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### Authors

Rheinschmidt, Michelle L  
Mendoza-Denton, Rodolfo

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# Social Class and Academic Achievement in College: The Interplay of Rejection Sensitivity and Entity Beliefs

Michelle L. Rheinschmidt and Rodolfo Mendoza-Denton  
University of California, Berkeley

Undergraduates, especially those from lower income backgrounds, may perceive their social class background as different or disadvantaged relative to that of peers and worry about negative social treatment. We hypothesized that concerns about discrimination based on one's social class (i.e., *class-based rejection sensitivity* or *RS-class*) would be damaging to undergraduates' achievement outcomes particularly among *entity theorists*, who perceive their personal characteristics as fixed. We reasoned that a perceived capacity for personal growth and change, characteristic of *incremental theorists*, would make the pursuit of a college degree and upward mobility seem more worthwhile and attainable. We found evidence across 3 studies that dispositionally held and experimentally primed entity (vs. incremental) beliefs predicted college academic performance as a function of RS-class. Studies 1a and 1b documented that high levels of both entity beliefs and RS-class predicted lower self-reported and official grades, respectively, among undergraduates from socioeconomically diverse backgrounds. In Study 2, high entity beliefs and RS-class at matriculation predicted decreased year-end official grades among lower class Latino students. Study 3 established the causal relationship of entity (vs. incremental) beliefs on academic test performance as a function of RS-class. We observed worse test performance with higher RS-class levels following an entity (vs. incremental) prime, an effect driven by lower income students. Findings from a 4th study suggest that entity theorists with RS-class concerns tend to believe less in upward mobility and, following academic setbacks, are prone to personal attributions of failure, as well as hopelessness. Implications for education and intervention are discussed.

**Keywords:** social class, rejection sensitivity, entity versus incremental implicit theories, higher education, academic achievement

Students from lower social class backgrounds face day-to-day obstacles after admission to 4-year universities, including a sense of social isolation (Ostrove & Long, 2007; Rubin, 2012), unfamiliar cultural norms (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012), and concerns about confirming stereotypes of low ability (Croizet & Claire, 1998). These findings suggest that class-based stereotypes and judgments may interfere with university outcomes through some of the same mechanisms that have been identified for other stigmatized groups, such as identity threat (Steele, Spencer, & Aronson, 2002), status-based rejection sensitivity (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak,

2002), and belonging uncertainty (Walton & Cohen, 2007). In the current research, consistent with these frameworks' emergent theme that a sense of social acceptance is key to university adaptation for underrepresented students, we explore how students' anxious expectations about being discriminated against on the basis of their social class background (i.e., *class-based rejection sensitivity*) can affect their academic achievement.

Social and interpersonal concerns are important predictors of college outcomes, but students' goal pursuit within college settings is likely to be affected by a myriad of other factors. Among these factors, students' beliefs about whether people have the capacity to grow and change have been shown to be an important predictor of resilience and success in college, particularly in the face of academic challenges (Dweck, Chiu, & Hong, 1995; Grant & Dweck, 2003; Martinez & Mendoza-Denton, 2011). As such, in this research we explore the interactive relationship between beliefs about the malleability of human qualities and class-based rejection sensitivity, with the specific hypothesis that entity theorists (who believe human qualities are fixed and immutable to change) who are also high in class-based rejection sensitivity may be at particular risk for underachievement in college.

## Social Class and College Experiences

Although students from higher class backgrounds have been traditionally overrepresented in higher education (Carnevale & Rose, 2004), universities are recruiting increasing numbers of students from lower class families (Housel & Harvey, 2009).

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Michelle L. Rheinschmidt and Rodolfo Mendoza-Denton, Department of Psychology, University of California, Berkeley.

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Correspondence concerning this article should be addressed to Michelle L. Rheinschmidt or Rodolfo Mendoza-Denton, Department of Psychology, University of California, 3210 Tolman Hall, Berkeley, CA 94720-1650. E-mail: mlr@berkeley.edu or rmd@berkeley.edu

Increased socioeconomic diversity on college campuses may bring to light class-based disparities between students and create more opportunities for students to meet peers from dissimilar social class backgrounds. Many students do not leave their home neighborhoods, which are often segregated by social class (e.g., Lareau, 2003), until their college transitions. This makes college a likely place to encounter class-based differences in thought and behavior among members of one's social network (see Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012, for review).

Social class groups (e.g., middle-class, working-class) may seem less perceptible than other social groups (e.g., gender, ethnicity), but research suggests that people can accurately infer others' social class backgrounds from brief conversations (Kraus & Keltner, 2009). In university settings, social class can be signaled through nonverbal social behavior (Kraus & Keltner, 2009), differential access to technological gadgets (Kaufman, 2001), preferences for certain types of music (Snibbe & Markus, 2005), and familiarity with the college environment itself (Langhout, Drake, & Rosselli, 2009). Given the range of material, social, and cultural cues that serve as indicators of social class standing (Snibbe & Markus, 2005; Stephens, Fryberg, et al., 2012; Stephens, Townsend, Markus, & Phillips, 2012), college students, particularly those from lower social class backgrounds, are likely to contemplate how their social class will influence their social relationships and academic performance.

Research supports the contention that students' social class backgrounds shape their college experiences. Lower class students report concerns about belonging or "fitting in" in higher education contexts (Johnson, Richeson, & Finkel, 2011; Ostrove & Long, 2007). A meta-analysis of 35 studies on social class and university inclusion found that lower class students are less socially integrated in college than their middle-class counterparts (Rubin, 2012). University environments tend to embrace cultural values shaped by middle- and higher class contexts (i.e., independence and paving one's own way) to a greater extent than those embraced by lower or working-class contexts (i.e., interdependence and being a part of a community; Stephens, Fryberg, et al., 2012), and research suggests that lower class students may be more sensitive to such contextual differences (e.g., Grossmann & Varnum, 2011; Kraus, Piff, & Keltner, 2009; Varnum, Na, Murata, & Kitayama, 2012). In addition to having concerns about cultural fit, students may worry about their academic capability as a function of social class. Priming social class, both in absolute and in relative terms, has been found to reliably elicit stereotype threat and its associated underperformance (John-Henderson, Rheinschmidt, Mendoza-Denton, & Francis, 2014; Johnson et al., 2011). These findings underscore the idea that stereotypes associated with social class include assumptions about low intellectual capacity.

In this research, consistent with this emerging research on how social class can affect educational experiences, we propose *class-based rejection sensitivity* (hereafter, *RS-class*) as a psychological dynamic that captures individual differences in people's anxious expectations about being rejected and discriminated against on the basis of their social class. Our research is informed by prior research on the effects of *race-based rejection sensitivity* in college settings (*RS-race*; Mendoza-Denton et al., 2002; Mendoza-Denton, Pietrzak, & Downey, 2008). *RS-race* among ethnic minority college students has been shown to predict a number of interpersonally mediated college outcomes, including avoidance of

situations in which one might be rejected because of one's race (e.g., review sessions, professor office hours), a decreased sense of inclusion within the university setting, and lower grades.

A growing literature detailing the effects of rejection sensitivity on a myriad of status characteristics, including race (Chan & Mendoza-Denton, 2008; Mendoza-Denton et al., 2002); age (Kang & Chasteen, 2009); gender (London, Downey, Romero-Canyas, Rattan, & Tyson, 2012); and sexual orientation (Pachankis, Goldfried, & Ramrattan, 2008), complements a literature on stereotype threat (Schmader, Johns, & Forbes, 2008; Steele & Aronson, 1995) by recognizing that people can experience threat and anxiety not only over whether they might confirm negative stereotypes about their group but also over whether they will be mistreated or rejected by virtue of their group membership. The emphasis on acceptance and rejection that characterizes the rejection sensitivity literature reflects its origins in a literature on attachment processes (Bowlby, 1969, 1973, 1980; see Downey & Feldman, 1996).

Prior research has shown that the outcomes associated with the broader construct of status-based rejection sensitivity are group specific (Mendoza-Denton et al., 2002; Mendoza-Denton & Mischel, 2007). For example, among Asian Americans, the *RS-race* dynamic does not predict academic outcomes as it does for African Americans, given that Asian Americans' rejection concerns are not centered around academics (instead, *RS-race* for this group predicts internalizing symptomatology, including self-esteem and depression; Chan & Mendoza-Denton, 2008). However, as reviewed above, the extant research suggests that the outcomes associated with class-based and race-based rejection sensitivity may be similar in college settings. First, historically, access to higher education has been limited for both racial minorities and lower income students (Carnevale & Rose, 2004), suggesting that students from both of these groups may doubt whether they are fully accepted within the institution. Second, suspicions of low intelligence and of low ability figure prominently in the stereotypes of both stigmatized ethnic minorities and lower income students, potentially leading to worries about achievement as well as concerns that one's presence in college may not be seen as fully legitimate.

### Entity/Incremental Beliefs

Concurrent with our interest in the impact of students' anxious expectations about their acceptance or rejection based on their social class, we also hypothesized that the effects of such concerns would be especially magnified among *entity theorists*, or people who believe that human qualities and characteristics are fixed and immutable to change. Research shows that beliefs about the fixedness of individual qualities exist on a continuum. People who endorse entity beliefs tend to perceive fewer opportunities for people to change or develop over time (e.g., in personality, intelligence; Levy, Chiu, & Hong, 2006; Levy, Stroessner, & Dweck, 1998) and less correspondence between their personal effort and achievement outcomes (e.g., Hong, Chiu, Dweck, Lin, & Wan, 1999). Alternatively, individuals who endorse *incremental beliefs* tend to perceive individual traits as malleable and subject to development via personal effort (Levy et al., 1998); such beliefs help students cope with academic challenges (Dweck, 2006).

The belief that one can nurture and grow one's capacities has been shown to be a powerful predictor of academic success, likely

due to the fact that these beliefs are applicable to so many of the tasks associated with getting an education. For example, students who construed difficulties during their college transitions as likely to change, as subtly encouraged by an intervention, experienced better academic performance and more stable feelings of university inclusion over time than did students in a control group, who were more vulnerable to construing difficulties as signals of enduring personal deficits (Walton & Cohen, 2011). From learning to cope adaptively with academic setbacks such as bad grades, to persevering through difficult material, to the taking of relatively small steps (e.g., academic units) toward the attainment of a broader goal (e.g., a college degree), successful coping with the frustrations and difficulties of college is facilitated by the adoption of an incremental mindset (Dweck, 2006).

We were particularly interested in examining the interplay of RS-class and entity beliefs in college settings for several reasons. Receiving a college education is widely seen as a key to social and economic mobility within the United States; indeed, a belief that a college education will lead to upward mobility is the overarching narrative that justifies the cost and effort of college (Carnoy & Levin, 1985; Lazerson, 2010). Unlike other identity characteristics such as race or gender, class is potentially porous, such that students are able to move up the socioeconomic ladder through progressively better paying or more prestigious employment. Nonetheless, the very notion of upward mobility hinges on the assumption that such mobility is, in fact, both achievable and appealing. We propose that students who are entity theorists, and who additionally feel their social class is a source of stigmatization and social rejection, are at particular risk for experiencing adverse college outcomes, because the possibility of changing one's socioeconomic status would seem not only unlikely (given an entity worldview) but also unappealing (because moving away from one's current social class community would mean opening oneself to class-based rejection from others). Further, both entity beliefs and RS-class should lead to the perception of class-based discrimination and barriers to success as persistent, additionally reducing motivation for study. Consistent with this reasoning, Destin and Oyserman (2009) found that lower income middle-school students expected higher grades and planned to invest more time in academics when they perceived college attendance as possible with financial aid versus unlikely due to cost; Destin and Oyserman explained that when students' path to college is "open," they perceive their effort to matter to their future outcomes. In short, students high in both entity beliefs and RS-class may feel that, in the final accounting, college is not worth the trouble and is a waste of time.

In summary, entity beliefs are applicable to a wide range of domains in college settings, from resilience in the face of negative interpersonal or academic feedback, to remaining motivated in the face of challenging tasks, to subscribing to the promise of upward mobility. Given the wide applicability of entity beliefs in college, our interest was thus in students' generalized entity beliefs rather than entity/incremental beliefs about specific qualities, such as personality or intelligence. The lack of support and interpersonal difficulties that we theoretically expect to be associated with RS-class should magnify entity theorists' risk for maladaptive college outcomes.

