

How Initial Cultural Mismatch Affects First-Generation Students Throughout College

Abstract

American higher education prioritizes independence as the cultural ideal. As a result, first-generation students (neither parent has four-year degree) often confront a cultural mismatch early on in college settings: first-generation students endorse relatively interdependent cultural norms that diverge from the independent cultural ideal. This initial cultural mismatch can undermine students' performance early in college. But, what happens as first-generation students, guided by different cultural norms, experience the university culture *throughout* their four years? Using cross-sectional and longitudinal approaches, we find that initial cultural mismatch creates lasting effects that persist until graduation. First, we find social class differences in cultural mismatch at college entry: first-generation students endorse more interdependence, which does not match the college culture of independence, than do continuing-generation students (one or both parents has four-year degree). Second, endorsing interdependence at college entry, predicts reduced subjective sense of fit in college four years later. Third, lower subjective sense of fit predicts lower grades and subjective status upon graduation. Together, these results suggest that *initial* cultural mismatch (i.e., endorsing interdependence in the college culture of independence) contributes to persisting social class achievement gaps, all the way to graduation. Further, we also find that social class differences in cultural norms remain stable throughout college: first-generation students continue to endorse more interdependence than do continuing-generation students. We suggest providing access is not sufficient to reduce social class inequality: colleges need more inclusive institutional environments to ensure that diverse students can reap similar rewards during the college experience.

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

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How Initial Cultural Mismatch Affects First-Generation Students Throughout College

In the United States, social class mobility, or the lack thereof, continues to be a cause for great concern. Among developed nations, the U.S. has the lowest rate of intergenerational mobility (OECD, 2010). For instance, social class background constrains students' access to education: the opportunity to earn a college degree varies sharply between first-generation students (neither parent has a four-year college degree) and continuing-generation students (at least one parent has a four-year degree; OECD, 2010). Even after defying the odds to be accepted to college, first-generation students still confront additional obstacles as they transition into college, including stress and marginalization (Batruch, Autin, Bataillard, & Butera, 2018; Covarrubias & Fryberg, 2014; Croizet & Claire, 1998; Croizet & Millet, 2012; Fryberg et al., 2013; Fryberg & Markus, 2007; Johnson, Richeson, & Finkel, 2011; Tibbetts et al., 2016). As a result, first-generation students are 35% less likely to matriculate and 51% less likely to graduate college in four years (Astin & Oseguera, 2004; Ishitani, 2006).

These disparities are important because higher education is a critical gateway institution that makes social class mobility possible (Belmi & Laurin, 2016; Ridgeway & Fisk, 2012; Rivera, 2016; Stephens, Markus, & Phillips, 2014).¹ People who attain a four-year degree can expect a lifetime of benefits, including more secure income and better health and well-being,

¹Three indicators of social class are commonly used: educational attainment, income, and occupation (Galobardes et al., 2006; Kraus & Stephens, 2012). Parental educational attainment is an especially good indicator of students' social class background (e.g., Sirin, 2005) because it affords both material and cultural resources (Bourdieu, 1984; Williams, 2012). Regarding material resources, people who hold a four-year degree earn higher incomes and obtain more prestigious jobs than those who do not (Lubrano, 2010; Pascarella & Terenzini, 1991; Reardon, 2011). Regarding cultural resources, a four-year degree is the best predictor of a range of behaviors, beliefs, and ideals (e.g., beliefs about what it means to be a good person, religious views, consumer product preferences; Davis, 1994; Housel & Harvey, 2009; Fiske & Markus, 2012; Kohn & Schooler, 1983; Lareau, 2003; Snibbe & Markus, 2005). As such, we follow existing research standards and refer to first-generation students as from working-class contexts, and continuing-generation students as from middle- and upper-class contexts.

while those without a four-year degree face more limited prospects (Reardon, 2011). Given the myriad benefits it confers, higher education is often presented as “the great equalizer.” This common perspective suggests that if first-generation students manage to not only gain access to college but also persist through graduation, then they will adjust to middle-class cultural norms over time and reap the rewards a college education has to offer. Accordingly, the college experience should foster middle-class psychological tendencies and behaviors.

Alternatively, in the current research, we challenge this reasoning and ask two novel questions. Do first-generation students’ cultural norms upon entering college continue to shape their experiences and important academic and social institutional rewards (grade point average, GPA, and subjective social status, SSS) *throughout* their four years in college? And, does the college experience change first-generation students’ cultural norms to shift towards the norms of their continuing-generation peers over time? We consider whether initial social class differences in students’ cultural norms may affect students’ development of a sense of fit in college. If so, then students may reap different institutional rewards during college, allowing social class gaps in GPA and SSS to persist all the way to graduation.

Homogenous Institutions, Diverse Selves

Colleges are not neutral gateway institutions; rather, they promote specific cultural norms (Adams et al., 2008; Croizet, 2008; Croizet & Millet, 2012; Stephens et al., 2014; Schneider, Smith, & Goldstein, 2000). U.S. colleges expect, socialize, and reward *independence* as the ideal cultural norm for how to be a good student (e.g., Fryberg & Markus, 2007; Kim & Sherman, 2007; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). For instance, colleges reward students who express their individual needs and opinions by offering them more attention and better participation grades (Kim & Markus, 2002; see also Anyon, 1980; Calarco, 2011). And

four-year university administrators also endorse independence, reporting that they expect students to challenge group norms and develop personal opinions, rather than respect group norms or appreciate others' opinions (Stephens et al., 2012; Tibbetts et al., 2018).

Despite institutional preferences for independence, 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 self (Belmi & Laurin, 2016; Fiske & Markus, 2012; Hermann & Varnum, 2018; Kraus et al., 2011; Miyamoto et al., 2018; Miyamoto, 2017; Piff, 2014; Snibbe & Markus, 2005; Stephens, Markus, & Townsend, 2007). That is, although people have the potential to access multiple selves, social class background shapes which selves are most elaborated and likely to guide behavior (Markus & Kitayama, 2010). For instance, first-generation students, who are from working-class backgrounds, are often guided by an *interdependent* model of self, one that emphasizes relationships with others (Fiske & Markus, 2012; Kusserow, 2012; Snibbe & Markus, 2005). In contrast, continuing-generation students, who are from middle- and upper-class backgrounds, are more often guided by an *independent* model of self, one that emphasizes individuality and self-expression (Kim & Markus, 2002; Lareau, 2003; Stephens, Markus, & Fryberg, 2007).

Because these models of self provide foundational beliefs about how to feel, think, and act, they affect people's expectations, motivations, and behaviors (Markus & Kitayama, 2010). These individual-level expectations, motivations, and behaviors can either match or mismatch the cultural norms prevalent in a given context. In the college context, first-generation, compared to continuing-generation, students are more likely to endorse interdependent motives for completing college (e.g., to give back to their communities; Stephens et al., 2012a). As such, colleges can produce a *cultural mismatch* for first-generation students: students who endorse

more interdependent motives do not match the college culture of independence (Harackiewicz et al., 2014; Stephens et al., 2012a; Tibbetts et al., 2016).

Prior work has shown that this cultural mismatch – in particular, endorsing interdependent motives in an independent context² – can create negative consequences. For instance, cultural mismatch can create disparities in academic and social outcomes early in college (Stephens et al., 2012a; Stephens, Townsend, Markus, & Phillips, 2012; Tibbetts et al., 2016; see also Fryberg et al., 2013; Ishitani, 2006; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Phinney & Haas, 2003; Pike & Kuh, 2005). Indeed, students' college motives predict their academic performance during the first half of college: those who endorsed more interdependent motives for college (a cultural mismatch) performed worse than those who endorsed fewer interdependent motives (a cultural match; Stephens et al., 2012a; Tibbetts et al., 2016, 2018; see also Hamedani, Markus, & Fu, 2013; Fryberg et al., 2013). In other work, when first-generation students were exposed to standard college welcome materials that framed the college experience in terms of independence (a cultural mismatch), they showed more physiological stress during a difficult academic task than did their continuing-generation peers (Stephens et al., 2012b; see also Covarrubias, 2018; Covarrubias, Hermann, & Fryberg, 2016; Levine, Atkins, Waldfogel, & Chen, 2018).

Together, this work suggests that initial cultural mismatch can help to account for the social class achievement gap among students early in college. But, what happens as students from different class backgrounds, guided by different cultural norms, experience the university

²Previous research on cultural mismatch theorized that first-generation students underperform early in college because their working-class *interdependent* norms constitute a mismatch with middle-class independent norms prevalent in universities (Fryberg et al., 2013; Stephens et al., 2012a; Stephens et al., 2012b; Tibbetts et al., 2016). However, previous work has measured both interdependent and independent norms among students. As such, we focus our theorizing on the interdependence component of mismatch (i.e., students' endorsing interdependence in an independent context), while still measuring both interdependence and independence in our studies.

culture throughout their four years? Here, we investigate how students interact with the college culture *over time*. We consider students' subjective sense of fit as an important psychological consequence of cultural mismatch, which may stay with them throughout college. We theorize that reduced subjective sense of fit can help to explain the relationship between first-generation students' interdependent motives for college and their reduced institutional rewards.

Subjective Sense of Fit

To understand whether and how early cultural mismatch might affect students over time, it is important to first consider how cultural mismatch produces negative consequences early in college. Previous work has suggested that cultural mismatch (i.e., interdependent motives in an independent context) exerts its negative effects via academic discomfort on specific tasks. For example, Stephens and colleagues (2012a) theorize that cultural mismatch increases students' discomfort, leading them to construe academic tasks (e.g., solving a puzzle) as difficult, which ultimately leads to worse performance early in college.

Here, we theorize that discomfort associated with early cultural mismatch may not only shape how students interpret specific academic tasks, but *also* affect how students interpret their sense of subjective fit with the global college environment. While we operationalize cultural mismatch as the objective state of endorsing interdependent motives in an independent culture, this state may lead students to *subjectively* doubt their fit with the college environment. Indeed, students are sensitive to a variety of fit and belonging cues (Cheryan et al., 2009; Pickett & Gardner, 2005). As such, an objective mismatch with the institutional culture may seep into students' subjective experience (Steele, 1997). For instance, when college students endorse interdependence (mismatching the college culture of independence), they report increased self-

consciousness about their social class background (Tibbets et al., 2016, 2018; see also Harackiewicz et al., 2014).

