

Access is Not Enough: Cultural Mismatch Persists to Limit First-Generation Students'

Opportunities for Achievement Throughout College

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Abstract

American higher education prioritizes independent models of self as the cultural ideal. This institutional culture produces a mismatch for first-generation students (those whose parents do not have four-year degrees), who are guided by relatively interdependent models of self. During the college transition, cultural mismatch increases first-generation students' stress and undermines their academic performance. However, we know little about these students' experiences of mismatch as they progress towards graduation. In the current work, we ask what happens as first-generation students interact with college institutions *over time*. By the time they make it to graduation, do first-generation students' interdependent selves and associated outcomes (reduced fit, worse grades) change or stay the same? Using a longitudinal design, we follow students across their four years in college. We find that cultural mismatch persists until graduation. First, social class differences in models of self remain stable throughout college: first-generation students still endorse more interdependence than do continuing-generation students. Second, endorsement of interdependence, which does not match the college culture of independence, predicts reduced sense of fit in college four years later. Third, social class differences in fit are associated with important outcomes during college: lower fit predicts lower grades and subjective status upon graduation. This work suggests opening access to college by itself does not do enough to reduce social class inequality. Rather, colleges may need to provide more inclusive institutional environments to ensure that students from diverse backgrounds enjoy similar experiences and reap similar rewards during college.

Keywords: social class, inequality, culture, institutions / organizations, higher education

Abstract Word Count: 243 / 250

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for achievement throughout college

Social class mobility, or the lack thereof, in American society is increasingly occupying the minds of citizens, pundits, and policymakers across the political spectrum (Pew, 2012, 2014). Among developed nations, the U.S. has the lowest rate of intergenerational mobility; for instance, social class background constrains students' access to educational opportunity in the U.S. more than in any other developed nation (OECD, 2010). In fact, the opportunity to earn a college degree varies sharply along social class lines, particularly between first-generation students (i.e., neither parent has a four-year college degree) and continuing-generation students (i.e., one or more parents has a four-year degree).¹ Compared to their continuing-generation peers, first-generation students are twice as likely to drop out of high school; 35% less likely to matriculate in college; and 51% less likely to graduate college in four years (Ishitani, 2006).

These disparities in access to higher education are important because colleges are a critical gateway institution for social class mobility (Ridgeway & Fisk, 2012; Stephens, Markus, & Phillips, 2014). For example, students who graduate from college can expect a lifetime of health benefits, steady income, and other resources, while those who do not graduate face more limited financial, social, and career prospects (Reardon, 2011). Considering the myriad benefits it confers, higher education is often presented as “the great equalizer.” This common perspective suggests that if first-generation students gain access to college, then they will necessarily adjust over time and, if they make it to graduation, they will reap the many rewards that college has to offer. Thus, the reasoning goes, college will expose such students to the middle-class “rules of

¹Social class can be captured by education, income, and/or occupational prestige or status. Because education provides and is associated with cultural ideals, norms, and beliefs, it is a particularly reliable indicator of social class (Lareau, 2003).

the game” and mold them into adults who are virtually indistinguishable from their middle- and upper-class peers. However, initial differences between first-generation and continuing-generation students may lead the two groups to experience the same institutional culture differently. As a result, students may experience different opportunities and benefits *during* their four years in college, thus allowing social class gaps to persist all the way to graduation.

In the current research, we investigate the extent to which social class differences among students change or remain the same from the beginning of college to graduation. Specifically, we ask two key questions. First, will college change first-generation students over their four years in college in a way that renders them indistinguishable from their continuing-generation peers? Second, do these changes allow first-generation students to access similar experiences and institutional rewards as continuing-generation students during college?

Social Class: Homogenous Institutions, Diverse Selves

Colleges are not neutral gateway institutions; rather, they reflect and promote culture-specific ideals (Adams, Biernat, Branscombe, Crandall, & Wrightsman, 2008; Croizet, 2008; see also Flynn & Chatman, 2001; O’Reilly & Chatman, 1996; Schein, 1990). In America, colleges reflect and promote *independence* as the cultural ideal for how to be a good student or person – i.e., an independent model of self (Cross & Madson, 1997; Fryberg & Markus, 2008; Fryberg, Covarrubias, & Burack, 2013; Markus & Kitayama, 2010). When asked to characterize the culture of their institutions, university administrators across a wide variety of four-year colleges endorsed primarily independent values and expectations of students. For example, they expected students to challenge group norms and develop personal opinions, rather than consider group norms or appreciate others’ opinions (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). And, colleges reward students who enact these independent ideals: for instance, students

who express individual needs and opinions in class receive more attention from their teachers and get better grades (Anyon, 1980; Calarco, 2011; Stephens et al., 2012; Stephens, Hamedani, & Destin, 2014).

Although universities predominantly expect, socialize, and reward behaviors associated with independent models of self, students who enter these institutions are not culturally homogenous. Indeed, a growing body of research suggests that students' social class backgrounds are an important source of variation in models of self². For example, students from working-class backgrounds (i.e., first-generation students)³ are often guided by an *interdependent* model of self, one that emphasizes connections and relationships with others (Fiske & Markus, 2012; Snibbe & Markus, 2005; Stephens, Fryberg, & Markus, 2011). Those from middle- and upper-class backgrounds (i.e., continuing-generation students) are more often guided by an *independent* model of self, one that emphasizes individuality and self-expression (Fryberg & Markus, 2007; Hall, 2012; Lareau, 2003; Stephens, Markus, & Townsend, 2007; Stephens et al., 2012). Because these models of self provide foundational beliefs about how to feel, think, and act as a good person, they affect people's expectations, motivations, and behaviors. For instance, reflecting an interdependent model of self, first-generation students more often endorse interdependent motives for attending college (e.g., to help their families; Stephens et al., 2012) compared to continuing-generation students.

²People can access both independent and interdependent selves, and both modes have beneficial elements. However, previous research demonstrates cultural contexts strongly shape the models of self that people access as their default, or the most frequently and consistently (Markus & Kitayama, 1991, 2010).

³We use the term *working-class* to refer to contexts in which most people do not have four-year college degrees. Since first-generation students are those who do not have parents with four-year degrees (Ishitani, 2006; Pascarella, Pierson, Wolniak, & Terenzini, 2004) we refer to them as coming from working-class backgrounds. We use the term *middle-class* to refer to contexts in which most people have at least a four-year degree. Since continuing-generation students are those who have at least one parent with a four-year college degree, we refer to them as coming from middle- and upper-class backgrounds.

According to *cultural mismatch theory*, the cultural mismatch between the independent models of self common in college institutions and the interdependent models common among first-generation students should render the college transition relatively difficult, uncertain, and threatening for first-generation students (Fryberg et al., 2013; London, 1992; Stephens et al., 2012; Thayer, 2000; see also person-environment fit theory: Kristof-Brown, Zimmerman, & Johnson, 2005; O'Reilly, Chatman, & Caldwell, 1991; Schneider, Smith, & Goldstein, 2000). For instance, during the first year of college, first-generation students often report that they have trouble finding a place to belong and experience more stress compared to their continuing-generation peers (Johnson, Richeson, & Finkel, 2011; Ostrove & Long, 2007; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Phinney & Haas, 2003; Stephens et al., 2012; Stephens, Townsend, Markus, & Phillips, 2012; Stephens, Hamedani, & Destin, 2014; Terenzini et al., 1994; Thayer, 2000). Together this work suggests the interaction of institutions' and students' models of self influences students' *experiences of fit* during the college transition: when these models match, students should experience increased fit and flourish in college, but when these models mismatch, students may experience diminished fit and flounder.