## Overview of Research

Using cross-sectional, longitudinal, and experimental designs, we conducted four studies to test the general hypothesis that among students with high levels of RS-class, entity (vs. incremental) theories would be damaging to academic performance. Using socioeconomically diverse student samples, in Studies 1a and 1b we tested the reliability of our Class-Based Rejection Sensitivity Questionnaire (RSQ-Class), the independence of RS-class from related constructs (e.g., objective social class, interpersonal rejection sensitivity), and the hypothesis that entity beliefs and RS-class, in tandem, would predict academic performance. In Study 2, we conducted a prospective study of lower income Latino students to assess whether RS-class and entity levels at matriculation predicted downstream academic performance. Study 3 employed an experimental priming technique to test the causal relationship of entity versus incremental beliefs on academic test performance (i.e., a mock graduate entrance exam) as a function of RS-class. Finally, in a fourth, exploratory study, we examined the phenomenology of RS-class and entity beliefs, to gain a better understanding of the construals and cognitions that characterize this interaction.

Recognizing that multiple factors influence college outcomes, we controlled for factors that might obscure the relations between our predictor and outcome variables. We assessed levels of past academic performance (i.e., college entrance exam scores). We also measured expectations of broad interpersonal rejection (i.e., RS-personal) and rejection based on ethnic group membership (i.e., RS-race) to differentiate class-based rejection sensitivity, as a predictor, from related constructs. Given the link between depressive symptoms and both rejection sensitivity (Ayduk, Downey, & Kim, 2001) and college academic performance (Haines, Norris, & Kashy, 1996), we accounted for students' scores on a depression inventory. Further, we explored the role of ethnicity and social class in our results, with the expectation that students from all ethnic and social class backgrounds could experience class-based rejection sensitivity, though with less frequency than lower income students, given their underrepresented status (Carnevale & Rose, 2004) and susceptibility to negative academic stereotypes (Croizet & Claire, 1998; John-Henderson et al., 2014).

Given the number of aforementioned covariates, we tested their contributions to our models systematically. We controlled for RS-personal in all models, as in prior work (e.g., Mendoza-Denton et al., 2002, 2008; Mendoza-Denton & Page-Gould, 2008), because broad concerns about interpersonal rejection may obscure the unique effects of group-based rejection concerns. To maximize our statistical power while being mindful of sample sizes, we tested other covariates one at a time in separate regression models for smaller samples (Studies 1b and 2) and simultaneously in larger samples (Studies 1a, 3, and 4).

## Studies 1a and 1b

In Studies 1a and 1b, we tested our central hypothesis that RS-class and entity beliefs jointly predict college outcomes. We tested this prediction with socioeconomically diverse student samples, as class-based rejection concerns can occur across the social class spectrum (Johnson et al., 2011). In Study 1a, we administered the RSQ-Class to a large sample of students, exploring its measurement properties, the independence of RS-class from objective

social class, and the interactive effect of RS-class and entity beliefs on self-reported expected and current academic performance. We were interested in expected performance, given research showing a relationship between expectations of success and academic motivation (Destin & Oyserman, 2009; Salili, Chiu, & Hong, 2001). For Study 1b, we examined the interactive effect of class-based rejection sensitivity and entity beliefs on academic performance using official university records. Additionally, we used these records to control for documented past academic performance.

## Study 1a

### Method

**Participants.** Four hundred fifty-two undergraduates (308 female, 140 male, 4 unspecified) participated in exchange for partial course credit, as part of the research participation program at the University of California, Berkeley, one of the nation's most socioeconomically diverse campuses. The sample was 57.0% Asian, 31.3% White, 8.1% Latino, 2.9% Bi/Multi-racial, and 0.7% African American, with a mean age of 20.61 years ( $SD = 3.20$ ). Participants had completed an average of 2.72 ( $SD = 1.12$ ) years of college.

**Procedure.** All undergraduates participating in the research participation pool in one semester were invited to complete the study measures online as part of a larger prescreening survey. We included data from all students completing the two main predictor measures (i.e., entity/incremental beliefs and class-based rejection sensitivity).

#### Measures.

##### Main predictors.

**Class-Based Rejection Sensitivity Questionnaire.** The RSQ-Class was modeled after previously validated rejection sensitivity measures (Downey & Feldman, 1996; Mendoza-Denton et al., 2002). Study participants are asked to imagine a series of interpersonal scenarios relating to their socioeconomic status or social class background. The scenarios themselves were generated from reviews of class-based rejection experiences as described in the literature and popular media (e.g., Alvarez & Kolker, 2001; Kaufman, 2001; Langhout et al., 2009; Snibbe & Markus, 2005), as well as through laboratory meeting discussions (see Goldman-Flythe, 2013). Pilot testing revealed six scenarios capturing a range of contexts in which class-based rejection might occur; we chose six scenarios to parallel the length of the other RS questionnaires used in this research.

For each scenario, participants indicate how anxious they are about rejection in that setting and the extent to which they expect acceptance (vs. rejection) from others based on their social class group membership. Items are structured such that anxiety over rejection is rated on a 6-point scale from 1 (*very unconcerned*) to 6 (*very concerned*) and expected acceptance from others is rated on a 6-point scale from 1 (*very unlikely*) to 6 (*very likely*). The measure itself is provided in the Appendix.

As consistent with expectancy-value frameworks (see Feather, 1982) as well as research and theory on rejection sensitivity (e.g., Downey & Feldman, 1996), we conceptualized class-based rejection sensitivity as a "hot cognition," (Metcalf & Mischel, 1999) whereby the effects of rejection expectations are amplified by one's anxiety about the possibility of the negative outcome. Accordingly, we use the product term between expectations and anxiety to capture the notion of "hot cognitions" related to rejection. This operationalization has been widely applied to the other

instantiations of status-based rejection sensitivity (Kang & Chasteen, 2009; London et al., 2012; Mendoza-Denton et al., 2002, 2008; Pachankis et al., 2008). Average scores for the expectation and anxiety subcomponents of this scale were correlated ( $r = -.30, p < .001$ ). Expected acceptance items were reverse-scored and multiplied with the corresponding anxiety items for each scenario. All product terms were averaged to create a composite score for the RSQ-Class, with higher scores indicating greater class-based rejection sensitivity ( $M = 6.65, SD = 3.90$ ).

The measure showed adequate reliability in this sample ( $\alpha = .82$ ), and in a principal-component analysis, all items loaded onto a single factor accounting for 54.09% of the variance (eigenvalue = 3.24; see Table 1).

**Entity/incremental beliefs measure.** Participants indicated the extent to which they believe that human attributes are changeable versus fixed. This eight-item measure and abbreviated versions have been used in past research to distinguish between entity and incremental beliefs (Dweck et al., 1995; Hong, Chiu, Dweck, & Sacks, 1997; Levy et al., 1998). Incremental theorists, or people who endorse incremental beliefs, perceive potential for personal development (e.g., "People can change even their most basic qualities"), while entity theorists, or people who endorse entity beliefs, perceive less potential for individual growth (e.g., "People can do things differently, but the important parts of who they are can't really be changed"; 1 = *strongly agree* to 6 = *strongly disagree*). We reverse-scored four of eight items reflecting an incremental view before creating a scale average. Thus, lower scores on this continuous measure indicate greater agreement with incremental views and higher scores indicate greater agreement with entity views ( $M = 3.69, SD = 0.88; \alpha = .94$ ). Note that we use the terms *entity theorists* and *incremental theorists* as shorthand to describe individuals who score high versus low on the corresponding entity/incremental beliefs continuum, retaining the continuous nature of the measure rather than using a tertiles or a median split.

##### Covariates.

**Social class.** Consistent with prior research (Johnson et al., 2011; Kraus & Keltner, 2009; Piff, Kraus, Côté, Cheng, & Keltner, 2010), family income was used as a measure of objective social

Table 1  
Factor Loadings for Items on the Class-Based Rejection Sensitivity Questionnaire and Its Psychometric Properties in a Large College Student Sample

Item no.	Factor loading
1	.74
2	.79
3	.64
4	.72
5	.74
6	.77
Scale properties	
<i>M</i>	6.65
<i>Mdn</i>	6.00
<i>SD</i>	3.90
Maximum score	24.33
Minimum score	1.00
<i>N</i>	452

class.<sup>1</sup> Study 1a participants indicated their annual family income by selecting one of the following: 1 = <\$15,000, 2 = \$15,001–25,000, 3 = \$25,001–35,000, 4 = \$35,001–50,000, 5 = \$50,001–75,000, 6 = \$75,001–100,000, 7 = \$100,001–150,000, 8 = \$150,000+. The median income range was \$75,001–100,000 ( $M = 5.33$ ,  $SD = 2.23$ ).

**Interpersonal Rejection Sensitivity Questionnaire (RSQ-Personal).** A short version of the RSQ-Personal (Downey & Feldman, 1996) was administered to statistically isolate rejection sensitivity based on social class from rejection sensitivity based on individual characteristics. Respondents consider six social scenarios (e.g., “You ask someone in one of your classes to coffee”) and then indicate (a) their level of anxiety over rejection and (b) how much they expect to be accepted versus rejected on 1–6 scales. The product of these items, averaged across scenarios, is used to obtain an individual’s score on the RSQ-Personal, with higher scores indicating greater interpersonal rejection sensitivity ( $M = 10.70$ ,  $SD = 4.36$ ).

**Race-Based Rejection Sensitivity Questionnaire (RSQ-Race).** A short version of the RSQ-Race (Mendoza-Denton et al., 2002) was administered to measure anxious expectations of rejection based on membership to an ethnic/racial group. This measure was used to distinguish rejection sensitivity based on social class from rejection sensitivity based on race. Respondents are presented with six scenarios and asked to rate their anxiety over rejection (e.g., differential treatment, discrimination) in that situation and their expectation of that outcome actually occurring. Anxiety and expectation scores are multiplied within scenario; anxious expectations are averaged across scenarios to calculate RSQ-Race scores, with higher scores indicating greater RS-race ( $M = 5.11$ ,  $SD = 5.29$ ).

**Depressive symptoms.** Depressive symptoms, linked to both interpersonal rejection sensitivity (Ayduk et al., 2001) and worse academic performance (Haines et al., 1996), served as a covariate. We administered the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), a 23-item measure that allows participants to report depressive symptoms that they have experienced within the past week, including the day of survey administration ( $M = 7.97$ ,  $SD = 8.06$ ).

#### Dependent measures.

**Self-reported expected and current GPA.** Participants completing the online questionnaire were asked, at the beginning of the academic term (i.e., at least 4 months prior to receiving official term grades), how they expected to do academically at the university. They were asked to indicate an average letter grade ranging from A to F, which was then converted to an equivalent numerical grade point average (GPA) on a standard 4.0 scale ( $M = 3.50$ ,  $SD = 0.43$ ). Participants also recorded their current GPAs ( $M = 3.45$ ,  $SD = 0.39$ ). Self-reported current GPAs were significantly related to expected overall GPAs,  $r(429) = .58$ ,  $p < .001$ . We were able to obtain official university records in Study 1b.

## Results

Table 2 lists the zero-order correlations between the variables measured in Study 1a (above the diagonal), as well as the relationship of RS-class with entity beliefs, depression, social class, and achievement variables when partialing out interpersonal and race-based rejection sensitivity levels (below the diagonal). The observed negative relationship between objec-

tive social class and class-based rejection sensitivity,  $r(435) = -.17$ ,  $p < .001$ , supports our prediction that lower income students would report higher levels of class-based rejection sensitivity.

We conducted a regression analysis predicting self-reported expected and current GPA from entity beliefs, RS-class, and their interaction, controlling for RS-personal, RS-race, depression scores, and objective social class in both cases. We conducted these analyses with mean-centered predictor variables (Aiken & West, 1991). We assessed possible moderation by objective social class (i.e., three-way interaction of objective social class, entity beliefs, and class-based rejection sensitivity) and did not find supporting evidence in our analyses. We did, however, observe the predicted interaction of entity beliefs and class-based rejection sensitivity on our achievement variables.

