation (which, unbeknownst to them, did not actually exist). The island was described as being populated by two groups, the dominant majority community, which controlled most of the resources, and a disadvantaged minority community. People from the minority community were described in terms of the prevalent stereotypes about African Americans in the United States (Devine & Elliot, 1995)—that they "tend to drop out of high school, to be unemployed or working in low-paying jobs, to be arrested for crimes, and are largely poor." Participants were then told that the government of this nation is considering instituting a quota for the minority community (the Tobo) in various institutions in proportion to their representation in the population. They were presented with seven items assessing their support for quotas in undergraduate colleges, professional colleges, government-run institutions, private companies, the judicial system, the national legislative congress, and the

presidential administration. A sample item is "Caledonia is considering setting a quota for the Tobo community in all of the country's undergraduate colleges, reserving 30% of seats in all colleges for students of Tobo ethnic backgrounds. To what extent would you oppose/support such a policy?" Participants rated their agreement on a 6-point scale ranging from 1 = *strongly oppose* to 6 = *strongly support*. Next, to assess participants' attentiveness, we gave them three multiple-choice questions testing whether they remembered three pieces of information provided in the description of the island at the beginning of the task.

Given that social desirability has been found to influence people's attitudes toward redistributive policies (Konrad & Linnehan, 1995), participants were asked to complete a subset of Crowne and Marlowe's (1960) Social Desirability Scale. They were also asked to indicate their political orientation on a 7-point scale ranging from 1 = *extremely conservative* to 7 = *extremely liberal*.

## External Manipulation Check

To ensure that the universal–nonuniversal and entity–incremental manipulations targeted only the intended dimension and not the alternate dimension, a separate sample of participants from http://www.mturk.com ($N$ = 150, 77 women, 73 men; mean age = 36.38 years, $SD$ = 13.27) were randomly assigned to one of the four conditions and then presented with single-item measures of both the universal–nonuniversal belief ("Do you believe that almost all people or that only some people have the potential to become highly intelligent") and the entity–incremental belief ("Do you believe that people cannot change their intelligence a lot over time or that people can change their intelligence a lot over time"), each measured on a 20-point bipolar scale (as in Study 2). We elected to use these single-item manipulation check measures because they are more distinct from the manipulation in terms of the response scale (bipolar vs. unipolar, 20 point vs. 5 point).

A repeated-measures analysis of variance (ANOVA) with responses to the two single-item measures as the within-subject factor and experimental condition as the between-subjects factor revealed a significant interaction between type of belief and condition, $F(1, 148) = 8.41$, $p < .005$. To decompose this interaction, we conducted independent-samples $t$ tests assessing whether the universal–nonuniversal and entity–incremental manipulations produced the expected shift only in the target belief and not in the alternative belief. We found that participants in the universal condition ($M$ = 10.12, $SD$ = 5.05) rated the potential for high intelligence as more universal than did those in the nonuniversal condition ($M$ = 12.97, $SD$ = 5.3), $t(67) = 2.29$, $p < .05$. Yet, participants in the universal ($M$ = 12.4, $SD$ = 4.05) and nonuniversal ($M$ = 12.53, $SD$ = 4.24) conditions rated intelligence as equally malleable, $t(67) = 0.12$, $p > .89$. Thus, the manipulation of universal/nonuniversal theories affected only the target belief and not the alternate belief (i.e., incremental–entity beliefs). Participants in the incremental condition ($M$ = 12.79, $SD$ = 4.08) rated intelligence as more changeable than did those in the entity condition ($M$ = 9.92, $SD$ = 5.34), $t(79) = 2.72$, $p < .05$, but showed no differences in their ratings of the universality of intelligence (incremental $M$= 12.91, $SD$ = 5.04; entity $M$ = 13.51, $SD$ = 5.58), $t(79) = 1.12$, $p > .2$. Thus, the manipulation of incremental–entity theories influenced only beliefs about the changeability of intelligence and not beliefs about the universality of intelligence. These manipulation check results indicate that the universal–nonuniversal and incremental–entity manipulations shift only the targeted belief, while having no effect on the alternate belief.