These mismatch experiences also fuel social class gaps in highly consequential outcomes, including academic achievement, physical and mental health, and social relationships. For instance, research suggests that mismatch experiences can contribute to first-generation students' underperformance during their first two years of college (Ishitani, 2006; Pike & Kuh, 2005; Stephens et al., 2012; Stephens, Townsend, Markus, & Phillips, 2012). In particular, the lack of fit that mismatch experiences produce among first-generation students may play a role in hindering their academic and social outcomes in college.

In sum, previous research suggests that college culture of independence produces a mismatch for first-generation students that is associated with a range of negative consequences: Mismatch can hamper first-generation students' college experiences, undermine their academic performance, and even contribute to students' dropping out, during the first half of college. Notably, however, much less is known about first-generation students' experiences of mismatch and its consequences for performance *beyond* the first half of college, as students progress towards graduation. By investigating how students interact with a primarily independent institution *over time*, we can consider whether and how early social class differences are changed versus maintained by college: an important but unexplored component of cultural mismatch theory. What happens as students from different class backgrounds, guided by different models of self, interact with the university culture throughout their four years in college?

Do Students Change or Stay the Same?

Diverse theoretical perspectives suggest two competing hypotheses as to how students from different class backgrounds will experience and be shaped by institutions of higher education over time. The *cultural change* perspective suggests that, over four years, college will shape first-generation students in ways that shift them away from interdependence and toward independence. However, drawing on a *cultural mismatch* perspective, we propose that college will *not* shift first-generation students away from interdependence or toward independence. Rather, we posit that their experiences of mismatch may prevent them from experiencing the same sense of fit and achieving the same benefits as their continuing-generation peers by the end of college. Below we review relevant literatures that support these two perspectives.

Cultural Change

Developmental perspectives suggest college may change first-generation students, shifting them away from interdependence and toward independence, in part because college comes during an important life stage known as emerging adulthood (Arnett, 2000). College students are still developing physically, psychologically, and experientially, and college is often the first time students have lived as adults and outside their family homes (Arnett & Tanner, 2006). During this period, young adults are particularly malleable as they explore and change previously held identities, values, and beliefs. Thus, college represents a life period marked by broad and even intense change for students.

The potential for change in emerging adulthood is further heightened in contexts like college, in which students are fully immersed and spend their daily lives interacting with the same institutional culture, via residential life and student groups (Armstrong & Hamilton, 2013; Berry & Sam, 1997; McCabe et al., 2005; Phinney, 2003; Sam & Berry, 2010; Weidman, 1989). Colleges expose students to standards and expectations for how to be an effective student that reflect independence as the institutional ideal (Fryberg & Markus, 2007; Stephens et al., 2012). For example, colleges produce guidelines that direct coursework, residential life, and student activities to socialize all students toward independence (Morphew & Hartley, 2006). In short, college itself is a “strong situation” especially likely to change students’ cultural norms, beliefs, and attitudes via intensive acculturation processes (see also Mischel, 1977).

Revealing the power of college as a strong situation, Newcomb (1943, 1967; Alwin, Cohen, & Newcomb; 1991) surveyed students beginning the first year of college and continuing over the next several decades. These studies, focused on political attitudes among upper-class students, found that students’ experience in college led to increased political and economic liberalism. More recent research similarly reveals that students become more liberal, open,

tolerant, and secular over four years in college (Astin, 1977, 1993; Pascarella & Terenzini, 1991). Moreover, as people become more familiar with new environments like college over time, they also feel less uncertainty and more fit (Saks, Uggerslev, & Fassina, 2007).

Altogether, research from developmental, persuasion, and acculturation literatures suggests that colleges provide strong institutional environments that actively socialize students, during a life stage in which change is especially likely. By persisting in such an institutional environment, first-generation students may shift away from interdependence and toward independence. As a result, they should experience increased fit, which should, in turn, reduce social class gaps in institutional rewards and benefits (e.g., higher grades) by the end of college.

Cultural Mismatch

In contrast to the cultural change perspective, we propose that students' diverse models of self—and the associated social class gaps in fit and achievement—will in fact *persist* throughout the college experience. We draw from a variety of research areas to build this cultural mismatch perspective. People are socialized over time by their families, their schools, their peers, and their communities in different social class environments, generally for eighteen years before they reach college (Hackman & Farah, 2009; Lareau, 2003; McLoyd, 1998). Developmental perspectives suggest that, although college comes during a life stage of change, such early experiences often exert especially strong imprinting effects on people over time (Bradley & Corwyn, 2002; Cheah & Nelson, 2004; Marmot et al., 2001; Tilcsik, 2014). Thus, while beliefs about particular political topics may shift during college, early experiences may continue to shape cultural norms for how to behave and interact as person in the world. For instance, even among middle-aged CEO's, early social class background influences leadership style (Kish-Gephart & Campbell, 2014).

Even in the face of strong socialization pressures, like those presented by college, students' formative models of self may prevent change because these models inform how students interact with institutions. Institutional socialization practices, including residential and classroom approaches in college, often assume that independent models of self guide students' behavior. When students do not match the models prevalent in the institutional environment, then socialization may not proceed as expected (Lareau, 2003; Mok, Cheng, & Morris, 2010; Stephens et al. 2012; O'Reilly, Chatman, & Caldwell, 1991; Schneider, Smith, & Goldstein, 2000; Tinto, 1993). For instance, during classroom discussions, students guided by interdependent models of self are more likely to show deference to authority than to express their personal opinions, even though colleges intend such classroom discussions to promote students' independence (Kim & Markus, 2002). We posit that mismatches when interacting with an institution like college can blunt otherwise strong and immersive socialization processes, rendering students less likely to change.

In fact, these early mismatch experiences may reinforce mismatch rather than promoting change in students (Cheryan, Plaut, Davies, & Steele, 2009; O'Reilly, Chatman, & Caldwell, 1991; Schneider, Smith, & Goldstein, 2000). In the context of higher education, first-generation students are often stigmatized, marginalized, and in positions of lower power compared to their continuing-generation peers (Croizet & Claire, 1998; Croizet & Millet, 2011; see also Johnson, Richeson, & Finkel, 2011). When people are in such positions, acculturation processes are less likely to occur (Berry, 1997; Sam & Berry, 2010) and people are more likely to be guided by the cultural norms promoted through early life experiences (Gelfand & Harrington, 2015; Newcomb, 1943). Further, interdependence may lead first-generation students to be especially connected to and likely to rely on their families and home communities for support, thus reinforcing their

interdependent models of self (e.g., Covarrubias & Fryberg, 2014; Vasquez-Salgado, Greenfield, & Burgos-Cienfuegos, 2014). Thus, we suggest that initial mismatch experiences in college may maintain and reinforce first-generation students' interdependence, rather than fostering change, setting up continued experiences of mismatch throughout college. In turn, these continued mismatch experiences should lead first-generation students to have a reduced sense of fit and worse academic outcomes even at the end of college.

Altogether, research from developmental, social identity threat, and acculturation literatures supports our hypothesis that first-generation students will *not* shift away from interdependence or toward independence during college. Differences in social class backgrounds and associated models of self should lead students to have different institutional interactions (mismatch vs. match). Because such mismatch vs. match experiences should lead students to experience different fit in the college environment, students should in turn reap different institutional benefits and rewards, such as academic achievement during college.

Current Research: Classed Selves Interacting with Classed Institutions

For the first time, we examine the effects of social class background on students' experiences throughout their four years in college. We extend existing cross-sectional research by examining cultural mismatch over time. Our longitudinal approach allows us to explore how psychological processes associated with class-based mismatch affect not only early college academic experiences, but also college experiences broadly over time. We have two key goals in doing so. First, we examine whether and to what extent social class differences in student's models of self persist from the time that students enter higher education to the time that they graduate. Second, we consider the impact of these models of self on both subjective and objective outcomes: experiences of fit during college, and academic and social outcomes.