In turn, a separate body of work has documented the importance of subjective sense of fit for academic, social, and organizational success (Brannon et al., 2017; Cheryan et al., 2009; Ostrove & Long, 2007; Pascarella et al., 2004; Schneider et al., 2000). For instance, work investigating racial achievement gaps has found that underrepresented minorities report lower sense of fit, which in turn can undermine their academic performance in middle school, high school, and college (Shnabel et al., 2013; Walton & Cohen, 2007, 2010).³ Among employees, lower sense of fit is associated with worse performance and turnover (Goldberg et al., 2016; Kristof-Brown, Zimmerman, & Johnson, 2005; Edwards, 2006; O'Reilly et al., 1996; Schneider et al., 2000; Srivastava et al., 2017). Likewise, among female students in STEM fields, increased sense of fit is associated with longer persistence and better performance (Good et al., 2012; Smith et al., 2013). Indeed, students who subjectively *feel* they do not fit in college are more likely to experience academic difficulty and social stress (Croizet & Claire, 1998; Croizet & Millet, 2012; Johnson et al., 2011; Stephens et al., 2012b). Low subjective sense of fit can lead students to make more negative, personal attributions in the face of difficulty (e.g., “I don’t fit because I’m not smart enough”; Smith et al., 2013), which can decrease positive academic and social behaviors, like help-seeking or connecting to others (Johnson et al., 2011; Walton & Cohen, 2011). This can create a self-reinforcing cycle over time, in which low sense of fit leads to disengagement, which further diminishes sense of fit (Walton & Cohen, 2011).

³Following organizational behavior theories of cultural, person-environment, and person-organization fit (i.e., the subjective experience of fitting with a specific organizational environment), we use the term *subjective sense of fit* to refer to subjective feelings of comfort, inclusion, and compatibility with a particular institutional environment (i.e., college; O'Reilly & Chatman, 2003; Edwards et al., 2006; Edwards, 2008; Schmader & Sedikides, 2017). This is in contrast to the related term “social belonging” (Walton & Cohen, 2010, 2012), which emphasizes positive interpersonal relationships, rather than compatibility with the institutional environment.

Taken together, this work suggests that subjective sense of fit is an important psychological requirement for academic success. Here, we theorize that subjective sense of fit is an integral part of the process by which cultural mismatch exerts negative effects on academic performance. Critically, in the current research, we examine how this process unfolds as students persist in the college environment over time. Specifically, we ask: do initial experiences of cultural mismatch (i.e., interdependent motives in college setting of independence) continue to exert negative effects on students' institutional rewards (GPA and SSS)? And if so, is this due to lower subjective fit?

Do Students Change or Stay the Same?

Findings from a range of literatures suggest two perspectives on how students from different class backgrounds will experience institutions of higher education over time. Both perspectives recognize the role of mismatch – endorsing interdependent motives in an independent context – during early college experiences, but diverge in their theorizing about how mismatch will affect students' responses to college over time. The *cultural change* perspective would imply that, over four years in college, students may progressively shift away from interdependence and toward independence, and naturally develop a subjective sense of fit over time. In turn, this sense of fit should benefit their academic performance (GPA) and social status (SSS). Thus, the negative effects of initial cultural mismatch – such as worse academic and social outcomes – may diminish over time. A *cultural mismatch* perspective suggests that initial cultural mismatch will instead blunt first-generation students' subjective sense of fit, preventing students from shifting away from interdependence and keeping sense of fit depressed over time. In turn, students would reap different rewards (GPA, SSS) by the end of college. Thus, the

negative consequences of initial mismatch may *extend* beyond early college, and drive social class achievement gaps that persist all the way to graduation.

Cultural Change

In support of the cultural change perspective, our review of literature suggests two processes by which first-generation students may overcome initial cultural mismatch (interdependent motives in an independent context) and develop a subjective sense of fit over time: increasing familiarity and socialization. First, as people persist in new environments, they often become more familiar with and adjust to new cultural norms over time (Saks, Uggerslev, & Fassina, 2007). For instance, work on acculturation shows that immigrants who have social support in their new cultural environment often develop new cultural norms and may become bicultural (Mok, Morris, & Cheng, 2010; Sam & Berry, 2010; Ward & Kennedy, 2001). Similarly, organizational behavior research on newcomer socialization finds that new employees may feel low subjective sense of fit at first, but that their sense of fit increases as they persist in the organization over time (Edwards, 2006).

Second, beyond increasing familiarity over time, college students may be especially likely to develop a subjective sense of fit over time via socialization. Indeed, college is a “strong situation”, offering intensive socialization and acculturation processes (Alwin, Cohen, & Newcomb, 1991; Astin, 1993; Pascarella & Terenzini, 1991; see also Mischel, 1977). College students are fully immersed and spend their daily lives interacting with the same institutional culture, via classes, residential life, and clubs (Armstrong & Hamilton, 2013; Sam & Berry, 2010; Weidman, 1989). Colleges actively teach students how to be effective and successful: institutions offer coursework and activities designed to socialize students toward the institutional ideal of independence (Fryberg & Markus, 2007; Mophew & Hartley, 2006).

Altogether, colleges provide strong institutional environments that actively socialize students, and, for many students, this occurs during a life stage in which change is especially likely. By persisting in such an institutional environment, first-generation students may develop a subjective sense of fit over time. As a result, they may experience better academic performance and social outcomes over time. And, as their sense of fit develops over time, they may ultimately shift away from interdependence and toward independence.

Cultural Mismatch

Critically, the difference between the cultural change and cultural mismatch perspectives hinges on divergent predictions for how students respond to the initial experience of having their interdependent motives mismatch with the independent college culture. Our cultural mismatch perspective posits that initially endorsing interdependent motives in an independent context will *blunt* students' chances to develop a subjective sense of fit. As a result of this continued lower subjective sense of fit, social class gaps in academic and social outcomes should persist over time. Below we review literature supporting this perspective, focusing on how a lack of support and ineffective socialization can blunt the development of fit.

First, prior work on both organizational socialization and immigrant acculturation has demonstrated that *support for newcomers' existing cultural norms* is critical for a subjective sense of fit to emerge: newcomers need to feel that their own cultural norms are welcomed (Edwards, 2006; Sam & Berry, 2010; Ward & Kennedy, 2001). As reviewed above, colleges prioritize independent norms and devalue the interdependent norms more common among first-generation students (Stephens et al., 2012a). As such, they do not provide the kind of support that many first-generation students likely need to adjust (Johnson et al., 2011); therefore, we theorize

that initial cultural mismatch (endorsing interdependent norms in an independent context) leaves first-generation students relatively *unsupported* as newcomers.

Importantly, when people's norms from their home environments are not supported in the new cultural context, people are *unlikely* to develop a sense of fit over time (Gelfand & Harrington, 2015; Phinney & Haas, 2003; Sam & Berry, 2010; Ward & Kennedy, 2001). Indeed, first-generation students, as compared to their continuing-generation peers, report higher levels of marginalization in college (Johnson et al., 2011; Ostrove & Long, 2007; Stephens et al., 2014). And, absent intervention, first-generation students report feeling less included in college even in the fourth year (Tibbetts et al., 2016). Like immigrants marginalized in their new countries (Ward & Chang, 1997; Ward & Kennedy, 2001), first-generation students may turn to home communities for support, which could further reinforce their low sense of fit (e.g., Alwin et al., 1991; Covarrubias & Fryberg, 2014; Vasquez-Salgado et al., 2014).

Second, even when first-generation students experience socialization in their new environment, colleges often design these activities with an assumption of independence. Given the initial cultural mismatch between college norms of independence and first-generation students' endorsement of interdependence, these activities may not socialize students as intended (Fryberg et al., 2013; Weidman, 1989). For example, during classroom discussions *intended* to cultivate students' independence by asking them to express themselves, students guided by interdependent models of self often do not engage in the independent, self-expressive behaviors expected of them. Instead, they are more likely to show deference to authority than to express their personal opinions (Kim & Markus, 2002; Lareau, 2003; Mok, Cheng, & Morris, 2010). As a result, college socialization activities may not help first-generation students develop a subjective sense of fit over time.

In sum, taking a cultural mismatch perspective, we argue that initial mismatch between college norms of independence and first-generation students' norms of interdependence will hinder their chances to develop a subjective sense of fit over time. As a result, we expect social class gaps in important institutional rewards (GPA and SSS) will in fact *persist* throughout college to graduation. Finally, given this depressed sense of fit, we expect that first-generation students will maintain their initial cultural norms over time.

Current Research

Employing cross-sectional (Study 1) and longitudinal (Study 2) methods, we examine how students' social class backgrounds affect their college experiences and outcomes over time. In doing so, we seek to make three contributions. First, research has not yet explored how cultural mismatch, and its consequences, change over time. Here, we consider whether early cultural mismatch (interdependent motives in an independent context) exerts negative effects on students' *long-term* college rewards. We focus on GPA and SSS as our critical outcome variables. GPA is an objective measure of academic achievement, and is a key predictor of important life outcomes, including future employment and earnings (Destin et al., 2012; Jones & Jackson, 1990). SSS is a subjective measure of individual social status, and is also a key predictor of important life outcomes, including health and life satisfaction (Adler et al., 2000; Singh-Manoux, Marmot, & Adler, 2005).

Second, we illuminate the *process* by which early cultural mismatch may drive social class gaps in academic and social outcomes, by focusing on the previously untested role of subjective sense of fit with the college environment.

Third, if, as theorized, subjective sense of fit does *not* change over time, then cultural mismatch (endorsing interdependent motives in an independent context) is also likely to persist.

Thus, we examine whether early cultural mismatch persists *throughout* first-generation students' four years in college. As such, we push cultural mismatch theory towards a more temporally dynamic approach. By considering whether students' initial cultural mismatch experiences may evolve versus persist over time, this work may offer useful insights for practitioners and educators as well.

Based on the theorizing above, we propose the following hypotheses: First, we hypothesize that early mismatch (i.e., endorsing interdependent motives for college) will prevent first-generation students from developing a subjective sense of fit over time. Second, because low subjective sense of fit should play a crucial role in undermining students' academic and social performance, we predict that persisting social class disparities in subjective sense of fit should fuel disparities in academic and social institutional rewards (GPA, SSS) that also persist over time. Third, just as we do not expect first-generation students' subjective sense of fit to change over time, we similarly hypothesize that they will continue endorsing more interdependent motives, compared to continuing-generation students.

Study 1: Cross-Sectional Design

Using a cross-sectional design, Study 1 investigates whether, as hypothesized, first-generation students at the end of college are similar to first-generation students at the beginning of college, or if they have shifted toward the middle-class cultural norms of their continuing generation peers. Specifically, for both first-year and fourth-year students, we examine whether first-generation students are guided by more interdependent and less independent motives, compared to their continuing-generation peers. For both sets of students, we also investigate whether first-generation students report lower subjective social status (SSS; Adler et al., 2000) than continuing-generation students. Despite students' navigating their way through college and

ultimately earning a four-year college degree, we expected that social class differences in college motives and SSS would be present at both the beginning *and* end of college.

