The Role of Academic Validation in Developing Mattering and Academic Success

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Abstract

We use survey data from three four-year campuses to explore the relationship between academic validation and student outcomes during students' first 3 years in college using structural equation modeling. We examine both a psychosocial outcome (mattering to campus) and an academic outcome (cumulative GPA). We find that both frequency of interactions with faculty and feelings of academic validation from faculty are positively related to students' feelings of mattering to campus and cumulative GPA in their third year. Our results suggest that academic validation, beyond the frequency of faculty–student interactions, is an important predictor of students' psychosocial and academic success.

Keywords Validation · Mattering · Academic achievement · Longitudinal analysis · Structural equation modeling

Introduction

As first-generation students, students from low-income backgrounds, and students who are racially minoritized continue to grow as a share of universities' student bodies (Aud et al., 2010), institutions are being exhorted to become "student-ready" to facilitate student success (Brown McNair et al., 2016). Traditional models of college

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persistence and success often fail to acknowledge the unique challenges and strengths brought by students from traditionally underrepresented and underserved groups. Further, a large and increasing share of college students face mental health challenges (Auerbach et al., 2016; Hunt & Eisenberg, 2010), with many students, particularly those who are racially minoritized, unable to access mental health services (Eisenberg et al., 2011; Ketchen Lipson et al., 2018). These troubling trends point to a need for increased support of students' psychosocial outcomes that may act as a protective factor against mental health issues.

Institutions and programs are increasingly working to develop multifaceted interventions to support students in all aspects of their lives, whether academic, financial, personal, or social. One such program is the Thompson Scholars Learning Community (TSLC), a comprehensive college transition program (Hallett, Kezar, et al., 2019) implemented at three campuses in the University of Nebraska system. Privately funded by the Susan Thompson Buffett Foundation (STBF), TSLC provides students with a generous scholarship (up to $60,000 over 5 years) as well as shared living spaces, small classes with dedicated faculty, a first year seminar, peer mentoring, a summer orientation, advising, and one-on-one staff support.

Prior qualitative work by Hallett, Reason, et al. (2019) used Laura Rendòn's (1994) validation theory to explore the mechanisms by which TSLC served to improve students' psychosocial outcomes. Ultimately, Hallett, Reason, et al. (2019) argued that the extent to which students had validating experiences within the program components was more important than what specific program components were included as part of the program. We complement Hallett, Reason, et al. (2019)'s work by using structural equation modeling to establish the relationship between academic validation and students' academic achievement, as measured by their cumulative GPA, as well as with feelings of mattering to campus during students' first 3 years on campus. We extend this prior work by examining the relationship between validation and student outcomes among a larger sample of students enrolled in the University of Nebraska system, including students who do and do not experience TSLC.

Specifically, we ask the following research questions:

1. Does academic validation predict student feelings of mattering to campus, after accounting for student background characteristics and frequency of student-initiated interactions with instructors?
2. Does academic validation predict student achievement, above and beyond student background characteristics and frequency of student-initiated interactions with instructors?
3. Are feelings of mattering to campus an intermediate outcome between student perceptions of academic validation and academic achievement?

Our results shed light on the role validation plays in predicting students' academic success and psychosocial wellbeing. Further, our work offers insight into the expectations institutions should have for faculty–student interactions. We make a substantial contribution to the literature by showing how academic validation relates to students' psychosocial and academic outcomes during their first 3 years on campus using descriptive quantitative analyses. Our results suggest that when faculty proactively reach out to students rather than waiting for students to come to them, students experience higher psychosocial and academic outcomes.

Prior Literature

Researchers define validation as a proactive process whereby students' worth and value is affirmed; this is particularly powerful for nontraditional students who typically only receive messages that alienate them from the institution and discourage their persistence (Rendón, 1994, 2002; Rendón & Munoz, 2011). Validation theory emerged from two bodies literature, one recognizing the positive relationship between student involvement on campus and student outcomes (e.g., Astin, 1985; Pascarella & Terenzini, 1991), and one documenting the barriers and trauma experienced by nontraditional students trying to integrate into these academic spaces (e.g., Belenky et al., 1986; Rodriquez, 1975). These dynamics have persisted into the twenty-first century (e.g., Lozano, 2010; Mayhew et al., 2016; Quaye & Chang, 2012), motivating a continued focus on validation for nontraditional students. In recent qualitative work, international students reported better relationships with community college advisors who use validating practices (Zhang, 2016). American Indian/Alaska Native students who experienced validation were more likely to complete their first year of college (Saggio & Rendón, 2004) and validating messages from female family members were critical for Latino male students' persistence (Vasquez et al., 2021).