We suggest *cultural mismatch* will characterize the effects of social class on students' experiences throughout college. Broadly, we theorize that initial social class differences in students' selves will produce different experiences of fit with the university context; that social class differences in selves and fit will ultimately be reinforced and maintained over time, rather than erased; and that these differences in selves and fit will relate to differential grade point averages (GPAs) and subjective status at graduation. To test this theory, we use a longitudinal design consisting of two different survey waves to track first- and continuing-generation students from college entry (Time 1) to the end of college four years later (Time 2). We propose the following hypotheses regarding the effects of students' social class backgrounds over time:

Hypothesis 1. Social class differences in students' independent and interdependent selves upon entering college (Time 1) will persist to the end of college (Time 2).

Hypothesis 2. Social class differences in students' experiences of fit upon entering college (Time 1) will persist to the end of college (Time 2).

Hypothesis 3. Social class differences in students' institutional rewards (objective academic outcomes and subjective social outcomes) will persist to the end of college (Time 2).

Lastly, we use structural equation modeling to test a conceptual model that specifies our theorized relationships between social class, models of self, experiences of fit, and college outcomes, linking hypotheses 1-3:

Hypothesis 4. The relationship between students' social class backgrounds and outcomes at the end of college will be mediated by social class differences in models of self (Time 1) and fit (Time 2). Specifically, as shown in Figure 1:

a. Students' social class backgrounds will predict the models of self they are likely to endorse at college entry (Time 1): first-generation students will endorse more interdependent models of self than continuing-generation students (as in Hypothesis 1).

b. The degree to which these initial models of self match the college culture will predict fit at the end of college (Time 2): more interdependent models of self will predict diminished fit.

c. Sense of fit at the end of college will predict important outcomes at the end of college (Time 2): less fit will predict lower grades and subjective status.⁴

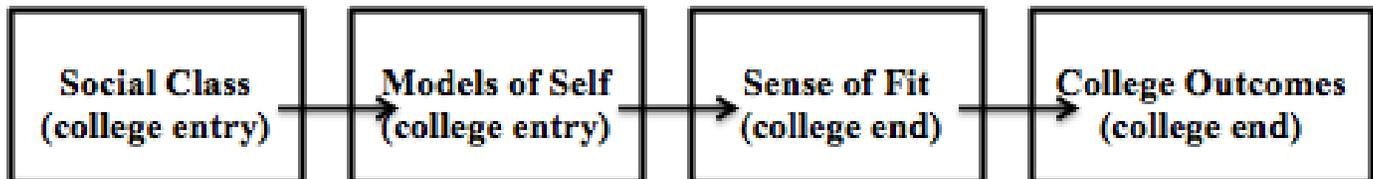


Figure 1. Conceptual model of Hypothesis 4: students' experiences from college entry (Time 1) to the end of college (Time 2).

Longitudinal Study

Method

Participants and Procedure. Participants included incoming college students from a competitive, private, residential university. 1372 first year students participated in the beginning-of-college survey (Time 1) and a subset of 265 students participated in the end-of-college survey (Time 2).

⁴Although we present the simplest model here, our theoretical approach would also predict additional cross-temporal effects. Please see supplementary online material for additional analyses.

Time 1 Survey. Prior to beginning their first year in college, the entire incoming student population was asked to participate in an online survey, administered by the university.

Participants completed measures of interdependence and independence, followed by measures of fit, and finally, demographic information.

Following previous research (Stephens et al., 2012), using demographic information provided by the university, only U.S. Citizens or permanent residents were included in the study. Social class information was available for only some of the participants, leaving a final sample of 1372 ($n=1185$ continuing-generation; $n=187$ first-generation; 50% male) for the Time 1 survey. Among first-generation students, 37% self-identified as Asian/Asian-American, 12% as Black/African-American, 6% as Native American, 27% as Latino/Latino-American, 17% as White/European-American, and 1% were Unknown. Among continuing-generation students, 24% self-identified as Asian/Asian-American, 11% as Black/African-American, 5% as Native American, 14% as Latino/Latino-American, 45% as White/European-American, and 1% were Unknown.

Time 2 Survey. In the middle of the fourth year of college, all first-generation students and a randomly-generated subset⁵ of continuing-generation students were contacted via email and asked to participate in a two-part online survey. The first part of the survey was administered half-way through the fourth year ($N=212$), and participants completed measures of interdependence and independence, followed by measures of fit, and demographic information. The second part of the survey was administered at the end of the fourth year ($N=211$), and participants completed graduation GPA, subjective status, and demographic measures.

⁵We aimed to recruit 200 continuing-generation volunteers during Time 2, or approximately 15% of our Time 1 continuing-generation sample. To select students for recruitment, we first divided students into their self-identified racial/ethnic groups, then recruited a random sample of 15% from within each group.

Participants were paid \$8 for completing each of the two surveys. Some students completed only the first or the second part; we kept all students in our sample who participated in either the first or second part of the Time 2 survey, leaving us a total $N=265$ ($n=155$ continuing-generation, $n=110$ first-generation). One hundred and fifty six students completed both parts of the Time 2 survey ($n=90$ continuing-generation, $n=66$ first-generation; 62% female). First-generation participants' racial backgrounds were: 42% Asian/Asian-American, 12% Black/African-American, 6% Native American, 26% Latino/Latino-American, 14% White/European-American, and 0% Unknown. Continuing-generation participants' racial backgrounds were: 27% Asian/Asian-American, 4% Black/African-American, 4% Native American, 19% Latino/Latino-American, 42% White/European-American, and 3% Unknown.

Measures

Social Class Background. Participants were considered first-generation if neither parent had a 4-year college degree, and continuing-generation if at least 1 parent had a 4-year college degree (Housel & Harvey, 2009; Somers, Woodhouse, & Cofer, 2004; Stephens et al., 2012).

Interdependent Motives. We measured interdependent motives the same way at both Time 1 and Time 2, using 6 items representing different relationship-oriented reasons for attending college (e.g., "I want to give back to my community"; $\alpha_{T1}=.73$, $\alpha_{T2}=.72$; Stephens et al., 2012; see Appendix). Endorsement of these items has been shown to reflect an interdependent model of self (Stephens et al., 2012). Participants indicated whether they endorsed each item using a binary scale (1 = Yes; 0 = No), and these were summed to create a composite measure of interdependence.

Independent Motives. We measured independent motives the same way at both Time 1 and Time 2, using 6 items representing different individual-focused motives for attending college

(e.g., “I want to become an independent thinker;” $\alpha_{T1}=.74$, $\alpha_{T2}=.77$; Stephens et al., 2012; see Appendix). Endorsement of these items has been shown to reflect an independent model of self (Stephens et al., 2012). Participants indicated whether they endorsed each item using a binary scale (1 = Yes; 0 = No), and these were summed to create a composite measure of independence. On the survey participants completed, these items were presented together with the 6 interdependent items described above.

Fit. Fit was measured the same way at both Time 1 and Time 2, using 12 items (e.g., “I feel like I belong as a student at [university name]”; “My personal values are compatible with the values that are common at [university name]”; $\alpha_{T1}=.65$, $\alpha_{T2}=.82$, see Appendix). Participants rated the extent to which they agreed or disagree with each item on a 7-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree).