## Results

**Manipulation.** For all four manipulation scales (the universal, nonuniversal, entity, and incremental beliefs about intelligence) the items were highly intercorrelated ($\alpha$s = .93–.97), so we averaged participants' responses across all items. A one-way ANOVA with mean agreement with the items as the dependent variable and condition as the sole independent variable found a significant effect, $F(3, 92) = 10.50$, $p < .001$. Follow-up $t$ tests revealed that participants' level of agreement did not differ across the nonuniversal and universal conditions, $t(49) = 1.19$, $p > .23$, $M$ = 3.69, $SD$ = 0.19 versus $M$ = 3.33, $SD$ = 0.24, but participants agreed more with the items claiming that intelligence can be increased than with those claiming that intelligence is fixed, $t(43) = 3.25$, $p < .005$, $M$ = 3.1, $SD$ = 0.23 versus $M$ = 2.1, $SD$ = 0.21. This difference might indicate that at baseline, people were more likely to hold an incremental belief about intelligence than an entity belief, or that the incremental intelligence manipulation was stronger than the entity intelligence manipulation. In either case, to control for variation in participants' agreement with the items across conditions, we included the level of agreement as a covariate in our analyses.

**Support for quotas.** We first counted the number of memory test items about the island nation that participants got incorrect and excluded four participants (two in the universal intelligence condition, two in the nonuniversal condition) who got two or more of the memory test items incorrect. Participants' support for the seven quota items was highly intercorrelated ($\alpha$ = .94), so we averaged across these items. We then submitted this measure to an ANCOVA with condition as the independent variable and social desirability, political orientation, and agreement with the intelligence items included in the manipulation as covariates. We found significant effects of condition, $F(3, 85) = 2.99$, $p < .05$; political orientation, $F(1, 85) = 3.86$, $p < .05$; social desirability, $F(1, 85) = 5.02$, $p < .05$; and agreement with the manipulation items, $F(1, 85) = 5.09$, $p < .05$.[3]

Follow-up ANCOVAs (separately for the universal–nonuniversal and the entity–incremental conditions, with the same control variables as above) found that participants exposed to the idea that everyone can become highly intelligent were significantly more supportive of quotas than those exposed to the belief that not everyone can become highly intelligent, $F(1, 46) = 10.23$, $p < .005$, universal $M$ = 4.12, $SE$ = 0.29, versus nonuniversal $M$ = 2.89, $SE$ = 0.22, $d$ = 0.46. However, there was no difference in participants' support for quotas in the entity versus incremental intelligence conditions, $F(1, 40) = 0.06$, $p > .80$, entity $M$ = 3.50, $SE$ = 0.23, versus incremental $M$ = 3.58, $SE$ = 0.23 (see Figure 4).

[3] The effect of condition was significant even when social desirability was omitted from the ANCOVA, $F(1, 86) = 2.64$, $p = .05$.

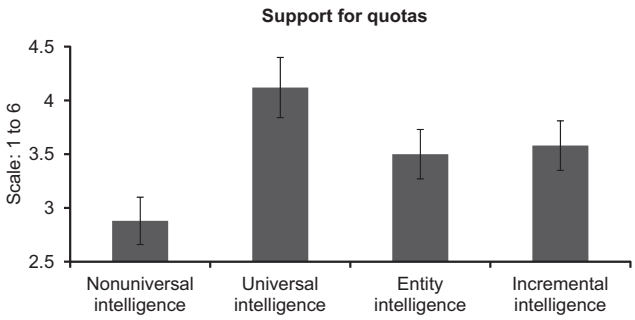


*Figure 4.* Extent to which participants in Study 5 supported quotas, by experimental condition. Error bars represent standard error of the mean.

## Discussion

Study 5 found that merely exposing Americans to the idea of a universal potential to become highly intelligent increased their support for policies that would provide more opportunities for minority groups, even policies as radical as legislating quotas in institutions ranging from the educational system to private companies to the government. However, manipulating their beliefs about the entity versus incremental nature of intelligence did not influence people's support for quotas, perhaps in part because the participants did not tend to endorse the fixed belief. These results again suggest that a belief that not all people have the potential to become highly intelligent may be contributing to Americans' reluctance to endorse specific policies aimed at reducing inequality in the country, although they uphold equality as a general principle (Norton & Ariely, 2011).

