8-2024

THE CULTURAL MISMATCH BETWEEN LATINAS' INTERDEPENDENT SELF-CONCEPT AND THE INDEPENDENT CULTURE OF STEM

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A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Psychological Science

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ABSTRACT

I assessed the role of self-concept fit, as outlined in the SAFE model (Schmader & Sedikides, 2018), in Latina college students' feelings toward pursuing a STEM course. Research on the underrepresentation of certain social groups in STEM has mainly focused on the role of goal fit. More specifically, researchers have found that portraying STEM environments as affording communal goals promotes goal fit, which is related to positive outcomes like interest, belonging, and favorable ratings for STEM courses, careers, and lab positions (Belanger et al., 2017; Belanger et al., 2020; Diekman et al., 2011). Because Latinas are socialized within an interdependent culture due to their ethnic and gender identities and the intersection of these identities (Madison & Trafimow, 2001; Galanti, 2003; Castillo et al., 2010), it is possible there is a perceived culture mismatch between Latinas' interdependent self-concept and the independent culture of STEM (Diekman et al., 2010; Joshi et al., 2022). In the current project, I expected that participants who read about a STEM course with an interdependent culture, compared to participants who read about a STEM course with an independent culture, would report more self-concept fit, especially if the participants held a more interdependent self-concept. Additionally, I expected higher levels of self-concept fit to predict higher levels of interest and intent to persist in the course. Thus, I expected self-concept fit to mediate the relationship between course framing or culture and interest and intent to persist. Unexpectedly, course framing did not have a direct effect on self-concept fit,

interest, or intent to persist. However, there was significant moderated mediation effect on both interest and intent to persist. Participants who held a more interdependent self-concept and read about a STEM course with an independent culture reported lower self-concept fit. Self-concept fit significantly predicted interest and intent to persist in the course.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

Choosing a course of study is one of the most important steps college students take to prepare for their future. There are personal-level and social-level factors that contribute to this decision, resulting in certain groups being overrepresented and others being underrepresented in certain disciplines. I am specifically interested in the underrepresentation of Latinas in Science, Technology, Engineering, and Mathematics (STEM) due to the cultural mismatch between Latinas' interdependent self-concept and the perceived independent nature of STEM.

In the United States, Latinos make up 19.1 percent of the population, making them the largest ethnic minority group in the country (U.S. Census Bureau, 2022). Approximately half of that 19.1 percent is Latina. Despite making up a large percentage of the workforce in the country, Latinas only make up three percent of the STEM workforce (Burke, 2021). Additionally, the STEM majors and occupations that Latinas tend to be attracted to are more health-related, or people-oriented (Burke, 2021). Meanwhile, Latinas remain especially underrepresented in other STEM fields such as computer science, engineering, and physics (Burke, 2021). Increasing the representation of Latinas in these areas is important for several reasons. First, because of their lived experiences, Latinas would bring a different perspective to the table, helping to create a more diverse group of problem solvers. Research has shown that a diverse workforce

is associated with outcomes such as increased creativity, performance, productivity, and innovation (Hudson, 2014). Second, people in STEM programs who then go on to work in their respective fields are among the highest paid workers in the United States (U.S. Bureau of Labor Statistics, 2023). For Latinas, pursuing careers that guarantee a higher income is one step toward upward social mobility.

The focus of my research is to understand the underrepresentation of Latinas in STEM by exploring the conflicting relationship between Latinas' gender and ethnic social identities and the perceived culture of STEM. Past research that provides insight into the underrepresentation and experiences of certain social groups in STEM includes research on social identity theory, identity threat, and stereotype threat.

According to social identity theory, identifying with a social group serves to help individuals understand who they are and where they belong based on their group membership as well as maintain a positive self-concept (Tajfel & Turner, 1979). Consequently, people are more likely to seek contexts that fit with their self-concept and make them feel appreciated (Schmader, 2023). Regarding the current research, Latinas beginning their college journey likely go through the cognitive processes (i.e., categorization, identification, comparison) outlined by social identity theory. Specifically, they may make the distinction between themselves and other students who are more likely to pursue STEM, identify with the non-STEM students who they share characteristics with, and compare the

differences in shared qualities and status of the two distinct groups. Thus, Latinas may conclude that who they are does not align with what they perceive STEM to be.

Expanding on social identity theory, past research has used an identity threat and stereotype threat framework to explore the experiences of underrepresented minority groups in higher education. Identity threat refers to the fear of being judged or mistreated due to an individual's social identity (Abrams & Hogg, 1999). This threat was illustrated by Cheryan et al. (2020) who found that college women studying computer science were highly concerned with how men outside of their field would judge or treat them for choosing to study something that is not normally associated with their gender group. According to Lee et al. (2015), experiencing gender identity threat is detrimental to women's academic outcomes. When women in STEM experience identity threat, they lose interest in the field and motivation to achieve, and they develop performance avoidance goals. Consequently, their academic performance worsens, and their likelihood of persisting in STEM decreases.

Stereotype threat is similar to social identity threat but refers specifically to the fear of being judged or mistreated in a domain in which one of an individual's social identities is negatively stereotyped. Research on stereotype threat has consistently revealed that stereotype threat is associated with performance impairments in several domains (for a review see Spencer et al., 2016). In fact, people who are underrepresented and negatively stereotyped in STEM are

hyper-aware of their physical environment, have increased cardiovascular activation, report a lower sense of belonging, and have less desire to participate relative to their well-represented peers (Murphy et al., 2007). As observed by Murphy et al. (2017), these stereotype threat effects can be activated simply by showing highly identified STEM students a video of an academic conference in which gender is not represented equally. The researchers' findings imply that not only do women experience stereotype threat in STEM, but that situational cues play an important role in that experience. The significance of the identity and stereotype threat research discussed above is that it provides evidence for the idea that for people who hold certain social identities, their social environment, not just their individual qualities, can explain their academic outcomes.

More recently, Schmader and Sedikides (2018) developed the State Authenticity as Fit to the Environment (SAFE) model, which explains how individuals use environmental cues to decide whether to approach or avoid an environment based on the individuals' perceived fit to the environment. According to the model, environmental cues signal three types of fit: goal, self-concept, and social. Goal fit refers to cues that one's environment does or does not afford opportunities to fulfill one's internalized goals. Self-concept fit refers to one's environment automatically activating the most accessible aspects of the self, or one's core identity. Social fit refers to the acceptance individuals feel when others in their environment validate who they are. Research on the underrepresentation of certain groups in STEM has mainly focused on goal fit.

One key theory of goal fit is goal congruity theory, which demonstrates that people make decisions to pursue or persist in a given context or situation based on whether they feel they have opportunities to fulfill their goals (Diekman et al., 2011). As mentioned previously, part of categorizing oneself into a social category is identifying with that category. By adopting the identity of a social category, people begin to conform to the social norms (i.e., values, beliefs, attitudes, behaviors) of that group (Terry et al., 1999).

In the past, researchers have used the goal fit or goal-congruity framework to test whether framing STEM as affording more communal goals will influence interest, sense of belonging, and other outcomes for certain social groups. For instance, researchers have tried framing scientific classroom content as communal. Fuesting et al. (2021) found that framing a genetic mutations lesson as communal rather than agentic (as typically described) led to increased perceived student engagement. Additionally, Belanger et al. (2017) framed engineering course descriptions as communal and found that when course descriptions included a service-learning component, participants rated the course as having more communal affordances, rated the course more positively, and had higher ratings of likelihood to take the course compared to a more traditional course. Similarly, Belanger et al. (2020) manipulated a lab description for a research assistant position as either collaborative or independent and found that women felt more sense of belonging in the collaborative lab, which predicted interest in pursuing the position. Another route researchers have taken is framing

scientific careers, rather than classroom content, as communal. In one study, Belanger et al. (2020) found that middle school girls who perceived the careers of the female scientist speakers were communal felt they themselves belonged in STEM, which predicted interest in pursuing a STEM career in the future. Similarly, Diekman et al. (2011) found that when science careers are framed as collaborative, rather than independent, women rated them more favorably. Men rated the collaborative and independent science careers equally, leading researchers to believe a collaborative environment would not only benefit women but would also not harm men. In terms of STEM fit, research from the last decade or so has focused mainly on the role of goal fit.