**Expected GPA.** We observed a main effect of entity beliefs,  $B = -.06$ ,  $t(423) = -2.45$ ,  $p = .02$ , which was qualified by the predicted interaction of entity beliefs and RS-class on expected GPA,  $B = -.03$ ,  $t(423) = -4.30$ ,  $p < .001$  (see Figure 1a). Simple slope analyses revealed that, among students high in entity beliefs, greater levels of RS-class corresponded to worse expected academic performance ( $b = -.03$ ,  $t = -4.12$ ,  $p < .001$ ). In contrast, among students high in incremental beliefs, we observed an opposite trend, such that greater levels of RS-class corresponded to better expected academic performance ( $b = .01$ ,  $t = 1.69$ ,  $p = .09$ ). In support of our main prediction, students with both high entity beliefs and RS-class levels expected worse academic performance, even when accounting for objective social class, depression scores, and interpersonal and race-based rejection sensitivity.

**Current GPA.** In a parallel analysis predicting current GPA, we observed the predicted interaction of entity beliefs and RS-class,  $B = -.02$ ,  $t(407) = -2.57$ ,  $p = .01$  (see Figure 1b). Simple slope analyses revealed that, among entity theorists, greater levels of RS-class corresponded to worse current academic performance,  $b = -.02$ ,  $t = -3.50$ ,  $p = .001$ . By contrast, greater levels of RS-class corresponded to better current academic performance among incremental theorists ( $b = .01$ ,  $t = 2.56$ ,  $p = .01$ ). In line with our main prediction, students with both high entity beliefs and RS-class levels demonstrated vulnerability to worse academic performance, even when accounting for relevant covariates.

## Study 1b

### Method

**Participants.** Seventy-six undergraduates (59 female) participated in exchange for partial course credit as part of the research participation program at the University of California, Berkeley. The sample was 47.4% Asian, 30.3% White, 9.2% Bi/Multi-racial,

<sup>1</sup> All models hold when using a composite of objective indicators of social class (i.e., mother’s education level, father’s education level, and parental income) in lieu of parental income. Of these indicators, parental income had the most variance across studies. We also confirmed that our pattern of results held when controlling for subjective social status in the United States and at one’s university (Adler, Epel, Castellazzo, & Ickovics, 2000).

Table 2  
Raw Bivariate Correlations (Above the Diagonal) and Partial Correlations Between RS-Class and Other Variables, Controlling for RS-Personal and RS-Race (Below the Diagonal)

Variable	1	2	3	4	5	6	7	8
1. RS-class	—	.33**	.35**	-.17**	.25**	-.17**	-.07	-.08
2. RS-personal		—	.14**	.01	.36**	-.11*	-.04	-.05
3. RS-race			—	-.13**	.21**	-.12*	-.11*	-.04
4. Income				—	-.09	.18**	.16**	-.01
5. Depression					—	-.19**	-.13**	-.13**
6. Expected grades						—	.58**	-.06
7. Current grades							—	.01
8. Entity beliefs								—

Note. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity; RS-race = race-based rejection sensitivity.  
\*  $p < .05$ . \*\*  $p < .01$ .

7.9% African American, and 5.3% Latino, with a mean age of 19.51 years ( $SD = 1.50$ ). Participants had completed an average of 1.91 ( $SD = 1.09$ ) years of college.

**Procedure.** Undergraduates were invited to complete a study on college students' social and academic experiences. Participants completed background questionnaires in the laboratory. During the

lab session, they were asked to provide written consent for us to access their academic records directly from the university.

**Measures.**

**Main predictors.**

**Class-based rejection sensitivity.** RS-class was assessed with the same measure described in Study 1a, the RSQ-class ( $M = 5.68$ ,  $SD = 3.07$ ,  $\alpha = .71$ ).

**Entity/incremental beliefs measure.** Participants completed the same eight-item measure of entity and incremental beliefs about personal attributes used in Study 1a, but on a 5-point scale (1 = *strongly agree* to 5 = *strongly disagree*;  $M = 2.92$ ,  $SD = 0.65$ ;  $\alpha = .87$ ).

**Covariates.**

**Social class.** Study 1b participants reported their annual family income on a similar scale to that in Study 1a: 1 = \$10,000–\$20,000, 2 = \$20,000–\$30,000, 3 = \$30,000–\$60,000, 4 = \$60,000–\$90,000, 5 = \$90,000–\$110,000, 6 = \$110,000+. The mean and median income range for this sample was \$60,000–\$90,000 ( $M = 4.06$ ,  $SD = 1.64$ ).

**Interpersonal Rejection Sensitivity Questionnaire.** As in Study 1a, the RSQ-Personal was included as a covariate ( $M = 9.94$ ,  $SD = 3.90$ ).

**Past academic performance.** We obtained official college entrance exam scores (i.e., SAT), with permission, to test whether our model accounted for variance in college outcomes beyond that accounted for by individual differences in past academic performance. Official SAT total scores were available for 68 participants ( $M = 1287.80$ ,  $SD = 171.88$ ). Self-reported SAT total scores ( $M = 1345.36$ ,  $SD = 168.48$ ) were highly correlated with official score reports,  $r(54) = .85$ ,  $p < .001$ .

**Dependent measure.**

**Official cumulative GPA.** All participants granted permission to access their official academic transcripts. We recorded their cumulative GPA at the end of the term in which they completed the background questionnaires ( $M = 3.22$ ,  $SD = 0.50$ ).

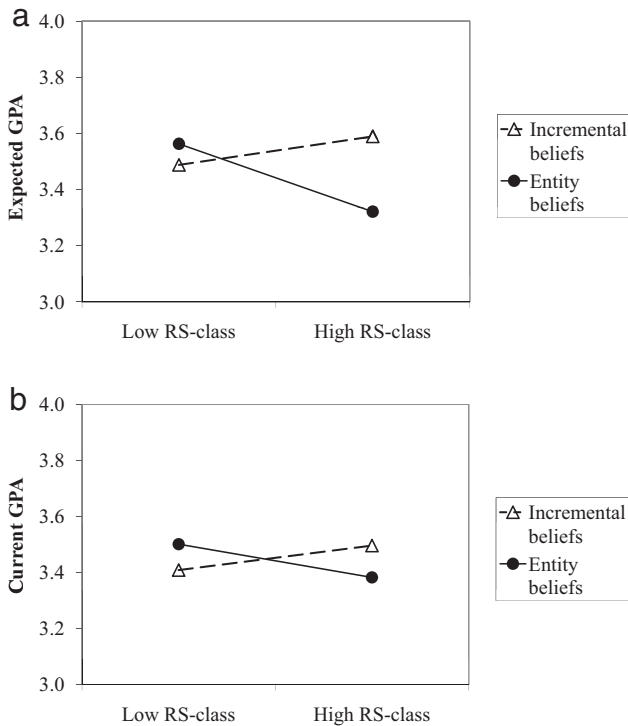


Figure 1. Study 1a: Self-reported (a) expected and (b) current grade point average (GPA) as a function of RS-class levels and entity beliefs, controlling for RS-personal, RS-race, depression scores, and objective social class. Markers represent predicted GPAs at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors centered. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity; RS-race = race-based rejection sensitivity.

**Results**

Consistent with Study 1a, lower income students tended to report greater class-based rejection concerns, although this relationship was not statistically significant in this sample ( $r = -.20$ ,  $p = .09$ ). As we had in Study 1a, we used mean-centered predictor

variables in our regression models. We did not observe a three-way interaction of entity beliefs, class-based rejection sensitivity, and objective social class on GPA.

**Official cumulative GPA.** Study 1b tested our hypothesis that levels of RS-class and entity beliefs in interaction would predict cumulative GPAs, as reported in official university records. Regressing entity beliefs, RS-class, and their interaction on official GPA, controlling for RS-personal, we observed no main effects and a marginally significant interaction effect,  $B = -.06$ ,  $t(71) = -1.71$ ,  $p = .09$ . We observed similar results when controlling for parental income in a separate analysis, though income was a marginally significant covariate,  $B = .06$ ,  $t(67) = 1.77$ ,  $p = .08$ . However, when we added SAT scores as a covariate, we observed a significant main effect of SAT scores on GPA,  $B = .002$ ,  $t(62) = 5.27$ ,  $p < .001$ , qualified by a significant interaction between entity beliefs and class-based rejection sensitivity on GPA,  $B = -.07$ ,  $t = -2.18$ ,  $p = .03$  (see Figure 2). Among students high in entity beliefs, higher levels of class-based rejection sensitivity predicted worse GPAs ( $b = -.05$ ,  $t = -2.25$ ,  $p = .03$ ). We did not observe a significant relationship between class-based rejection sensitivity and official GPA among students high in incremental beliefs, though the simple slope analysis revealed a trend in the opposite direction ( $b = .04$ ,  $t = 1.92$ ,  $p = .06$ ). Thus, after we had accounted for past academic performance, increases in class-based rejection sensitivity corresponded to worse grades only among students high in entity beliefs.

### Discussion of Studies 1a and 1b

Across two studies, we found an interactive effect of entity beliefs and class-based rejection sensitivity on university academic outcomes among ethnically and socioeconomically diverse students from all class years. Greater entity beliefs predicted vulnerability to lower expected and actual GPAs among students high, but not low, in class-based rejection sensitivity.

Even those less subject to negative academic stereotypes (i.e., White and Asian students; Cuddy, Fiske, & Glick, 2008) displayed relatively worse outcomes as a function of class-based rejection sensitivity and entity beliefs. Our analyses held at average levels of

parental income for our sample (\$60,000–\$90,000/year), which is consistent with studies showing that relative comparisons of socioeconomic status (SES), independently of objective SES, can lead to performance decrements (John-Henderson et al., 2014; Johnson et al., 2011).

Nevertheless, these findings need not downplay the challenges faced by lower income undergraduates. We find evidence of their disadvantage in the positive correlations between parental income and academic achievement over time. Students with lower parental income demonstrated lower past as well as current academic performance across studies ( $r_s = .16-.32$ ,  $p_s < .05$ ). Our Study 1b model holds even when accounting for SAT scores, which were an especially strong predictor of our outcomes of interest, given their associations with both objective social class and university GPA. Although we did not find evidence of moderation by objective social class in either study, we observed a negative relationship between class-based rejection sensitivity levels and parental income across studies. We revisit the potential independent and interactive effects of objective social class in subsequent models with a larger samples (see Study 3) and, in Study 2, establish the interactive effects of interest in a sample of socioeconomically disadvantaged students.

### Study 2

In this study, we employed a longitudinal design to test our central hypothesis that class-based rejection sensitivity levels and entity beliefs at college matriculation would predict downstream academic outcomes in a sample of predominately lower income Latino/a undergraduates. The restricted range of family income in this sample allowed for a focus on the predictive utility of between-participant variance in class-based rejection sensitivity concerns. Further, our participants shared a number of other characteristics (i.e., class year, ethnicity), thus reducing the influence of extraneous variables on our academic outcomes of interest: expected and official academic performance.

### Method

**Sample and procedure.** Fifty-five Latino/a undergraduates (34 female) were recruited as part of a longitudinal study of incoming college students. One male student did not complete our class-based RS measure and was therefore excluded. All students were enrolled in the study during their first semester of college at the University of California, Berkeley. At matriculation, Latino/a students constituted 11.93% of the university's undergraduate student body. The mean age of the sample was 18.24 years ( $SD = 1.29$  years). Students' annual family income fell largely below the campus average for their class year ( $M = \$80,000$ ), with the most frequently reported amounts being \$10,000–\$20,000 (35.3%) and \$30,000–\$60,000 (39.2%). Thus, the majority of students in this sample were represented in these two income brackets.