Method

Participants. We recruited students from a competitive (Top 100-200 U.S. News & World Report Ranking, 2016), Catholic liberal arts college, located in the Midwest, with a large undergraduate population (15,000), including many commuters and part-time enrollees. Using a conservative effect size estimate of $f^2=.03$, we needed a total sample of 322 participants to achieve power=.8. We recruited until the college semester ended, for a sample of 409. We investigate U.S. social class contexts, and so removed 57 international students. We also removed 33 who were not in their first or fourth years in college⁴, and 10 who did not report social class background, for a final sample $N=309$. See Table 1 for participant demographics.

Survey. Research assistants, unaware of hypotheses, asked on-campus passers-by if they wanted to complete a “15-minute study for current freshmen or seniors” in exchange for a \$5 giftcard. After completing measures of interdependence and independence, SSS, and demographics, participants were told they could also select a gift pen (see below).

Measures

Motives for Completing College. Participants responded to six items representing relationship-oriented reasons for completing college (e.g., “I want to give back to my community”; $\alpha=.81$; SOM), shown by previous research to reflect *interdependent* motives, and 6 items representing individual-focused reasons (e.g., “I want to become an independent thinker;” $\alpha=.82$), shown to reflect an *independent* motives (Stephens et al., 2012a). Items were intermixed,

⁴Results persist if we retain students who accidentally participated in the study, despite not being in the first or fourth years (SOM).

and participants responded using a scale, 1 (*strongly disagree*) to 7 (*strongly agree*). Responses were averaged to create composite measures of interdependence and independence.

Consistent with previous research (Stephens et al., 2012a), principal components analysis (varimax rotation) of all 12 items revealed that the 6 independent items loaded onto one factor (range [.61,.81], Eigenvalue=4.06, 28% variance explained) and 6 interdependent items loaded onto a second factor (range [.64,.74], Eigenvalue=2.35, 25% variance explained). No items loaded highly onto the opposite factor (range [-.11,.37], all other Eigenvalues<1).

Further, motives questions were asked in a way that reflected the fact that attending and completing college is an on-going choice (“Please read the following list and mark all the items that are very important reasons for you in attending college”); just as students may decide their college major no longer fits their preferences and goals, students may also see college itself fitting into their plans differently over time. That is, students at the end of college can feel different justifications for their continued attendance (e.g., secure a good job) than at their initial entry (e.g., explore the world).⁵

Following previous research (Harackiewicz et al., 2014; Stephens et al., 2012a; Tibbetts et al., 2018), this measure assesses students’ culture-specific motives for completing college. Importantly, given the college culture of independence, interdependent motives for completing college indicate cultural mismatch. This measure predicts important early college outcomes, including academic performance (Stephens et al., 2012a; Tibbetts et al., 2016, 2018).

Pen Choice. In addition to the motives measure, we used a behavioral task—choice between unique or common pen—that captures people’s preferences for independence or

⁵Indeed, in our longitudinal results (Study 2), we do find evidence that this measure is sensitive to change over time (Time 1 to Time 2 difference score range: interdependence [-4, 5], independence [-6, 6]).

interdependence. Indeed, previous research has shown that this choice reflects culture-specific preferences for uniqueness (independence) versus similarity (interdependence; Kim & Markus, 1999; Kim & Sherman, 2007), and can be used to assess underlying models of self. Because pen choice indicates whether students act on interdependent norms, measuring pen choice in the college context may be useful as an additional indicator of cultural mismatch.

Following previous research (Kim & Markus, 1999; Stephens et al., 2007), we asked students to choose a pen (unique vs. common) from a set. The experimenter randomly drew five pens from a bag containing orange and green pens. If the experimenter drew five of the same color, one was replaced with the opposite color. This created a set with either three or four pens of one color (majority color), and two or one pen of the other color (minority color). The pens were then presented to the participant, whose choice was recorded. If the participant chose a minority pen color – unique in the set – this was recorded as an independent choice (coded 1). If the participant chose a majority color pen – conforming in the set – this was recorded as an interdependent choice (coded -1).

SSS. Using a standard measure, participants used a ladder image “representing where people stand in the United States” to self-identify where they ranked compared to “other people in the United States” (1=Lowest Status; 10=Highest Status; Adler et al, 2000).

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 (self-reported: First-Generation=-1, Continuing-Generation=1; Housel & Harvey, 2009).

Year. Year in college was self-reported (-1=First-Year, 1=Fourth-Year).

Demographics. Participants’ gender (Female=-1; Male=1) and race were self-reported (Table 1). Research finds that non-Asian minorities face underrepresentation and report worse

social and academic outcomes in U.S. colleges compared to Whites and Asians (Harackiewicz et al., 2016; Kao, 1995, 2003; Steele, 2010). Accordingly, we code race using underrepresented minority status (underrepresented minority: Black, Latino/a, Native, Other=-1; White/Asian=1).

Results

Table 2 presents means and standard deviations. We present results of linear regressions, in which each dependent variable is regressed on social class, year (centered), gender, and race.⁶ Then, we present results from the same regression models, but including an interactive effect of social class and time (Table 3).⁷

Interdependent Motives. As hypothesized, first-generation students were significantly more likely to endorse interdependent motives than were continuing-generation students, $b=-.22$, 95%-CI=[-.40, -.05], $SE=.09$, $t(296)=-2.47$, $p=.01$, $f^2=.02$. We found no effect of year on students' endorsement of interdependent motives, $b=.04$, 95%-CI=[-.12, .20], $SE=.08$, $t(296)=.49$, $p=.62$, and no interactive effect of social class and year on interdependent motives, $b=.09$, 95%-CI=[-.09, .26], $SE=.09$, $t(295)=.95$, $p=.34$, indicating consistent endorsement of interdependent motives across college years.

Independent Motives. As hypothesized, first-generation students were significantly less likely to endorse independent motives than were continuing-generation students, $b=.22$, 95%-CI=[.10, .35], $SE=.06$, $t(296)=3.50$, $p<.001$, $f^2=.04$. We found no effect of year on students' endorsement of independent motives, $b=.03$, 95%-CI=[-.08, .14], $SE=.06$, $t(296)=.51$, $p=.61$, and

⁶Research has established associations between race and social class, social fit in college, and academic performance (e.g., Fischer, 2007; Harackiewicz et al., 2016; Johnson et al., 2011; Kao, 1995; Steele, 2010). Gender is also associated with academic performance (Conger & Long, 2010), and both race and gender can be associated with models of self (Markus & Kitayama, 2010). To isolate effects of social class, we control for race and gender across studies. Importantly, however, our results persist *both* without race and gender covariates, *and* when we code race using a majority/minority status method instead of underrepresented minority status (SOM).

⁷We also probed for intersectional effects; however, we found no significant social class X race interactions nor social class X gender interactions in Study 1 or Study 2 (SOM).

no interactive effect of social class and year on independent motives, $b=.05$, 95%-CI=[-.07, .18], $SE=.06$, $t(295)=.82$, $p=.42$, indicating consistent endorsement of independent motives across college years.

Pen Choice. Using a binomial logistic model, we regressed pen choice on social class, year (centered), gender, and race. As hypothesized, first-generation students were marginally less likely to choose a unique pen than were continuing-generation students, log-odds=.26, 95%-CI=[-.01, .53], $SE=.14$, $z(299)=1.77$, $p=.08$.

However, this effect was qualified by a significant interaction of social class and year on pen choice, log-odds=.36, 95%-CI=[.07, .67], $SE=.15$, $z(298)=2.39$, $p=.02$, odds-ratio=1.44. Early in college, contrary to expectations, first-generation and continuing-generation students were similarly likely to choose a unique pen, log-odds=.02, 95%-CI=[-.32, .36], $SE=.17$, $z(298)=.09$, $p=.93$. At the end of college, we did find the expected social class difference: first-generation students were significantly less likely than continuing-generation students to choose a unique pen, log-odds=.74, 95%-CI=[.25, 1.27], $SE=.26$, $z(298)=2.87$, $p=.004$. Decomposed differently, among first-generation students, students were significantly less likely to choose a unique pen at the end of college compared to the beginning, log-odds=-.54, 95%-CI=[-1.08, -.04], $SE=.26$, $z(298)=-2.04$, $p=.04$. Among continuing-generation students, there was no effect of year, log-odds=.19, 95%-CI=[-.11, .48], $SE=.15$, $z(298)=1.24$, $p=.22$.

SSS. As hypothesized, first-generation students reported significantly lower SSS than did continuing-generation students $b=.60$, 95%-CI=[.41, .79], $SE=.10$, $t(293)=6.17$, $p<.001$, $f^2=.13$. We found no effect of year on students' SSS, $b=-.03$, 95%-CI=[-.20, .15], $SE=.09$, $t(293)=-.30$, $p=.77$, and no interactive effect of social class and year on SSS, $b=-.01$, 95%-CI=[-.20, .18], $SE=.10$, $t(292)=-.08$, $p=.94$, indicating consistent SSS differences across college years.

Discussion

Study 1 finds that, early in college, first-generation students are guided by more interdependent and less independent motives than are continuing-generation students, replicating previous research. Going beyond previous work, and supporting our proposed cultural mismatch perspective, we also found that these differences remain largely consistent at the end of college.

Indeed, we found converging evidence of the expected social class differences in motives: across three attitudinal and behavioral measures of selves at two different time points (six total tests), only one did not show expected social class differences (pen choice, early in college). We speculate that one reason for this null finding is that the dichotomous nature of the behavioral task could make it challenging to reliably detect differences in independence versus interdependence. Moreover, recent work has found that the pen choice measure may be especially sensitive to situational cues (Yamagishi, Hashimoto, & Schug, 2008).

Further, Study 1 shows that first-generation students report lower SSS during their first year in college, *and* that this difference also exists among students in their final year. Altogether, Study 1 provides initial evidence that first-generation students' cultural motives and SSS remain the same at the beginning and end of college.

Study 2: Longitudinal Design

In Study 2, we investigate whether first-generation students stay the same or shift towards middle-class cultural norms as they experience college over time. We aim to build on Study 1 in several ways. First, we disentangle effects of time and cohort by moving from a cross-sectional design to a longitudinal design, in which we track the same cohort of students from college entry (Time 1) to graduation four years later (Time 2). Second, we recruit participants from a different

university, allowing us to consider whether findings from Study 1 replicate in a different college context.

Third, in Study 2, we explore both objective (academic performance) and subjective (social status) outcomes, in order to investigate whether social class disparities persist over time. Finally, we also test students' subjective sense of fit as a factor that may fuel the effect of initial cultural mismatch (interdependent motives in an independent context) on academic and social disparities over time. In Study 2, we expected:

Hypothesis-1. Social class differences in independent and interdependent motives upon entering college (Time 1) will persist throughout college (Time 2).

Hypothesis-2. Social class differences in subjective sense of fit upon entering college (Time 1) will persist throughout college (Time 2).

Hypothesis-3. Social class differences in college outcomes (GPA, SSS) will persist throughout college (Time 2).