This study examines academic validation, or the validation of students by instructors (Rendón, 1994; Rendón & Munoz, 2011). Regardless of full- or part-time status, living arrangements, or other circumstances, students have regular interactions with instructors, and empowering classroom experiences positively affect student outcomes (e.g., Astin, 1993; Tinto, 1993). Academic validation is one way of measuring the quality of student interactions with instructors, and it is a lens through which the field can understand how faculty members may improve their practice to support student success. In this section, we discuss the theory behind academic validation, how previous scholars have measured it, faculty members' role in validating students and promoting student outcomes, and the significance of the two outcomes examined in this work: mattering to campus and cumulative GPA. We also describe the context of data collection for the present study.

Academic Validation

When conceptualizing the validating experiences students may have on campus, theorists have typically centered the importance of an institutional agent (Stanton-Salazar, 2011), such as a faculty or staff member, who reached out to the student and affirmed something meaningful, whether their contributions in class, individual experiences, or a shared identity such as race (i.e., homophily; Cole & Griffin, 2013; Nora et al., 2011). Academic validation has been defined as faculty-initiated interactions within and outside of the classroom that aim to develop, facilitate, and "help students trust their innate capacity to learn and to acquire confidence in being a college student" (Rendón, 1994, p. 40).

Rendón's (1994) research offered examples of validating practices demonstrated by faculty, including: (1) demonstrating genuine and authentic concern when teaching students; (2) conveying approachability through classroom-related interactions and activities; (3) treating students equally and equitably; (4) creating learning experiences wherein students develop competencies and self-efficacy; and (5) offering meaningful and constructive feedback. Faculty interactions outside of the classroom involve meeting with students, as well as valuing students' non-classroom learning experiences.

Following Rendón's initial conceptualization of academic validation, researchers have developed survey instruments to measure and examine validation quantitatively. Hurtado et al. (2011) developed items for a two-factor construct of validation that measured both academic and interpersonal validation. With a multi-institutional sample of 2574 students, Hurtado et al. (2011) found that racially minoritized students reported lower levels of both academic and interpersonal validation relative to their white peers. Using the same instrument with a sample of over 20,000 students at 34 two- and four-year campus, Hurtado et al. (2015) found that both academic and interpersonal validation substantially mediated "the negative effects of a hostile climate on students' psychological sense of integration in college" (p. 70).

Validation is a key indicator of the environment students experience on a college campus, which may shape their outcomes in important ways. We complement existing research by documenting a quantitative relationship between students' reported feelings of validation and measures of success over time.

Importance of Faculty

Interactions with faculty have profoundly affected students' collegiate experiences and academic success, whether positively or negatively (Cole & Griffin, 2013). Prior work has documented how faculty shape student outcomes, including major choice, course performance, and transfer from two- to four-year institutions (Bettinger & Long, 2005; Brownback & Sadoff, 2019; Eagen & Jaeger, 2009). However, relatively few quantitative studies have examined the extent to which validation may have been a key mechanism by which faculty members influenced student outcomes. A notable exception is Hurtado et al. (2015), who found that students often interpreted faculty feedback negatively, decreasing students' perceived validation. Thus, prior work established instructors' importance for shaping student outcomes and highlighted the limits of faculty members' influence if instructors were not responsive to students' identities and needs.

While researchers have long acknowledged that faculty play a critical role in students' experiences and outcomes (Bean & Kuh, 1984; Kuh & Hu, 2001; Kuh et al., 1991), recent work has examined the specific relationships among faculty actions, perceived validation, and student outcomes. For instance, Barnett (2006, 2011) developed a survey instrument to measure faculty validation and identified four sub-constructs: (1) students feeling known and valued; (2) caring instruction; (3) appreciation for diversity; and (4) mentoring. Barnett (2011) found modest, positive, and significant associations between faculty validation and student persistence among community college students at a single institution in the Midwest. Barnett (2011) also reported statistically significant relationships between faculty validation and a composite measure of students' sense of belonging and academic self-efficacy, which she termed academic integration. Academic integration was a mediator between faculty validation and intentions to persist (Barnett, 2011). Validation may be particularly important for racially minoritized students: the relationships between faculty validation, academic integration, and intentions to persist were stronger for Black, Latinx, and Asian/Pacific Islander students than for white students (Barnett, 2011).