To my knowledge, little research has focused on self-concept or social (rather than goal) fit to explain the underrepresentation of women, particularly Latinas, in STEM. For the current study, I am interested in the role that self-concept fit plays in Latinas' decisions to pursue or persist in STEM. According to the SAFE model (Schmader & Sedikides, 2018), self-concept fit refers to environmental cues that do or do not validate one's default self-concept or core aspects of identity. If there is a perceived discrepancy between one's identity and the culture of an environment, people feel a reduced sense of fit. I propose that the cultural mismatch described here is experienced by Latinas faced with the decision to pursue a STEM program of study.

The self-concept that Latinas hold because of their gender and ethnic identities, as well as the intersection of these identities, tends not to align with the

culture that STEM environments are perceived to have. In general women are more relational, or have a more interdependent self-concept, than men (Madison & Trafimow, 2001). Although Latinos are not one big homogenous group, Latino populations do tend to be more collectivistic (Shkodriani & Gibbons, 1995). Specifically, familismo is a common value among Latinos. Familismo refers to holding the wants and needs of the family unit above personal wants and needs (Galanti, 2003). Thus, a core aspect of Latinos' identity is not who they are as individuals, but who they are to their group. Although familismo refers specifically to the family unit, it is related to other interdependent values in that it has a focus on the well-being of the group. Research shows that in college settings, Latino students endorse nonkin collectivism more than non-Latino students, meaning they are more likely to offer their time, help, and support to people they are not biologically related to (Arevalo et al., 2016). These findings not only provide support for the interdependent nature of the Latino identity but indicate that Latino interdependent values transfer from the family to other group contexts. Within Latino cultures, there are also clear gender roles. Thus, the values that Latinas hold are not only the result of their gender and ethnic identities, but the intersection of these identities. For example, marianismo, which is based on the Catholic figure the Virgin of Guadalupe in many Latin American cultures is unique to Latinas' identity (Cauce & Domenech-Rodriguez, 2002). Marianismo emphasizes the importance of family, purity, subordination to others, silencing the self to maintain group harmony, and spirituality (Castillo et al., 2010).

Because marianismo is based on a cultural figure that is central to the Latina community, women who adhere to the expectations of marianismo are seen more positively by their community than those who do not (Valencia-Garcia et al., 2008). It is possible that the interdependent role Latinas are socialized with at home is a core part of their identity that they carry across different contexts, including academia. Furthermore, cues in the environment can signal fit, or lack thereof, between Latinas' identity and certain academic settings.

Interdependent self-concepts or preferences are inconsistent with the cultural norms embedded in higher education, particularly STEM. The overall culture of STEM academic environments (i.e., courses, lessons, labs, careers) is often described and perceived as independent, with an emphasis on values such as agency, competition, recognition, focus on the self, and so on (Diekman et al., 2010). When comparing perceptions of STEM careers to more female-stereotypic careers such as a kindergarten teacher or social worker, individuals perceive STEM careers as affording more agency (Diekman et al., 2010). The stereotypic perception of STEM as independent is especially true for the physical sciences and engineering. Research has found that simply looking at the bulletin boards displayed in the respective buildings of these majors cues students to perceive that these majors focus on self-promotion over concern for others (Joshi et al., 2022). Not only do people perceive STEM as encouraging competition, focus on the self, and independence, but also as impeding more interdependent behaviors such as helping others, serving humanity, and working collaboratively

with others (Diekman et al., 2010). Possibly, if STEM environments emphasized the importance of group learning outcomes over individual accomplishments or creating a harmonious learning environment over promoting individual academic goals, underrepresented minorities such as Latinas might feel a greater sense of fit in STEM, which could lead to increased interest and persistence in STEM college majors and careers.

Because past research has shown a goal fit or goal congruity framework is successful in promoting positive outcomes for underrepresented groups in STEM, I am interested to examine how manipulating self-concept fit will influence Latinas' feelings and choices regarding STEM. In the current study, my population of interest is college-aged women who identify as Latina. Past research has consistently found that there are gender differences in endorsement of interdependence and independence, such that women tend to endorse more interdependent values (Madison & Trafimow, 2001). Additionally, collectivistic cultures, such as the Latino culture, also endorse interdependent values. In fact, collectivists' well-being is more dependent on helping others than on getting ahead of others (Triandis & Suh, 2002). Following from empirical findings that women and Latinos are both more likely to adopt interdependence as part of their core identity, I am interested in the experience of Latinas in STEM because of the intersectionality of their gender and ethnic identity. Drawing on the self-concept fit component of the SAFE model, I am interested in how courses framed as independent versus interdependent affect Latina's sense of

self-concept fit and whether that sense of fit influence their interest and intentions to persist in STEM courses.

CHAPTER TWO

PILOT STUDY

Before examining how course culture influences interest and intent to persist in a course via self-concept fit, I ran a pilot study to ensure the course descriptions accurately captured an interdependent or independent course culture. In the independent framing condition, descriptions emphasized internal abilities, thoughts, and feelings, being unique and expressing the self, realizing internal attributes and promoting one's own goals, and being direct in communication. In the interdependent framing condition, descriptions emphasized external, public features such as statuses, roles, and relationships, belonging and fitting in, occupying one's proper place and engaging in appropriate action, and being indirect in communication and "reading others' minds" (Singelis, 1994).

Design and Hypotheses

The pilot study is a within-subjects one-way ANOVA. I predict that the interdependent course description will have higher ratings on the interdependent items and lower ratings on the independent items compared to the independent course description. Similarly, I expect the independent course description to have higher ratings on the independent items and lower ratings on the interdependent items compared to the interdependent description.

Participants

I recruited 64 participants from a public university in southern California through the SONA Research Management System. Participants were given course credit in exchange for their participation in the study.

Procedure

All participants were directed to an online Qualtrics survey. After they agreed to the consent form (see Appendix B) and the terms of payment, they were assigned to read both the interdependent and independent course descriptions (see Appendix C). The descriptions were counterbalanced to prevent order effects. In the independent framing condition, descriptions emphasized internal abilities, thoughts, and feelings, being unique and expressing the self, realizing internal attributes and promoting one's own goals, and being direct in communication. In the interdependent framing condition, descriptions emphasized external, public features such as statuses, roles, and relationships, belonging and fitting in, occupying one's proper place and engaging in appropriate action, and being indirect in communication and "reading others' minds" (Singelis, 1994). Following the course description, participants rated the course on interdependent and independent items (see Appendix D).

Measures

Independence and Interdependence

To assess the perceived independent and interdependent culture of each course description, participants rated their agreement as to the extent the description they read emphasized a series of interdependent and independent descriptors. The descriptors were taken from the work of Singelis (1994). Sample interdependent items include “belonging and fitting in” and “occupying one’s proper place and engaging in appropriate action.” Sample independent items include “promoting one’s own goals” and “being unique and expressing the self.”

Analysis Plan

To analyze the data from the pilot study, I ran several paired samples t-tests. I compared the following pairings: the interdependent rating and independent rating for the interdependent condition, the interdependent rating and independent rating for the independent condition, the interdependent rating for the interdependent condition and independent condition, and the independent rating for the interdependent condition and independent condition.

Results

I conducted a paired samples t-test to compare interdependent ratings in the interdependent and independent course descriptions. There was a significant difference in interdependent ratings for the interdependent (M = 4.52, SD = .96) and independent (M = 3.94, SD = .99) course descriptions $t(63) = 4.19$, $p < .001$;

d = .52. I then conducted a paired samples t-test to compare independent ratings in the interdependent and independent course descriptions. Contrary to predictions, there was no significant difference in independent ratings for the interdependent (*M* = 5.02, *SD* = 1.00) and independent (*M* = 5.21, *SD* = 1.15) course descriptions *t*(63) = -1.17, *p* = .245; *d* = -.15. Finally, I compared the interdependent and independent ratings of each description. There were the predicted significant differences in interdependent (*M* = 4.52, *SD* = .96) and independent (*M* = 5.02, *SD* = 1.00) ratings of the interdependent condition *t*(63) = -3.93, *p* < .001; *d* = -.49. There were also significant differences in interdependent (*M* = 3.94, *SD* = .99) and independent (*M* = 5.21, *SD* = 1.15) ratings of the independent condition *t*(63) = -9.33, *p* < .001; *d* = -1.17.