Lastly, we use structural equation modeling to test a conceptual model specifying our theorized relationships between social class, cultural motives, subjective sense of fit, and college outcomes:

Hypothesis-4. The relationship between students' social class backgrounds and outcomes (Time 2) will be fueled by social class differences in cultural motives (Time 1) and subjective sense of fit (Time 2; Figure 1):

- a. First-generation students will endorse more interdependent and less independent motives than continuing-generation students (Time 1).
- b. More interdependent and less independent motives will predict lower subjective sense of fit (Time 2).

- c. Lower subjective sense of fit will predict lower GPA and SSS (Time-2).⁸

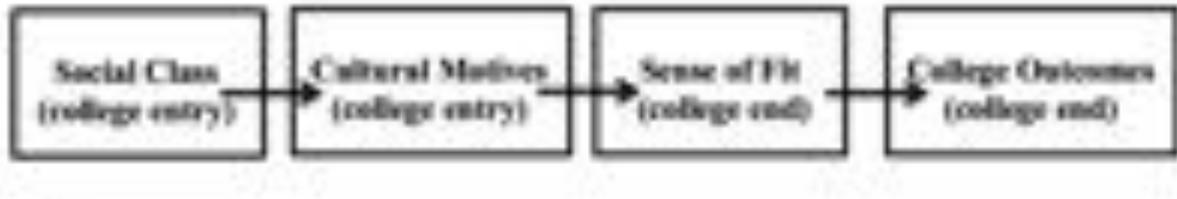


Figure 1. Conceptual model of Hypothesis-4.

Method

Participants. We recruited students from a highly competitive (Top 10 U.S. News & World Report Ranking, 2016), elite research institution, located on the West Coast, with a small undergraduate population (6,000), all of whom are full-time and live on campus. See Table 1 for participant demographics.

Time 1 Survey. Prior to beginning their first year in college (Time 1), the entire incoming student population was asked to participate in a university-administered, online survey. Participants completed measures of subjective sense of fit, interdependent and independent motives, and demographics. We included only those who reported their social class information, and were U.S. citizens or permanent residents, leaving a final sample of $N=1372$.

Time 2 Survey. During their fourth year of college, we emailed (Time 1) participants to ask them to participate in a two-part online survey (Time 2). Across the interdependent motives, independent motives, and SSS measures in Study 1, effect size estimates for social class differences ranged from $f^2 = [.02-.13]$. Thus, we used an estimated $f^2 = .05$ to determine sample size for our Time 2 survey, which showed a total sample of 193 participants would achieve

⁸Our theory also predicts additional cross-temporal effects: initial mismatch in motives should reduce initial subjective sense of fit, which should cause persisting differences in motives. We find evidence supporting this extended path (SOM).

power=.80. We aimed to recruit approximately equal samples of first-generation and continuing-generation students; therefore, we emailed *all* first-generation students and a subset of continuing-generation students (59% response rate). To ensure our sample of continuing-generation students reflected the racial diversity of the population, we divided these students into self-identified racial/ethnic groups, then randomly selected 15% of each group to receive recruitment emails.

The first part of the Time 2 survey was administered halfway through the fourth year ($N=212$), and measured interdependent and independent motives, subjective sense of fit, and demographics. The second part of the Time 2 was administered at the very end of the fourth year ($N=211$), and measured graduation GPA, SSS, and demographics. Importantly, virtually all students at this university graduate on time (>95%); as such, their self-reported GPA at the end of the fourth year reflects students' GPA upon graduating with a bachelor's degree.

Participants received \$8 for each part of the survey. One hundred and fifty-six students completed both parts of the Time 2 survey. Some completed only one 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 $N=265$.

Measures

Motives for Completing College. Following Study 1, we measured interdependent ($\alpha_{T1}=.73$, $\alpha_{T2}=.72$) and independent ($\alpha_{T1}=.74$, $\alpha_{T2}=.77$) motives. Participants indicated whether they endorsed each of the 6 items using a binary scale (1=Yes; 0=No; SOM), which were summed to create two composite measures.

Subjective Sense of Fit. As described earlier, we follow person-environment fit theories (Edwards, 2006) to conceptualize subjective sense of fit as students' *self-reported* feelings of

comfort, inclusion, and compatibility in the college environment. In order to capture students' subjective sense of fit with the broad college environment, we adapted 12 items from previous research (e.g., Stephens, Hamedani, & Destin, 2014; Walton & Cohen, 2005, 2007; Tibbets et al., 2016). Specifically, we adapted items to focus on both comfort being oneself in the college environment (e.g., "I feel comfortable as a student at [university name]") and sense of compatibility with the college environment (e.g., "My personal values are compatible with the values that are common at [university name]"). These items were reliable as a scale ($\alpha_{T1}=.65$; $\alpha_{T2}=.82$), and dropping any item would have reduced the overall alpha. Students indicated agreement with these items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Item wording was adjusted for time (e.g., "I expect..." versus "I am"; SOM).

GPA. For Time 1, students' official cumulative GPA for their first year in college was provided by the university (0-4.3 scale). For Time 2, given the university declined to provide final grades, we relied on students' self-reported cumulative GPAs. Previous work suggests undergraduates' GPA self-reports are highly accurate when compared to actual grades (Cassady, 2001).

SSS. We measured SSS only at Time 2, using three items ("Please mark...where you would place yourself in relation to... your fellow seniors at [university name]"; "...other people in America"; "...your peers at home;" $\alpha=.87$). Following Study 1, participants responded to each item using a vertical ladder image (1=Lowest Status; 10=Highest Status). Results persist when we analyze each of the three items independently (SOM).

Social Class Background was measured following Study 1.

Time was indicated by survey wave (college entry / Time 1=-1, college end / Time 2=1).

Demographics. The university provided participants' gender (Female=-1; Male=1) and race (underrepresented minority: Black, Latino/a, Native, Other=-1; White/Asian=1) from self-reported admissions data (Table 1). Race was unreported for 99 participants; when available, we used their self-reported race from the Time 1 survey.

Results

Analytic Strategy. Table 4 presents means and standard deviations. We used a linear mixed-effects modeling package (R packages *lme4*, *lmerTest*; Bates et al., 2015; Kuznetsova, Brockhoff, Christensen, 2017) to regress dependent variables on predictor and control variables (Tables 5-6). We treated dependent variables as repeated measures in our analyses, using time, along with social class, race, and gender, as fixed effects.⁹ Participant was treated as a random-intercept. Following Study 1, rather than excluding participants with missing data from the entire sample, missing cases were removed listwise from individual analyses.

Finally, we fitted structural equation models using a RAM path method in OpenMx (Neale et al., 2015) and R package *sem* (Fox et al., 2017). Because we were interested in relationships among our variables over time, we restricted our data set for SEM analyses to those who completed at least one part of the Time 2 survey. Missing data were found to be missing-completely-at-random (MCAR; non-parametric test of homoscedasticity $p > .41$). To retain power despite missing data, and because our data were MCAR, we used a multiple imputation method to produce five complete imputed datasets (for each $N=265$; predictive mean matching, R package *mice*; van Buuren & Groothuis-Oudshoorn, 2011). We then fit our SEM models on each of these five datasets, and averaged the estimates and variance for each path. Error varied freely

⁹In both studies, results persist *both* without race and gender controls, *and* when we code race using a majority/minority status method instead of underrepresented minority status (SOM).

for all variables. Continuous variables were centered, and categorical variables were contrast-coded as described. Finally, when we use an alternative approach to handling missing data – listwise deletion – we find similar results ($N=116$ GPA model; $N=112$ SSS model; see SOM).

Hypothesis-1.

Interdependent motives. As hypothesized, and consistent with Study 1, first-generation students endorsed significantly more interdependent motives than continuing-generation students, $b=-.65$, 95%-CI=[-.78,-.52], $SE=.07$, $t(1193)=-9.55$, $p<.001$, $ML-\chi^2(1)=88.16$. We found no effect of time on students' endorsement of interdependent motives, $b=.06$, 95%-CI=[-.05,.17], $SE=.06$, $t(346)=1.05$, $p=.29$, $ML-\chi^2(1)=1.11$. Additional analysis yielded no interactive effect of social class and time on interdependent motives, $b=-.01$, 95%-CI=[-.12,.11], $SE=.06$, $t(330)=-.11$, $p=.91$, $ML-\chi^2(1)=.01$, indicating consistent interdependence over time.

Independent motives. We found no effect of social class on students' endorsement of independent motives, $b=.04$, 95%-CI=[-.08,.17], $SE=.06$, $t(1161)=.72$, $p=.47$, $ML-\chi^2(1)=.52$. We found a significant effect of time, such that students endorsed fewer independent motives at Time 2 than at Time 1, $b=-.14$, 95%-CI=[-.26,-.02], $SE=.06$, $t(538)=-2.38$, $p=.02$, $ML-\chi^2(1)=5.65$. Additional analysis yielded no interactive effect of social class and time on independent motives, $b=-.04$, 95%-CI=[-.16,.08], $SE=.06$, $t(497)=-.67$, $p=.50$, $ML-\chi^2(1)=.45$.¹⁰

Hypothesis-2.

¹⁰Probing further, we found that continuing-generation students' independent motives decreased over time ($b=-.21$, $SE=.08$, $t(1278)=-2.53$, $p=.01$), while first-generation students' independent motives did not change ($b=-.09$, $SE=.12$, $t(267)=-.77$, $p=.44$). This finding is inconsistent with Study 1, and previous research (Harackiewicz et al., 2014; Stephens et al., 2012a). This may reflect the fact that our Time 2 population volunteered to participate in the survey, and thus could be less independent, compared to the population in Time 1, who were all required by the university to participate. Alternatively, despite the prevailing university culture of independence, unique features of the environment for that particular cohort (e.g., emphasis on inclusion; Eagan et al., 2017) could have contributed to this finding.

Subjective sense of fit. As hypothesized, first-generation students reported significantly less subjective sense of fit than did continuing-generation students, $b=.17$, 95%-CI=[.08,.18], $SE=.03$, $t(1370)=6.23$, $p<.001$, $ML-\chi^2(1)=29.97$. We also found that students reported significantly more subjective sense of fit at Time 2 than at Time 1 $b=.11$, 95%-CI=[.08,.17], $SE=.02$, $t(589)=4.41$, $p<.001$, $ML-\chi^2(1)=26.34$.