# Study 6

In Study 6, we attempted to replicate the effects of Study 5 and to further explore the question of whether the two sets of beliefs about intelligence (universal–nonuniversal, entity–incremental) predict different policy outcomes. The finding that inducing an incremental belief did not lead to significantly more support for quotas may be somewhat surprising. If people believe that individuals can increase their intelligence, then they should be more willing to support policies that provide them with resources to help them do so. However, incremental theorists may not be willing to take resources or opportunities away from others in the service of helping those who are less advantaged, since this might mean sacrificing one group's growth for another's. It might also be seen as taking resources away from groups who have the greater potential to become highly intelligent. Therefore, an incremental versus entity theory may predict support for greater allocation of resources across the board, but not for redistributing existing resources. In contrast, if everyone has the potential to become highly intelligent, it may imply that everyone has a right to equal resources to reach their potential for high intelligence. In other words, holding the universal belief might make people more likely to view resource inequality as unfair and thus motivate them to act in ways that restore fairness, even if, as is the case in the context of limited resources, this comes at the expense of those who have more.

In sum, Study 6 tested whether both incremental and universal theories predict the provision of more educational resources to all students, while only universal theories predict redistributing educational resources to create greater equality across different groups.

## Method

**Participants.** Two hundred and forty-three adults from http://www.mturk.com (98 women, 144 men, 1 unreported; mean age = 36.8 years) were recruited for an online study for pay. Participants were randomly assigned to either the general policies or the redistributive policies conditions.

**Independent measures.** We first measured participants' beliefs in the universal–nonuniversal theories (e.g., "Everyone has the potential to become very intelligent if they really want to") and the entity–incremental theories (e.g., "People have a certain amount of intelligence, and they can't really do much to change it"), using four items to measure each belief. The two belief measures were administered on separate webpages, and their order of administration was counterbalanced. In between the two belief questions, we included a filler measure of participants' hobbies. Participants then completed 10 items from the Social Desirability Scale (Crowne & Marlowe, 1960) as a filler between the intelligence beliefs measures and the policy measures. Thereafter, participants were asked to indicate their support for four educational policies.

**Dependent measures.** Participants received either the general policies or the redistributive policies as the dependent measure. In the general policies condition, participants were presented with these four policies: (a) a proposal to provide additional incentives to fully qualified teachers to replace partially qualified teachers in all U.S. schools; (b) a proposal to supplement schools' decrease in funding due to property devaluation by additional federal funds; (c) a proposal to provide free additional test preparation materials to all schools; and (d) a proposal to fund all public school and public libraries to purchase English language learning books and software. Participants were always explicitly told that the costs for all these expenses would come from additional funds sanctioned by the government, not from the existing educational budget. Therefore, these policies provided more educational resources for all students in the country.

In the redistributive policies condition, participants were presented with four parallel policies: (a) a proposal to provide additional incentives to fully qualified teachers to replace partially qualified teachers only in low-income schools; (b) a proposal to accumulate all property taxes at the state level and to distribute them evenly to school districts based upon student enrollment and cost of living; (c) a proposal to provide free additional test preparation materials to schools serving low-income communities; and (d) a proposal to fund public schools and public libraries in districts with large proportion of English-as-a-second-language students to purchase English language learning books and software. Participants were told that the costs for any additional expenses would come from the existing educational budget, thus removing resources from the communities they were currently allocated to (Policies 1–2) or reducing the funding available for other purposes (Policies 3–4). Therefore, these policies shifted some portion of educational resources to a more equal allocation, from relatively high-income communities to relatively low-income communities. Participants indicated their agreement with each policy on a 6-point scale ranging from 1 = *strongly oppose* to 6 = *strongly support*.