Discussion

As expected, the interdependent course description was rated as more interdependent compared to the independent course description. Although the independent course description did receive higher ratings of independence compared to the interdependent course description, this difference was not significant. Both course descriptions unexpectedly had higher ratings of independence than interdependence.

Participants were presented with information about the course's academic content at the beginning of the description, the independent or interdependent culture of the course in the middle, and the course grading policy at the end of the description. Due to primary and recency effects on memory recall,

participants may more easily remember this information than information describing the course's culture (Murre & Dros, 2015). If it is the case that participants were more likely to remember the course content and grading policy of a hypothetical statistics course description, it is possible that their automatic assumptions about STEM heavily influenced their interdependent and independent ratings of the descriptions.

The script or stereotype of a STEM course like Introduction to Statistics is independent (Diekman et al., 2010; Joshi et al., 2022). Thus, when people are using their memory to think back to the description they read, it is possible that participants are relying on scripts or stereotypes and filling in gaps of information with information that fits the STEM environment.

Another potential concern was the potential for order effects such that the first course presented affected ratings of the subsequent course presented. Unfortunately, because of the small sample size, the 3-way analysis needed to test for order effects was not practical. A perusal of the mean ratings within each condition does show some variation in mean patterns and substantial variation in magnitude between the order conditions. In proceeding with study 1, participants were randomly assigned to only one course description, rather than reading both. By doing so, order effects would be eliminated. Additionally, I implemented a different measure for the manipulation check in Study 1. Participants were asked to rate the extent to which each course had an interdependent culture and

independent culture. In retrospect, these two items better capture my intended manipulation and would be less confusing to participants.

Fortunately, the interdependent manipulation did produce the expected results, as the interdependent course was rated as more interdependent compared to the independent course. Thus, I decided to use the same course descriptions for the primary study. Because it is possible that participants did not actually read or pay attention to the descriptions fully, I included a statement describing the terms of compensation, which participants had to read and agree to before moving forward with the primary study.

CHAPTER THREE

STUDY 1

To examine how an independent versus interdependent environment influences Latinas' feelings toward pursuing a STEM education, I asked Latina college students to read a mathematics course description and assessed their self-concept fit, interest, and intent to persist in the course. Drawing on social identity theory, identity threat, and stereotype threat research, I specifically tested one aspect of the SAFE model: self-concept fit.

Design and Hypotheses

In my study, I test a moderated mediation model (see Figure 1). The independent variable is course framing with two levels: independent and interdependent, the moderator variable is self-concept, the mediator is self-concept fit, and the outcome variables are interest and intent to persist in the course. I hypothesized that:

1. Participants in the interdependent condition will report higher levels of self-concept fit compared to participants in the independent condition, especially if they have a more interdependent self-concept.
2. Higher levels of self-concept fit will predict higher levels of interest and intent to persist in the course.
3. The relationship between course framing and interest and intent to persist will be mediated by self-concept fit.

Participants

I recruited 174 Latina college students through the Cloud Research Prime Panels platform. Participants were compensated based on the agreed upon amount with Cloud Research in exchange for their participation in the study. I used G-power (power = .80, and α = .05) to determine I needed a total target sample size of 152.

Procedure

All participants were directed to an online Qualtrics survey. After they agreed to the consent form and the terms of payment (see Appendix E), participants were screened for their identification as a current college student and as a Latina. Participants who did not identify as both a current college student and a Latina were removed from the survey. The remaining participants were presented with items assessing their self-concept (see Appendix F). Following the self-concept measure, participants read the course description they were randomly assigned to.

Moderator

Self-Concept

To assess Self-Concept, I used the 24-item Self-Construal Scale (Singelis, 1994). The scale consists of two subscales: interdependent and independent. Sample interdependent items include “It is important for me to maintain harmony within my group,” “I often have the feeling that my relationships with others are

more important than my own accomplishments," and "I will stay in a group if they need me, even when I'm not happy with the group." Sample independent items include "I am comfortable with being singled out for praise or rewards," "My personal identity, independent of others, is very important to me," and "Being able to take care of myself is a primary concern for me." Items were rated on a scale from 1 (strongly disagree) to 7 (strongly agree). The interdependent scale (12 items; α = 77) and independent scale (12 items; α = 73) were reliable. Following the methods of previous studies (Chiao et al., 2010; Ma et al., 2014; Luo et al., 2015), to calculate self-concept scores, I took participants' average rating for the interdependent items as well as the average rating of the independent items. Then, I subtracted the independent score from the interdependent score, so that positive scores indicate a more interdependent self-concept.

Manipulation

Participants were asked to read one undergraduate mathematics course description. Participants were randomly assigned to one of two framings of these courses: independent or interdependent. The course descriptions are the same ones used for the pilot study.

After reading the course description, students were asked manipulation check questions to ensure they read the course description (see Appendix G). Participants who did not answer these questions incorrectly were dismissed from the study without payment (as specified in consent form and prior to the course

descriptions). Participants who answered the questions correctly were able to move on to the post-manipulation survey (see Appendix H). These participants completed items to assess their self-concept fit, interest, and intent to persist in the course. Before exiting the survey, participants were asked to provide demographic information (see Appendix I).

Outcome Measures

Self-Concept Fit

To assess Self-Concept Fit, I used 4 items adapted from Aday et al. (2023). Items include “Being in this class would suit the way I see myself” and “Being in this class would feel right for who I am.” The items were rated on a scale from 1 (not at all) to 7 (very much). Additionally, I included a slider type question adapted from the Inclusion of Other in the Self Scale (Aron et al., 1992). Participants were instructed to use the slider to indicate how much their cultural background fits with the course's culture. One circle in this item represents the self and the other represents the course. The value measured for fit is the distance traveled by the “self” circle toward the “course” circle, with more distance traveled indicating greater fit. Because the four items and the slider were on different scales, I transformed them into z-scores before aggregating them into a single measure. The combination of the two different fit measures was highly reliable (5 items; $\alpha = .87$).

Interest

To assess Interest, I used three items adapted from Belanger et al. (2020). The items were modified from a focus on interest in being a lab research assistant to interest in the described course. One sample item was “If you were looking for a course to fulfill the mandatory general education requirement, how likely would it be for you to register for this course?” Items were rated on a scale from 1 (not at all) to 7 (extremely). Items were highly reliable (3 items; $\alpha = .88$).

Intent to Persist

To assess Intent to Persist, I used three items that my advisor and I developed for this study. One sample item is “How likely would it be for you to finish this course?” Items were rated on a scale from 1 (not at all) to 7 (extremely). The scale was reliable (3 items; $\alpha = .71$).

Analysis

To test whether the effects of course framing on the outcome variables occurred indirectly through self-concept fit, I ran separate moderated mediation analyses using PROCESS (v 4.2), Model 8 (Hayes, 2022). The predictor variable was Course Framing (interdependent = 0 versus independent = 1). The moderator variable was Self-Concept (mean centered). The mediator variable was Self-Concept Fit (mean centered), and the outcome variables were Interest and Intent to Persist.

CHAPTER FOUR

RESULTS

Preliminary Analyses

Manipulation Check

To ensure the course manipulations were successful in capturing either an interdependent or independent course culture, I conducted an independent samples t-test on interdependent rating and independent rating. The t-test for interdependent rating was significant $t(172)=7.48$, $p<.001$, $d = 1.16$. Participants in the interdependent condition ($M=5.57$, $SD=1.33$) rated the course description they read as more interdependent than participants in the independent condition ($M = 3.75$, $SD = 1.87$). The t-test for independent rating was also significant $t(172) = -7.92$, $p < .001$, $d = -1.12$. Participants in the independent condition ($M = 5.72$, $SD = 1.17$) rated the course description they read as more independent than participants in the interdependent condition ($M = 3.91$, $SD = 1.84$).

I also conducted a paired samples t-tests to compare the interdependent and independent ratings within each condition. There were the predicted significant differences in interdependent ($M = 5.57$, $SD = 1.33$) and independent ($M = 3.91$, $SD = 1.84$) ratings of the interdependent condition $t(104) = 7.14$, $p < .001$; $d = .70$. There were also significant differences in interdependent ($M = 3.75$, $SD = 1.87$) and independent ($M = 5.72$, $SD = 1.17$) ratings of the independent condition $t(68) = -6.96$, $p < .001$; $d = -.84$.