We complement prior literature by documenting longitudinal associations among academic validation, frequency of interactions between students and instructors, students' feelings of mattering to campus, and students' cumulative GPA. By including the extent to which students find interactions with their instructors to be validating as well as the frequency with which students interact with their instructors, we disentangle the relationship

between the quality of student-faculty interactions and student success from the relationship between the quantity of student-faculty interactions and student outcomes.

Mattering to Campus and Academic Achievement

The first outcome we examined was students' reported sense of mattering to campus. This construct captured the extent to which students felt that they were cared for and valued by others at their institution (Rosenberg & McCullough, 1981; Schlossberg, 1989) and measured the richness of the connections that students had on campus. Feelings of mattering to campus were related to lower levels of academic stress among first year students (Dixon Rayle & Chung, 2007), higher levels of service use among online students (Hart, 2017), and persistence among community college students who have transferred to a four-year university (Dykes, 2011). We extend the literature by estimating the relationship between the extent to which faculty create validating experiences for students and students' feelings of mattering to campus during their first 3 years enrolled at a four-year institution.

The second outcome examined was cumulative GPA. Whether after the first semester or first year, early measures of GPA were significant predictors of whether or not students graduated within 6 years (Gershenfeld et al., 2015). Despite some concern about grade inflation (e.g., Jaschik, 2016), students' college GPAs have remained important predictors of degree attainment and labor market success (Pattison et al., 2013). Further, students have continued to consider grades as one dimension of success (O'Shea & Delahunty, 2018), underscoring cumulative GPA's relevance as an important outcome to study.

Study Context

Beginning in 2015, a team of researchers began the Promoting At-promise Student Success (PASS) project to assess whether, how, and why TSLC shaped participants' psychosocial outcomes. TSLC is a comprehensive college transition program that provides students with financial, academic, social, and emotional support. TSLC is implemented at three University of Nebraska campuses and is supported by the STBF. The STBF also provides scholarships to students without the comprehensive support of TSLC. In order to evaluate the effect of the scholarship and of participating in TSLC, between 2012 and 2016 students whose scholarship applications were scored highly enough to be eligible for support were randomized to either participate in TSLC, receive a scholarship without comprehensive support, or to not receive support (see Melguizo et al., 2021 and Angrist et al., 2016 for more information on the randomization procedures). Students from all three groups (TSLC, scholarship-only, and control) who enrolled at one of the three four-year campuses in the University of Nebraska system were surveyed as part of the PASS project; the data in this study are drawn from these longitudinal surveys.

An experimental evaluation of TSLC found that the program increased students' sense of belonging to campus and feelings of mattering to campus relative to students only receiving financial support from STBF (Melguizo et al., 2021). Qualitative work found that the program developed a model of ecological validation to support students (Hallett et al., 2021; Kitchen et al., 2020). Examples of validating practices utilized by faculty members are described by Perez et al. (2021) in their qualitative examination of an autobiographical composition course taken by all TSLC students at one of the three participating campuses.

While this prior work documents the positive impact TSLC has on certain psychosocial outcomes, it also points to a potential mechanism for supporting student success that extends beyond students in TSLC. This study complements the evaluative work on TSLC by exploring the extent to which validation is connected to measures of student success, including academic achievement and feelings of mattering to campus, among high-achieving, low-income college students. In contrast to prior work, we are not examining the extent to which validation is a lever by which participation in TSLC improves student outcomes. Instead, we ask whether, across TSLC, scholarship-only, and control students, validation predicts postsecondary outcomes.

Theorized Model

We used Rendón's (1994) theory of validation as our conceptual framework for this paper. Validation was not included in the initial design of the project evaluating the Thompson Scholars Learning Community, but emerged as a key concept in early qualitative analyses. Validation was then incorporated into the student survey and used to guide additional qualitative and quantitative inquiries.

Rendòn defined validation as a proactive process by which institutional agents support, affirm, and empower students in their abilities as scholars and their development as individuals. Rendòn stressed the classroom and instructors' importance in this process, arguing that instructors could enable students to get involved on campus. Importantly, involvement was conceptualized to include the extent to which students are engaged with and woven into the fabric of institutional life (Rendòn, 1994; Astin, 1984). Further, Rendòn argued that academic validation can transform "students into powerful learners" (p. 7). This theory produced clear and testable hypotheses; namely:

1. Academic validation is positively associated with students' feelings of mattering to campus.
2. Academic validation is positively associated with students' academic achievement.