**Manipulation check.** After participants responded to all policies, they completed a manipulation check verifying that the redistributive policies were indeed perceived as more redistributive than the general policies. We presented participants with the same policies again but asked them to rate the policies on a 6-point scale ranging from 1 = *this policy takes some resources away from some people and gives them to other people* to 6 = *this policy gives more resources to all people without taking away from anyone*. Finally, participants reported their political orientation and demographics.

## Results

The items on each scale were highly intercorrelated (the four universal–nonuniversal belief items, $\alpha = .92$; the four entity–incremental belief items, $\alpha = .96$; and the four policies, $\alpha = .69$), so we averaged them. There was a small but significant correlation between the universal and incremental beliefs ($r = .14$, $p = .03$).

We ran a regression with average support for policies as the dependent measure and policy condition (general policies = –1, redistributive policies = 1), universal belief (higher numbers indicating universal belief, centered), incremental belief (higher numbers indicating incremental belief, centered), the Policy Condition × Universal Belief interaction, the Policy Condition × Incremental Belief interaction, the Universal Belief × Incremental Belief interaction, the Policy Condition × Universal Belief × Incremental Belief three-way interaction, and political orientation (centered) as independent variables. The main effect of condition was not significant, $B = .03$, $t(234) = 0.48$, $p > .63$, but we found a main effect of universal beliefs, $B = .17$, $t(234) = 2.78$, $p < .01$; a main effect of incremental beliefs, $B = .10$, $t(234) = 1.94$, $p = .05$; a Policy Condition × Incremental Belief interaction, $B = –.12$, $t(234) = 2.5$, $p = .01$; and a main effect of political orientation, $B = .25$, $t(234) = 7.06$, $p < .001$. The Policy Condition × Universal Belief interaction was not significant, $B = .01$, $t(234) = 0.11$, $p > .9$, and the Universal Belief × Incremental Belief interaction was not significant, $B = .03$, $t(234) = 0.63$, $p > .5$. In addition, the three-way interaction was not significant, $B = .003$, $t(234) = 0.06$, $p > .9$, providing further evidence that the universal–nonuniversal beliefs uniquely predict support for redistributive measures.

The findings indicate that universal beliefs predict both general and redistributive policies equally, but incremental beliefs predict general policies more strongly than redistributive policies. To further examine the two-way interaction, we conducted separate regressions for the general policies and redistributive policies conditions, again controlling for political orientation. For general policies, both incremental beliefs, $B = .22$, $t(120) = 2.95$, $p < .005$, and universal beliefs, $B = .18$, $t(120) = 1.96$, $p = .05$, were significant predictors, as was political orientation, $B = .266$, $t(120) = 5.12$, $p < .001$ (see Figure 5). However, for redistributive policies, universal beliefs were a significant predictor, $B = .18$, $t(115) = 2.23$, $p < .03$, as was political orientation, $B = .23$, $t(236) = 4.86$, $p < .001$, but incremental beliefs were not, $B = .02$, $t(115) = 0.34$, $p > .73$ (see Figure 6).

The manipulation check revealed that participants in the redistributive condition were more likely than those in the general condition to state that the policies would take money from some people and transfer it to others, $t(240) = 4.15$, $p < .0001$, $M = 2.77$, $SD = 0.11$ versus $M = 3.42$, $SD = 0.12$. These results confirm that participants did, in fact, interpret the policies as intended.

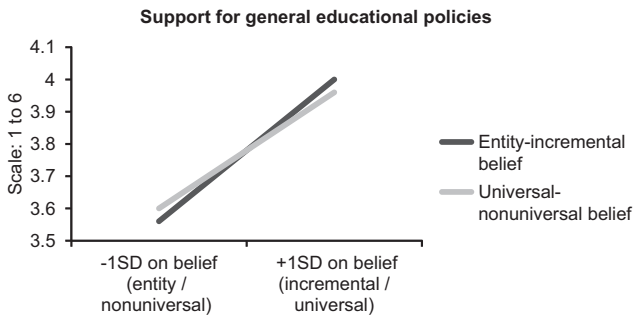


*Figure 5.* Extent to which the two beliefs about intelligence predicted support for general educational policies in Study 6.