Correlations

I conducted Pearson *r* correlations to assess the linear relationships between the outcome variables. There was a positive correlation between self-concept fit and interest $r(171) = .59$, $p < .001$. There was also a positive correlation between fit and intent to persist $r(171) = .52$, $p < .001$. Finally, there was a positive correlation between interest and intent to persist $r(171) = .67$, $p < .001$.

T-tests for Main Effects

To test the main effects of course framing on self-concept fit, interest, and intent to persist, I ran several t-tests. The t-test for self-concept fit was not significant $t(172) = 1.11$, $p = .13$; $d = .17$. Participants in the interdependent condition ($M = .06$, $SD = .76$) reported similar levels of self-concept fit compared to participants in the independent condition ($M = -.08$, $SD = .87$). The t-test for interest was not significant $t(171) = .04$, $p = .48$; $d = .01$. Participants in the interdependent condition ($M = 5.12$, $SD = 1.23$) reported similar levels of interest compared to participants in the independent condition ($M = 5.11$, $SD = 1.30$). The t-test for intent to persist was not significant $t(171) = -.48$, $p = .32$; $d = -.07$. Participants in the interdependent condition ($M = 5.45$, $SD = 1.05$) reported similar levels of intent to persist compared to participants in the independent condition ($M = 5.53$, $SD = 1.12$).

Moderated Mediation

To test whether the effects of course framing on interest occurred indirectly through self-concept fit, I ran a moderated mediation analyses using PROCESS, Model 8 (Hayes, 2022) with Course Framing (interdependent = 0, independent = 1) as the predictor, Self-Concept as the moderator, Self-Concept Fit as the mediator, and Interest as the outcome (see Table 1). The overall moderated mediation model was significant, b = -.38, 95% CI: [-.70; -.11], providing evidence for moderated mediation. The conditional indirect effect of course framing on interest via self-concept fit was significant for high values (+ 1 SD) of self-concept, b = -.46, 95% CI: [-.91; -.08], but not for average values of self-concept b = -.08, 95% CI: [-.33; .16] or low values (- 1 SD) of self-concept b = .30, 95% CI: [-.04; .68]. For the a-path from course framing to self-concept fit, there was a significant interaction between course framing and self-concept, b = -.38, p < .01, ΔR^2 = .05. The conditional effect of course framing on self-concept fit was significant for high values (+ 1 SD) of self-concept, b = -.47, $t(172)$ = -2.72, p < .01, but not for average values of self-concept b = -.08, $t(172)$ = -.64, p = .52, or low values (- 1 SD) of self-concept b = .31, $t(172)$ = 1.62, p = .11. The b path from self-concept fit to interest was significant, b = .99, $t(172)$ = 10.34, p < .01. The direct effect of course framing on interest was not moderated by self-concept b = .11, $t(172)$ = .66, p = .51 (see Figure 2).

To better interpret differences in interest based on the manipulated course descriptions, I conducted the moderated mediation again, but switched Course

Framing and Self-Concept. The results showed that conditional indirect effects of self-concept on interest via self-concept fit were significant for the independent condition, b = -.29, 95% CI: [-.57; -.08] but not the interdependent condition, b = .08, 95% CI: [-.07; .24]. This analytical approach clarifies that the moderated mediated effect was because participants in the independent condition who also held a strong interdependent self-concept reported less interest in the course. Self-concept, however, was unrelated to interest for participants who read an interdependent course description (see Figure 3).

To test whether the effects of course framing on intent to persist occurred indirectly through self-concept fit, I ran a moderated mediation analyses using PROCESS, Model 8 (Hayes, 2022) with Course Framing (interdependent = 0 versus independent = 1) as the predictor, Self-Concept as the moderator, Self-Concept Fit as the mediator, and Intent to Persist as the outcome (see Table 2). The overall moderated mediation model was significant, b = -.28, 95% CI: [-.53; -.08]. The conditional indirect effect of course framing on intent to persist via self-concept fit was significant for high values (+ 1 SD) of self-concept, b = -.34, 95% CI: [-.67; -.06], but not for average values of self-concept b = -.06, 95% CI: [-.23; .12] or low values (- 1 SD) of self-concept b = .22, 95% CI: [-.02; .51]. For the a-path from course framing to self-concept fit, there was a significant interaction between course framing and self-concept, b = -.38, $t(172)$ = -2.98, $p < .01$, ΔR^2 = .05. The conditional effect of course framing on self-concept fit was significant for high values (+ 1 SD) of self-concept, b = -.47, $t(172)$ = -2.72, $p < .01$, but not for

average values of self-concept b = -.08, t(172) = -.64, t(172) = 1.62, p = .52, or low values (- 1 SD) of self-concept b = .31, p = .11. The b path from self-concept fit to intent to persist was significant, b = .73, t(172) = 8.35, p < .01. The direct effect of course framing on intent to persist was not moderated by self-concept b = .07, t(172) = .49, p = .63 (see Figure 4).

To better interpret differences in interest based on the manipulated course descriptions, I conducted the moderated mediation again, but switched Course Framing and Self-Concept. The results showed that conditional indirect effects of self-concept on intent to persist via self-concept fit were significant for the independent condition, b = -.22, 95% CI: [-.42; -.06] but not the interdependent condition, b = .06, 95% CI: [-.05; .19]. As with interest, this analytical approach clarifies that the moderated mediated effect was because participants in the independent condition who also held a strong interdependent self-concept reported less intent to persist in the course. Self-concept, however, was unrelated to intent to persist for participants who read an interdependent course description (see Figure 5).

CHAPTER FIVE

DISCUSSION

I examined whether there were significant differences between the means of participants in the interdependent and independent condition regarding the following outcome measures: self-concept fit, interest, and intent to persist. I found that there were no significant differences in any of the outcome measures between the two conditions. Although course framing did not have a direct effect on the outcome measures, I was still interested in looking at the indirect effects of course framing on interest and intent to persist.

I tested two separate moderated mediation models to explore the roles of self-concept and self-concept fit in the relationship between course framing and interest and intent to persist. I found that the moderated mediation model for interest was significant. Course framing predicted self-concept fit, but only for participants in the independent course description condition who were high in self-concept (i.e. a more interdependent self-concept). In other words, participants in the independent condition had lower self-concept fit, but only if they had a more interdependent self-concept. Self-concept fit predicted interest such that participants with higher self-concept fit reported higher interest in the course. The regression coefficient between self-concept fit and interest was notably large. This implies that changes in self-concept fit impact interest to a great extent. Because interest is important in guiding individuals through their academic and career paths (Harackiewicz et al., 2016), exploring the relationship

between self-concept fit and interest provides valuable insights into how Latinas make decisions to pursue STEM.

The moderated mediation model for intent to persist was also significant. Course framing predicted self-concept fit, but only for participants in the independent course description condition who were high in self-concept (i.e. a more interdependent self-concept). In other words, participants in the independent condition had lower self-concept fit, but only if they had a more interdependent self-concept. Self-concept fit predicted intent to persist. Participants with higher self-concept fit reported higher ratings of intent to persist in the course.

The findings of this study provide support for the SAFE model. The SAFE model outlines that environmental cues can signal self-concept fit and influence individuals' decision to approach or avoid a situation (Schmader & Sedikides, 2018). In the current study, I found that when people with a more interdependent self-concept read about a STEM course with an independent culture, they felt less self-concept fit, which predicted their interest and intent to persist in the course. Furthermore, the findings of this study align with the theoretical SAFE model by providing additional evidence that environmental cues can signal fit to the environment, which influences individuals' decisions to pursue that environment.

The findings from Study 1 also supplement research on goal congruity theory. Past research on the underrepresentation of certain social groups in

STEM has mainly utilized goal-congruity theory (Diekman et al., 2011). This research has shown success in increasing interest in STEM by portraying STEM as affording communal goals and thus promoting goal fit. My research expands on this previous literature by showing that self-concept fit is also important in promoting interest in STEM for underrepresented groups, such as Latinas.