To better isolate the relationship between students' feelings of mattering to campus and academic achievement, we account for students' demographic characteristics, prior educational experiences, and frequency of student-initiated interactions with instructors in our models. We also explore whether increased feelings of mattering to campus is an intermediate outcome between academic validation and cumulative GPA. Here, we discuss each of our hypothesized structural models, each aligned with a separate research question.

Research Question 1: Does Academic Validation Predict Student Feelings of Mattering to Campus, After Accounting for Student Background Characteristics and Frequency of Student-Initiated Interactions with Instructors?

Figure 1 illustrates our theorized structural model connecting students' personal characteristics, interactions with high school teachers, interactions with college faculty, and validation with students' reported mattering to campus. We included students' demographic characteristics, including race/ethnicity and sex, as predictors of their interactions with their high school teachers because of a large and growing body of research indicating that teachers' expectations of students, reactions to student behavior, and evaluation of student
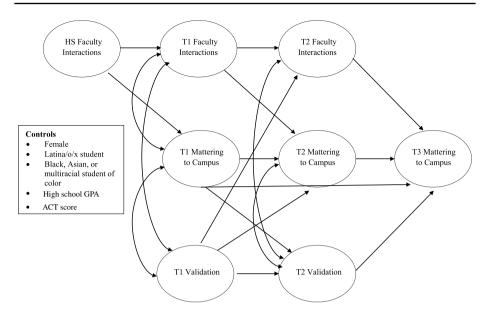
Fig. 1 Theorized structural model relating faculty–student interactions, academic validation, and mattering to campus. Validation a latent construct with 4 items at each time point (items covary with themselves over time). High school faculty interactions is a latent construct with three items; T1 and T2 faculty interactions are latent constructs with three items, two of which were included in the HS faculty interaction construct (items covary with themselves over time). Mattering is a latent construct with six items at T1 and eight items at T2 and T3; all six items included at T1 are included at T2 and T3 (items covary with themselves over time). ACT scores and high school GPA covary

work vary systematically based on the interaction of student and teacher demographics (Dee, 2005; Egalite et al., 2015; Gershenson et al., 2016; Lindsay & Hart, 2017; Robinson-Cimpian et al., 2014). We included students' prior achievement in the model because, intuitively, students with different levels of academic achievement may feel differing amounts of pressure to interact with their teachers about coursework and feel more or less positively about those interactions. For similar reasons, we estimated relationships between all of these background characteristics and students' feelings of validation, mattering, and frequency of interactions with faculty while in college.

We modeled changes in the frequency of student interactions with their instructors over time, drawing direct paths between students' interactions with teachers in high school, with faculty in their first year in college, and with faculty in their second year in college. Similarly, we estimate associations between students' perceptions of academic validation over time, drawing paths from academic validation in their first year to academic validation in their second year. Based on the assessment of model fit and convergence, we allowed validation and interactions with faculty to covary at the end of years one and two. We also allowed validation and mattering to covary at the end of years one and two, and interactions with faculty and mattering to covary in year one. The model would not converge if we estimated the covariance between interactions with faculty and mattering in year two, leading to a slight asymmetry in the model.

The primary outcome of interest in Fig. 1 was students' self-reported mattering to campus at the end of their third year. We included prior measures of mattering to capture how the development of psychosocial outcomes early on may have led to sustained or improving
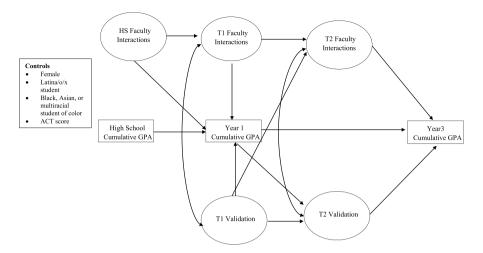
Fig. 2 Structural model relating faculty–student interactions, validation, and cumulative GPA. Validation a latent construct with 4 items at each time point (items covary with themselves over time). High school faculty interactions is a latent construct with three items; T1 and T2 faculty interactions are latent constructs with three items, two of which were included in the HS faculty interaction construct (items covary with themselves over time)

psychosocial outcomes over time. Based on an assessment of model fit, we allowed mattering and validation to covary at the end of years one and two; we also included a lagged direct path between mattering as reported at the end of year one with mattering as reported at the end of year three. We estimated direct paths from validation and faculty interactions at the end of year one to mattering at the end of year two, and from validation and faculty interactions at the end of year two to mattering at the end of year three.