However, additional analysis found these effects were qualified by an interaction of social class and time on subjective sense of fit, $b=.07$, 95%-CI=[.02,.12], $SE=.02$, $t(595)=2.92$, $p=.004$, $ML-\chi^2(1)=8.55$. Decomposing the interaction revealed that, at Time 1, continuing-generation students reported more subjective sense of fit than did first-generation, $b=.10$, 95%-CI=[.05,.15], $SE=.03$, $t(1477)=4.03$, $p<.001$. At Time 2, this gap was even larger, $b=.24$, 95%-CI=[.15,.33], $SE=.05$, $t(1192)=5.36$, $p<.001$. Decomposed differently, time had no effect on first-generation students' subjective sense of fit, $b=.04$, 95%-CI=[-.04,.11], $SE=.04$, $t(496)=.95$, $p=.34$. However, for continuing-generation students, time was positively associated with subjective sense of fit, $b=.17$, 95%-CI=[.11,.24], $SE=.03$, $t(789)=5.87$, $p<.001$.

Hypothesis-3.

GPA. As hypothesized, first-generation students had lower GPAs than did continuing-generation students, $b=.05$, 95%-CI=[.03,.08], $SE=.01$, $t(1285)=4.03$, $p<.001$, $ML-\chi^2(1)=16.15$. We also found that students had significantly higher GPAs at graduation than at the end of their first year, $b=.05$, 95%-CI=[.03,.07], $SE=.01$, $t(195)=5.88$, $p<.001$, $ML-\chi^2(1)=32.53$. Additional analysis yielded no interactive effect of social class and time on GPA, $b=-.005$, 95%-CI=[-.02,.01], $SE=.01$, $t(190)=-.53$, $p=.60$, $ML-\chi^2(1)=.28$, indicating a consistent social class disparity in GPA over time.

SSS. Because SSS was measured only at Time 2, we regressed SSS on social class, gender, and race (fixed effects). As hypothesized, first-generation students at graduation reported significantly lower SSS than did continuing-generation students, $b=.62$, 95%-CI=[.32,.93], $SE=.15$, $t(150)=4.07$, $p<.001$, $f^2=.11$. Because GPA and SSS were correlated ($r_{T1}=.14$, $p=.08$; $r_{T2}=.26$, $p<.001$), we additionally controlled for Time 1 and Time 2 GPA (both centered), finding that social class differences in SSS persist, $b=.53$, 95%-CI=[.22,.85], $SE=.16$, $t(147)=3.34$, $p=.001$, $f^2=.08$.

Hypothesis-4. We hypothesized that early (Time 1) social class differences in cultural motives (interdependence and independence) would predict different subjective sense of fit even after four years in college (Time 2). In turn, this different subjective sense of fit in the college environment should predict different college outcomes, including GPA and SSS. To evaluate these hypotheses, we tested separate models for GPA and SSS. Given our multiple imputation approach, we report model statistics from all five imputed datasets, using range for fit indices, and averages for path statistics (Figures 2-3, Tables 7-10).

GPA (Time 2). Overall, three indices indicated that our model fit the data well: RMSEA=[.09-.10], 95%-CI=[.05,.14]; CFI=[.90-.92]; TLI=[.79-.83].

Path coefficients revealed that social class was not associated with independent motives (Time 1), $b=.01$, $SE=.11$, 95%-CI=[-.20,.23]. Further, independent motives (Time 1) were not associated with subjective sense of fit (Time 2), $b=.05$, 95%-CI=[-.01,.10].

However, we found that social class was negatively associated with interdependent motives (Time 1), $b=-.67$, $SE=.11$, 95%-CI=[-.89,-.45]. First-generation students endorsed more interdependent motives than did continuing-generation students upon entering college. In turn, endorsement of interdependent motives (Time 1) was negatively associated with subjective sense

of fit (Time 2), $b = -.10$, 95%-CI=[-.15,-.04]. 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, subjective sense of fit (Time 2) was positively associated with GPA (Time 2), $b = .03$, 95%-CI=[.00,.05]. Those who reported higher subjective sense of fit at Time 2 reported higher GPAs upon graduation.

Finally, for each of our five imputed datasets, we compared this model to a direct effect only model, removing the paths from social class to interdependent motives (Time 1), interdependent motives (Time 1) to sense of fit (Time 2), and sense of fit (Time 2) to GPA (Time 2). This allows us to test whether the inclusion of the indirect effect of social class on GPA (Time 2) through interdependent motives (Time 1) and sense of fit (Time 2) is a better fit than a direct effect only model; this approach can be used to probe for mediation within SEM analyses (Kenny, 2018; see also Yzerbyt et al., 2018). Indeed, we find that the indirect effect model (average BIC=-26.92) offers an improvement over the direct effect only model (average BIC=3.99), which suggests a significant indirect effect of social class (Time 1) on GPA (Time 2), via interdependent motives (Time 1) and subjective sense of fit (Time 2).

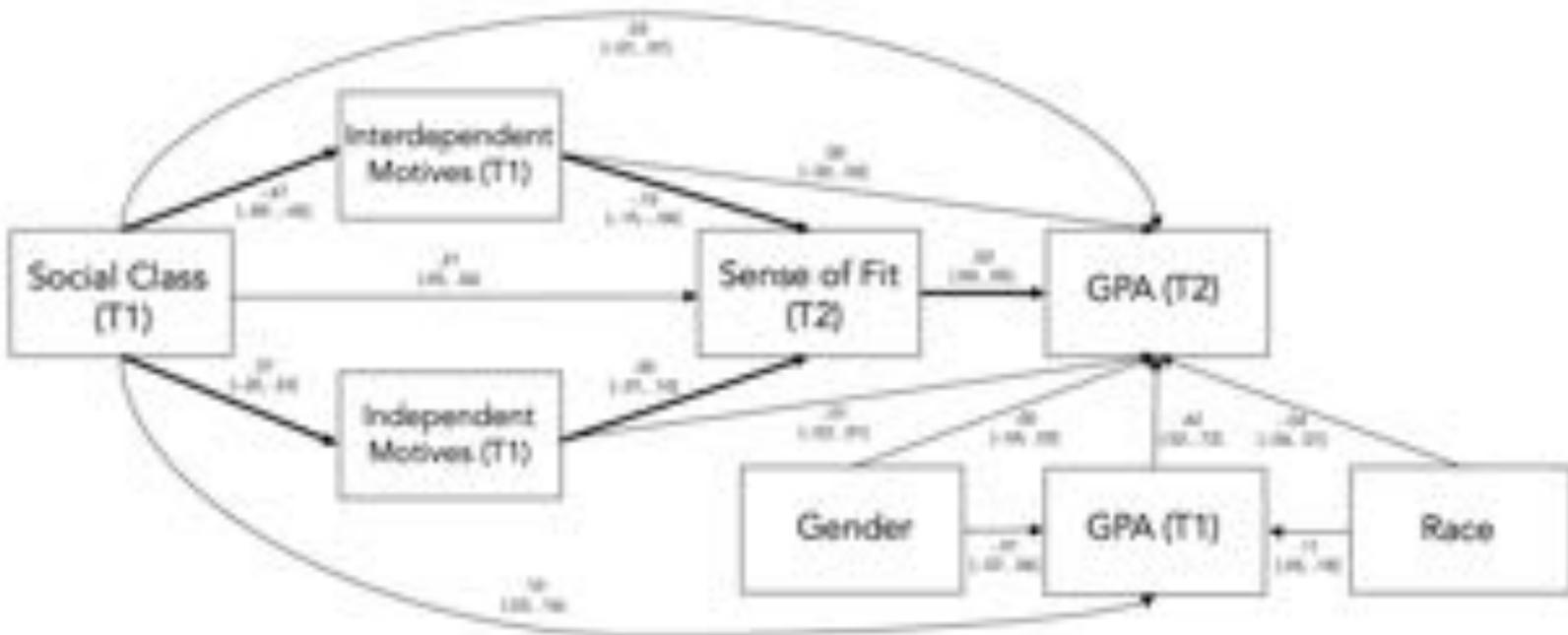


Figure 2. Structural equation model (GPA T2). Path coefficient and confidence interval (average across imputed datasets). Bold arrows represent indirect path of interest.

SSS (Time 2). Given SSS was only measured at Time 2, we cannot include Time 1 SSS as a control variable; however, we do include GPA Time 1 and GPA Time 2, following our analyses in Hypothesis 3 above. Overall, three indices indicated that our model fit the data well: RMSEA=[.08-.11], 95%-CI=[.05,.14]; CFI=[.88-.93]; TLI=[.77-.85].

Following the GPA-model, path coefficients revealed that social class was not associated with independent motives (Time 1), $b=.01$, $SE=.11$, 95%-CI=[-.20,.23], and independent motives (Time 1) were not associated with subjective sense of fit (Time 2), $b=.05$, 95%-CI=[-.01,.10].

However, paralleling the GPA-model, we found that social class was negatively associated with interdependent motives (Time 1), $b=-.67$, $SE=.11$, 95%-CI=[-.89,-.45]. In turn, endorsement of interdependent motives (Time 1) was negatively associated with subjective sense of fit (Time 2), $b=-.10$, 95%-CI=[-.15,-.04]. Finally, subjective sense of fit (Time 2) was

positively associated with SSS (Time 2), $b=.73$, 95%-CI=[.48, .98]. Those who reported higher subjective sense of fit at Time 2 reported higher SSS upon graduation.

Finally, for each of our five imputed datasets, we compared this model to a direct effect only model, removing the paths from social class to interdependent motives (Time 1), interdependent motives (Time 1) to sense of fit (Time 2), and sense of fit (Time 2) to SSS (Time 2). Indeed, we find that the indirect effect model (average BIC=-36.90) offers an improvement over the direct effect only model (average BIC=21.79), which suggests a significant indirect effect of social class (Time 1) on SSS (Time 2), via interdependent motives (Time 1) and subjective sense of fit (Time 2).