Limitations

Although the course descriptions I used as manipulations for this study did capture either an interdependent or independent culture, one possible explanation for the lack of a direct effect of course culture on interest and intent to persist is that the manipulation was not strong enough. For example, although individuals from Latino cultural backgrounds tend to have a more interdependent self-concept, they are also American college students who have been socialized in an independent college culture. In fact, the average self-concept score from participants in the current study was slightly more independent than interdependent (M = -.07, SD = 1.00; scores ranged from –3.67 to 3.00). This finding is contrary to what I expected, as I expected Latina participants to have more of an interdependent self-concept. In the future, it might be beneficial to look at participants' generation status, as acculturation to American independent college culture might explain Latina participants' more independent self-concept. I also did not consider participants' identification with STEM in this study. All participants self-identified as current college students, so it is possible they were already set in their course of study when they participated in this study. Thus,

whether a statistics course was framed as embracing interdependence or independence would not directly influence their opinion on the course. In the future, I would measure STEM identity to determine its role in the theoretical model or recruit participants who are already STEM majors.

Another possible limitation is that the number of participants who were dropped from the survey for failing attention checks varied by condition. Out of all the participants removed from the survey for failing attention check questions, 56% were from the interdependent condition and 44% were from the independent condition. One possible explanation for this is that participants in the independent conditions were more aware of and sensitive to the independent cues in the course description they read because the cues were consistent to what is stereotypically expected of a STEM course (Diekman et al., 2010; Joshi et al., 2022). Heightened attentiveness and sensitivity may explain why fewer participants in the independent condition failed the attention check questions. As for the participants who remained in the interdependent condition, it is possible that interdependent environmental cues do not conflict with an independent self-concept, which explains why the results only showed a significant moderation effect on self-concept fit for individuals in the independent condition with a more interdependent self-concept.

Additionally, upon further exploration of the data, I found that although I used random assignment to ensure there were no systemic differences between the interdependent and independent condition, this was not the case. The first

scale participants responded to in the survey was the Self-Concept Scale, so the results of this scale should be independent from the manipulation. However, I conducted an independent samples t-test and found that there were significant differences in self-concept between the two conditions $t(172) = -2.22$, $p < .05$, *CI*: [-.64; -.04]. Participants in the independent condition had higher ratings of self-concept ($M = .13$, $SD = .91$) signifying a more interdependent self-concept compared to participants in the interdependent condition ($M=-.21$, $SD=1.04$). Differences in self-concept between the two conditions could explain the results of Study 1. For instance, participants in the independent condition would have read about an environment that is more incongruent with their self-concept, which would explain the significant moderating effect of self-concept for course framing and self-concept fit in the independent condition.

Future Directions

Although in the current study, I measured self-concept by subtracting the scores of two subscales to create a continuum of independent-interdependent, the Self-Construal Scale (Singelis, 1994) is intended to measure two dimensions of the self that can coexist (e.g., Oyserman, Coon, & Kemmelmeier, 2002; Singelis, 1994). Because I combined the two subscales into one measure, it is possible that the results of the study or the magnitude of the effect sizes were diminished. Thus, in the future, testing the subscales in separate models or as separate moderators might yield stronger indirect effects on outcome measures.

Regarding the SAFE model, recent research is largely observational as opposed to experimental. For example, in one longitudinal study with middle school math students, researchers measured students' perceptions of classroom communality and found that these perceptions predicted math learning outcomes (Dasgupta et al., 2022). In another longitudinal study, Aday et al. (2023) followed college students throughout one academic term and periodically asked students to self-report their current context, fit, authenticity, and other momentary outcomes. The researchers found that participants' perception that their environment (i.e., current context) had good goal, self-concept, and social fit each uniquely predicted outcomes like authenticity and willingness to return to the same context later. Furthermore, experimental research as it relates to testing the SAFE model is relatively new. Future research should continue to establish and refine the experimental methods or manipulations used to test environmental influences on fit.

One way of refining experimental methods of testing the SAFE model is by creating a stronger manipulation to be able to better experimentally test how STEM environments influence self-concept fit and academic outcomes. As I mentioned previously, hypothetical STEM course descriptions are perhaps too trivial or inconsequential to elicit differences in self-concept fit, interest, and intent to persist. Ideally, a similar study could be conducted in person, rather than online, with college students who are preparing to register for a future term. Under these circumstances, participants' decisions have real consequences for

their academic career. Additionally, to avoid the influence of STEM identification on participants' interest or willingness to pursue STEM, future researchers should consider working with younger populations. Perhaps, by working with middle or high school students, researchers can eliminate other explanations for participant interest and intent to persist in STEM. Alternatively, to eliminate STEM identification as a third variable, researchers interested in improving the retention of Latinas in STEM could consider recruiting Latina participants who intend to major or are majoring in STEM.

Because the SAFE model differentiates between three types of fit to explain why individuals choose to approach or avoid situations, future research should measure self-concept, goal, and social fit. By assessing all three types of fit at once, researchers can determine the unique influence of each type of fit on academic outcomes. The current study is the first step in focusing on the role of self-concept fit rather than goal fit in the underrepresentation of certain social groups in STEM. It is possible that the manipulations used in goal-congruity studies also activated self-concept fit for participants. Similarly, the manipulations used in this study may have unintentionally activated goal fit or social fit. In future studies, researchers should examine both goal and self-concept fit to control for each other.

Additionally, the current SAFE model is concerned with how fit influences state authenticity, or feeling like an individual can be themselves (Schmader & Sedikides, 2018). The worry of whether an individual can "be themselves" or not

seems a product of an individualistic culture or independent social identity. Thus, when Latinas with a highly interdependent self-concept imagine themselves in a hypothetical STEM course, authenticity to self might not be the biggest worry that drives their interest or lack thereof. Rather, they might be more concerned about their authenticity as a Latina (or authenticity to group). Future research should expand the SAFE model and move away from authenticity to a more universal human desire to be more inclusive of other cultural backgrounds.

Conclusion

The findings of the current study shed light on the role of self-concept fit in Latina college students' choice to pursue and persist in STEM. Although I cannot conclude based off this study that an environment that accepts and validates core aspects of Latinas' interdependent identity increases self-concept fit, I can conclude that self-concept fit influences outcomes like interest and intent to persist. Thus, increasing self-concept fit is still a valuable lens through which the scientific community can increase the participation and retention of Latinas in STEM. The implications of the findings of this study would not only be beneficial for Latina students and their educational and career outcomes, but for their peers who would benefit from a more diverse environment.

APPENDIX A

TABLES AND FIGURES

Table 1

Moderated Mediation Results for Interest

Variable	Model a-path				Model b/c'-path			
	b	SE	*p*	*95% CI*	*b*	SE	*p*	*95% CI*
Framing	-.08	.13	.52	[-.33, .17]	.12	.16	.45	[-.19, .42]
SC	.47	.18	<.05	[.11, .83]	-.16	.23	.48	[-.62, .29]
Framing x SC	-.38	.13	<.01	[-.64, -.13]	.11	.16	.51	[-.22, .43]
SCF					.99	.10	<.001	[.80, 1.17]
R^2					.40			

Note. SC = Self-Concept, SCF = Self-Concept Fit

Table 2

Moderated Mediation Results for Intent to Persist

Variable	Model a-path				Model b/c'-path			
	b	SE	*p*	*95% CI*	*b*	SE	*p*	*95% CI*
Framing	-.08	.13	.52	[-.33, .17]	.22	.14	.13	[-.07, .50]
SC	.47	.18	<.05	[.11, .83]	-.24	.21	.26	[-.66, .18]
Framing x SC	-.38	.13	<.01	[-.63, -.13]	.07	.15	.63	[-.22, .37]
SCF					.73	.09	<.001	[.56, .90]
R^2					.32			