GPA. At Time 1, students’ official cumulative grade point average (GPA) for their first year in college was provided by the university’s registrar’s office. At Time 2, given we were not able to obtain final grades from the university, we relied on students self-reported cumulative GPAs for their four years in college. Notably, previous work suggests that undergraduates’ self-reports of GPA are highly accurate when compared to actual grades (Cassady, 2001; Kuncel, Credé, & Thomas, 2005). The GPA scale ranges from a possible 0 (low) to 4.3 (high); the observed range was 1.95 to 4.13 (Time 1) and 2.40 to 4.10 (Time 2).

Subjective Status. We measured subjective status only at Time 2, using 3 items (“Please rate where you rank compared to other seniors at [university name]”; “...compared to other people in society”; “...compared to peers at home;” $\alpha=.87$). Participants used a vertical ladder image to mark where they ranked compared to the target group in each question (1 = Lowest Status; 10 = Highest Status; Adler et al, 2000).

Race. Participants' race/ethnicity was provided by the university and was based on the admissions data students provided. Race was unreported for 99 participants. For these students, where available, we used their self-reported race from the Time 1 survey. Given the relationships among race, fit, and academic performance in the United States (e.g., Kao, 1995; Steele, 2010), those who self-identified as White/European-American or Asian/ Asian-Americans were categorized as advantaged. Those who self-identified as Black/African-American, Latino/Latino-American, or Native American were categorized as disadvantaged.

Gender. Participants' gender was provided by the university and was based on the admissions data students provided.

Results

Data Analysis Strategy. We used a linear mixed-effects modeling package (lme4 with lmerTest) available for R statistical software to regress dependent variables on predictor and control variables. We treated dependent variables as repeated measures in our analyses, using time (contrast coded Time=-1, Time 2=1) as a fixed effect. Social class (contrast coded First Generation=-1, Continuing Generation=1), race (contrast coded Disadvantaged=-1, Advantaged=1, and gender (contrast coded Female=-1, Male=1) were also treated as fixed effects, and participant was treated as a random effect. Rather than excluding participants with missing data from the entire sample, missing cases were instead removed listwise from individual analyses, unless otherwise noted. All results are presented controlling both race and gender, although results persist without these control variables (see supplementary online materials).

Hypothesis 1: social class differences in students' independent and interdependent selves upon entering college (Time 1) will persist to the end of college (Time 2).

Interdependent Motives. We found no interactive effect of social class and time on interdependent motives, $b=-.01$, $SE=.06$, $t(330)=-.11$, $p>.91$. Therefore, we regressed interdependent motives on social class, time, gender, race (fixed effects) and participant (random effect).

As hypothesized, and consistent with previous research (Stephens et al., 2012), we found a significant main effect of social class on students' endorsement of interdependent motives across the two time points, $b=-.65$, $SE=.07$, $t(1193)=-9.55$, $p<.001$. Specifically, first-generation students ($M_{T1}=3.62$, $SD_{T1}=1.83$; $M_{T2}=3.65$, $SD_{T2}=1.84$) endorsed more interdependent motives than did continuing-generation students ($M_{T1}=2.26$, $SD_{T1}=1.81$; $M_{T2}=2.35$, $SD_{T2}=1.78$). Additional regression analyses within each time wave revealed that first-generation students endorsed more interdependent motives than continuing-generation students at both college entry, $b=-.65$, $SE=.07$, $t(1351)=-9.09$, $p<.001$, and at the end of college four years later, $b=-.66$, $SE=.13$, $t(194)=-4.98$, $p<.001$.

We found no effect of time on students' endorsement of interdependent motives, $b=.06$, $SE=.06$, $t(346)=1.05$, $p>.29$, indicating that students' levels of interdependence remained consistent throughout their time in college.

Independent Motives. We found no interactive effect of social class and time on independent motives, $b=-.04$, $SE=.06$, $t(497)=-.67$, $p>.50$. Therefore, we regressed independent motives on social class, time, gender, race (fixed effects) and participant (random effect).

We found no effect of social class on students' endorsement of independent motives, $b=.04$, $SE=.06$, $t(1161)=.72$, $p>.47$. First-generation students endorsed independent motives to the same degree as did continuing-generation students.

We did find a significant effect of time on students' endorsement of independent motives, $b=-.14$, $SE=.06$, $t(538)=-2.38$, $p=.02$, such that overall students endorsed more independent motives at Time 1 than at Time 2. Additional regression analyses within each social class group revealed continuing-generation students endorsed more independent motives at Time 1 than at Time 2, $b=-.21$, $SE=.08$, $t(1278)=-2.53$, $p=.01$ ($M_{T1}=4.52$, $SD_{T1}=1.64$; $M_{T2}=4.15$, $SD_{T2}=1.87$). However, among first-generation students, there was no difference in endorsement of independent motives over time ($M_{T1}=4.39$, $SD_{T1}=1.82$; $M_{T2}=4.18$, $SD_{T2}=1.79$), $b=-.09$, $SE=.12$, $t(267)=-.77$, $p>.44$.

Discussion. Reflecting an interdependent model of self, first-generation students endorsed more interdependent motives upon entering college than their continuing-generation peers, replicating previous research (Stephens et al., 2012). Importantly, and consistent with the cultural mismatch perspective, students' experiences throughout college did not erase these social class differences in models of self. Rather, we found that, even at the end of four years in college, first-generation students still endorsed more interdependent motives than continuing-generation students, suggesting they were still guided by more interdependent models of self.

Inconsistent with previous research, however, we found no social class differences in independent motives—neither at the beginning of college nor at the end of four years in college. This result was unexpected, and there are a few reasons why this could have been the case. First, it is possible that first-generation students in our sample – students who gained access to an elite institution and volunteered to complete a multi-wave survey – are unique compared to the general first-generation population. Another possibility is that interdependence could be more central to characterizing social class differences in models of self than independence. Consistent with this suggestion, previous research demonstrates that at least at an explicit level, Americans

across the social class spectrum endorse the ideals of individualism that are foundational to American culture at large (Kusserow, 2012; Stephens, Markus, & Phillips, 2014). Importantly, our study suggests that differences in *interdependence* are critical to the experience of mismatch – that is, endorsing interdependent models of self may be especially injurious when the institutional culture promotes independence as the cultural ideal.

Hypothesis 2: social class differences in students' experiences of fit upon entering college (Time 1) will persist to the end of college (Time 2).

Fit. Again using a repeated-measures approach, we regressed fit on social class X time, gender, race (fixed effects) and participant (random effect). As hypothesized, we found a significant effect of social class on fit, $b=.17$, $SE=.03$, $t(1370)=6.23$, $p<.001$, such that first-generation students reported less fit than did continuing-generation students. We also found a significant effect of time, $b=.11$, $SE=.02$, $t(589)=4.41$, $p<.001$, such that students reported more fit at Time 2, the end of college, than at Time 1, the beginning of college.

However, these effects were qualified by an interaction of social class X time on fit, $b=.07$, $SE=.02$, $t(595)=2.92$, $p=.004$. Decomposing the interaction revealed that, at Time 1, continuing-generation students ($M=4.57$, $SD=.60$) reported more fit than did first-generation students ($M=4.36$, $SD=.54$), $b=.10$, $SE=.03$, $t(1477)=4.03$, $p<.001$. At Time 2, this gap was even larger ($M_{CG}=4.93$, $SD_{CG}=.87$; $M_{FG}=4.43$, $SD_{FG}=.81$), $b=.24$, $SE=.05$, $t(1192)=5.36$, $p<.001$. Decomposed differently, time had no effect on first-generation students' fit, $b=.04$, $SE=.04$, $t(496)=.95$, $p>.34$. However, for continuing-generation students, time was positively associated with fit, $b=.17$, $SE=.03$, $t(789)=5.87$, $p<.001$. Overall, first-generation students entered college feeling less fit than their continuing-generation peers, and this difference grew throughout their four years in college.