During the first month of the academic year, participants attended an initial study session in which they completed background questionnaires and were asked for written consent to access their academic records. Participants were recontacted 1 month prior to their spring final exams and invited to complete follow-up questionnaires. Forty-two participants (31 female) completed the follow-up session and received \$15 compensation. Unexpectedly,

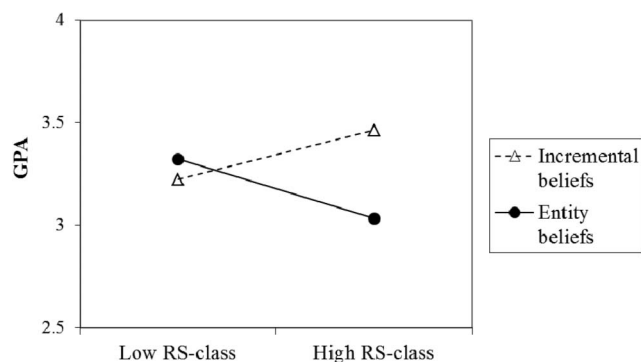


Figure 2. Study 1b: Cumulative grade point average (GPA) as a function of RS-class levels and entity beliefs, controlling for RS-personal and SAT scores. Markers represent predicted GPAs at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors centered. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity.



participants who completed the follow-up had higher average levels of RS-class at Time 1 than those who did not complete the follow-up ( $t = -2.22, p = .03$ ).

### Measures.

#### Time 1: Main predictors.

**RS-Class.** As in Studies 1a and 1b, participants completed the RSQ-Class. Higher scores indicated greater class-based RS ( $M = 6.74, SD = 3.97, \alpha = .78$ ).

**Entity/incremental beliefs.** We again employed the entity/incremental beliefs measure using a 1–5 rating scale. Higher scores represented greater endorsement of entity beliefs ( $M = 2.88, SD = 0.58; \alpha = .72$ ).

#### Time 1: Covariates.

**Rejection sensitivity.** We measured interpersonal rejection sensitivity with the RSQ-Personal ( $M = 10.04, SD = 3.11$ ) and race-based rejection sensitivity with the RSQ-Race ( $M = 10.42, SD = 7.41$ ) to differentiate between perceived sources of rejection.

**Social class.** Participants recorded their annual family income on the 1–6 scale used in Study 1b. The median income range for this sample was \$30,000–\$60,000 ( $M = 2.37, SD = 1.30$ ).

**Depressive symptoms.** As in Study 1a, we administered the Beck Depression Inventory ( $M = 6.04, SD = 5.80$ ).

**Past academic performance.** As we had in Study 1b, we collected self-reported SAT scores ( $M = 1119.33, SD = 154.78$ ). Official SAT total scores were available for 49 students ( $M = 1057.96, SD = 147.11$ ).

#### Time 2: Dependent measures.

**Expected GPA (self-reported).** Students completing the follow-up measures were asked, 6–8 weeks prior to receiving their official term grades, to report the average letter grade they expected to receive at the university. We converted letter grades to equivalent numerical GPAs, as in Study 1a. The average expected GPA was 3.20 ( $SD = 0.44$ ).

**Official GPA.** All participants granted permission to access their academic transcripts. We recorded students' cumulative GPA after their first two semesters of college. One participant withdrew from her second semester and was therefore excluded from the analysis, leaving 53 participants. The mean cumulative GPA for the first academic year was 2.89 ( $SD = 0.59$ ) on a 4.0 scale. Expected and official GPA were moderately correlated ( $r = .52, p < .001$ ).

## Results

**Expected GPA.** To test our central hypothesis on the interactive role of class-based rejection sensitivity and entity beliefs on academic outcomes, we regressed mean-centered entity beliefs, RS-class, and their interaction, controlling for RS-personal (all Time 1 variables), on expected academic performance (Time 2). We observed a main effect of entity beliefs on expected GPA,  $B = -.32, t(37) = -2.65, p = .01$ . As predicted, this main effect was qualified by a significant interaction between entity beliefs and class-based rejection sensitivity,  $B = -.07, t(37) = -2.70, p = .01$ . Simple slope analyses revealed that among students high in entity beliefs, increases in class-based rejection sensitivity were associated with worse expected GPAs ( $b = -.04, t = -2.08, p = .045$ ). We also observed that, among students high in incremental beliefs, increases in class-based rejection sensitivity predicted better expected GPAs ( $b = .04, t = 2.38, p = .02$ ; see Figure 3a). The

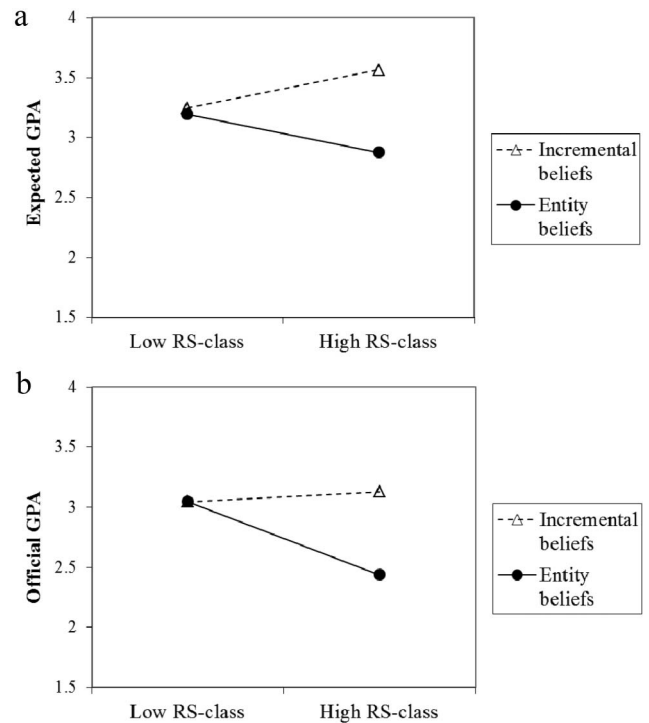


Figure 3. Study 2: (a) Expected and (b) official grade point average (GPA) as a function of RS-class levels and entity beliefs, controlling for RS-personal. Markers represent predicted GPAs at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors centered. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity.

interaction between entity beliefs and class-based rejection sensitivity remained statistically significant in separate regression analyses controlling for family income, depressive symptoms, race-based rejection sensitivity, and prior academic performance ( $Bs = -.10$  to  $-.07, ts = -2.73$  to  $-2.29, ps < .05$ ). None of these covariates accounted for a significant amount of variance in expected GPA.

**Official GPA.** In a similar analysis using mean-centered predictors, we examined the association between entity beliefs, RS-class, and their interaction (all Time 1 variables) on cumulative GPA after two semesters (Time 2), controlling for RS-personal (Time 1). We observed significant main effects of entity beliefs,  $B = -.30, t(48) = -2.12, p = .04$ , and RS-personal,  $B = .06, t(48) = 2.33, p = .02$ , on GPA. These effects were qualified by the predicted interaction between entity beliefs and class-based rejection sensitivity on GPA,  $B = -.08, t(48) = -2.32, p = .03$  (see Figure 3b). Consistent with the findings from Studies 1a and 1b, simple slope analyses revealed that, among students high in entity beliefs, increases in RS-class were associated with decreases in GPA ( $b = -.08, t = -4.02, p < .001$ ). Among students high in incremental beliefs, no relationship was found between RS-class and official academic performance ( $b = .01, t = .60, p = .55$ ). Moreover, in subsequent regression analyses the interaction remained significant when controlling for objective social class, depression scores, and RS-race levels ( $Bs = -.08$  to  $-.07, ts = -2.30$  to  $-2.17, ps < .05$ ). Inclusion of prior academic

performance in the model (i.e., official SAT scores) provided a conservative test of our hypotheses, as entity beliefs and RS-class levels may also influence standardized test scores (in addition to reducing our sample size). This analysis yielded a marginal main effect of SAT scores,  $B = .001$ ,  $t(42) = 1.75$ ,  $p = .09$ , and the same, albeit nonsignificant, interaction pattern,  $B = -.07$ ,  $t(42) = -1.56$ ,  $p = .13$ , in the subsample for whom we had official SAT score reports ( $n = 48$ ).

## Discussion

Study 2 provides further support for our hypothesis that the relationship between class-based rejection sensitivity and academic performance depends on levels of entity beliefs. That is, in a sample of first-year Latino college students from predominately lower income backgrounds, students who were higher in RS-class were particularly likely to exhibit reduced expected and actual academic performance when they were also high in entity beliefs. In contrast, students higher in RS-class who endorse incremental beliefs showed no reduction in actual GPA with increasing levels of RS-class and even expected higher GPAs than did students lower in RS-class.

Further, our interaction model held when accounting for RS-race, broad expectations of interpersonal rejection, depressive symptoms, and objective social class. Including SAT scores as a covariate for actual GPA yielded patterns of findings that were consistent with our hypotheses, although not significant. We return to this issue in Study 3, where we examine performance in an experimental setting while again controlling for standardized test scores. Our Study 3 experimental paradigm allowed us to establish a causal connection between entity beliefs and vulnerability to negative outcomes among those high (vs. low) in class-based rejection sensitivity.

## Study 3

There were two primary goals in Study 3: First, we tested the causal effect of entity versus incremental beliefs on (simulated) graduate entrance exam performance as a function of RS-class levels. As such, we experimentally tested our hypothesis by situationally inducing entity or incremental beliefs, using previously validated priming procedures (Chiu, Hong, & Dweck, 1997). Consistent with our findings from Studies 1 and 2, we hypothesized that the entity prime would harm standardized test performance among students high in RS-class. Given the relative inconsistency of the relationship between RS-class and performance among incremental theorists in our prior studies, we did not have a specific hypothesis about the effects of the incremental prime.

Second, we revisited, with a larger and more diverse sample, whether the entity/incremental primes caused divergent outcomes as a function of both RS-class and objective social class (i.e., a three-way interaction). Our rationale for continuing to test for a three-way interaction of social class, RS-class, and entity beliefs stems from research on the manner in which relatively lower and higher class individuals perceive and react to environmental and interpersonal threats. Chen and Matthews (2001), for example, found that children from lower social class backgrounds were more likely than those from higher social class backgrounds to appraise ambiguous social situations as threatening or hostile. In a

study of college students, lower versus higher class individuals displayed greater attunement to and mirroring of their friends' hostile emotions (i.e., a social threat) when prompted to tease one another (Kraus, Horberg, Goetz, & Keltner, 2011). Vigilance for social and environmental threats, though adaptive in some contexts (e.g., those that are dangerous or necessitate shared resources), may detract from students' focus on personal achievement in college (Kraus, Rheinschmidt, & Piff, 2012). Thus, we tested whether objective social class, in addition to class-based rejection sensitivity, contributes to variance in achievement outcomes.

## Method

**Sample and procedure.** One hundred eighteen undergraduates from the research participation pool at the University of California, Berkeley, completed the study (82 female, 33 male, 3 unspecified). All students participated in exchange for partial course credit. Our sample was 60.2% Asian, 21.2% White, 5.9% Latino, 1.7% African American, and 11% Bi/Multi-racial, with a mean age of 20.68 years ( $SD = 2.92$ ).

Participants were invited into the lab to complete a study on "how students approach academic tasks and their experiences in college more generally." Participants were exposed to the entity/incremental belief manipulation outlined below. After this manipulation, they completed an academic performance task, which was composed of sample math questions from a graduate school entrance exam.

**Entity/incremental belief manipulation.** Entity and incremental beliefs were experimentally induced with priming materials developed by Chiu et al. (1997; Study 5). Chiu et al.'s original priming materials were two mock *APA Science Observer* articles that described ostensible research suggesting that personality traits are stable (i.e., entity view) or malleable (i.e., incremental view). These primes were adapted for the current study to reflect the breadth of the measures employed in Studies 1a, 1b, and 2. References to "personality" were changed to "personal characteristics" or "individual qualities" to mirror entity/incremental beliefs survey items such as "Everyone no matter who they are can significantly change their basic characteristics." As a result, the entity prime ( $n = 57$ ) was titled "Personal characteristics, like plaster, are stable over time" and included research attesting to this conclusion. The incremental prime ( $n = 61$ ) was titled "Personal characteristics are changeable and can be developed" and described supporting research. To bolster the cover story, we administered this article manipulation in a similar fashion to the reading comprehension section of a graduate school entrance exam.