Note. SC = Self-Concept, SCF = Self-Concept Fit

Figure 1

Theoretical Moderated Mediation Model

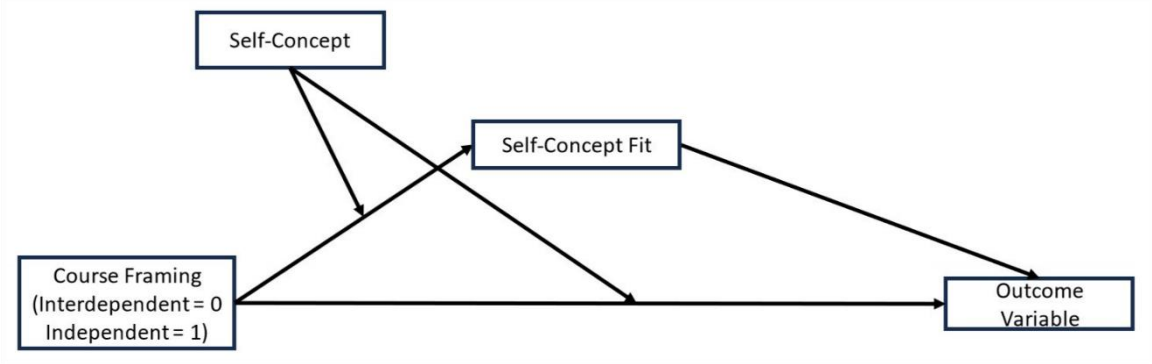
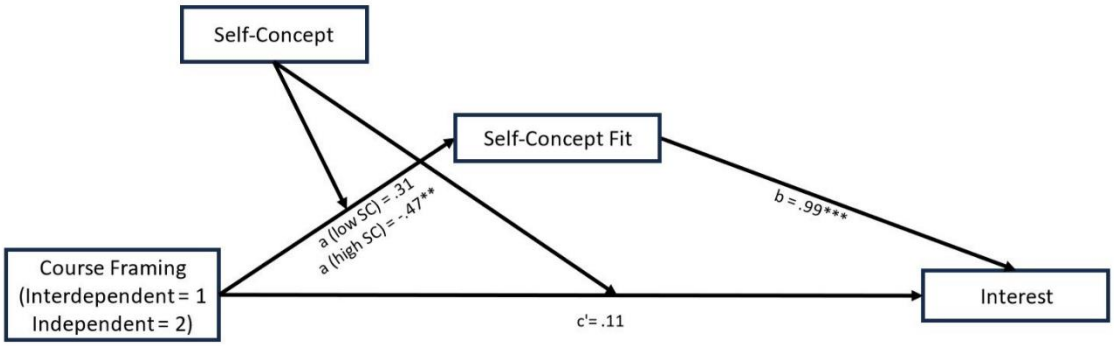


Figure 2

Moderated Mediation Results for Interest



Note. The effect of course framing on interest via self-concept fit differs depending on self-concept. *p<.05 **p<.01 ***p<.001.

Figure 3

Interest: Self-Concept Predicting Self-Concept Fit by Condition

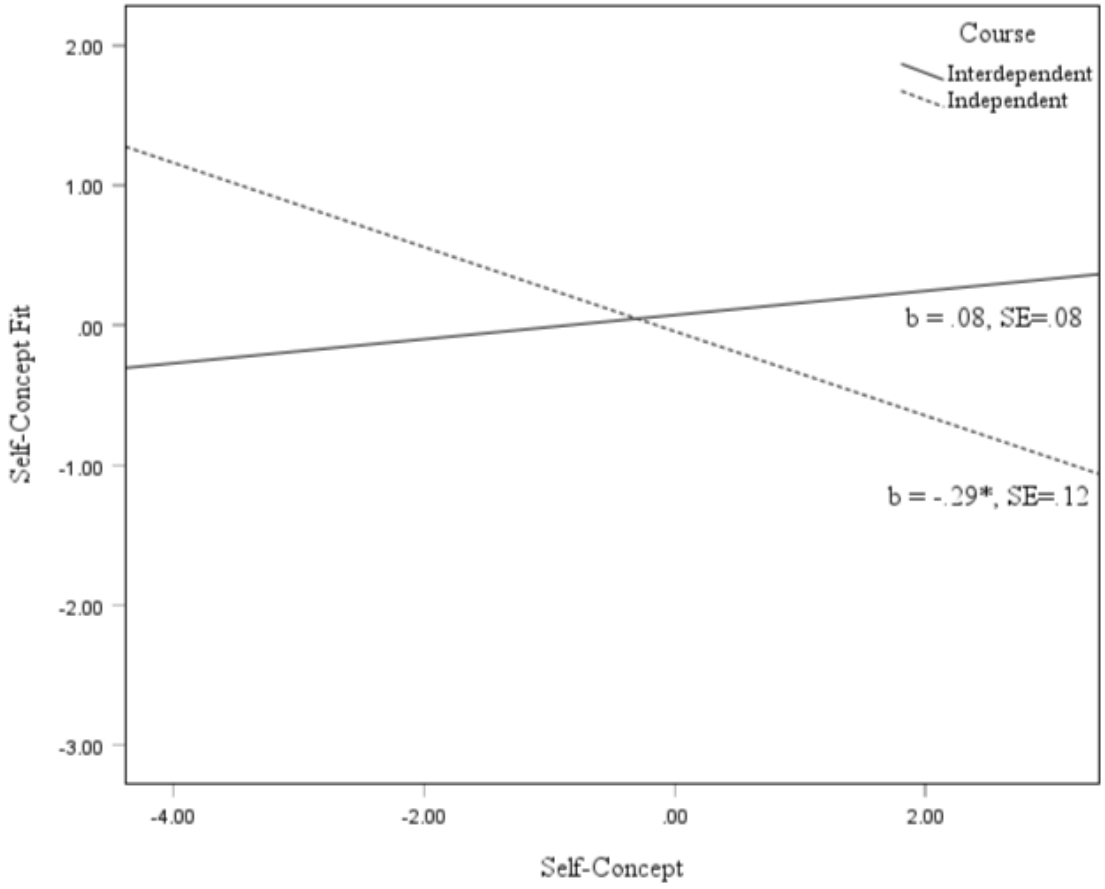
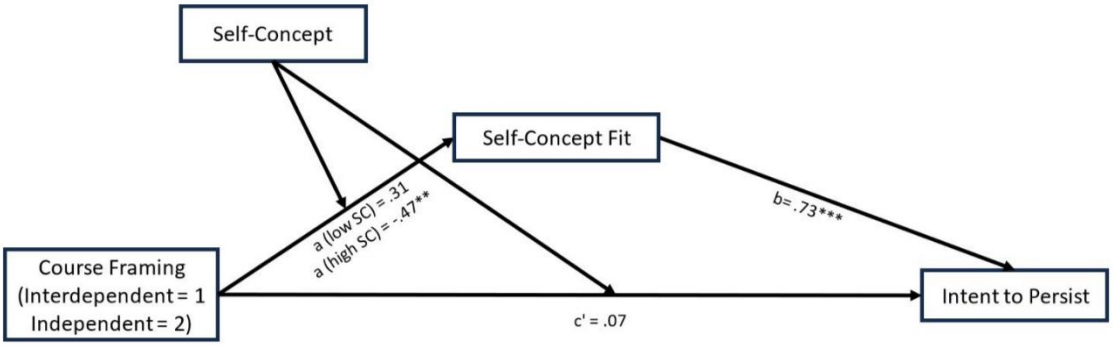