Discussion. Just as social class differences in models of self persist throughout college (as described above), so too do social class differences in fit. Notably, although continuing-generation students enjoy increasing fit from the beginning to end of college, first-generation students' experience of fit does not change. In other words, consistent with the cultural mismatch perspective, first-generation students' relative lack of fit experienced at the beginning of college stays with them until the end. This divergent pattern in fit over time leaves the social class gap in fit even larger at the end of college than it was at the beginning.

The persistence of this social class gap in fit throughout the college experience suggests that the gap is not solely due to early differences in preparation and/or familiarity with college environments. If this were the case, one might expect that students from different social class backgrounds would converge in their experience of fit over time as all students become more familiar with the college environment. Rather, the fact that the social class gap in fit widens over time implies that students are indeed experiencing the same institution differently as a function of their different backgrounds. Students not only experience the institution differently when they arrive, but also as they continue throughout college. Continuing-generation students' experiences improve as they interact with the institution over time, while first-generation students do not make the same gains.

Hypothesis 3: social class differences in students' institutional rewards (objective academic outcomes and subjective social outcomes) will persist to the end of college (Time 2).

GPA. We found no interactive effect of social class and time on GPA, $b = -.005$, $SE = .01$, $t(190) = -.53$, $p > .60$. Therefore, again using a repeated-measures approach, we regressed GPA on social class, time, gender, race (fixed effects) and participant (random effect).

As hypothesized, we found a significant effect of social class on GPA, $b=.05$, $SE=.01$, $t(1285)=4.03$, $p<.001$, such that first-generation students had lower GPAs than did continuing-generation students. Additional regression analyses within each time wave revealed that first-generation students ($M=3.35$, $SD=.39$) had lower GPAs than continuing-generation students ($M=3.48$, $SD=.35$) both at the end of the first year, $b=.06$, $SE=.01$, $t(1341)=4.00$, $p<.001$, and at graduation four years later, $b=.08$, $SE=.02$, $t(156)=3.50$, $p<.001$ ($M_{FG}=3.45$, $SD_{FG}=.34$; $M_{CG}=3.63$, $SD_{CG}=.27$).

We also found a significant effect of time, $b=.05$, $SE=.01$, $t(195)=5.88$, $p<.001$, such that students had higher GPAs at graduation than at the end of their first year. Additional regression analyses within each social class group revealed that continuing-generation students, $b=.07$, $SE=.02$, $t(1256)=3.97$, $p<.001$, had higher GPAs at graduation than at the end of their first year in college. However, first-generation students GPAs did not change over time, $b=.04$, $SE=.03$, $t(241)=1.53$, $p>.12$.

Subjective Status. Because subjective status was measured only at Time 2, we regressed subjective status on social class, gender, and race (fixed effects). As hypothesized, we found a significant effect of social class on subjective status, $b=.62$, $SE=.15$, $t(150)=4.07$, $p<.001$. First-generation students ($M=6.62$, $SD=2.20$) reported less subjective status than did continuing-generation students ($M=7.92$, $SD=1.53$). Because GPA and subjective status were correlated ($r_{T1}=.14$, $p=.08$; $r_{T2}=.26$, $p<.001$), we additionally controlled for Time 1 GPA and Time 2 GPA (centered). We found the social class differences in subjective status persist, $b=.53$, $SE=.16$,

$t(147)=3.34, p=.001$.⁶ Overall, first-generation students reported lower subjective status at the end of college than did their continuing-generation peers.

Discussion. As expected, and consistent with previous research, first-generation students had lower first year GPA's than did their continuing-generation peers (Pascarella et al., 2004; Sirin, 2005). However, by the end of college, students had spent similar amounts of time on an elite college campus and had access to the wealth of resources the campus has to offer. While differences in early preparation and access to resources might partially explain gaps in first year GPA, one might expect that first-generation students would learn the “rules of the game” and start to catch up to their peers over time. However, consistent with the cultural mismatch perspective, even after students had access to similar elite college resources for four years, the social class gap in GPA persisted.

In addition to this persistent social class achievement gap, an objective academic outcome, we also found a social class gap for a subjective social outcome – subjective status. In our sample, first-generation and continuing-generation students end up with equivalent degrees from an elite university by the time they make it to graduation. And yet, first-generation students reported lower subjective status at graduation, not only when they compared themselves to their continuing-generation peers, but also when they compared themselves to others in society at large. Although they graduate marked as equally elite in terms of educational status, some graduating students (continuing-generation) seem to feel more equal than others (first-generation).

Hypothesis 4: The relationship between students' social class backgrounds and outcomes at the end of college will be mediated by social class differences in models of self

⁶Results persist when we independently analyze students' subjective status compared to university peers, hometown peers, and society at large. Please see supplementary online materials for more information about these analyses.

(Time 1) and fit (Time 2). We hypothesized that first year (Time 1) social class differences in models of self – differences in interdependence, in particular, which would represent a mismatch with the university’s institutional norms⁷ – would predict different experiences of fit even after four years in college (Time 2). In turn, these different experiences of fit in the college environment should predict different end of college outcomes, including GPA and sense of subjective status. To evaluate these hypotheses, we tested two separate models: one for GPA, and one for subjective status.

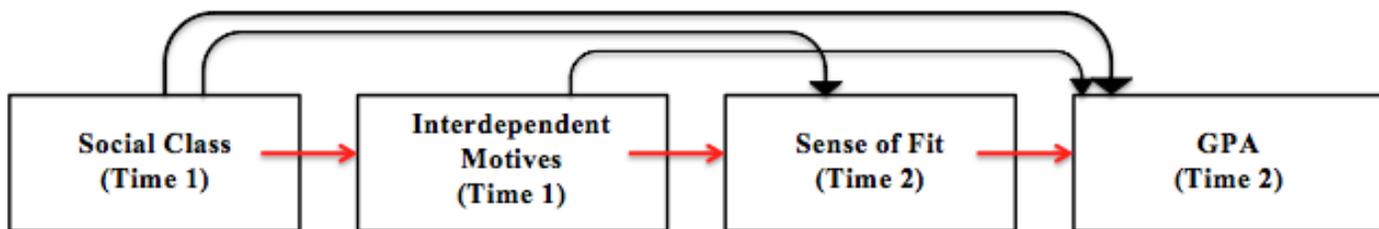
To test for these relationships among our variables, we fitted several structural equation models using a RAM path method in the OpenMx package in R (Neale et al., 2015). Because we were interested in effects over time, we restricted our data set for SEM analyses to those who also completed in the Time 2 survey. Missing data were found to be missing completely at random (MCAR; non-parametric test of homoscedasticity $p>.41$) and were therefore removed listwise; this left us with $N=117$ (GPA model) and $N=112$ (subjective status model). We let error vary freely for all variables. Continuous variables were centered, and categorical variables were contrast coded as described earlier.

GPA (Time 2). We specified our hypothesized model using unidirectional paths: social class -> interdependent motives (Time 1) -> fit (Time 2) -> GPA (Time 2). We also included race, gender, and GPA (Time 1) as control variables (unidirectional paths to GPA Time 2; see Figure 2).

⁷We theorized that *mismatch*, in which students’ models of self inconsistent with institutional cultural norms, would reduce students’ sense of fit and negatively affect college outcomes over time. Interdependent models of self represent such mismatch, so our main hypotheses focused on interdependence. Because the following additional control variables were not critical to our theorized model, and in order to maintain statistical power, we did not include: independent motives (Time 1; Time 2), fit (Time 1), interdependent motives (Time 2). However, a more saturated model including additional control variables also fit our data (please see supplementary online materials).