## Discussion

Study 6 tested differential predictions of universal–nonuniversal and entity–incremental beliefs about intelligence. We predicted and found that the more people believe that everyone has the potential for high intelligence the more likely they were to support general policies that provide greater educational resources to all students, as well as redistributive policies that shift educational resources from high-income communities to low-income communities. However, the more people believed that intelligence can be increased, the more likely they were to support the general policies but not the redistributive policies.

Together, the findings demonstrate that universal–nonuniversal beliefs and entity–incremental beliefs are distinct beliefs about the nature of intelligence and make different predictions about people's support for policies aimed at redressing social inequality.

# General Discussion

The article began by identifying a novel dimension along which people's beliefs about intelligence vary, namely, whether people believe that everyone or not everyone has the potential to become highly intelligent. Studies 1–3 found that whereas both beliefs are present in the United States and in India, a majority of Indians tended to believe that most people have the potential to become highly intelligent, but a majority of Americans tended to believe that only some individuals have this potential.

After documenting these diverging beliefs about intelligence, we manipulated Americans' beliefs about the universal potential for high intelligence and examined the impact on support for social policies affecting disadvantaged groups—groups that are at times characterized as having limited potential for intelligence (Herrnstein & Murray, 1994; Jensen, 1998). Study 4 showed that participants who were exposed to the idea that nearly everyone can become highly intelligent were more supportive of distributing educational funds more equally across schools serving wealthier and poorer communities. Study 5 found that after being exposed to the idea that most people have the potential to become highly intelligent, Americans were more likely to support an even more

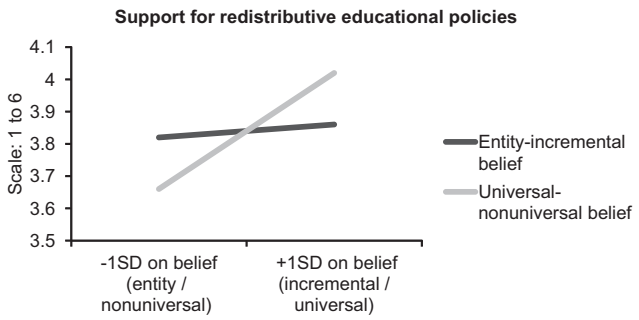


*Figure 6.* Extent to which the two beliefs about intelligence predicted support for redistributive educational policies in Study 6.

radical policy measure: quotas for minority groups in educational institutions, private companies, and the government.

Across the studies, we found a significant, but not a strong, correlation between the belief in universal intelligence and the belief that intelligence can be developed, suggesting that these two beliefs are distinct constructs. We also showed that manipulating one belief did not shift the other belief. Moreover, the key results of Studies 5 and 6 showed that the universal and the incremental beliefs predicted different policies. For example, Study 6 found that the more people believe in the universal potential for intelligence, the more likely they are to support both general educational policies that provide more resources to all students and redistributive educational policies that transfer resources from advantaged to disadvantaged students. People who believe that intelligence can be changed were more likely to support only the general policies, not the redistributive ones.

## Implications and Future Directions

### Relevance for Cultural Variation in Beliefs About Intelligence

Our studies consistently found that Indian participants believed in the universal potential for high intelligence more than did Americans, and there was also some suggestion that they had a more incremental theory of intelligence than Americans (in Study 2, but not Study 3). Perhaps beliefs about intelligence are another example of psychological variables that are organized together between cultures but not within cultures (Kitayama, Park, Sevincer, Karasawa, & Uskull, 2009; Na et al., 2010). In other words, cultures that emphasize hard work and persistence might lead some individuals to believe that intelligence can be increased, while leading other individuals to believe that many have unlimited intelligence. Both beliefs further the cultural emphasis on effort but through different routes. From this perspective, it would not be surprising that we found cultural differences in both universal–nonuniversal beliefs and entity–incremental beliefs, but not a strong correlation between the two.