Figure 4

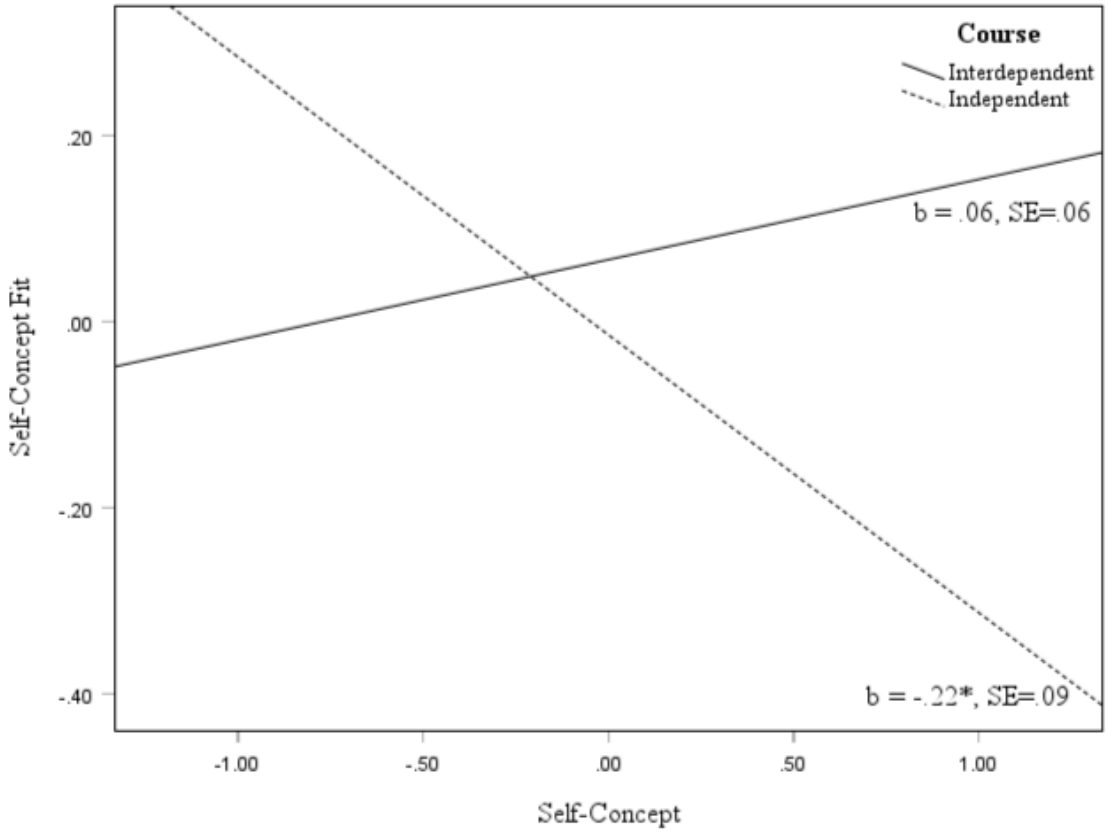
Moderated Mediation Results for Intent to Persist



Note. The effect of course framing on intent to persist via self-concept fit differs depending on self-concept. *p<.05 **p<.01 ***p<.001.

Figure 5

Intent to Persist: Self-Concept Predicting Self-Concept Fit by Condition



APPENDIX B

INFORMED CONSENT

Informed Consent

Introduction/Purpose: The purpose of this study is to assess the opinion of college students on newly developed undergraduate courses. This research is being conducted by Maria Velasco and Dr. Donna Garcia and has been approved by the Institutional Review Board of California State University, San Bernardino.

Procedures: By choosing to participate in the study, you will be asked to read undergraduate course descriptions and complete measures asking about your opinion on these courses.

Duration and Compensation: The study should take no more than 20 minutes to complete. You will be compensated for your time by CloudResearch based on the agreed-upon amount of course money. However, we will be conducting measures to assess your attention and you will not be compensated if you fail our attention checks.

Confidentiality: The information that you give us will remain confidential. Because we will not be provided your name, your name will not be associated with your data in any way and will not appear on any data reports. Any reports of the data will present the information in aggregate form so no individual participant will be identifiable. The research might be presented at professional conferences or submitted to scientific journals for publication. It will also be reported in the student researchers' thesis documents. The data will be stored indefinitely on a password-secured survey management system and will potentially be made available to other researchers via Open Science Framework. Again, your name will not be contained in this data and your responses will not be identifiable.

Risks and Benefits: Participation in this study does not pose any foreseeable risks beyond those of everyday life. There are no personal benefits for participating in this study; however, your opinion would contribute to the assessment of newly developed general education courses.

Participant's Rights: You have the right to refuse to participate in this study, refuse to answer any questions, or terminate your participation at any time.

Contact Information: If you have any complaints or comments regarding this study, you can contact Dr. Donna Garcia at dmgarcia@csusb.edu. If you feel you have been treated unfairly or differently as defined in this consent form, you may contact CSUSB's IRB mgillespie@csusb.edu

APPENDIX C

COURSE DESCRIPTIONS

Course Descriptions

Independent:
Welcome to Introduction to Statistics. Topics discussed in this course include displaying and describing data, the normal curve, regression, probability, statistical inference, confidence intervals, and hypothesis tests with applications in the real world. In this class, students will focus on improving their own mathematical abilities to maximize their independent learning outcomes. The course is designed so individual students can identify and promote their own academic goals. One of the best ways to navigate this class is to be direct in the way you communicate and express what you're thinking. It is important to stand out as a unique student in this class. Your final course grade will depend on class attendance, weekly homework assignments, one midterm, and one final. If this class seems like a good fit for you, consider registering for this class next term.

Interdependent:
Welcome to Introduction to Statistics. Topics discussed in this course include displaying and describing data, the normal curve, regression, probability, statistical inference, confidence intervals, and hypothesis tests with applications in the real world. In this class, students will focus on building professional relationships with their professor and peers to maximize everyone's learning outcomes. The course is designed so community members can contribute to and experience a harmonious learning environment. One of the best ways to navigate this class is to be attentive to your peers' thoughts and feelings when communicating to maintain group harmony in the classroom. It is important that everyone feels they fit in, or belong, in this class. Your final course grade will depend on class attendance, weekly homework assignments, one midterm, and one final. If this class seems like a good fit for you, consider registering for this class next term.

APPENDIX D

COURSE RATING

Course Rating

To what extent do you think this course description emphasizes the following:

1. Internal abilities, thoughts, and feelings
2. Being unique and expressing the self
3. Promoting one's own goals
4. Being direct in communication
5. External, public features such as statuses, roles, and relationships
6. Belonging and fitting in
7. Occupying one's proper place and engaging in appropriate action
8. Being indirect in communication and "reading others' minds"

APPENDIX E

STUDY 1 CONSENT FORM

Study 1 Consent Form

Introduction/Purpose: The purpose of this study is to assess the opinion of college students on newly developed undergraduate courses. This research is being conducted by Maria Velasco and Dr. Donna Garcia and has been approved by the Institutional Review Board of California State University, San Bernardino.

Procedures: By choosing to participate in the study, you will be asked to read undergraduate course descriptions and complete measures asking about your opinion on these courses.

Duration and Compensation: The study should take no more than 20 minutes to complete. You will be compensated for your time by CloudResearch based on the agreed-upon amount of course credit/money. However, we will be conducting measures to assess your attention and you will not be compensated if you fail our attention checks.

Confidentiality: The information that you give us will remain confidential. Because we will not be provided your name, your name will not be associated with your data in any way and will not appear on any data reports. Any reports of the data will present the information in aggregate form so no individual participant will be identifiable. The research might be presented at professional conferences or submitted to scientific journals for publication. It will also be reported in the student researchers' thesis documents. The data will be stored indefinitely on a password-secured survey management system and will potentially be made available to other researchers via Open Science Framework. Again, your name will not be contained in this data and your responses will not be identifiable.

Risks and Benefits: Participation in this study does not pose any foreseeable risks beyond those of everyday life. There are no personal benefits for participating in this study; however, your opinion would contribute to the assessment of newly developed general education courses.

Participant's Rights: You have the right to refuse to participate in this study, refuse to answer any questions, or terminate your participation at any time.

Contact Information: If you have any complaints or comments regarding this study, you can contact Dr. Donna Garcia at dmgarcia@csusb.edu. If you feel you have been treated unfairly or differently as defined in this consent form, you may contact CSUSB's IRB mgillespie@csusb.edu

APPENDIX F

SELF-CONCEPT SCALE

Self-Concept Scale (Singelis, 1994)

Please indicate your agreement with the following items:

Interdependent Items

1. I have respect for the authority figures with whom I interact.
2. It is important for me to maintain harmony within my group.
3. My happiness depends on the happiness of those around me.
4. I would offer my seat on a bus to my professor.
5. I respect people who are modest about themselves.
6. I will sacrifice my self-interest for the benefit of the group I am in.
7. I often have the feeling that my relationships with others are more important than my own accomplishments.
8. I should take into consideration my parents' advice when making education/career plans.
9. It is important to me to respect decisions made by the group.
10. I will stay in a group if they need me, even when I'm not happy with the group.
11. If my brother or sister fails, I feel responsible.
12. Even when I strongly disagree with group members, I avoid an argument.