Results demonstrated that our model did not differ significantly from the data, $\chi^2(9)=11.74, p=.23$, indicating good fit. In addition, three other indexes also indicated good fit: RMSEA=.05, 95% CI [.00, .13]; CFI=.98; TLI=.96.

We further explored the specific path coefficients in our primary model of interest. We found that social class was negatively associated with interdependent motives (Time 1), $b=-.94, SE=.35, 95\% \text{ CI} [-1.63, -.25]$. That is, first-generation status was associated with increased interdependence upon entering college. In turn, interdependent motives (Time 1) was negatively associated with fit (Time 2), $b=-.10, SE=.04, 95\% \text{ CI} [-.18, -.02]$. Those who endorsed interdependent motives more at the beginning of college reported lower levels of fit four years later at the end of college. Finally, fit (Time 2) was positively associated with GPA (Time 2), $b=.03, SE=.02, 95\% \text{ CI} [.00, .07]$. That is, those who reported higher fit at Time 2 reported higher GPAs upon graduation.

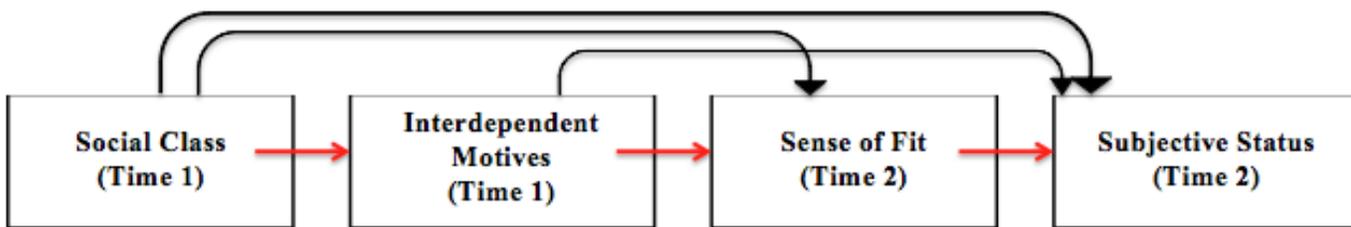


Controls (additional unidirectional paths not pictured):
 Race, Gender (to GPA Time 1 and Time 2)
 GPA Time 1 (from Social Class; to GPA Time 2)

Subjective Status (Time 2). We specified our hypothesized model using unidirectional paths: social class \rightarrow interdependent motives (Time 1) \rightarrow fit (Time 2) \rightarrow subjective status (Time 2). We also included race, gender, and GPA (Time 1 and Time 2) as control variables (unidirectional paths to subjective status; see Figure 3).

Results demonstrated that our model did not differ significantly from the data, $\chi^2(11)=11.01, p=.44$, indicating good fit. In addition, three other indexes also indicated good fit: RMSEA=.002, 95% CI [.00, .11]; CFI=1.00; TLI=1.00.

We further explored the specific path coefficients in our primary model of interest. Following the GPA model reported above, we found that social class was negatively associated with interdependent motives (Time 1), $b=-.92, SE=.35, 95\% CI [-1.61, -.23]$. In turn, interdependent motives (Time 1) was negatively associated with fit (Time 2), $b=-.11, SE=.04, 95\% CI [-.19, -.03]$. Finally, fit (Time 2) was positively associated with subjective status (Time 2), $b=.73, SE=.20, 95\% CI [.34, 1.12]$. That is, those who reported higher fit at Time 2 reported higher subjective status upon graduation.



Controls (additional unidirectional paths not pictured):
 Race, Gender (to GPA Time 1, GPA Time 2, and Subjective Status)
 GPA Time 1 (from Social Class; to GPA Time 2, and Subjective Status)
 GPA Time 2 (from Social Class; to Subjective Status)

Discussion. Our results reveal that upon entering college, first-generation students endorse more interdependent models of self than do their continuing-generation peers. Importantly, and consistent with our cultural mismatch perspective, these early differences are associated with important consequences that extend all the way to their graduation. Differences in selves at the beginning of college are associated with different experiences of fit four years later: more interdependence is related to less fit. In turn, this gap predicts different college outcomes at the end of college, with lower fit associated with lower cumulative GPA and lower subjective status upon graduation. Altogether, our results suggest that the social class differences

students bring with them to college are not erased by the college experience. Rather, these gaps may set students on different paths within college, resulting in different experiences and ultimately different collegiate outcomes.

General Discussion

Summary

Here, for the first time, we ask to what extent social class differences among students change or remain the same from the beginning of college to graduation. Using a longitudinal approach to follow students across their four years in college, we examined two competing hypotheses as to how social class background affects students' experiences of higher education institutions. While a cultural change perspective would suggest that first-generation students would adjust and be molded over time as to be indistinguishable from their continuing-generation peers, our results instead support a cultural mismatch perspective. The current study reveals that even when first-generation students gain access *to* college and persist to graduation, mismatch continues to shape their experiences and outcomes *during* their four years of college.

Specifically, the current work shows that when first-generation students enter college, they are more often guided by interdependent models of self, which do not match the college culture of independence. As a result, first-generation students experience less fit than their continuing-generation peers. For the first time, we find that these differences in models of self and fit *persist* over students' four years in college, and are associated with lower GPA and subjective status even at graduation. College undoubtedly provides first-generation students a wide range of valuable academic and social opportunities that they would not access otherwise. Yet, at the same time, our results suggest that students' social class backgrounds systematically inform the quality of their interactions with institutions of higher education, maintaining social

class gaps in important outcomes (i.e., GPA and subjective status) throughout students' four years in college.

Theoretical Contributions and Implications

Cultural Mismatch Theory. The current work extends cultural mismatch theory in three important ways. First, previous work on cultural mismatch has focused on students' transitional experiences during their first half of college. Instead, we draw on developmental psychology, acculturation, and social identity literatures to develop theory regarding how students experience and are affected by mismatch dynamically over time, from college entry all the way to graduation: an important but unexplored component of cultural mismatch theory. Second, previous research in this area has primarily examined students' comfort with and performance on academic tasks in laboratory settings. We extend this work by going beyond the laboratory to examine students' ongoing interactions with the college environment.

Third, while previous work theorized that early mismatch may affect college outcomes via fit (Stephens et al., 2012; Stephens, Townsend, Markus, & Phillips, 2012), the current study provides the first clear evidence for the psychological mechanism underlying mismatch effects. We find that mismatch reduces positive outcomes in college by reducing students' sense of fit, not only during early experiences, but also over time. As such, social class gaps in fit actually increase by the end of college. By shaping whether students feel a sense of fit at their institution, persisting mismatch contributes to social class gaps in academic achievement and subjective status, even among students who graduate.

Relative Effects of Match versus Mismatch. While we do not find social class differences in independence, we do find that first-generation students are more interdependent than continuing-generation students, both when they enter college and four years later. Thus,

despite endorsing similar independence as their continuing generation counterparts, first-generation students' interdependence is still associated with lower fit, GPA, and subjective status. These results suggest that mismatch may have more deleterious effects than match has positive effects. Seeing one's cultural ideal and model of self *not* represented and *not* valued may be particularly consequential.

