



The can and cannot do attitude: How self-estimates of ability vary across ethnic and socioeconomic groups



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ABSTRACT

How people think about their own abilities is an important predictor of educational and work attainment. This study examines group differences in the self-concept of intelligence and creativity. We compared self-concept of ability in relation to ethnic group membership (White, African American, and Hispanic) and social class (working class, middle class) in a large sample of undergraduate students ($N = 3289$). Both ethnicity and social class were related to self-estimates of ability (favoring White and middle class students), with group differences being stronger for intelligence than creative abilities. White middle class students show an advantage in their self-concept of intelligence in comparison to minority working class students. For self-estimates of creativity, however, White middle class students show an advantage only in relation to working class Hispanic, but not African American students.

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1. Introduction

An achievement gap in the United States persists both between ethnic minority and majority groups and students from working class and middle class families (Nord et al., 2011). Although most students start out with aspirations for higher education, these aspirations tend to diminish with time for African American and Hispanic students (Kao & Tienda, 1998; Schoon, 2001). Most first generation college students do not complete their degrees within eight years of high school graduation, with Hispanic and African American students showing lower graduation rates than White students (McCarron & Inkelas, 2006). In order to reduce these discrepancies, it is necessary to understand the factors associated with the inequalities. A number of such factors have been studied, such as parental involvement (Jeynes, 2005) and stereotype threat (Aronson & Steele, 2005). Here we examine another potential source of group differences: self-concept of ability.

Evaluations of one's own abilities are important for understanding the nature of the self-concept and group differences in achievement behavior. Researchers studying self-concept of ability (i.e., efficacy beliefs) in the educational context ask children to evaluate to what extent they possess abilities necessary to do well in their classes. Children use Likert-type scales to indicate how good at math they are or how well they expect to do compared to other students (Eccles & Wigfield,

1995). This research found that children entering elementary school have uniformly positive beliefs about their abilities, but that these beliefs become less positive as children become more skilled in social comparison and receive more feedback on their performance (Eccles & Wigfield, 2002; Fredricks & Eccles, 2002).

Self-concept of ability is also studied by differential psychologists who ask people to evaluate their abilities in units commonly used in psychometric assessments, such as IQ metrics (Furnham, 2001). In this paradigm, participants are introduced to the IQ bell curve scale (e.g., 100 is the average) and asked to estimate their own ability using this scale. Research findings across studies and across cultures show that men consistently give higher estimates than women and that self-estimated general intelligence is largely based on perceptions of logical and verbal abilities (Furnham, 2001; von Stumm, Chamorro-Premuzic, & Furnham, 2008).

Self-evaluations of ability have important consequences for behavior in achievement contexts. Self-concept of ability predicts both achievement and interest in different academic subjects (Eccles & Wigfield, 2002; Fredricks & Eccles, 2002). Self-estimated IQ scores predict course grades, as well as attendance and participation in class two years later. Moreover, this correlation remains significant even after controlling for measured intelligence (Chamorro-Premuzic & Furnham, 2006; Furnham, Chamorro-Premuzic, & McDougall, 2003). Self-estimated creative ability is less widely studied, but appears to mirror the findings about self-estimated intelligence. Men estimate their creativity higher than women and these self-evaluations can predict performance on psychometric tests of creative ability (Furnham, Batey, Anand, & Manfield, 2008; Furnham, Zhang, & Chamorro-Premuzic,

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2005; Kaufman, 2006, 2012a).^{1,2} Moreover, creative self-efficacy in middle and high school students is related to aspirations to attend college and participation in after-school activities (Beghetto, 2006), as well as teacher-rated creativity (Beghetto, Kaufman, & Baxter, 2011). In adults, employee creative self-efficacy at work predicts their creative performance (Tierney & Farmer, 2011).