Independent Items

1. I'd rather say "No" directly, than risk being misunderstood.
2. Speaking up during class is not a problem for me.
3. Having a lively imagination is important to me.
4. I am comfortable with being singled out for praise or rewards.
5. I am the same person at home that I am at school.
6. Being able to take care of myself is a primary concern for me.
7. I act the same way no matter who I am with.
8. I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am.
9. I prefer to be direct and forthright when dealing with people I've just met.
10. I enjoy being unique and different from others in many respects.
11. My personal identity, independent of others, is very important to me.
12. I value being in good health above everything.

APPENDIX G

ATTENTION/MANIPULATION CHECK QUESTIONS

Attention/Manipulation Check Questions

1. According to the course description you read, what is the course designed for?
    a. so community members can contribute to and experience a harmonious learning environment
    b. so individual students can identify and promote their own academic goals
2. According to the course description you read, what is one of the best ways to navigate this class?
    a. to be attentive to your peers' thoughts and feelings when communicating to maintain group harmony in the classroom
    b. to be direct in the way you communicate and express what you are thinking
3. According to the course description you read, it is important ...
    a. that everyone feels they fit in, or belong in this class
    b. to stand out a unique student in this class

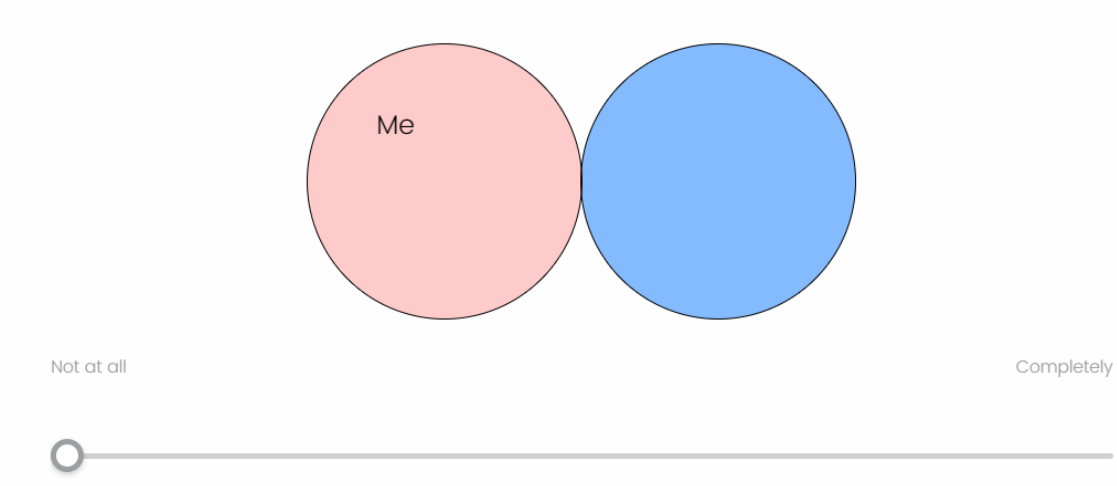
APPENDIX H

POST-MANIPULATION SURVEY

Post-Manipulation Survey

Self-Concept Fit (Adapted from Aday et al., 2023)

1. Being in this class would suit the way I see myself.
2. Being in this class would feel right for who I am.
3. Being in this class would bring out who I am.
4. I would feel ‘at home’ in this class.
5. Using the slider below, indicate to what extent your cultural background fits with the culture of this class.



Interest

6. If you were looking for a course to fulfill the mandatory general education requirement, how likely would it be for you to register for this course?
7. If you were looking for a course to fulfill the mandatory general education requirement, how interested would you be in being a student in this course?
8. If you were looking for a course to fulfill the mandatory general education requirement, how likely would it be for you to accept a spot as a student in this class?

Intent to Persist

9. How likely would you finish this course?
10. How likely do you feel you would be able to persevere in this course, even if you experienced some challenges?
11. If there were multiple courses in the sequence, how likely would you be to take a second course similar to this one?

APPENDIX I

DEMOGRAPHICS

Demographics

1. What is your gender?
    a. Male
    b. Female
    c. Gender expansive (transgender, gender queer, non-binary, gender fluid, non-conforming, agender)
    d. Prefer to self-define *text box*
    e. Prefer not to say
2. What is your age?
    a. *text box*
3. What is your race/ethnicity? Choose all that apply.
    a. Black/African American
    b. Asian American
    c. Hispanic/Latino American
    d. Nativa American/American Indian
    e. White/European American
    f. Hawaiian/Pacific Islander
    g. Alaskan Native/Inuit
    h. Not in this list (please specify) *text box*
4. Academic year
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. 5th Year or higher
5. What is your college major?
    a. *text box*
6. Were you born in the United States of America?
    a. Yes
    b. No
7. If your answer to the previous question was no, where were you born?
    a. *text box*
8. Do you have a parent who completed a 4-year college degree?
    a. Yes
    b. No

APPENDIX J

IRB APPROVAL

CALIFORNIA STATE UNIVERSITY SAN BERNARDINO

Maria Velasco <005483357@coyote.csusb.edu>

IRB-FY2024-194 - Initial: Psych Reviewers: Expedited Review Approval Letter

do-not-reply@cayuse.com <do-not-reply@cayuse.com> Tue, Jan 23, 2024 at 8:55 AM
To: dmgarcia@csusb.edu, mariav@coyote.csusb.edu

January 23, 2024

CSUSB INSTITUTIONAL REVIEW BOARD
Expedited Review
IRB-FY2024-194
Status: Approved

Donna Garcia Maria Velasco
Department of CSBS - Psychology
California State University, San Bernardino
5500 University Parkway
San Bernardino, California 92407

Dear Donna Garcia Maria Velasco:

Your application to use human subjects, titled "Cultural Mismatch Guilt Between Latinas and STEM" has been reviewed and approved by the Institutional Review Board (IRB). The informed consent document you submitted is the official version of your study and cannot be changed without prior IRB approval. A change in your informed consent (no matter how minor the change) requires re-submission of your protocol as amended using the Cayuse Human Ethics (IRB) system protocol change form.

Your IRB proposal (IRB-FY2024-194) is approved.
Your application is approved for one year from January 23, 2024 through --.

This approval notice does not replace any departmental or additional campus approvals which may be required including access to CSUSB campus facilities and affiliate campuses. Investigators should consider the changing COVID-19 circumstances based on current CDC, California Department of Public Health, and campus guidance and submit appropriate protocol modifications to the IRB as needed. CSUSB campus and affiliate health screenings should be completed for all campus human research related activities. Human research activities conducted at off-campus sites should follow CDC, California Department of Public Health, and local guidance. See CSUSB's COVID-19 Prevention Plan for more information regarding campus requirements.

If your study is closed to enrollment, the data has been de-identified, and you're only analyzing the data - you may close the study by submitting the closure form through the Cayuse Human Ethics (IRB) system. The Cayuse system automatically reminders you at 90, 60, and 30 days before the study is due for renewal or submission of your annual report (administrative check-in). The modification, renewal, study closure, and unanticipated/adverse event forms are located in the Cayuse system with instructions provided on the IRB Applications, Forms, and Submission Webpage. Failure to notify the IRB of the following requirements may result in disciplinary action. Please note a lapse in your approval may result in your not being able to use the data collected during the lapse in the application's approval period.

You are required to notify the IRB of the following as mandated by the Office of Human Research Protections (OHRP) federal regulations 45 CFR 46 and CSUSB IRB policy.

- **Ensure your CITI Human Subjects Training is kept up-to-date and current throughout the study for all investigators.**
- **Submit a protocol modification (change) if any changes (no matter how minor) are proposed in your study for review and approval by the IRB before being implemented in your study.**
- **Notify the IRB within 5 days of any unanticipated or adverse events are experienced by subjects during your research.**
- **Submit a study closure through the Cayuse IRB submission system once your study has ended.**

The CSUSB IRB has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required. If you have any questions regarding the IRB decision, please contact Dr. Jacob Jones, Associate Professor of Psychology. Dr. Jones can be reached by email at Jacob.Jones@csusb.edu. Please include your application approval identification number IRB-FY2024-194 in all correspondence.

Best of luck with your research.

Sincerely,

Sincerely,

King-To Yeung

King-To Yeung, Ph.D., IRB Chair
CSUSB Institutional Review Board

KY/MG

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