Given the costs associated with interdependence, even in the presence of independence, scholars may need to expand current conceptualizations of cultural capital (i.e., one's access to cultural norms and practices that are valued in a specific context; Bourdieu, 1987). While some scholars argue that higher education provides students the chance to gain middle- and upper-class cultural capital, our results suggest that the experience of cultural mismatch may thwart this opportunity (see Bourdieu, 1987; Bourdieu & Passeron, 1990; Coleman, 1988; Lamont & Lareau, 1988; Lareau & Calarco, 2012; Pascarella et al., 2004; Reay, Crozier, & Clayton, 2009). Thus, cultural capital may be a function of not only the presence, but also the *absence* of certain norms. Because independent norms are the cultural ideal in mainstream American society (Markus & Kityama, 1991, 2010), independence may be thought of as a form of middle-class cultural capital, allowing students to effortlessly understand and enact unstated expectations. However, our results suggest that *not* prioritizing *interdependence* may also function as a form of middle-class cultural capital, enabling individuals to fit in to the middle-class.

Furthermore, to understand the impact of match versus mismatch on students, it is important to consider that mismatch experiences occur in a context broader than the individual and the institution: they play out against a foundation of larger American cultural ideals. Importantly, independence reflects the mainstream American cultural ideal, and is particularly common among high status groups (Markus & Conner, 2013). Thus, match versus mismatch

may have different consequences for lower versus higher status students (and institutions). For instance, while a student who endorses independence may experience mismatch in an institution that endorses interdependence, she may remain *comfortable* with the assurance that she is enacting a cultural ideal that is higher status in society at large. In this case, status is on the student's side, which may protect her from some negative effects of mismatch. On the other hand, if an institution were to endorse devalued cultural norms, then the institution itself may incur costs, such as stigmatization, associated with mismatching the higher status norms (see Tracey & Phillips, 2015). Future work should further explore the relative advantages of matching experiences and disadvantages of mismatching experiences, including the potential moderating role of status.

Theories of Social Class and Psychological Functioning. Building on burgeoning theories of how social class shapes psychological functioning (Belmi & Laurin, 2015; Côté, Piff, & Willer, 2013; Kraus & Stephens, 2012; Phillips & Lowery, 2015; Shah, Mullainathan, Shafir, 2012; Stephens, Markus, & Phillips, 2014), our results suggest that the impact of social class background on students' experiences and outcomes is about more than just access to resources (see also Stephens & Townsend, 2013; Stephens, Cameron, & Townsend, 2014). We find that, even with access to the resources of an elite university, first-generation college graduates do not benefit from the same academic and status rewards in college as their continuing-generation peers. This suggests the effects of social class on psychological experience can be compounded during interactions with institutions, like colleges, that serve as gateways to upward mobility.

By illuminating how first-generation students experience this gateway institution, our results also have implications for theories of acculturation as people experience social class mobility. Little psychological work has considered changes in social class over time (see also

Herrman & Varnum, 2015), but our results begin to address this gap. We find that, as they earn four-year degrees, first-generation students' models of self do not necessarily change as their social class changes. Future work should continue to explore the psychological processes and results of such social class changes, in both upwards and downwards directions.

Importantly, social class differences that persist throughout college may put first-generation students at a disadvantage as they begin their careers. For instance, existing work surveying students right after graduation finds that while first- and continuing-generation graduates earn similar initial incomes, first-generation graduates may be less likely to enroll in graduate education programs (Pascarella et al., 2004). Future work should explore in greater depth the effects of early social class background on students' experiences and outcomes post-graduation, in graduate school or the workplace. For example, graduate lifetime earnings statistics do not distinguish between first-generation and continuing-generation college graduates; since both groups have a four-year degree, they are treated as equivalent, which may belie important differences in outcomes as a function of people's earlier social class backgrounds. Just as the cultural environment of college can perpetuate social class inequality among equally qualified students, classed cultural environments in work organizations, civil service organizations, and civic society organizations may also perpetuate social class inequality among equally qualified employees (Coté, 2011; Gray & Kish-Gephart, 2013; Lareau, 2015; Rivera, 2015; see also Flynn & Chatman, 2001; O'Reilly & Chatman, 1996; O'Reilly, Chatman, & Caldwell, 1991; Schein, 1990).

Limitations and Future Work

Our work has some limitations that may be addressed by future research. For instance, we focus on first-generation students' experiences in an elite institution. Future work should

consider a broader range of institutions as well, and explore how first-generation students' experiences compare across different types of institutions, including those especially likely to serve first-generation students, such as community colleges (Astin & Oseguera, 2004; Carnevale & Rose, 2004). Furthermore, while our focus is on an institution of higher education, our cultural mismatch perspective should help explain the production and maintenance of inequality across a range of institutions, including primary and secondary schools as well as workplaces (see Stephens, Markus, & Phillips, 2014).

Another limitation that future work might address is the role of independence in first-generation students' experiences. For instance, previous work has found first-generation students to be more interdependent *and* less independent than their continuing-generation peers upon entering college (Stephens et al., 2012; see also Destin & Stephens, 2015; Harackiewicz et al., 2014). However, in the current work, we find that first-generation students were similarly independent as their continuing-generation peers when they entered college and four years later. There are various reasons why our findings could diverge from previous work. One possibility is that our sample may not represent the more general population of first-generation students: first-generation students who persist to graduation at an elite institution are relatively rare (Astin & Oseguera, 2004; Carnevale & Rose, 2004). First-generation students who are the most independent, compared to the general population of first-generation students, may be especially well equipped to gain access to an elite institution.

Another possibility and avenue for future work is that first-generation students' independence may take a different form than continuing-generation students' independence. For instance, recent work suggests "hard interdependence" – which includes some elements of independence – characterizes working-class contexts while "expressive independence" is more

common in middle- and upper-class contexts (Kusserow, 2012; Stephens, Markus, & Phillips, 2014). In either case, and as discussed above, our results suggest facets of *interdependence* may be especially critical to characterizing social class differences and mismatch experiences.

Finally, while our work is some of the first to investigate students' mismatch experiences dynamically over time, we do not access students' experiences of specific interactions with the college institution. For instance, our data suggests that initial experiences of cultural match versus mismatch may set students up on divergent trajectories that reinforce themselves over time, likely via daily experiences and interactions. If students were to initially experience mismatch with the institution, then their decreased comfort or fit could lead to a negative spiral of psychological and behavioral change. For instance, this sense of not fitting could put them at risk of interpreting difficulty as evidence that they are not cut out for college and lead them to disengage (Stephens, Townsend, Markus, & Phillips, 2012). Given the college environment itself does not change, students may expect subsequent mismatch experiences, which may then reinforce early feelings of exclusion in a recursive cycle. On the other hand, if students feel an initial sense of match, they may be buffered against this negative cycle, allowing their sense of fit to grow over time instead. Future work might dive deeper into students' day-to-day experiences and cognitions that may underlie the mismatch experience and its effects on college outcomes.

Policy Interventions

Higher education serves as a gateway institution, awarding degrees that impact who has access to upward social mobility and its associated life opportunities. Given this gateway role, policymakers increasingly recognize the importance of addressing social class inequalities in higher education for generating societal class mobility and reducing inequality. However, while

access *to* this gateway institution is clearly necessary, it is not sufficient to provide first-generation students the many academic and social benefits that continuing-generation students enjoy *during* their four years. Our results demonstrate that if institutions themselves do not change, then first-generation students are likely to experience persistent mismatch throughout college. However, if institutions instead change to offer more inclusive cultures, then the cycle of mismatch may be broken.