Self-evaluations of ability are influenced by societal stereotypes about different groups. For instance, women are less optimistic about their abilities in science, a traditionally male dominated field, although their objective performance is not different from their male counterparts (Ehrlinger & Dunning, 2003). When asked to estimate their intelligence in multiple areas, men give higher estimates of quantitative and spatial intelligence and women give higher estimates of social and personal intelligence (Furnham & Buchanan, 2005). Gender differences in perceptions of intelligence emerge not only for self-ratings, but also when rating one's parents or grandparents, and they disappear when controlling for endorsement of gender stereotypes (Furnham, 2001; Rammstedt & Rammsayer, 2000). Similarly, Bonnot and Croizet (2007) showed that women's stereotype endorsement lowers their self-evaluations of math ability and these lower self-evaluations have an adverse effect on their performance. Thus, self-concept of ability reflects, at least in part, one's internalization of societal stereotypes.

Members of ethnic minority and working class groups are stereotyped as less intelligent and these stereotypes are a powerful source of social influence (Aronson & Steele, 2005; Steele, 1997). Activation of a negative stereotype about ability leads to lower performance and less positive attitudes towards a stereotyped domain for individuals who belong to the target group (Aronson & Steele, 2005; Croizet & Claire, 1998; Steele, 1997). When a stereotype that African Americans, Hispanics, or working class individuals are not very intelligent is activated (e.g., by describing a test as diagnostic of intelligence), students belonging to these groups experience concern that their behavior will confirm the stereotype. This concern negatively influences self-concept and behavior, making their performance more similar to the stereotype. Moreover, multiple stereotyped social identities (e.g., female gender and Hispanic ethnic background) may act in concert in influencing self-concept and behavior (Brown & Leaper, 2010; Gonzales, Blanton, & Williams, 2002).

A recent study of self-estimates of intellectual abilities in a sample of ethnically diverse college students demonstrates chronic group differences in the self-concept (Kaufman, 2012b). Students were asked to estimate their overall intelligence quotient, as well as crystallized and fluid intelligence. This was the first study examining self-estimates of fluid and crystallized intelligence, which are important as the facets of intellectual abilities most frequently assessed by intelligence tests (Kaufman, 2009). Fluid intelligence is the ability to solve a wide variety of novel problems through reasoning and crystallized intelligence is an ability to use acquired knowledge in problem solving (Horn, 1968; Horn & Cattell, 1966). Self-estimates of these abilities were highly correlated (mean $r = .67, p < .001$), showing close association of these abilities in the self-concept. Significant ethnic group differences were found for all three abilities, with White students giving the highest self-estimates and Hispanic students giving the lowest self-estimates.

Group differences in creative abilities have received much less empirical attention. Performance on tests of creative abilities shows at best inconsistent evidence of ethnic group differences. Many studies find non-significant differences (e.g., Baer & Kaufman, 2008; Kaufman, Baer, & Gentile, 2004). Some ethnic differences favor African Americans (e.g., Torrance, 1971; Troiano & Bracken, 1983) and when ethnic group differences favoring Whites are found, they are smaller than differences

in analytical ability skills (e.g., SAT tests, which are similar to analytic intelligence measured by the IQ scores; Sternberg & The Rainbow Project Collaborators, 2006). Studies directly examining ethnic stereotypes of creative abilities do not find a substantial bias against ethnic minority groups. For instance, Kaufman, Baer, Agars, and Loomis (2010) asked college students to rate creativity and liking of poems downloaded from a poetry website that were presented as either written by someone with a stereotypically African American, White, or ambiguous name or without any name attribution. In comparison to the no-name condition, poems were rated slightly higher when described as written by a person with a typically White name and there were no significant differences for poems described as written by a person with a typically African American name. To date, creativity self-evaluations of working class individuals have not been directly studied and our predictions are somewhat tentative. Creative self-efficacy is related to higher job complexity (Tierney & Farmer, 2002). Considering that working class individuals are less likely to work in domains that require independent decision making and problem solving (e.g., manual labor), their activities and life experiences might not have enabled them to develop a high self-concept of creativity.

In this paper we examine differences in the self-concept of intellectual and creative abilities in different ethnic (African American, Hispanic, and White) and socioeconomic groups (working and middle class family backgrounds). We examine chronic self-concept; the assessment situation is not manipulated to increase the salience of different social identities. Rather, we are interested in underlying differences in the self-concept of abilities that are likely to operate across situations. Based on above reviewed research, we hypothesize that observed group differences will reflect negative stereotypes of intelligence about African American and Hispanic students and about working class students. We do not have specific hypotheses about ethnic group differences in the self-evaluations of creativity and expect social class differences favoring middle class individuals.