### Measures.

#### **Background measures.**

**Rejection sensitivity.** One hundred and fourteen students completed measures of RS-class and RS-personal as part of an online prescreening survey in the weeks prior to the lab session ( $n = 105$ ) or as a postscreening survey at least four weeks following the lab session ( $n = 9$ ). The average RSQ-Class score was 6.36 ( $SD = 4.16$ ,  $\alpha = .84$ ), and the average RSQ-Personal score was 11.59 ( $SD = 4.63$ ,  $\alpha = .69$ ).

**Depressive symptoms.** As in Study 2, participants completed the Beck Depression Inventory during the lab session ( $M = 8.14$ ,  $SD = 8.10$ ).

**Objective social class.** As in Studies 1b and 2, participants indicated their annual family income by selecting a value between 1 and 6. The median income range for this sample was \$90,000–\$110,000 ( $M = 4.35$ ,  $SD = 1.65$ ). This objective social class measure was completed at the end of the lab session.

**Previous math performance.** Given that self-reported SAT scores were highly correlated with official SAT scores in Studies 1b and 2 ( $r_s = .69$  and  $.85$ ,  $p_s < .001$ ), we used self-reported SAT scores in place of official SAT score reports; a subsample of the participants in the study ( $n = 73$ ) provided self-reports of their SAT scores. We focused on participants' scores for the math section of the SAT test ( $M = 725.89$ ,  $SD = 65.85$ ), given our use of math-based graduate entrance exam items. Math SAT scores were used as a control variable and indicator of previous math achievement.

#### **Manipulation checks.**

**Agreement with article.** Participants indicated the extent to which they agreed with the author's viewpoint in the article on a 1–5 scale, from 1 (*Very slightly or not at all*) to 5 (*Extremely*). They completed this rating just after reading the mock article; it was embedded among a few questions that purportedly tested their reading comprehension ( $M = 3.29$ ,  $SD = 0.93$ ).

**Entity/incremental beliefs.** The eight-item entity/incremental beliefs survey (Levy et al., 1998) was administered in a packet of surveys at the end of the study, approximately one hour after reading the mock article. Participants responded on a 1–6 scale, with higher scores indicating greater entity beliefs ( $M = 3.48$ ,  $SD = 0.96$ ;  $\alpha = .93$ ).

#### **Dependent measure.**

**Math performance.** Participants completed a timed math test consisting of 10 multiple-choice questions, modeled after graduate school entrance exam items and representing a range of difficulty levels. Math performance scores were the total number of correct responses in ten minutes ( $M = 7.60$ ,  $SD = 2.38$ ,  $\alpha = .77$ ).

## **Results**

### **Manipulation checks.**

**Agreement with article.** Regardless of experimental condition, participants moderately endorsed the argument put forth in their assigned article on average ( $M = 3.04$  for entity prime;  $M = 3.52$  for incremental prime). Participants receiving the incremental prime agreed with its argument significantly more than those who received the entity prime,  $t(115) = -2.94$ ,  $p = .004$ , likely because this argument is slightly more in line with college students' baseline entity/incremental beliefs.<sup>2</sup>

**Postmanipulation entity/incremental beliefs.** One hour after the entity/incremental priming manipulation, participants reported significantly greater levels of entity beliefs in the entity prime condition ( $M = 3.75$ ,  $SD = 0.92$ ) than in the incremental prime condition ( $M = 3.15$ ,  $SD = 0.91$ ),  $t(102) = 3.29$ ,  $p < .001$ . Our manipulation was therefore effective in temporarily shifting participants' entity/incremental beliefs.

**Math performance.** We regressed entity/incremental beliefs, RS-class, and their interaction on math test performance, using a dichotomous variable to represent our between-participant priming conditions (0 = entity prime, 1 = incremental prime). We included parental income, RS-personal, and depression scores as covariates. All continuous predictors were standardized. The sub-

sample of participants reporting their previous math performance was considered separately in a second round of analyses. Given stereotypes regarding women's math performance (Spencer, Steele, & Quinn, 1999), we confirmed that including gender in all models, as a covariate, did not change the pattern of results; neither did gender account for a significant amount of variance in the models, and it was therefore dropped to preserve statistical power. We again graphed significant interactions at 1 standard deviation above and below the mean for RS-class.

We observed a significant main effect of RS-class,  $B = -.63$ ,  $t(99) = -2.16$ ,  $p = .03$ , and a trend for the main effect of parental income,  $B = .35$ ,  $t(99) = 1.68$ ,  $p = .10$ . Our analysis yielded a significant interaction effect for RS-class and entity/incremental priming condition on math performance,  $B = .89$ ,  $t(99) = 2.02$ ,  $p = .046$  (see Figure 4). In the entity prime condition, consistent with our hypothesis, we observed a significant negative relationship between RS-class and performance ( $b = -.63$ ,  $t = -2.15$ ,  $p = .03$ ). No relationship between RS-class and performance was observed in the incremental prime condition ( $b = .26$ ,  $t = .78$ ,  $p = .44$ ). Unrelated to our central hypothesis, we observed that students with low class-based rejection sensitivity did significantly better in the entity versus incremental condition ( $b = -1.21$ ,  $t = -2.10$ ,  $p = .04$ ); we hesitate to interpret this finding because it is both unexpected and unreplicated in Studies 1a, 1b, or 2. In a separate analysis with the subsample reporting their SAT math scores, the interaction effect did not reach statistical significance,  $B = .14$ ,  $t(59) = 0.37$ ,  $p = .72$ . In sum, we observed in our full sample that high levels of class-based rejection sensitivity corresponded to worse math performance in the entity prime condition only.

**Three-way interaction with objective social class.** We tested the three-way interaction between entity (vs. incremental) prime condition, RS-class, and objective social class on math performance, with RS-personal as a covariate. In our three-way interaction model, we observed a single main effect of RS-class,  $B = -.72$ ,  $t(97) = -2.49$ ,  $p = .01$ , and a significant three-way interaction,  $B = -1.21$ ,  $t(97) = -2.76$ ,  $p = .007$ . According to simple slope analyses, students from relatively low social class backgrounds showed the predicted negative relationship between RS-class and math performance in the entity condition, such that increases in RS-class were associated with decreases in math performance ( $b = -1.21$ ,  $t = -3.27$ ,  $p < .001$ ). We observed no significant relationship between RS-class and math performance among relatively higher class students in the entity condition. In the incremental priming condition, RS-class levels and math performance were not significantly related regardless of social class. Thus, entity, but not incremental, beliefs hampered the performance of lower income students with high class-based rejection sensitivity.

As in Studies 1b and 2, we tested whether the three-way interaction model held controlling for previous math performance (i.e., SAT math section score). Our inclusion of this covariate notably reduced our sample size as only 73 of the 118 participants reported their SAT math scores. The three-way interaction term did not reach statistical significance,  $B = -.68$ ,  $t(57) = -1.66$ ,  $p = .10$ , but revealed the same pattern even in this smaller sample.

<sup>2</sup> Consistent with this interpretation, mean values in Studies 1a, 1b, and 2 are somewhat skewed toward the incremental viewpoint.

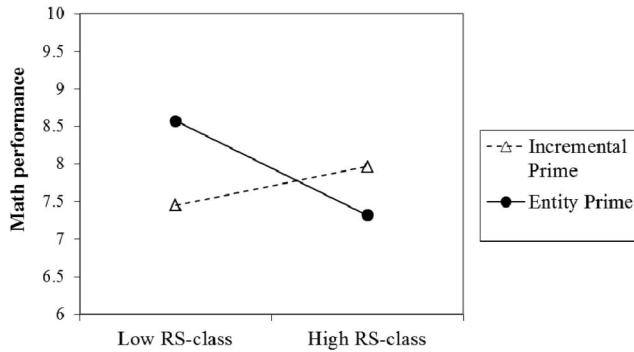


Figure 4. Study 3: Math performance (out of 10 possible) as a function of RS-class levels and entity versus incremental priming condition, controlling for RS-personal, social class, and depression scores. Markers represent predicted performance at 1 standard deviation above and below the mean for RS-class, with all predictors standardized. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity.

## Discussion

Study 3 provided evidence that entity beliefs in combination with high class-based rejection sensitivity cause negative academic outcomes, particularly among students from lower social class backgrounds. Building on the longitudinal and cross-sectional designs of Studies 1a, 1b, and 2, we employed an experimental manipulation of temporarily held entity versus incremental beliefs to account for the possible co-occurrence of dispositionally held class-based rejection sensitivity concerns and entity beliefs. As class-based rejection sensitivity and entity beliefs were not correlated in Studies 1a (see Table 2), 1b, and 2, we suspected that our effects were not driven by the co-occurrence of these variables and that a randomly assigned entity versus incremental prime would function similarly to dispositionally held entity beliefs. Indeed, we observed a negative relationship between academic outcomes and class-based rejection sensitivity in the entity priming condition only.

This experimental study also allowed us more control over the academic performance measures, as all students received the same math exam. Our simulated graduate entrance exam could be thought of as one instance of college academic performance, and we would expect cumulative performance deficits over repeated performance situations to manifest as lower GPAs, as suggested by the patterns of Studies 1 and 2.

No strong evidence of a buffering effect of the incremental prime was found. We return to this issue in the General Discussion.

## Study 4

Studies 1–3 focused specifically on the academic outcomes associated with the interaction between RS-class and entity beliefs. The fact that we observed such strong effects for academic outcomes suggests that the interactive relationship between RS-class and entity beliefs on both expected and realized academic achievement outcomes is robust. The interactive relationship likely reflects recursive processes whereby academic underachievement

further amplifies students' existing worries about social class and ability. Despite the consistency of the findings, however, one question that remains is the phenomenology behind this interaction effect. In other words, what are the kinds of disruptive thoughts that characterize the mindsets of students who are both entity theorists and who anxiously expect class-based rejection in the university setting? As we have outlined in the introduction, we believe that students who both hold an immutable view of human qualities and are high in RS-class may be particularly vulnerable in the face of academic challenges and be unmoved by the narratives of upward mobility that otherwise motivate people to seek a college degree. To identify the specific thoughts and beliefs that may contribute to academic performance deficits among students with high class-based rejection sensitivity and entity beliefs, we undertook two strategies in a final study.

The first strategy was to collect data on a nomological net of variables that might characterize entity theorists who are also high in RS-class. First, we wanted to make sure that the variance captured by the RS-class/entity beliefs interaction is not redundant with preexisting related constructs, including belonging uncertainty (Walton & Cohen, 2007) and dispositional optimism (Scheier, Carver, & Bridges, 1994). In addition, we sought to establish that the interaction of interest here is not simply capturing a particular subset of domain-specific entity theories, notably about social class or about intelligence, given research suggesting that entity beliefs can be both general and domain specific (Dweck, 2006). Finally, we asked students directly about whether they endorsed a belief in upward mobility, as we expected such endorsement to be particularly low among entity theorists high in RS-class.

The second strategy was to have students freely describe their thoughts and feelings following an imagined academic setback; we would subsequently content code these essays for their naturally emerging thematic content. This strategy, we reasoned, would "let the data speak to us," perhaps allowing us to uncover thought patterns that we might not have otherwise considered. We specifically focused on an academic setback scenario, because it is precisely during these moments that we expect high RS-class/high entity students to feel deflated and to question the utility of perseverance and, perhaps, of the college enterprise itself. Together, we hoped, our closed- and open-ended strategies would help us paint a broader picture of the phenomenology of RS-class and entity/incremental beliefs.

## Method

**Sample.** A total of 170 undergraduates (111 female, 52 male, 7 unspecified) participated in exchange for partial course credit, as part of the research participation program at the University of California, Berkeley. The sample was 61.4% Asian, 26.1% White, 8.1% Latino, 3.1% Bi/Multi-racial, and 1.2% African American, with a mean age of 21.07 years ( $SD = 3.15$ ). Participants had completed an average of 3.06 ( $SD = 1.07$ ) years of college.