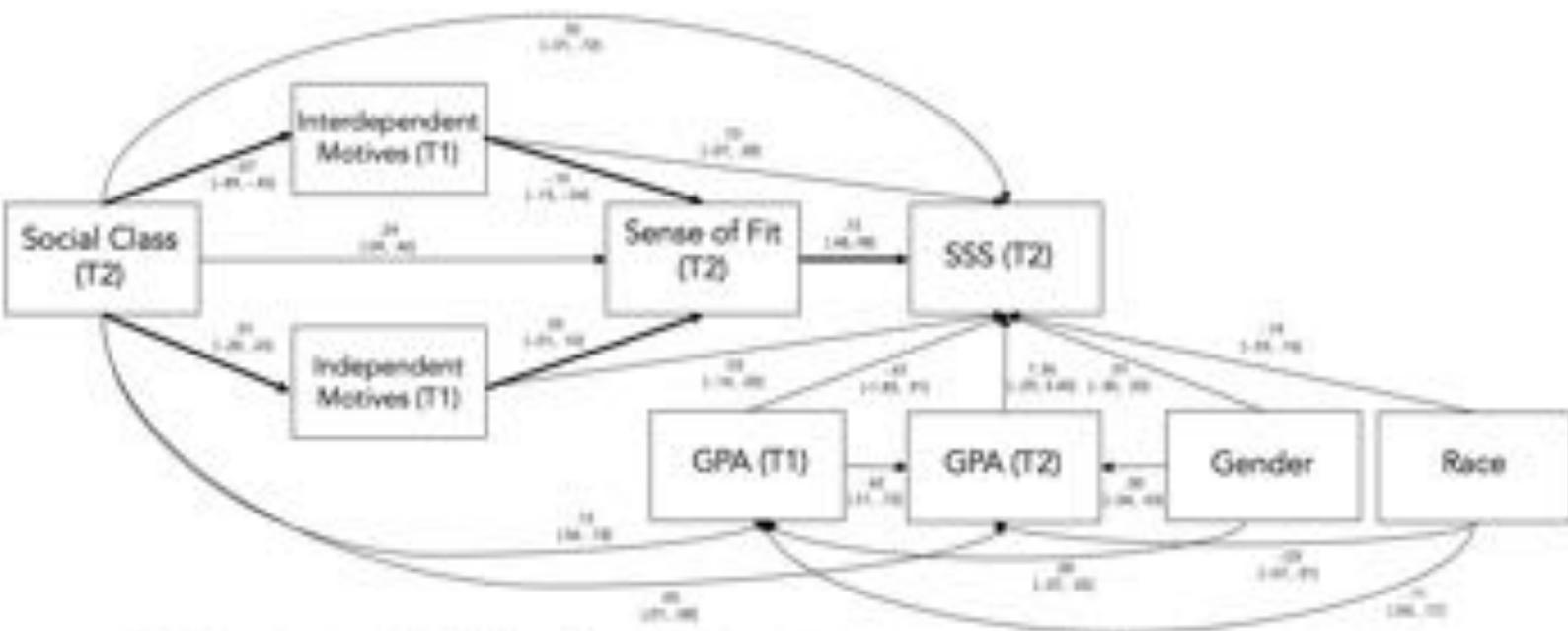


Figure 3. Structural equation model SSS T2. Path-coefficient and confidence interval coverage across imputed datasets. Solid arrows represent indirect path of interest.

Discussion

Extending results from Study 1, we found that first-generation students endorse more *interdependent* motives than do continuing-generation students upon entering college. Consistent

with our proposed cultural mismatch perspective, these differences in cultural motives *persist* until graduation, four years later. Unexpectedly, we found no significant social class differences in *independent* motives upon entering college, nor at graduation.

Importantly, *despite* students' comparable endorsements of independence, social class differences in *interdependence* nevertheless affects their college experiences: continuing-generation students' subjective sense of fit increases over time, while first-generation students' remains stagnant. Thus, our results suggest an important new facet of mismatch theory: in a college culture of independence, endorsing interdependent cultural norms is sufficient to create the negative experiences of mismatch. Conversely, endorsing independent cultural norms is insufficient to overcome these mismatch effects.¹¹

Our results further suggest the gap in subjective sense of fit is not solely due to early differences in familiarity with college; if that were the case, we would expect the social class gap in subjective sense of fit to decrease over time, as students from different social class backgrounds become familiar with the college environment. Rather, consistent with cultural mismatch theory, the social class gap in subjective sense of fit *widens* over time. This implies that, throughout college, students continue to experience the same institution differently as a function of their social class backgrounds.

By graduation, students had spent similar amounts of time on an elite college campus with access to ample resources. A cultural change perspective suggests students would learn the

¹¹We also tested whether interdependent and independent motives might interact to predict subjective sense of fit. We regressed subjective sense of fit (T2) on interdependent motives (T1), independent motives (T1), and their interaction. We find a significant main effect of interdependent motives on subjective sense of fit, $b = -.13$, $SE = .03$, $t(177) = -3.80$, $p < .001$. However, we find no effect of independent motives ($p = .13$), and no interaction ($p = .77$). This suggests that even high independent motives may not protect against the negative consequences of cultural mismatch. Instead, the mismatch between students' interdependent motives and the college context of independence may be sufficient to depress students' subjective sense of fit.

“rules of the game” and that the initial social class gap in GPA may diminish over time; however, consistent with our cultural mismatch perspective, the social class gap in GPA persists, even when controlling for early differences in academic preparation (early GPA). And, beyond objective academic differences, we also found a social class gap for a subjective outcome—SSS—which has important implications for students’ health and well-being (Adler et al., 2000).

Together, these results demonstrate the critical role of subjective sense of fit: initial cultural mismatch (interdependent motives in an independent context) reduces subjective sense of fit, which in turn fuels the persistence of gaps in institutional rewards (GPA, SSS) over time.¹² As such, our findings suggest that time in college does not mitigate initial social class differences students, nor shift first-generation students towards middle- and upper-class cultural norms. Rather, social class background sets students on divergent college trajectories, fostering disparities in college experiences and outcomes all the way to graduation.

General Discussion

Across two different college settings, and using both cross-sectional and longitudinal approaches, we examined how social class background affects students’ college experiences *over time*. While a cultural change perspective suggests first-generation students would naturally develop a subjective sense of fit over time, our results support a cultural mismatch perspective instead. Even when first-generation students gain access to college and persist to graduation, initial cultural mismatch (interdependent motives in an independent context) shapes their experiences and outcomes *throughout* college.

¹²In more saturated models, we find that T1-interdependent motives reduces T1-sense of fit, which increases T2-interdependent motives, which reduces T2-sense of fit, and T2-outcomes. SOM reports additional analyses regarding fit as a mechanism.

College undoubtedly provides students a wide range of valuable opportunities. Yet, 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 institutional rewards (GPA, SSS). When first-generation students enter college, compared to continuing-generation students, they are guided by relatively interdependent motives, which mismatch the college culture of independence (Studies 1 and 2). As a result, first-generation students experience lower subjective sense of fit than continuing-generation students (Study 2). Further, these differences in cultural motives and subjective sense of fit *persist* over students' time in college, and are associated with lower grades and subjective status even at graduation (Study 2).

Theoretical Contributions

The current work advances our understanding of cultural mismatch, and related theories of person-environment fit, in four important ways. First, previous research on cultural mismatch has focused on first-generation students' transitional experiences as they begin college. Here, we develop theory regarding how first-generation students are affected by mismatch dynamically *over time*, as they persist all the way to graduation. Second, we go beyond the laboratory to illuminate students' ongoing, naturalistic experiences with the college environment, as they progress *through* this gateway institution (cf. Edwards, 2006).

Third, these results provide direct evidence of subjective sense of fit as a key psychological mechanism underlying the negative consequences of cultural mismatch. Early mismatch (endorsing interdependent motives in an independent context) undermines students' subjective sense of fit. Further, we find that the social class gap in students' sense of fit *increase* throughout college; initial cultural mismatch sets students up on divergent trajectories that may

self-reinforce over time, perhaps through daily cognitions, experiences, and interactions. On the one hand, given the college environment itself does not change (e.g., interdependence continues to be less of a priority in independent setting), first-generation students may expect to face continued cultural mismatch. Such expectations and experiences then reinforce early lack of subjective fit (and related consequences for performance) in a recursive cycle. On the other hand, we find that continuing-generation students match the college culture from the beginning, which may buffer them against any early difficulties and allow their sense of fit (and performance) to grow over time. By shaping whether students feel a sense of fit at their institution, mismatch contributes to social class gaps in academic and social rewards (GPA, SSS), not only early in college, but even as students persist to graduation.

Fourth, our findings suggest that endorsing more versus fewer interdependent motives may be more crucial to students' outcomes than endorsing more versus fewer independent motives. Indeed, while previous work found social class differences in both interdependent motives and independent motives (Stephens et al., 2012), this work also found that effects were stronger for *interdependent* (vs. independent) motives, and at times merely marginal for independent motives. As such, our results provide new theoretical insights, revealing an important facet of cultural mismatch processes: we find that endorsing more interdependent motives can depress student outcomes, regardless of independent motives. This suggests that the negative effects of mismatch may be driven, in particular, by colleges' failure to recognize or value *interdependence*. Experiencing a *lack* of support for an important cultural norm (i.e., interdependence) may be especially disadvantageous, even if other cultural norms *do* fit (i.e., independence). Thus, merely having or training independence may not be enough to overcome the disadvantage of interdependence (cf. Tibbetts et al., 2016).

Limitations

One limitation is that we do not find consistent effects of social class on independent norms. Previous work has found first-generation students endorse more interdependence *and* less independence than continuing-generation students upon entering college (Stephens et al., 2012a). Using multiple measures (college motives and pen choice), we find first-generation students endorse more interdependence than continuing-generation students, at college entry *and* upon graduation (Studies 1 and 2). However, whereas in Study 1 first-generation students endorsed less independence than continuing-generation students in both early and late college, in Study 2 first-generation students endorsed independence to the same extent as continuing-generation students. While this may have been a fluke, there are a few other reasons why this might have occurred. First, it is possible that the cohort was unique compared to previously sampled cohorts. More generally, it is also possible that norms are shifting over time (Eagan, 2017), such that first-generation students today are more likely to endorse independent cultural norms than they were in past research (see similar result in Tibbetts et al., 2018).

Second, inconsistent differences in *independent* norms may be due to the “general” measures (pen choice and motives) that we used in this research. These measures tap into people’s general endorsement of independence, as opposed to endorsement of more specific kinds of independence (e.g., vertical versus horizontal; Triandis & Gelfand, 1998). However, given broad American cultural emphasis on independence, emerging work suggests that those from working-class backgrounds may not endorse independence less, but rather may endorse different *features* of independence compared to those from middle-class backgrounds (Kusserow, 2012; Stephens et al., 2014; Tibbetts et al., 2016; see also Schaumberg & Flynn, 2016). For instance, those in working-class contexts may endorse hard interdependence (grit and

self-reliance), as compared to soft independence (preferences and self-expression) which may be more endorsed in middle-class contexts. As such, we speculate that general measures of independence may be somewhat less reliable for detecting social class differences in American settings. Future work on the effects of cultural mismatch might consider different features of independence more specifically (Vignoles et al., 2016). Nevertheless, it is important to note that we continue to find social class differences in students' endorsement of *interdependence*, which drives the observed negative experiences for first-generation students in college settings.

Another limitation of the current research is that our studies focused on first-generation college students attending four-year universities. These university environments may be more likely to idealize independence, as compared to institutions that are especially likely to serve first-generation students (e.g., community colleges; Tibbetts et al., 2018). To the extent such institutions idealize interdependence instead, then first-generation students' experiences of cultural mismatch may be attenuated (Astin & Oseguera, 2004; Carnevale & Rose, 2004; Stephens et al., 2012a; Tibbetts et al., 2018). However, it is also possible that social status may moderate mismatch effects in such institutions: although continuing-generation students' independent motives might mismatch interdependent community college institutions, independence is still valued by society at large, which may be protective.