2. Method

2.1. Participants

Participants were $N = 3289$ (2371 female, 358 male; 560 did not disclose gender) undergraduate students at a large public university in California (mean age = 24.29; $SD = 7.28$). The data were collected as a part of a larger study and only participants who self-identified as African American ($N = 470$), Hispanic ($N = 1649$), or White ($N = 1170$) were included in the analyses. The sample was diverse in terms of family background, with 20.6% of mothers and 19.8% of fathers having college degrees or higher educational attainment.

2.2. Measures and procedure

Participants were asked to provide self-estimates of their intelligence quotient (overall IQ), fluid intelligence, crystallized intelligence, and creativity. Consistent with Furnham (2001), they were first shown a figure representing a normal distribution with labels for different levels of ability based on the standardized scale with a mean of 100 and a standard deviation of 15 (e.g., 85 = low average, 100 = average, 115 = high average, 130 = superior). Next, they were asked to estimate their IQ, crystallized intelligence, fluid intelligence, and creativity. Because terms intelligence and creativity are commonly used in everyday discourse, we did not provide an explicit definition of these concepts. However, fluid and crystallized intelligence are technical concepts in psychology and they were defined for participants; crystallized intelligence was described as representing "acquired knowledge and concepts" and fluid intelligence as "problem solving ability with novel stimuli, adaptability, and flexibility". Also, participants completed a 5-item measure of creative self-efficacy (adapted from Kaufman & Baer, 2004; see also Kaufman, Pumacchua, & Holt, 2013). On a 5-point scale, participants indicated agreement with self-descriptive statements

¹ However, it is important to note that self-assessments appear less related to actual rated creative work (Kaufman, Evans, & Baer, 2010; Lee, Day, Meara, & Maxwell, 2002; Priest, 2006).

² Because of the scarcity of research on self-evaluations of fluid and crystallized intelligence, we conducted statistical analyses to test whether these abilities examined separately give the same results as the combined score. Evaluations of both abilities yield the same results as the combined score.

Table 1

Summary results for ANCOVA testing the effects of ethnicity and social class on self-estimates of intelligence and creativity.

	<i>F</i>	<i>df</i> 1	<i>df</i> 2	<i>p</i>	η^2
Intelligence					
College GPA	99.45	1	2225	<.001	.043
Ethnicity	12.33	2	2225	<.001	.011
Class	24.71	1	2225	<.001	.011
Ethnicity × class	4.27	2	2225	.014	.004
Creativity					
College GPA	5.17	1	3025	.023	.002
Ethnicity	7.72	2	3025	<.001	.005
Class	13.72	1	3025	<.001	.005
Ethnicity × class	5.03	2	3025	.007	.003

about creative ability, such as “I consider myself to be very creative” and “I am good at coming up with new and different ideas” ($\alpha = .69$). In addition, participants provided self-reported high school and college grade point averages.

Factor analysis (principal components extraction with an oblique rotation) of 3 self-evaluations of intelligence and 2 measures of creativity yielded a two-factor solution separating self-concept of intelligence and self-concept of creativity. Using standardized z-scores, we created an average measure of self-concept of intelligence (including self-estimates of overall, crystallized, and fluid IQ; $\alpha = .86$) and creativity (including the self-estimate of creative ability and the total score on creative self-efficacy; $\alpha = .79$).

Socioeconomic status was operationalized as family educational background, with working class defined as both parents having less than a college degree and middle class defined as at least one parent having a college degree or higher. While there are other valid operationalizations of socioeconomic status, recent research shows that parental education has a powerful influence on disparities in educational attainment, making this an especially relevant variable for the present study (Snibbe & Markus, 2005; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012; Stephens, Markus, & Townsend, 2007).

All measures were administered as a part of an internet-based survey.