**Procedure and measures: Nomological net.** We administered background measures to participants online as part of a larger prescreening survey. These measures included our two central measures of interest, the RS-class ( $M = 7.66$ ,  $SD = 4.73$ ) and the entity/incremental beliefs ( $M = 3.49$ ,  $SD = 0.78$ ) questionnaires. We also assessed parental income ( $M = 4.51$ ,  $SD = 2.23$ ) and

interpersonal RS ( $M = 11.69$ ,  $SD = 4.82$ ) as covariates, consistent with our prior studies. In addition, we measured the following closed-ended constructs with potential relationships to the intersection of high entity beliefs and class-based rejection sensitivity.

**Belonging uncertainty.** We measured whether students find positive and negative college experiences to be indicative of their “fit” at the institution, with Walton and Cohen’s (2007) three-item measure (e.g., “When something bad happens, I feel that maybe I don’t belong at [college name]”; 1 = *Strongly disagree* to 7 = *Strongly agree*;  $M = 4.27$ ,  $SD = 1.22$ ,  $\alpha = .67$ ).

**Optimism.** Students completed a four-item measure of optimism (adapted from Scheier et al., 1994), including the item “In uncertain times, I usually expect the best” (1 = *I disagree a lot* to 5 = *I agree a lot*;  $M = 3.23$ ,  $SD = 0.90$ ,  $\alpha = .71$ ).

**Entity/incremental beliefs measure—Intelligence domain.** This four-item measure and related versions (Hong et al., 1999) capture the extent to which people believe that their intelligence and academic ability are fixed (e.g., “You have a certain amount of intelligence, and you really can’t do much to change it”), on a 6-point scale (1 = *strongly disagree* to 6 = *strongly agree*;  $M = 3.18$ ,  $SD = 0.98$ ;  $\alpha = .87$ ).

**Entity/incremental beliefs measure—Social class domain.** We created an item to assess the extent to which students think that “a person’s social class/socioeconomic status” is a fixed attribute. They used a 1–100 slider to indicate their response (1 = *substantial change is possible* and 100 = *no potential for change*;  $M = 30.06$ ,  $SD = 23.03$ ), with higher scores indicating greater entity beliefs about social class.

**Belief in upward mobility through hard work.** We included an item that reflects a personal belief in hard work as the means to upward mobility in American society. Participants responded to the item (“Hard work offers little guarantee of success”; Pew Research Center, 2012) on a scale from 1 (*Strongly agree*) to 6 (*Strongly disagree*), with higher scores acknowledging the role of hard work in attaining success ( $M = 4.24$ ,  $SD = 1.22$ ).

**Procedure and measures: Open-ended essays.** In the weeks following the initial data collection described above, students completed a separate online study in which they were asked to contemplate their response to the following scenario:

You are finishing your last semester of college, and you are planning to apply to graduate school. You have just completed your graduate school entrance exams. You receive your score report, and you have performed much worse than you expected. Your scores are not high enough for any of the graduate schools that you were considering.

We asked students to imagine themselves in this scenario for 35 seconds, and then we administered four brief prompts meant to elicit their cognitions and construals. Each short answer question was prefaced with “keeping this scenario in mind . . .” and was presented on a separate page. The questions included the following:

1. “Please write whatever thoughts and feelings come to mind.”
2. “How do you feel about your life goals/aspirations and future career opportunities? Will this news shape them?”

3. “How do you feel about your experiences in college and your college degree?”
4. “Please describe your next steps. That is, what would you do following this experience?”

Students were given 35 seconds to type their answers to each essay question in train-of-thought fashion, without regard for spelling, grammar, or punctuation. Following completion of the essays, participants filled out two additional covariate measures, race-based rejection sensitivity ( $M = 4.61$ ,  $SD = 5.26$ ) and depressive symptoms ( $M = 10.48$ ,  $SD = 9.45$ ), that we had been unable to include in prescreening.

**Essay coding.** The essay data was coded for naturally emergent themes by two independent coders. Participants’ responses to the four prompts were coded as a unit, rather than individually, given that the prompts were short and were meant to take students through the temporal progression of the experience. In the first step, a coder naive to the study hypotheses extracted themes from the collection of essay responses using a bottom-up approach. This coder and another independent coder achieved high consensus on the 14 non-mutually-exclusive codes ( $\alpha = .70$  to  $.89$ ), which indicated the presence (1) or absence (0) of specific themes. A theme was “present” if it was mentioned in at least one of the short essays; disagreements were resolved through discussion. Only themes emerging in at least 10% of the responses were included in the analyses, yielding a total of 12 themes (out of 14); their frequencies are listed in Table 3.

To extract a smaller number of manageable themes, we submitted these 12 codes to a principal component factor analysis with varimax rotation. This analysis yielded a seven-factor structure, as indicated by the elbow of the scree plot of eigenvalues (DeVellis, 2011). We reversed codes that loaded negatively onto factors and then summed the codes for each factor where applicable.<sup>3</sup>

The themes that emerged have high face validity and are the kinds of cognitions and attributions that one might expect following poor performance on an important “gateway” exam. The first factor reflects attributions over whether one’s performance will limit future life opportunities (e.g., “all is lost”); we called this factor *hopelessness*. The second factor centers the intention to take steps toward improving one’s score or application versus “throwing in the towel” and changing tracks altogether. We called this factor *goal disengagement*. A third factor captured attributions about one’s college experience and was called *devaluing college*. The fourth factor reflects internalized negative affect, specifically words related to “failure” and “depression”; we termed this factor *personal failure*. The fifth factor involves attributions of personal responsibility for the negative outcome, and we called this factor *personally responsible*. The sixth factor captured intentions to reach out to others and was termed *support seeking*. Finally, the seventh factor concerned adopting less challenging goals, such as attending lower ranked programs, and was called *lowering of personal standards*. Table 4 provides factor loadings and sample responses.

<sup>3</sup> One coding theme, embarrassment, loaded at exactly .52 on two factors; given that it did not differentiate reliably, it was not included in the final factor analysis.

Table 3  
Coding Themes From Study 4 Sorted by Frequency (N = 170)

Coding theme	Frequency
Reengage with goal	130
Opportunities limited	88
Assumes personal responsibility	87
Opportunities open	84
Value college	81
Devalue college	68
Depression	67
Failure	61
Embarrassment	60
Shift from goal	50
Adopts less challenging goals	45
Social support behaviors	41

As we had with our other outcome variables, we regressed each of these themes on RS-class, entity theories, and their interaction. These analyses yielded insight into the differential prevalence of each theme for different combinations of entity beliefs and RS-class. Beyond this, however, we were interested in the interrelationships among these themes among people high or low in entity beliefs and RS-class; therefore, we also examined correlations among the themes for the four “cells” that result from splitting entity beliefs and RS-class into high/low groups using tertiles. Our

cutoffs for the top and bottom tertiles were consistent with past research using the entity/incremental beliefs measure (Dweck et al., 1995).

**Results**

**Nomological net.** We ran a series of regression analyses predicting each of the closed-ended constructs described above from entity beliefs, RS-class, their interaction, as well as the covariates used in earlier studies: interpersonal rejection sensitivity, race-based rejection sensitivity, depressive symptoms, and parental income. All predictors were standardized. Table 5 lists the coefficients from these analyses. As the table shows, we found no significant interaction effects for belonging uncertainty, optimism, and either of the domain-specific entity beliefs measures.

Consistent with our expectations, however, we observed a significant interaction effect for belief in upward mobility through hard work ( $B = -.21, t = -2.16, p = .03$ ; see Figure 5). Given this significant interaction, we conducted simple slope analyses, which revealed a marginal effect of entity beliefs among students with levels of class-based rejection sensitivity at 1 SD above the mean ( $b = -.28, t = -1.80, p = .07$ ). In particular, attainment of success through hard work seems less possible as entity beliefs increase among students with high levels of RS-class, which is consistent with our theorizing that these students may be particularly unlikely to endorse the narrative of upward mobility that

Table 4  
Coding Themes From Study 4 With Sample Responses, Grouped by Factor With Percentage of Variance Explained and Factor Loadings After Varimax Rotation

Factor (% variance)	Coding theme	Sample responses	Factor loadings						
			1	2	3	4	5	6	7
1. Hopelessness (14.94)	Opportunities open	“In life, we often have second chances”; “not all doors are closed”	<b>-.85</b>	.04	.23	-.07	.03	-.13	-.09
	Opportunities limited	“My future career would be in jeopardy”; “I would lose hope that my goals would ever be reached”	<b>.71</b>	.16	.04	.15	.32	.22	-.22
2. Goal disengagement (13.67)	Shift from goal	“I’m not going to apply . . . I should just be a truck driver”; “Re-evaluate my life goal”	-.15	<b>.84</b>	-.06	.05	-.16	.06	-.15
	Reengage with goal	“Retake the exam”; “Devote everything I have to getting my ideal score”	-.21	<b>-.83</b>	.00	-.03	-.08	.05	-.16
3. Devaluing college (13.25)	Value college	“College was a once in a lifetime opportunity”; “My college degree will remain an essential step”	-.18	.13	<b>.84</b>	.15	-.08	.05	.01
	Devalue college	“My college experience was for nothing”; “My degree was worthless”	.03	.23	<b>-.81</b>	.22	-.02	.12	-.08
4. Personal failure (10.99)	Failure	“I would feel like a failure”	.10	.08	.01	<b>.88</b>	.18	.15	-.02
	Depression	“Desperation, depression”; “I would cry and feel worthless”	.53	-.03	-.16	<b>.56</b>	-.23	-.29	.14
5. Personally responsible (10.06)	Assumes personal responsibility	“I would blame myself”; “Angry at myself” about performance	.07	-.08	-.06	.10	<b>.94</b>	-.03	.07
6. Lowering of personal standards (9.74)	Adopts less challenging goals	“I would just give up on my dreams of getting in to my top dream grad school”; “Apply for whatever company that might take me”	.18	-.02	-.06	.08	-.03	<b>.93</b>	.00
7. Support seeking (9.70)	Social support behaviors	“Talk to my parents”; “Seek guidance”	-.01	.01	.07	.02	.06	.00	<b>.97</b>

Note. Highest factor loadings from each factor are bolded.

Table 5  
Regression Coefficients for Entity beliefs, RS-Class, and Their Interaction Predicting Study 4  
Nomological Net Variables and Open-Ended Essay Coding Outcomes

Variable	Entity beliefs <i>B</i>	RS-class <i>B</i>	RS-class × Entity <i>B</i>
Nomological net			
Belonging uncertainty	.11	.09	-.13
Dispositional optimism	-.03	-.08	-.03
Entity/incremental beliefs—Intelligence domain	.37**	-.11	.14 <sup>†</sup>
Entity/incremental beliefs—Social class domain	-.47	2.04	.66
Belief in upward mobility through hard work	-.07	.12	-0.21*
Open-ended coding outcomes			
Hopelessness	.15*	.09	.13 <sup>†</sup>
Goal disengagement	.14*	.03	.09
Devaluing college	.04	.02	.01
Personal failure	-.03	.05	-.01
Personally responsible	-.11	.16	.40*
Lowering of personal standards	.39 <sup>†</sup>	-.37	.24
Support seeking	-.20	-.03	-.06

Note. RS-class = class-based rejection sensitivity.  
<sup>†</sup>  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ .

often serves as the overarching motivator for the attainment of difficult educational outcomes. Among incremental theorists (1 *SD* below the mean for entity beliefs), a significant positive relationship was observed between RS-class and belief in upward mobility through hard work ( $b = .33$ ,  $t = 2.34$ ,  $p = .02$ ). We return to this finding in the General Discussion, where we discuss the broader pattern of results for incremental theorists with high levels of RS-class.

**Open-ended essays.** We ran a series of regressions predicting the thematic factors of the open-ended essays from RS-class, entity beliefs, and their interaction (the regressions for the binary factors of personal responsibility, support seeking, and lowering of personal standards were logistic). We included covariates in all analyses, as in our other studies with relatively large sample sizes.