Relatedly, the current work is limited by its focus on social class alone, as opposed to considering intersections of social class by race or gender. While we do probe for such intersectional effects, our relatively small sample of underrepresented minority students may not provide sufficient statistical power to conduct robust intersectional analyses. It will be important for future work to consider intersectional perspectives when exploring change over time. For instance, cultural mismatch effects likely differ in intensity by students' race, in part due to

underrepresented minorities being more likely to endorse interdependence, and more likely to be first-generation, than Whites (Fryberg et al., 2013; Harackiewicz et al., 2016; Redford & Hoyer, 2017; see also Brannon, Higginbotham, & Henderson, 2017). At the same time, cultural mismatch effects may be mitigated for some groups. For instance, although women and Asian-American students on average endorse higher interdependence than other groups (e.g., Cross & Vick, 2001), women and Asian-American students are also known to benefit from protective factors (e.g., increased representation in college; Kao & Thompson, 2003) that may help students attain a sense of fit in spite of their interdependence. In sum, the complex intersecting effects of social class, gender, and race deserve additional research, in particular regarding how these factors shape students' cultural mismatch experiences in college over time.

Implications: Classed Selves Interacting with Classed Institutions

Most theories of how social class shapes psychological functioning (Belmi & Laurin, 2015; Côté, Piff, & Willer, 2013; Croizet & Claire, 1998; Fiske & Markus, 2012; Kraus & Stephens, 2012; Phillips & Lowery, 2016; Stephens et al., 2014) do not address the question of change (Destin et al., 2017). Our results begin to address this gap by considering how individuals experience social class change *over time*. As students enter college – a gateway institution for upward mobility – we find that social class background shapes the *trajectory* of their sense of fit over time, in turn shaping their social and academic outcomes (cf. Edwards, 2006; Goldberg et al., 2016). Thus, while some argue that higher education provides students the chance to gain middle- and upper-class cultural capital, our results suggest that mismatch experiences can, at least in part, thwart this opportunity (Coleman, 1988; Goudeau & Croizet, 2017; Lamont & Lareau, 1988; Lareau & Calarco, 2012; Reay, Crozier, & Clayton, 2009). Future work might explore other gateway institutions; for instance, classed work cultures may perpetuate inequity

among otherwise equally qualified employees (Côté, 2011; Gray & Kish-Gephart, 2013; Kohn, 2010; Lareau, 2015; Rivera, 2015; Stephens et al., 2014).

Our results also highlight acculturation as an important lens, for understanding not only international mobility experiences (Sam & Berry, 2010; Ward & Kennedy, 2001), but also class mobility experiences. We find that class acculturation may be a relatively slow process: students' social class *backgrounds* shape their experiences, even as their *current* social class standing objectively increases (obtaining an elite degree). This fits developmental perspectives, which suggest early experiences often exert strong imprinting effects, especially on cultural norms and models of self (Alwin et al., 1991; Bradley & Corwyn, 2002; Kish-Gephart & Campbell, 2014; Lareau, 2003; Marquis & Tilcsik, 2013). Future research should explicitly consider experiences of social class change and associated acculturation processes. For instance, dovetailing with research on immigrants' acculturation experiences, our theorizing presents the possibility that intergenerational class mobility may be complicated by parents' gaining and passing on some forms of capital (e.g., economic resources) but not others (e.g., models of self). That is, first-generation students who graduate college may have access to better labor outcomes, but we find that they do not necessarily shift toward the cultural norms of the middle and upper classes. Future work should consider how this fragmented acquisition of cultural capital (e.g., gaining economic access, but not norms) may then affect first-generation college graduates' interactions with their own children, making it possible to track class mobility and acculturation processes over multiple generations (see also Lareau, 2003).

Although cultural change may be slow, selves *are* malleable and can change over time, especially if individuals have support for their existing norms while learning new ones (Markus & Kitayama, 2010; Sam & Berry, 2010; Ward & Kennedy, 2001). Thus, to address social class

disparities, institutions might work to value *both* interdependence and independence (Brannon, Markus, & Taylor, 2015). In such an inclusive environment, first-generation students may have the opportunity to elaborate their independent selves over time and become bicultural (e.g., Herrman & Varnum, 2016; Pascarella et al., 2004). Indeed, Tibbetts et al. (2016) found that providing first-generation students an opportunity to affirm their *independence* increased their sense of inclusion and academic performance. Moreover, by accepting students' diverse selves, and helping them leverage the assets that these different selves can provide (e.g., increased pro-social behavior, persistence, performance), inclusive college environments may reduce the need for students to change in the first place (Cross & Vick, 2001).

Conclusion

Higher education serves as a gateway institution, awarding degrees that provide class mobility and associated life opportunities. It is widely believed that, as long as students from different social class backgrounds are given access to college, then they will be provided similar experiences and rewards in college, molding them into the middle- and upper-classes. However, we document persisting social class gaps in cultural mismatch and its negative consequences *throughout* students' years in college. Thus, while access to this gateway institution is clearly necessary, it is not sufficient. By differentially providing mismatch experiences, colleges fail to provide first-generation graduates equal opportunities for academic and social benefits enjoyed by continuing-generation graduates. Rather than fully equalizing opportunity, colleges may help maintain class inequity, even among those who ultimately graduate. Instead, colleges need to interrupt the cycle of mismatch, in order to enable students from all backgrounds to gain comparable institutional rewards.

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Table 1. Demographics

Variable	Study 1		Study 2	
	Counting Observations	Final Observations	Counting Observations	Final Observations
N	100	77	100 (71) 100 (71)	100 (71) 100 (71)
1. Gender (Female, Male)	50 / 50	37 / 40	50 / 50 50 / 50	50 / 50 50 / 50
2. Race White Black Hispanic Asian Other Missing or Refused	33 / 33 / 33 / 33 / 33 / 33 / 33	33 / 33 / 33 / 33 / 33 / 33 / 33	33 / 33 / 33 / 33 / 33 / 33 / 33 33 / 33 / 33 / 33 / 33 / 33 / 33	33 / 33 / 33 / 33 / 33 / 33 / 33 33 / 33 / 33 / 33 / 33 / 33 / 33
3. Year in School (1 st , 2 nd)	75 / 25	55 / 22	-	-

Note: For Study 2, university admissions data did not include multiracial options at the time.

Table 2. Study 1 Means (Standard Deviations)

Condition	Year 1		Year 4	
	Continuing Generation	First Generation	Continuing Generation	First Generation
Variable (Scale)				
1. Independent Motives (1-7)	4.03 (0.33) ^a	4.43 (0.30) ^b	4.27 (0.41) ^a	4.50 (0.39) ^a
2. Subjective Social Status (1-7)	3.80 (0.46) ^a	3.47 (0.37) ^a	3.49 (0.79) ^a	3.42 (0.34) ^a
3. Income Per Capita (0-100k)	41.7 (1.80) ^a	45.7 (1.50) ^a	44.6 (1.50) ^a	32.4 (1.43) ^a
4. Subjective Social Status (1-10)	4.76 (0.26) ^a	5.13 (0.37) ^b	4.66 (0.43) ^a	4.19 (0.46) ^a

Note: Within variables, those marked with "a" are significantly different from those marked with

"b".

Table 3

Study 1: Summary of Regression Analyses

<i>Variable (Fixed)</i>	Interdependent Motives				Independent Motives				Pen Choice (binary)				Subjective Status			
	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>z (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>
Intercept	4.63	.10	47.23 (296)	<.001	5.64	.07	81.96 (296)	<.001	-.27	.15	-1.76 (299)	.08	5.95	.11	56.46 (293)	<.001
Social Class	-.22	.09	-2.47 (296)	.01	.22	.06	3.50 (296)	<.001	.26	.14	1.77 (299)	.08	.60	.10	6.17 (293)	<.001
Year	.04	.08	.49 (296)	.62	.03	.06	.51 (296)	.61	-.03	.10	-.05 (299)	.96	-.03	.09	-.30 (293)	.77
Race	-.52	.09	-5.92 (296)	<.001	-.11	.06	-1.68 (296)	.10	-.13	.14	-.95 (299)	.34	.20	.10	2.11 (293)	.04
Gender	.28	.08	3.34 (296)	<.001	.13	.06	2.15 (296)	.03	-.12	.13	-.93 (299)	.35	-.28	.09	-3.17 (293)	.002
Intercept	4.63	.10	47.21 (295)	<.001	5.64	.07	81.90 (295)	<.001	-.30	.16	-1.87 (298)	.06	5.95	.11	56.37 (292)	<.001
Social Class	-.20	.09	-2.13 (295)	.03	.24	.07	3.59 (295)	<.001	.38	.16	2.38 (298)	.02	.60	.10	5.95 (292)	<.001
Year	.004	.09	.049 (295)	.96	.01	.06	.12 (295)	.90	-.18	.15	-1.16 (298)	.24	-.02	.10	-.23 (292)	.82
Race	-.53	.09	-5.96 (295)	<.001	-.11	.06	-1.72 (295)	.09	-.16	.14	-1.11 (298)	.27	.20	.10	2.11 (292)	.04
Gender	.28	.08	3.41 (295)	<.001	.13	.06	2.22 (295)	.03	-.09	.13	-.70 (298)	.48	-.28	.09	-3.16 (292)	.002
Social Class X Year	.09	.09	.95 (295)	.34	.05	.06	.82 (295)	.42	.36	.15	2.39 (298)	.02	-.01	.10	-.08 (292)	.94

Note: Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male), Year (-1=First Year, 1=Fourth Year).

Table 4. Study 2. Means (Standard Deviations).

Condition	Time 1		Time 2	
	Continuing-Generation	First-Generation	Continuing-Generation	First-Generation
Variable (Scale)				
1. Interdependent Motives (0-4)	2.26 (1.81) ^a	3.62 (1.80) ^b	2.35 (1.78) ^a	3.65 (1.84) ^b
2. Independent Motives (0-4)	4.52 (1.64) ^a	4.39 (1.82) ^a	4.15 (1.87) ^a	4.18 (1.79) ^a
3. Fit (1-7)	4.57 (1.60) ^a	4.36 (1.54) ^a	4.95 (1.87) ^a	4.43 (1.81) ^a
4. GPA (0-4.3)	3.48 (1.31) ^a	3.35 (1.30) ^a	3.63 (1.27) ^a	3.48 (1.34) ^a
5. Subjective Status (1-10)	—	—	7.93 (1.53) ^a	6.42 (1.20) ^a

Note: Within variables, those marked with "a" are significantly different than those marked with "b" or "c", and so on.