3. Results

To examine group differences we analyzed participants' self-estimated intelligence and creativity in an ANCOVA, with self-estimated

abilities predicted by ethnicity (African American, Hispanic, White) and socioeconomic status (working class, middle class) and controlling for college grade point average. Both for self-concept of intelligence and creativity, there were significant main effects of social class (higher estimates given by students with middle class background) and ethnicity (higher estimates given by White students). In addition, class × ethnicity interaction was significant so that social class differences were smaller for White than minority students (see Table 1). The magnitude of the observed group differences is larger for intelligence than for creativity. Fig. 1 shows the mean ability estimates for each of the ethnic and social class groups.

Next, we compared White middle class students (non-stereotyped group) with each of the other groups. The hypothesis of the White middle class advantage in terms of the self-concept of overall intelligence was largely confirmed. The contrasts showed that White middle class students gave higher estimates of intellectual ability ($M = .29$, $SD = .85$) than African American ($M = -.12$, $SD = .92$; $p < .001$) and Hispanic working class students ($M = -.23$, $SD = .82$; $p < .001$). White middle class students gave higher self-estimates of creativity ($M = .08$, $SD = .90$) than working class Hispanic students ($M = -.18$, $SD = .85$; $p < .001$), but lower estimates than middle class African American students ($M = .22$, $SD = .95$; $p = .038$).

4. Discussion

This study examined the self-concept of ability, including overall intelligence, crystallized and fluid intelligence, and creativity, across ethnic and socioeconomic groups. We hypothesized that stereotypes of intellectual ability would be reflected in these chronic self-conceptions and that ethnic and social class differences would be smaller for creative abilities than intelligence. These hypotheses were largely supported. There was a significant ethnicity by social class interaction in relation to self-estimates of both intelligence and creativity so that the difference between working class and middle class students was more pronounced for minority than White individuals. Furthermore, whereas White middle class students estimated their intelligence higher than both working class African American and Hispanic students, their self-concept of creativity was higher only in comparison to working class Hispanic students and it was lower than that of middle class African American students.

Self-concept of ability reflects one's life history, including socialization in the family (Eccles, 1992), experiences of successes and failures

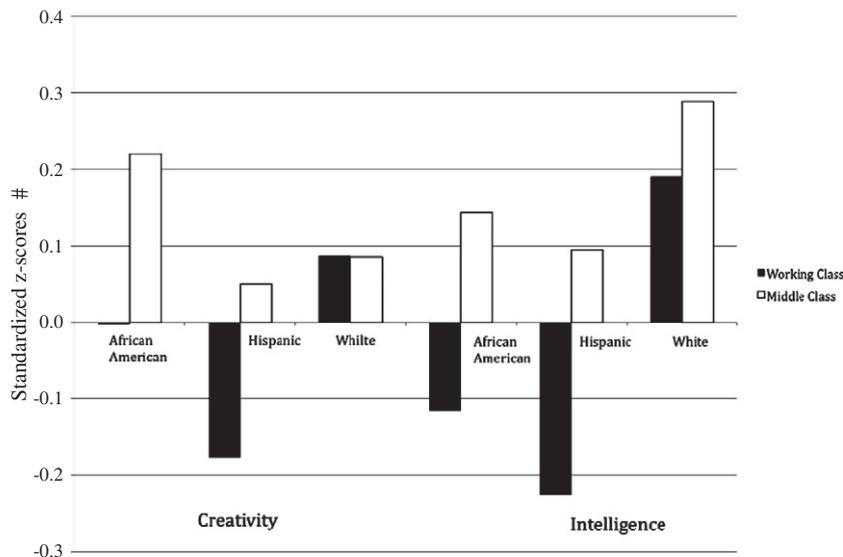


Fig. 1. Mean self-estimated intelligence and creativity across ethnic groups and social class.