### Relevance for Intergroup Relations

Previous research has shown people who make internal attributions (Levy, Plaks, Hong, Chiu, & Dweck, 2001; Levy, Stroessner, & Dweck, 1998) or those who hold essentialist beliefs (Haslam, Rothschild, & Ernst, 2000, 2002; Jayaratne et al., 2006; Keller, 2005) evaluate stigmatized group members more negatively. A potentially interesting hypothesis suggested by our research is that the belief in the nonuniversal potential for intelligence might be a key component of internal and essentialist attributions in the domain of academic and intellectual performance. When people see an underperforming individual, they may be more likely to attribute the underperformance to a lack of inherent potential if they hold the nonuniversal theory of intelligence, but if they hold the universal theory of intelligence, they might search for other, more contextual or motivational explanations. It is critical to understand the specific beliefs that spawn limiting versus optimistic judgments that people make about others, particularly about outgroups or underrepresented groups.

Moreover, our last three studies suggest that, quite apart from specific intergroup stereotypes, general beliefs that are not explicitly linked to social groups might also lead people to oppose policies aimed at redressing societal inequality. Further, because general beliefs appear harmless at face value, they might have consequences that are even more pervasive and difficult to address—people might not feel the need to question general beliefs about intelligence that do not say anything negative about a specific group. We elaborate upon this point below.

The model for understanding intergroup relations in the United States has largely focused on how beliefs, attitudes, and associations related to a specific group shape people's behavior toward that group (Fiske, Cuddy, Glick, & Xu, 2002; Greenwald, McGhee, & Schwartz, 1998; Pearson, Dovidio, & Gaertner, 2009; Richeson & Shelton, 2003; Shelton, Richeson, Salvatore, & Trawalter, 2005). In the context of intelligence, for example, negative stereotypes about women's math intelligence can influence people's behaviors toward women in math, such as parents or teachers telling a high school student that she is unlikely to succeed as a math major in college. When such beliefs and behaviors are identified as inappropriate, unfair, and in opposition to broader cultural values of equality, people can develop goals of changing both their beliefs about and behaviors toward the target social group. Although people may continue to harbor negative associations between the group and the attribute, they simultaneously know that they ought not to and may try to act in an unbiased manner to the best of their ability (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Plant & Devine, 1998).

In contrast, the current research examines more general beliefs that do not readily bring to mind the intergroup context. Because these beliefs are not explicitly linked to the social groups that are subject to bias, it may be harder for people to recognize that changing such seemingly distal beliefs will affect intergroup outcomes. For example, while prevalent egalitarian goals may motivate people to monitor their beliefs and behaviors about women in math and science or African Americans in the academic context, these goals might not instigate further monitoring of their general beliefs about intelligence—even though these beliefs may affect their behavior toward groups that have less access to educational resources, for example, low SES individuals. Another consequence of this process could be that lay beliefs, such as those about the potential for intelligence, might be particularly powerful in transmitting prejudice, particularly to new members of American society. As immigrant groups are gradually acculturated into the United States, they may come to believe that not everyone has the

potential to become highly intelligent. Without interrogating this belief, they then may come to exhibit the same opposition to policies that equalize resources across different groups even in the absence of animus toward low status social groups.

Further, it is an open question whether people who belong to disadvantaged minority groups and low SES communities tend to believe in the universal or the nonuniversal potential for high intelligence. As the belief that only some people can become highly intelligent is not considered a negative intergroup stereotype, it is possible that members of minority and low SES groups in American society might also come to hold this belief. On the other hand, the intergroup implications of such beliefs may be more apparent to minority group members, particularly in academic settings, given that majority group members might often perceive minority groups through the lens of this belief. If this is the case, then minority group members might be less likely to believe that that not everyone can become highly intelligent. At the same time, research has shown that mere knowledge of negative stereotypes can lead to decrements in stigmatized group members' performance (Steele, 1997), which might suggest that even minority group members who endorse the universal belief may be affected by others' endorsement of the nonuniversal belief. Comparing the extent to which majority and minority group members hold this belief, and the consequences of doing so, will be a fruitful area for future research.