Table 5

Study 2: Summary of Mixed-Model Regression Analyses

<i>Variable</i>	Interdependent Motives				Independent Motives				Subjective Sense of Fit				GPA			
	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>

Intercept	3.06	.08	39.12 (1527)	<.001	4.31	.07	58.92 (1458)	<.001	4.57	.03	162.09 (1385)	<.001	3.45	.02	226.78 (1474)	<.001
Social Class	-.65	.07	-9.55 (1193)	<.001	.04	.06	.72 (1161)	.47	.13	.02	5.52 (1144)	<.001	.05	.01	4.03 (1285)	<.001
Time	.06	.06	1.05 (346)	.29	-.14	.06	-2.38 (538)	.02	.12	.02	5.16 (665)	<.001	.05	.01	5.88 (195)	<.001
Race	-.26	.05	-5.04 (1338)	<.001	.07	.05	1.40 (1357)	.16	.004	.02	.20 (1347)	.84	.07	.01	7.15 (1331)	<.001
Gender	.01	.05	.13 (1348)	.90	-.09	.04	-2.07 (1370)	.04	-.01	.02	-.64 (1349)	.53	-.02	.01	-2.66 (1331)	.008
Participant (Random)	<i>SD</i> ² =1.69				<i>SD</i> ² =.99				<i>SD</i> ² =.11				<i>SD</i> ² =.09			
Intercept	3.06	.08	39.05 (1527)	<.001	4.30	.07	58.78 (1459)	<.001	4.57	.03	162.31 (1390)	<.001	3.45	.02	226.58 (1471)	<.001
Social Class	-.65	.07	-8.46 (1521)	<.001	.02	.07	.28 (1440)	.78	.17	.03	6.23 (1370)	<.001	.05	.01	3.39 (1472)	<.001
Time	.06	.06	1.05 (328)	.29	-.13	.06	-2.18 (491)	.03	.11	.02	4.41 (589)	<.001	.05	.01	5.82 (190)	<.001
Race	-.26	.05	-5.04 (1338)	<.001	.07	.05	1.40 (1357)	.16	.01	.04	.18 (1346)	.86	.07	.01	7.14 (1330)	<.001
Gender	.01	.05	.13 (1348)	.90	-.09	.04	-2.07 (1370)	.04	-.02	.03	-.63 (1348)	.53	-.02	.01	-2.66 (1330)	.008
Social Class X Time	-.01	.06	-.11 (330)	.92	-.04	.06	-.67 (497)	.50	.07	.02	2.92 (595)	.004	-.005	.01	-.53 (190)	.60
Participant (Random)	<i>SD</i> ² =1.68				<i>SD</i> ² =.99				<i>SD</i> ² =.11				<i>SD</i> ² =.09			

Note: Social Class (-1=First-Generation; 1=Continuing-Generation), Time (-1=Time-1; 1=Time-2), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male).

Table 6

Study 2: Summary of Linear Regression Analyses

<i>Variable</i>	Subjective Social Status			
	<i>b</i>	<i>SE</i>	<i>t (df)</i>	<i>p</i>
Intercept	7.28	.17	43.55 (150)	<.001
Social Class	.62	.15	4.07 (150)	<.001
Race	-.02	.16	-.13 (150)	.90
Gender	.11	.15	.76 (150)	.45
Intercept	7.31	.17	43.64 (147)	<.001
Social Class	.53	.16	3.34 (147)	.001
Race	-.01	.17	-.07 (147)	.94
Gender	.12	.15	.82 (147)	.42
GPA (T1)	-.96	.65	-1.47 (147)	.14
GPA (T2)	2.02	.75	2.70 (147)	.008

Note: Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male). GPA (T1) and GPA (T2) centered at their means.

Table 7

Study 2: Correlation (and Covariance) Matrix for SEM Analyses (GPA Model)

	1.	2.	3.	4.	5.	6.	7.	8.
1. SES	(.97)							
2. Interdependent Motives (T1)	-.26 (-.48)	(3.50)						
3. Independent Motives (T1)	.02 (.04)	.22 (.74)	(3.27)					
4. Fit (T2)	.30 (.26)	-.30 (-.48)	.01 (.02)	(.75)				
5. GPA (T2)	.35 (.10)	-.22 (-.13)	-.02 (-.01)	.30 (.08)	(.09)			
6. GPA (T1)	.30 (.11)	-.20 (-.14)	.07 (.04)	.26 (.08)	.78 (.09)	(.14)		
7. Race	.07 (.15)	-.09 (-.16)	.09 (.14)	.07 (.06)	.19 (.05)	.33 (.15)	(.88)	
8. Gender	.16 (.06)	.09 (.16)	-.08 (-.14)	-.08 (-.06)	.00 (.00)	.02 (.06)	.09 (.08)	(.96)

Note. Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male). All others centered at their means.

Table 8

Study 2: Correlation (and Covariance) Matrix for SEM Analyses (SSS Model)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. SES	(.95)								
2. Interdependent Motives (T1)	-.24 (-.44)	(3.48)							
3. Independent Motives (T1)	.03 (.05)	.24 (.80)	(3.22)						
4. Fit (T2)	.33 (.29)	-.31 (-.51)	.00 (-.00)	(.76)					
5. SSS (T2)	.31 (.57)	-.06 (-.23)	.04 (.13)	.40 (.65)	(3.56)				
6. GPA (T1)	.35 (.13)	-.21 (-.14)	.03 (.02)	.24 (.08)	.17 (.12)	(.13)			
7. GPA (T2)	.40 (.12)	-.24 (-.13)	-.05 (-.03)	.29 (.08)	.27 (.16)	.77 (.09)	(.09)		
8. Race	.16 (.14)	-.06 (-.11)	.04 (.07)	.07 (.06)	-.04 (-.07)	.32 (.11)	.18 (.06)	(.85)	
9. Gender	.07 (.07)	.07 (.13)	-.09 (-.17)	-.07 (-.06)	-.01 (-.02)	.02 (.01)	.01 (-.06)	.09 (.08)	(.96)

Note. Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male). All others centered at their means.

Table 9

Study 2: Multiple Imputation SEM Results (GPA Model)

	Imputed Dataset 1	Imputed Dataset 2	Imputed Dataset 3	Imputed Dataset 4	Imputed Dataset 5	Overall (average)
Model Fit	$\chi^2(13)=48.45$, $p<.001$	$\chi^2(13)=47.77$, $p<.001$	$\chi^2(13)=43.81$, $p<.001$	$\chi^2(13)=41.71$, $p<.001$	$\chi^2(13)=46.36$, $p<.001$	--
RMSEA, 95%-CI, CFI, TLI	RMSEA=.10, CI=[.07, .14], CFI=.90, TLI=.79	RMSEA=.10, CI=[.06, .14], CFI=.91, TLI=.81	RMSEA=.09, CI=[.06, .13], CFI=.91, TLI=.80	RMSEA=.09, CI=[.05, .13], CFI=.92, TLI=.83	RMSEA=.10, CI=[.06, .14], CFI=.91, TLI=.81	--
SES -> Interdependent Motives (T1)	$b=-.67$, $SE=.11$, $CI=[-.89, -.45]$	$b=-.67$, $CI=[-.89, -.45]$				
SES -> Independent Motives (T1)	$b=.01$, $SE=.11$, $CI=[-.20, .23]$	$b=.01$, $CI=[-.20, .23]$				
Interdependent Motives (T1) -> Sense of Fit (T2)	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.10$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.11$, $SE=.03$, $CI=[-.16, -.05]$	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.10$, $CI=[-.15, -.04]$
Independent Motives (T1) -> Sense of Fit (T2)	$b=.07$, $SE=.03$, $CI=[.01, .12]$	$b=.05$, $SE=.03$, $CI=[-.01, .11]$	$b=.06$, $SE=.03$, $CI=[.00, .11]$	$b=.01$, $SE=.03$, $CI=[-.04, .07]$	$b=.05$, $SE=.03$, $CI=[.00, .11]$	$b=.05$, $CI=[-.01, .10]$
Sense of Fit (T2) -> GPA (T2)	$b=.02$, $SE=.01$, $CI=[-.01, .05]$	$b=.04$, $SE=.01$, $CI=[.01, .07]$	$b=.02$, $SE=.01$, $CI=[-.01, .04]$	$b=.02$, $SE=.01$, $CI=[.00, .05]$	$b=.03$, $SE=.01$, $CI=[.01, .06]$	$b=.03$, $CI=[.00, .05]$

Note: Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male).

Table 10

Study 2: Multiple Imputation SEM Results (SSS Model)

	Imputed Dataset 1	Imputed Dataset 2	Imputed Dataset 3	Imputed Dataset 4	Imputed Dataset 5	Overall (average)
Model Fit	$\chi^2(17)=58.67$, $p<.001$	$\chi^2(17)=66.99$, $p<.001$	$\chi^2(17)=46.30$, $p<.001$	$\chi^2(17)=48.51$, $p<.001$	$\chi^2(17)=69.29$, $p<.001$	--
RMSEA, 95%-CI, CFI, TLI	RMSEA=.10, CI=[.06, .13], CFI=.91, TLI=.80	RMSEA=.11, CI=[.07, .14], CFI=.89, TLI=.77	RMSEA=.08, CI=[.05, .11], CFI=.92, TLI=.83	RMSEA=.08, CI=[.05, .12], CFI=.93, TLI=.85	RMSEA=.11, CI=[.08, .14], CFI=.88, TLI=.74	--
SES -> Interdependent Motives (T1)	$b=-.67$, $SE=.11$, $CI=[-.89, -.45]$	$b=-.67$, $CI=[-.89, -.45]$				
SES -> Independent Motives (T1)	$b=.01$, $SE=.11$, $CI=[-.20, .23]$	$b=.01$, $CI=[-.20, .23]$				
Interdependent Motives (T1) -> Sense of Fit (T2)	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.10$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.11$, $SE=.03$, $CI=[-.16, -.05]$	$b=-.09$, $SE=.03$, $CI=[-.15, -.04]$	$b=-.10$, $CI=[-.15, -.04]$
Independent Motives (T1) -> Sense of Fit (T2)	$b=.07$, $SE=.03$, $CI=[.01, .12]$	$b=.05$, $SE=.03$, $CI=[-.01, .11]$	$b=.06$, $SE=.03$, $CI=[.00, .11]$	$b=.01$, $SE=.03$, $CI=[-.04, .07]$	$b=.05$, $SE=.03$, $CI=[.00, .11]$	$b=.05$, $CI=[-.01, .10]$
Sense of Fit (T2) -> SSS (T2)	$b=.88$, $SE=.12$, $CI=[.64, 1.11]$	$b=.85$, $SE=.12$, $CI=[.61, 1.10]$	$b=.65$, $SE=.13$, $CI=[.40, .91]$	$b=.78$, $SE=.12$, $CI=[.54, 1.01]$	$b=.49$, $SE=.12$, $CI=[.23, .75]$	$b=.73$, $CI=[.48, .98]$

Note: Social Class (-1=First-Generation; 1=Continuing-Generation), Race (-1=URM; 1=White/Asian), Gender (-1=Female; 1=Male).