(Eccles & Wigfield, 2002), and messages in the culture (Aronson & Steele, 2005). Our culture stereotypes those of working class and ethnic minority individuals as having lower intelligence than middle class and White individuals (Aronson & Steele, 2005, Croizet & Claire, 1998). Experimental social psychologists showed that specific situations can activate people's concerns about whether their performance would confirm stereotypes about their social groups (Steele, 1997). Our study did not prime a specific social identity, but rather examined chronic differences in the self-concept of ability. The results show that non-negatively stereotyped White middle class students indeed have a higher self-concept of their intelligence than multiply stereotyped working class African American and Hispanic students. When facing decisions about whether to pursue advanced educational degrees or challenging courses of study, students with chronically lower estimates of their intellectual abilities are likely to lower their aspirations (Kao & Tienda, 1998; McCarron & Inkelas, 2006), thus contributing to the achievement gap between different social groups.

The detrimental effects of ethnic minority status and working class background were less pronounced in relation to self-estimates of creativity. Middle class White students had higher self-concept of creativity only in relation to Hispanic working class students, and African American middle class students had the most positive self-concept of creativity. This finding was consistent with past results showing that African Americans have stronger creativity self-beliefs than other ethnic groups (Kaufman, 2006). Also, these findings are similar to the research on measured abilities where tests of creative and practical intelligence abilities show lower ethnic disparities favoring White students in comparison to tests of analytic abilities (such as the SAT; Sternberg et al., 2006). Thus, our research findings support recent propositions that inclusion of a broader set of ability assessments in college and postgraduate admissions could help reduce the achievement gap for traditionally underrepresented groups (Hedlund, Wilt, Nebel, Ashford, & Sternberg, 2006; J.C. Kaufman, 2005, 2009, 2010; Stemler, Grigorenko, Jarvin, & Sternberg, 2006; Sternberg et al., 2006). Our research shows more positive self-concept of creative abilities in middle class African American than in middle class White students, suggesting that a greater focus on creative abilities in higher education could especially benefit some minority students.

Although ethnic and social class differences are less pronounced for creativity than for intelligence, the field is not completely evened. The interaction of ethnic background and social class indicates a disparity between working class and middle class for African American and Hispanic students. We can only speculate about the reasons for this disparity, such as the immigration status, occupational background, cultural beliefs, or life experiences of these students. For instance, creativity is associated with childhood artistic and intellectual activities (Helson, Roberts, & Agronick, 1995), which are less likely to be experienced in working class families (Kalmijn & Kraaykamp, 1996; Peterson, 1992). Studies of leisure participation show similarities between African American and White middle class individuals, but a divergence for working class individuals (Floyd, Shiner, McGuire, & Noe, 1993). Similarly, traits of individuality and independence predict creativity (Dollinger, Robinson, & Ross, 1999; Feist, 1999; Helson & Srivastava, 2002), but recent research shows that students from working class families tend to have a relatively more interdependent self-concept. Thus, tasks requiring self-expression are more challenging, and these students tend to perform more poorly than middle class students in college (Stephens et al., 2012).

This study opens a number of questions for future research on the nature of the self-concept of ability and its consequences. One important set of questions pertains to the origins of the observed group differences in the self-concept of ability. If self-estimated intelligence reflects stereotypes of social groups, awareness of stereotypes about one's group can mediate the relationship between social group (ethnic minority or working class) and the self-concept of ability (Vorauer, Main, & O'Connell, 1998). Also, it is likely that self-concept of ability reflects differences in experiences with activities involving different kinds of

skills, such as experiences in the schools (e.g., discrimination, parental involvement), and extracurricular or cultural activities (e.g., organized artistic and intellectual activities). Finally, future research should examine the interaction between gender, ethnic, and socioeconomic background. The majority of participants in the present study were female, potentially biasing the self-evaluations of ability.

Self-concept of ability predicts educational aspirations and achievement and is thus important both theoretically (in understanding social influences on the self) and practically (in identifying factors predicting educational attainment). Intelligence is a major predictor of educational and occupational attainment (Gottfredson, 2002) and the importance of creative abilities for social mobility is likely going to increase in the changing economic landscape (Florida, 2002). If members of some social groups are less optimistic about their abilities (e.g., Hispanics, working class students), then they will also be less likely to pursue advanced or complex educational and professional challenges. Ethnic group and social class differences in the self-concept of creativity are smaller than in the self-concept of intelligence, suggesting that group differences in achievement could be addressed in part if educators placed a greater emphasis on creativity.

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