Our work therefore suggests that more needs to be done to make the college culture more inclusive for students from diverse social class backgrounds. Colleges might create more inclusive environments by communicating that both independent and interdependent cultural norms are valued and respected, thus helping engage first-generation students more fully in the college culture. As a result, they may become more familiar with middle- and upper-class cultural capital over time (e.g., Pascarella et al., 2004) and use this to access new dimensions of themselves; selves and cultural norms *are* malleable and expandable, especially if students are given support to maintain their existing norms while also learning new ones (Berry, 1997; Markus & Kitayama, 2010). Moreover, by rewarding diverse cultural backgrounds and helping students access the positive benefits these different cultures can provide (e.g., increased pro-social behavior, persistence, and performance), inclusive college environments may reduce the need for students to change in the first place (Brannon, Markus, & Taylor, 2015; Cross & Vick, 2001; Hamedani, Markus, & Fu, 2011).

To build such inclusive institutional cultures, colleges may try representing the value of interdependence in the form of role models and classroom tasks (see Kuh, 2005; Stephens, Brannon, Markus, & Nelson, 2015). Colleges might also be sure to avoid implicitly rewarding independence by clearly stating educational and residential values and expectations, and making

sure these provide a balance of both norms of independence and interdependence. Providing this type of environment may be especially important during early college experiences, in order to redirect students' away from a cycle of mismatch and lack of fit toward a cycle of match and fit (see also Walton & Cohen, 2011). In short, adopting a multicultural approach may help first-generation students access the same benefits in college as their continuing-generation peers.

Conclusion

It is widely believed that, as long as students from different social class backgrounds are given access *to* the institution of higher education, then they will be provided similar experiences and benefits in college, helping mold them to fit into the middle- and upper-classes. However, our work suggests that the positive benefits of higher education may be limited for diverse students by a lack of inclusive culture. We find that college does not provide first-generation students the same opportunities as other students: rather, colleges help maintain class inequality even among those who ultimately graduate. Among first-generation students who succeed in graduating with a four-year degree, the experience of university education is characterized by a cultural mismatch that prevents them from accessing the same institutional benefits *during* college as their continuing-generation peers. By differentially providing mismatch experiences, colleges fail to provide first-generation graduates the same academic and social benefits enjoyed by continuing-generation graduates; thus, class inequality persists.

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Appendix

Interdependent Motives

I want to help my family out after I'm done with college.
I want to be a role model for people in my community.
I want to show that people with my background can do well.
I want to provide a better life for my children.
I want to bring honor to my family.
I want to give back to my community.

Independent Motives

I want to expand my knowledge of the world.
I want to become an independent thinker.
I want to explore new interests.
I want to explore my potential in many domains.
I want to learn more about my interests.
I want to expand my understanding of the world.

Fit

I am able to act the same way at [university name] as I do at home.
I am able to act the same way at [university name] as I did in high school.
I have become a different person to fit in at [university name]. (reversed)
My friends from home act very differently from students at [university name]. (reversed)
My personal values are compatible with the values that are common at [university name].
The culture of my high school is similar to my impression of the culture of [university name].
My parents understand my reason for attending [university name].
My friends from home understand my reasons for attending [university name].
I feel comfortable as a student at [university name].
I feel like I belong as a student at [university name].
My parents feel comfortable visiting [university name].
The values of my family are similar to those at [university name].

Supplementary Online Material

Additional Analyses

In addition to analyses controlling for gender and race as reported in the main text, we ran analyses without these control variables.

Hypothesis 1.

Interdependent Motives. Regressing interdependent motives on social class, time, their interaction (fixed effects), and participant (random effect), we again found no interactive effect, $b=-.01$, $SE=.06$, $t(328)=-.18$, $p>.95$. Regressing interdependent motives on social class and time (fixed effects) and participant (random effect), we again found a significant main effect of social class, $b=-.68$, $SE=.07$, $t(1206)=-10.03$, $p<.001$, and no effect of time, $b=.05$, $SE=.06$, $t(348)=.89$, $p>.27$.

Independent Motives. Regressing independent motives on social class, time, their interaction (fixed effects), and participant (random effect), we again found no interactive effect, $b=-.04$, $SE=.06$, $t(506)=-.64$, $p>.52$. Regressing independent motives on social class and time (fixed effects) and participant (random effect), we again found no effect of social class, $b=.05$, $SE=.06$, $t(1170)=.80$, $p>.42$, and a significant main effect of time, $b=-.13$, $SE=.06$, $t(559)=-2.24$, $p=.03$.

Hypothesis 2.

Fit. Regressing fit on social class, time, their interaction (fixed effects), and participant (random effect), we again found a significant interactive effect, $b=.07$, $SE=.02$, $t(600)=2.86$, $p=.004$, following the pattern reported in the main text.

Hypothesis 3.

GPA. Regressing GPA on social class, time, their interaction (fixed effects), and participant (random effect), we again found no interactive effect, $b=-.004$, $SE=.01$, $t(193)=-.49$, $p>.62$. Regressing GPA on social class and time (fixed effects) and participant (random effect), we again a significant main effect of social class, $b=.06$, $SE=.01$, $t(1306)=4.57$, $p<.001$, and a significant main effect of time, $b=.05$, $SE=.01$, $t(198)=6.15$, $p<.001$.

Subjective Status. Using a two-sided t-test, we again found a significant effect of social class on subjective status, $t(155)=4.35$, $p<.001$, 95% C.I. [.71, 1.88]. We then analyzed each subjective status item separately, and again found significant effects of social class: compared to other seniors at [university name], $t(159)=4.47$, $p<.001$, 95% C.I. [.81, 2.10]; compared to other people in society, $t(159)=4.69$, $p<.001$, 95% C.I. [.94, 2.31]; compared to peers at home, $t(158)=2.51$, $p=.01$, 95% C.I. [.18, 1.52].

Hypothesis 4. We focus on models using Time 2 fit in the main text: Because the first year fit measure was completed before students arrived on campus, Time 1 fit may be thought of as anticipated fit, while Time 2 fit represents fit experience. However, we explore additional models using fit at both Time 1 and Time 2 here.

GPA Model. We specified unidirectional paths as follows: social class \rightarrow interdependent motives (Time 1) \rightarrow fit (Time 1) \rightarrow interdependent motives (Time 2) \rightarrow fit (Time 2) \rightarrow GPA (Time 2), using $N=116$. For each variable listed in the model, we included additional paths from it to each subsequent variable in the model. We included race and gender as control variables, with paths to interdependent motives (Time 1 and Time 2), fit (Time 1 and Time 2), and GPA (Time 1 and Time 2). We included GPA (Time 1) as a control variable, with a path to GPA (Time 2); we also included paths from social class, interdependent motives (Time 1), and fit (Time 1) to GPA (Time 1). Results demonstrated that our model did not differ significantly from

the data, $\chi^2(5)=6.72$, $p=.24$, indicating good fit. In addition, three other indexes also indicated good fit: RMSEA=.05, 95% CI [.00, .16]; CFI=.99; TLI=.94.

Subjective Status Model. We specified unidirectional paths as follows: social class -> interdependent motives (Time 1) -> fit (Time 1) -> interdependent motives (Time 2) -> fit (Time 2) -> subjective status, using $N=112$. For each variable listed in the model, we included additional paths from it to each subsequent variable in the model. We included race and gender as control variables, with paths to interdependent motives (Time 1 and Time 2), fit (Time 1 and Time 2), GPA (Time 1 and Time 2), and subjective status. We included GPA (Time 1 and Time 2) as control variables, with paths to subjective status. We also included paths from social class, interdependent motives (Time 1), and fit (Time 1) to GPA (Time 1), and paths from social class, interdependent motives (Time 1 and Time 2), fit (Time 1 and Time 2), and GPA (Time 1) to GPA (Time 2). Results demonstrated that our model did not differ significantly from the data, $\chi^2(5)=5.51$, $p=.36$, indicating good fit. In addition, three other indexes also indicated good fit: RMSEA=.03, 95% CI [.00, .15]; CFI=1.00; TLI=.98.