Table 5 lists the results from these regression analyses. As the table indicates, we observed a significant interaction for the personally responsible factor,  $B = .40$ , Wald  $\chi^2(1, N = 160) = 4.45$ ,

$p = .04$ . To explore this effect further, we conducted simple slopes analyses at one standard deviation above and below the mean for entity beliefs (see Figure 6). We did not observe a significant relationship between RS-class and personal responsibility among incremental theorists,  $B = -.25$ , Wald  $\chi^2(1, N = 160) = .92$ ,  $p = .34$ . Among entity theorists, however, a marginally significant positive relationship was observed between RS-class and personal responsibility,  $B = .56$ , Wald  $\chi^2(1, N = 160) = 3.68$ ,  $p = .055$ . This finding suggests that the probability of attributing personal responsibility for the negative academic experience increases with higher levels of class-based rejection sensitivity among students high in entity beliefs. We also observed a significant negative relationship between entity beliefs and personal responsibility at low levels of RS-class (1 *SD* below the mean), such that incremental theorists assumed responsibility more frequently than entity theorists,  $B = -.51$ , Wald  $\chi^2(1, N = 160) = 4.56$ ,  $p = .03$ . As we discuss below, we suspected that taking responsibility when personal change is possible is psychologically different than taking responsibility with few to no prospects for change.

We additionally observed a marginally significant interaction effect of RS-class and entity beliefs for the hopelessness factor,  $B = .13$ ,  $t(152) = 1.82$ ,  $p = .07$  (see Figure 7).<sup>4</sup> We explored this interaction with simple slope analysis and found that entity theorists reported greater hopelessness as their RS-class levels increased ( $b = .22$ ,  $t = 2.05$ ,  $p = .04$ ). In contrast, incremental theorists showed no significant relationship between RS-class levels and hopelessness ( $b = -.03$ ,  $t = -.32$ ,  $p = .75$ ). We confirmed that the difference between entity (vs. incremental) theorists at high levels of RS-class was statistically significant ( $b = .28$ ,  $t = 2.56$ ,  $p = .01$ ).

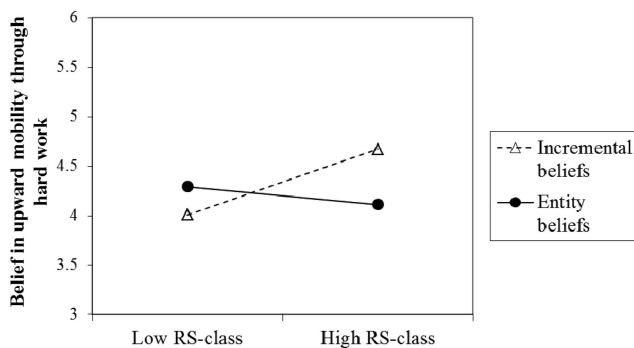


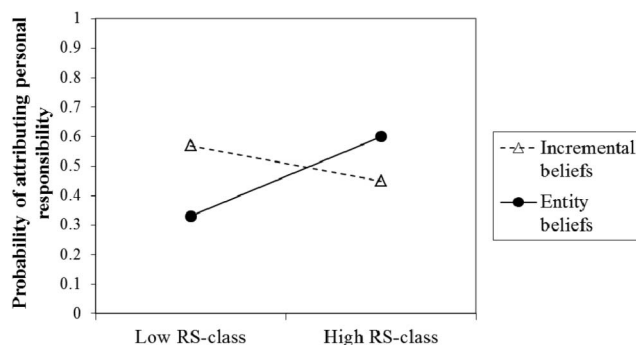
Figure 5. Belief in upward mobility through hard work in Study 4 as a function of RS-class levels and entity beliefs, controlling for RS-personal, RS-race, social class, and depression scores. Markers represent predicted endorsement at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors standardized. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity; RS-race = race-based rejection sensitivity.

<sup>4</sup> Including subjective social status in the United States or at one's university as a covariate in our regression model, in lieu of parental income (see Footnote 1), yielded a significant interaction effect for the hopelessness factor (with subjective status in the United States,  $B = .16$ ,  $t(139) = 2.21$ ,  $p = .03$ , with subjective status at one's university,  $B = .17$ ,  $t(127) = 2.21$ ,  $p = .03$ ).

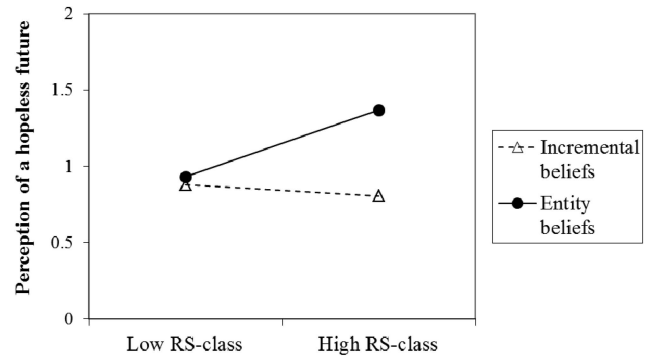
**Intercorrelations among themes for different groups.** Are the interrelationships among the themes different for students with different levels of RS-class and entity beliefs? To address this question, we split both the RS-class and entity/incremental beliefs distributions into tertiles and then retained students falling into the top or bottom tertiles for both variables. This resulted in four distinct “cells” (high/high, high/low, low/high, low/low) within which we assessed correlations between themes (see Tables 6, 7, 8, and 9).<sup>5</sup> We included belief in upward mobility in our correlation analyses, as this construct was relevant to the intersection of entity beliefs and RS-class in our nomological net analyses. The inter-correlation analyses were especially useful in testing our prediction that attributions of personal responsibility for the academic setback differ qualitatively by cell, specifically among entity theorists with high RS-class versus incremental theorists with low RS-class (see Figure 6).

Among participants high in both entity beliefs and RS-class, there was a strong correlation between attributions of personal responsibility and a sense of hopelessness ( $r = .61, p = .001$ ), supporting the idea that attributions of personal responsibility are negatively charged for this group (see Table 6). Hopelessness itself was also related to devaluing college ( $r = .51, p = .009$ ). Among incremental theorists who are low in RS-class, there was no significant relationship between attributions of personal responsibility and hopelessness ( $r = .24, p = .29$ ; see Table 7). Instead, personal responsibility was negatively related to goal disengagement ( $r = -.47, p = .03$ ) and positively related to a belief in upward mobility through hard work ( $r = .56, p = .008$ ). Our findings suggest that attributions of personal responsibility in this group are related to a motivation to persevere.

Incremental theorists high in RS-class, who at times show a trend toward higher GPAs, show a positive relationship only between hopelessness and feelings of personal failure ( $r = .51, p = .02$ ; see Table 8). We found a similar relationship between hopelessness and personal failure for entity theorists who are low in RS-class ( $r = .55, p = .005$ ); however, for this group, hopelessness is also positively associated with devaluing college ( $r =$



**Figure 6.** Probability of attributing personal responsibility following the academic setback scenario in Study 4, plotted as a function of RS-class levels and entity beliefs, controlling for RS-personal, RS-race, social class, and depression scores. Markers represent predicted probabilities at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors standardized. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity; RS-race = race-based rejection sensitivity.



**Figure 7.** Perception of a “hopeless” future following the academic setback scenario in Study 4 as a function of RS-class levels and entity beliefs, controlling for RS-personal, RS-race, social class, and depression scores. Markers represent thematic content of essays at 1 standard deviation above and below the mean for RS-class and entity beliefs, with all predictors standardized. RS-class = class-based rejection sensitivity; RS-personal = interpersonal rejection sensitivity; RS-race = race-based rejection sensitivity.

$.48, p = .02$ ) and negatively associated with a belief in upward mobility ( $r = -.43, p = .04$ ). Further, believing less in upward mobility corresponds with adopting less challenging goals ( $r = -.41, p = .047$ ; see Table 9). The correlations for entity theorists low in RS-class are consistent with prior research on entity theorists’ catastrophizing reactions to failure (e.g., Dweck, 2006; Grant & Dweck, 2003).

## Discussion

In Study 4, we used both a closed-ended, nomological net strategy and an open-ended, essay-coding strategy to arrive at the phenomenology of entity theorists who also anxiously expect rejection based on their social class. It is important to recognize that the open-ended nature of the study necessarily yields a greater variety of outcomes than do more closed-ended, hypothesis driven studies (e.g., Studies 1–3). We did not intend (nor should one expect) for our interaction to fully account for the reactions people might have to academic failure. Nevertheless, our exploration of the nomological net of our interactive effect provided insight into the types of beliefs that may contribute to the vulnerability of students with high class-based rejection sensitivity and entity beliefs. These students perceive the relationship between hard work and success as more tentative than their counterparts with incremental beliefs. We also established that the intersection of entity beliefs and class-based rejection sensitivity is not redundant with belonging uncertainty or dispositional optimism and that it does not strongly predict domain-specific beliefs about the malleability of social class or intelligence.

<sup>5</sup> Although using tertiles for these analyses reduces our sample sizes, the arbitrariness of using a median split to classify people as either “high” or “low” has also been noted by researchers (Irwin & McClelland, 2003). We chose the tertile split given a precedent for excluding the middlemost entity/incremental scores when needing distinct cells (Dweck et al., 1995); however, we found similar correlations when using a median split to divide participants into cells, suggesting a robustness to the patterns across the two methods.



Table 6  
Correlations Between Study 4 Coding Themes for Students in the Top Tertiles of RS-Class and Entity Beliefs ( $n = 25$ )

Item	High RS-class/entity							
	1	2	3	4	5	6	7	8
1. Hopelessness	—	.01	.51**	.30	.61**	.05	-.08	-.06
2. Goal disengagement		—	-.14	.11	-.02	.02	.09	.00
3. Devaluing college			—	.14	.00	-.21	.13	.00
4. Personal failure				—	.21	.39	.06	.06
5. Personally responsible					—	.10	-.30	.27
6. Lowering of personal standards						—	-.13	-.11
7. Support seeking							—	.02
8. Belief in upward mobility								—

Note. RS-class = class-based rejection sensitivity.  
\*\*  $p < .01$ .

The open-ended essay themes additionally revealed that, in the face of poor academic performance, students with entity beliefs tended to attribute personal responsibility for their failure as their levels of class-based rejection sensitivity increased. Of interest, this interaction also revealed that students with low levels of class-based rejection sensitivity and incremental beliefs assume personal responsibility for their poor academic performance. We suspected that the meanings students associate with personal responsibility may differ among vulnerable students (high RS-class entity theorists) versus less vulnerable students (low RS-class incremental theorists). In the former case, personal responsibility may map onto feelings of self-blame and perceived futility of effort, an interpretation supported by the network of outcomes also associated with this cell (hopelessness, lack of belief in personal mobility). In the case of less vulnerable students, attributions of personal responsibility may instead be coupled with feelings of self-efficacy and internal locus of control. Indeed, the intercorrelation analysis shows exactly this pattern, such that attributions of responsibility are strongly associated with hopelessness specifically for entity theorists high in RS-class, but the same attributions are positively related to a belief in upward mobility through hard work and negatively related to goal disengagement for incremental theorists low in RS-class.

Taking these results together, we find that students with high levels of class-based rejection sensitivity and entity beliefs may

experience academic setbacks as a reflection of obstacles and personal deficits that are stable. A belief that outcomes and opportunities will be “doomed,” not just in the near future but over the long term, could in turn lead to patterns of learned helplessness (Abramson, Metalsky, & Alloy, 1989) as well as domain disengagement (Major, Spencer, Schmader, Wolfe, & Crocker, 1998). Such patterns may help explain why the interactive effect of class-based rejection sensitivity and entity beliefs seems to be a consistent predictor of expected and actual college academic performance.