## Implications for Other Cultural Differences

We found that a large majority of the Indian college students we sampled indicated a belief that everyone has the potential to become highly intelligent. However, discrimination and inequality is indeed prevalent in Indian society. As such, this research points to an interesting and as yet unstudied area for future research. For example, given the importance of morality in Hindu Indian philosophical traditions (Miller, 2003; Miller & Bersoff, 1992; Miller, Bersoff, & Harwood, 1990; Shweder, Much, Mahapatra, & Park, 1997) and given the potential role of feelings of moral uprightness on intergroup bias (Monin & Miller, 2001), perhaps Indians believe that individuals vary in their potential to become moral adults, that only some individuals have the potential to attain high standards of morality. Future research might examine whether Indians hold more of a nonuniversal theory about moral character than do Americans.

## Conclusion

Although the field of cultural psychology has recently tended to treat culture as a "moderating variable," interacting with the independent variables of interest, the present research demonstrates that cross-cultural research can be used to identify previously unexamined psychological variables, thus making important contributions to basic science. Given that prevalent cultural beliefs and assumptions are rarely questioned, cross-cultural research can often be critical in uncovering such beliefs and in inspiring researchers to examine the specific psychological consequences that such beliefs might have. In this sense, cross-cultural research can inform researchers not just about specific cultural contexts but also about psychological processes in general.

The concept of intelligence is among the most important concepts in educational settings and in society in general. There are many nuances to this concept, many component beliefs and assumptions that make up the concept of intelligence. Whether accurate or not, these assumptions have powerful organizing influences on society. The present research calls for a closer examination of the cultural assumptions underlying intelligence and their effects on society.

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## Appendix

### Items Included in the Biased Questionnaire Manipulation for the Universal Versus Nonuniversal Beliefs About Intelligence in Studies 4 and 5 and Entity Versus Incremental Beliefs About Intelligence in Study 5

| Universal condition | Nonuniversal condition |
|---|---|
| 1. Given the right environment, nearly everyone can become highly intelligent. | 1. Even in the right environment, not everyone can become highly intelligent. |
| 2. Most people have the potential to become highly intelligent if they want to. | 2. Some people just don't have the potential to become highly intelligent even if they want to. |
| 3. Most people have the inborn potential to become very intelligent, but not all end up realizing their potential. | 3. Not all people have the inborn potential to become very intelligent. |
| 4. Provided they have access to a good education, most people have the mental capacity to attain high intelligence. | 4. Even if they have access to a good education, some people just don't have the mental capacity to attain high intelligence. |
| 5. With the right opportunity, support, and endurance, there are few limits to how intelligent a person can become. | 5. There are biological limits to how intelligent people can become, despite the opportunities, support, and endurance they have. |
| 6. Many people can become highly intelligent if they get the chance. | 6. There are people who just can't become highly intelligent even if they get a chance to. |
| 7. In principle, there are no biological limits to how intelligent people can become. | 7. To be honest, there is a biological limit to how intelligent people can become. |
| 8. In an ideal world, all people could become highly intelligent, if they would like to. | 8. All people cannot become highly intelligent; there will always be individuals who just have limited capacities. |
| **Entity condition** | **Incremental condition** |
| 1. People can't really do much to change their intelligence. | 1. People can always do a lot to change their intelligence. |
| 2. People's intelligence is something about them that they can't change very much. | 2. People's intelligence is something about them that they can always change very much. |
| 3. To be honest, people can't really change how intelligent they are. | 3. To be honest, people really can change how intelligent they are. |
| 4. People can learn new things, but they can't really change their basic intelligence. | 4. People can learn new things, and they can also change their basic intelligence. |
| 5. No matter who it is, people can't significantly change their intelligence level. | 5. No matter who it is, people can always significantly change their intelligence level. |
| 6. People can never substantially change how intelligent they are. | 6. People can always substantially change how intelligent they are. |
| 7. No matter how much intelligence people have, they can't change it. | 7. No matter how much intelligence people have, they can always change it. |
| 8. People can't change their basic intelligence level. | 8. People can always change their basic intelligence level. |

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