## General Discussion

Across four studies, we found support for our central hypothesis that class-based rejection sensitivity and entity beliefs jointly predict university outcomes. That is, students with concerns about discrimination stemming from their social class backgrounds experienced negative academic outcomes when they also believed that one’s personal characteristics are fixed. We found evidence of the interactive effect of class-based rejection sensitivity and entity beliefs in samples of students from various ethnic backgrounds, social class backgrounds, and class years. Further, the observed negative relationship between class-based rejection sensitivity and university outcomes among those endorsing entity beliefs (both dispositionally and postpriming) held after accounting for inter-

Table 7  
Correlations Between Study 4 Coding Themes for Students in the Bottom Tertiles of RS-Class and Entity Beliefs ( $n = 21$ )

Item	Low RS-class/incremental							
	1	2	3	4	5	6	7	8
1. Hopelessness	—	-.08	.04	.45*	.24	.20	.34	.35
2. Goal disengagement		—	.21	.14	-.47*	.10	.23	-.04
3. Devaluing college			—	.31	.06	.10	-.21	-.08
4. Personal failure				—	.19	.13	.56**	.47*
5. Personally responsible					—	.04	.14	.56**
6. Lowering of personal standards						—	.00	.04
7. Support seeking							—	.45*
8. Belief in upward mobility								—

Note. RS-class = class-based rejection sensitivity.  
\*  $p < .05$ . \*\*  $p < .01$ .

Table 8  
Correlations Between Study 4 Coding Themes for Students in the Top Tertile of RS-Class and Bottom Tertile of Entity Beliefs ( $n = 22$ )

Item	High RS-class/incremental							
	1	2	3	4	5	6	7	8
1. Hopelessness	—	.37	.14	.51*	.13	.31	-.23	-.29
2. Goal disengagement		—	-.05	.19	-.01	-.20	.04	-.08
3. Devaluing college			—	.38	.01	-.10	-.20	.04
4. Personal failure				—	.27	.02	.03	-.12
5. Personally responsible					—	.06	.32	-.41
6. Lowering of personal standards						—	-.19	-.15
7. Support seeking							—	-.12
8. Belief in upward mobility								—

Note. RS-class = class-based rejection sensitivity.

\*  $p < .05$ .

personal and race-based rejection sensitivity, objective social class, depression symptoms, and past academic performance.

### Understanding Risk and Resiliency as a Function of RS-Class and Entity Beliefs

In this research, a negative relationship between RS-class and academic achievement was consistently observed, specifically among students who endorse entity theories. Study 4 further elucidated some of the phenomenology of high RS-class entity theorists, suggesting that these students are vulnerable to feelings of hopelessness and self-blame following academic setbacks and are not as eager as other students to endorse a belief in upward mobility. Thus, we see that vulnerability to academic difficulties may be compounded by being high in both RS-class and entity theories.

By contrast, however, the relationship between RS-class and academic outcomes was considerably more variable in association with incremental theories. Although we frequently observed no significant relationship between RS-class and academic outcomes among incremental theorists (e.g., official grades in Study 2, Study 3), in several studies RS-class tended toward being a positive predictor of academic outcomes (expected grades in Study 1a, Study 1b) and in some cases was significant (self-reported current grades in Study 1a; expected grades in Study 2; upward mobility

in Study 4). These latter cases suggest that, in the presence of an incremental theory of change, sensitivity to class-based rejection may unexpectedly become a protective factor—perhaps by allowing students to feel like they can tackle the class-based disparities that they are more likely to perceive.

This possibility notwithstanding, the strongest “signal” in these findings remains the instability of the relationship between RS-class and academic outcomes in the presence of incremental theories. This instability can perhaps be understood as being a reflection of variability in the efficacy of a protective factor (incremental theories) on buffering against a risk factor (RS-class). Whereas attenuation of the effects of a risk factor may be reasonably expected, it seems considerably less likely that a given protective factor would completely buffer or even reverse risk effects. The variability in the main effects of entity/incremental theories in the presence of the interaction (see, e.g., Study 2 vs. Study 3), as well as the lack of strong correlations for the incremental/high RS-class “cell” (see Table 8), further suggests variability in the effects of the protective factor, given a vulnerability factor. The specific “dosage” conditions under which we might expect attenuation versus buffering effects of RS-class is an exciting topic for future research. Nonetheless, our strong prediction—that entity theorists who are also anxious about rejection based on their social class would be vulnerable to academic underperformance—was con-

Table 9  
Correlations Between Study 4 Coding Themes for Students in the Bottom Tertile of RS-Class and Top Tertile of Entity Beliefs ( $n = 24$ )

Item	Low RS-class/entity							
	1	2	3	4	5	6	7	8
1. Hopelessness	—	.27	.48*	.55**	.07	.34	-.14	-.43*
2. Goal disengagement		—	.48*	.18	.10	.17	-.29	-.17
3. Devaluing college			—	.47*	.25	.59**	-.23	-.23
4. Personal failure				—	.23	.43*	.08	-.30
5. Personally responsible					—	-.18	.26	-.01
6. Lowering of personal standards						—	-.26	-.41*
7. Support seeking							—	.06
8. Belief in upward mobility								—

Note. RS-class = class-based rejection sensitivity.

\*  $p < .05$ . \*\*  $p < .01$ .

firmed, along with insights into the specific phenomenology surrounding this vulnerability.

### The Role of Objective Social Class

Our findings are in line with previous research documenting the importance of underrepresented students' feelings of acceptance and belonging in their adaptation to university settings (Mendoza-Denton et al., 2002; Stephens, Fryberg, et al., 2012; Walton & Cohen, 2007). Acceptance concerns may fuel students' vigilance for cues that indicate whether they belong in a given setting (Walton & Cohen, 2011). Although individuals from lower social class backgrounds express vigilance to social threats more generally (Chen & Matthews, 2001; Kraus et al., 2011), they may be especially vigilant to interpersonal and environmental cues in university settings because these settings evoke concerns about social stigmatization (Johnson et al., 2011). In particular, lower class college students contend with numerical underrepresentation (Carnevale & Rose, 2004), unfamiliar cultural norms (Stephens, Fryberg, et al., 2012; Stephens, Townsend, et al., 2012), and stereotypes about their academic ability (Croizet & Claire, 1998).

Our results suggest that students' levels of class-based rejection sensitivity are important to predicting their college experiences, even beyond their objective social class standing. We expected class-based rejection sensitivity to be most prevalent and detrimental among students from lower class backgrounds; although we found a negative correlation between parental income and class-based rejection sensitivity, we did not find consistent evidence of moderation by objective social class. This could be due to insufficient power in Study 1b and to higher class students also experiencing class-based rejection sensitivity (see Goldman-Flythe, 2013). We suspect that higher class students may worry about negative stereotypes in interpersonal domains (e.g., being perceived as "cold" or "spoiled"; Fiske, Cuddy, Glick, & Xu, 2002), and lower class students may worry about class-based discrimination more broadly, due to their traditionally underrepresented status in higher education and awareness of academic stereotypes (Carnevale & Rose, 2004; Croizet & Claire, 1998). Unpacking how class-based rejection sensitivity may differ among upper and lower class students remains a fruitful area for future research.

Several studies on college students' experiences as a function of their social class backgrounds have found that private university settings may be especially threatening for students from lower class backgrounds (Johnson et al., 2011; Ostrove, 2003). At the large public university at which these studies were conducted, we might have expected the high numerical representation of lower income students (i.e., over one third of the student population as indexed by Pell Grant eligibility; Heller, 2004) to "normalize" the experience of being from a lower class background (though see Stephens, Fryberg, et al., 2012 for counter evidence). We found that students in a relatively socioeconomically diverse campus demonstrate individual differences in RS-class, though we are unable to discern how the mean and variability in RS-class levels compares to those for other 4-year universities. Future research could assess whether class-based rejection sensitivity concerns are amplified versus attenuated as a function of campus socioeconomic diversity.

### Implications for Intervention

The findings we report here, particularly those from Study 4, may help inform interventions specifically targeted toward lower income students. College completion rates for students from the lowest income quartile show less growth than those from the highest quartile (e.g., rising from 5% to 9% vs. 36% to 54%, respectively, in birth cohorts from the early 1960s vs. the early 1980s; Bailey & Dynarski, 2011). Our data suggest that even though variability in RS-class meaningfully predicts academic outcomes across the social class spectrum, lower income students may be at particular risk for experiencing class-based rejection sensitivity.

The current findings suggest that one important—but not the only—component of interventions addressing class-based disparities in educational settings may be to specifically target students' networks of beliefs around the perceived futility of their efforts to "get ahead." We conclude that incremental belief interventions (e.g., Aronson, Fried, & Good, 2002) hold promise for students with high class-based rejection sensitivity. In past research, negatively stereotyped individuals who learned about incremental views of intellectual ability achieved better academic performance (Aronson et al., 2002; Good, Aronson, & Inzlicht, 2003). We suspect that these interventions could be further adapted for students with high class-based rejection sensitivity by also targeting students' beliefs about the fixedness versus permeability of social class group boundaries and by focusing on making nonglobal attributions in the face of academic setbacks (e.g., Weiner, 1985, 1986).

Students' class-based rejection concerns may interfere with their social and academic performance through other mechanisms as well. Vigilance to social threats and possible stigmatization, characteristic of class-based rejection sensitivity, likely drains attentional and self-regulatory resources. In line with this assertion, students from relatively lower versus higher class backgrounds experienced more cognitive depletion when asked to discuss stigma-relevant (i.e., academic achievement) but not stigma-irrelevant (i.e., geographic preferences) topics (Johnson et al., 2011; Study 3). Related research on stereotype threat, or the fear of confirming negative stereotypes about one's group (Steele & Aronson, 1995), demonstrates that people's working memory capacity, which is essential to completing academic tasks, is consumed by worries about negative group-based social evaluation (John-Henderson et al., 2014; Schmader & Johns, 2003). As such, interventions aimed to attenuate social threats, including cross-group friendship interventions (Mendoza-Denton & Page-Gould, 2008) and belonging interventions (Walton & Cohen, 2011), could provide fruitful approaches to intervention.

### Concluding Remarks

As universities seek to recruit more students from lower class backgrounds (Housel & Harvey, 2009), they must be aware of potential obstacles to these students' college adaptation. Higher education has been called the "great equalizer" because of its utility as a means to social and economic mobility (Carnevale & Rose, 2004). However, higher education remains both a gateway and a barrier to social mobility for lower class students, due to institutional, social, and psychological barriers to these students' academic achievement. Finding ways to increase students' sense of

inclusion may help them benefit from college-based opportunities for personal and socioeconomic advancement.

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## Appendix

### Class-Based Rejection Sensitivity Questionnaire (RSQ-Class)

Instructions: Please answer the following items with respect to your socioeconomic status (i.e., social class background). Please imagine yourself in each situation and select the number that best indicates how you would feel.

1. Imagine you are in class at the start of the Spring semester talking about what you did over the winter break. You realize that several of the students around you come from a very different socioeconomic background than you do.

- (A) How **concerned/anxious** would you be that the other students might reject you after learning about your socioeconomic status?
- (B) The other students would accept me after learning about my socioeconomic status.

2. Imagine you are at Student Services to complete an information update. As part of the update, you are asked for an estimate of your parents' income. One of your classmates is at the Student Services office and offers to hand your form in with his. If you give him your form he will clearly be able to see your parents' income.

- (A) How **concerned /anxious** would you be that your classmate might reject you after seeing your parents' income?
- (B) My classmate would accept me after seeing my parents' income.

3. Imagine that your college boyfriend/girlfriend's parents want to come and visit you at your house over the summer. His/her parents are from a different socioeconomic status background than your parents.

- (A) How **concerned/anxious** would you be that your boyfriend/girlfriend's parents might reject you after seeing your parents' home?

- (B) My boyfriend/girlfriend's parents would accept me after seeing my parents' home.

4. Imagine that you and a friend have stopped at an ATM to grab cash before going to the movies. As you withdraw money, you realize that your friend is standing very close to you and may be able to see your account balance.

- (A) How **concerned/anxious** would you be that your friend might reject you if he/she saw your account balance?
- (B) My friend would accept me after he/she saw my account balance.

5. Imagine that you are in class having a discussion about living in different types of neighborhoods. Your neighborhood comes up, but no one knows you live there.

- (A) How **concerned/anxious** would you be that your classmates would reject you after learning which neighborhood you're from?
- (B) My classmates would accept me after learning which neighborhood I'm from.

6. Imagine that you are responding to an ad for a roommate in a two-bedroom apartment. The other person has asked for some more information about you, including socioeconomic status-related information.

- (A) How **concerned/anxious** would you be that the other person would reject you after learning your socioeconomic status?
- (B) The person would accept me after learning about my socioeconomic status.

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