Research Question 2: Does Academic Validation Predict Student Academic Achievement, Above and Beyond Student Background Characteristics and Frequency of Student-Initiated Interactions with Instructors?

Figure 2 illustrates our hypothesized model of the relationships among students' background characteristics, academic validation, student-initiated interactions with instructors, and cumulative GPA over time. Our outcome of interest was students' cumulative GPA at the end of their third year. We included students' high school GPA and first year cumulative GPA in the model. Because students' cumulative GPA was so highly related over time (*r* roughly 0.9 year to year), including students' cumulative GPA at the end of each year mechanically restricted the extent to which we could estimate the covariance between students' GPA and other constructs, including faculty–student interactions, validation, and mattering. Thus, we included students' first but not second year cumulative GPA in the model.[1]

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[1] A concern with this modeling decision is that our estimates of the relationships between validation and faculty interactions, respectively, and third-year GPA may include the indirect relationship between prior (e.g., T1) validation and faculty as well as the direct relationship between the T2 measurements and third-year GPA. When we include students' high school, first semester, first year, second year, and third year GPA, we find no significant relationship between students' first-year faculty interactions and second-year GPA and a small, marginally significant relationship between first-year validation and second-year GPA,
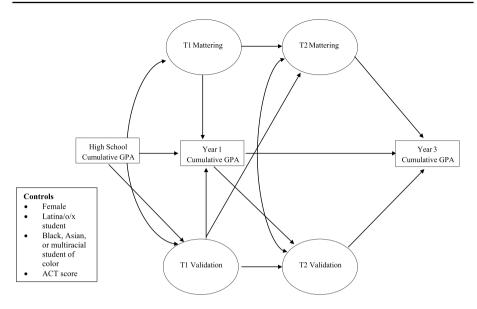
Fig. 3 Structural model relating academic validation, mattering to campus, and third year cumulative GPA. Validation a latent construct with 4 items at each time point (items covary with themselves over time). Items constrained to the same loading onto the construct at each time point. Mattering is a latent construct with six items; all items are included at each time point. Items covary with themselves over time. Items constrained to the same loading onto the construct at each time point.

Figure 2 also included direct paths from students' faculty–student interactions and feelings of validation in their first year to first year GPA. Students completed the survey before the end of the semester, before their cumulative GPA was determined. Further, the survey questions referred to students' experiences during the semester, while GPA was measured at a single point in time at the end of the semester. Thus, we argue that our measures of both first year validation and faculty–student interactions are temporally prior to students' first year GPA.

Research Question 3: Are Feelings of Mattering to Campus an Intermediate Outcome Between Student Perceptions of Academic Validation and Academic Achievement?

Our last model is presented in Fig. 3 and explores whether feelings of mattering to campus are an intermediate step between feelings of academic validation and cumulative GPA.

Footnote 1 (continued)

mitigating this concern. We also estimate the model including lagged direct paths between first-year validation and faculty interactions and third-year GPA; we find similar results to those presented below affirming the importance of second-year validation for predicting third-year GPA, again mitigating concerns of bias in our main estimates. However, a conservative interpretation of our results is as the cumulative relationship between second-year student-initiated interactions with faculty and feelings of academic validation with GPA. Goodness-of-fit measures are similar across specifications.

Again, we included students' background characteristics and repeated measures of latent constructs (validation and mattering) as well as the observed variable of cumulative GPA at the end of high school and first year in college. We also included direct paths from first year academic validation and first year mattering to campus to students' first year cumulative GPA.

Data

The data used for this study were drawn from a large, mixed methods evaluation of a comprehensive college transition program (TSLC, described previously) implemented at three University of Nebraska colleges (Cole et al., 2018). Students who attend a Nebraskan high school, are first-time college students, earn a high school GPA of at least 2.0, and have an expected family contribution of less than $10,000 are eligible to apply for a scholarship from the STBF. Some students who receive a scholarship also participate in TSLC; some students who have competitive scholarship applications do not receive any support from the STBF (see Melguizo et al., 2021 and Angrist et al., 2016 for additional information). Students who entered the University of Nebraska system in the 2015–2016 or 2016–2017 academic year, who applied for a scholarship, and whose applications were rated highly by the Foundation, regardless of whether they participated in TSLC, received a scholarship, or did not receive support, were included in our sample frame. As the STBF determines scholarship eligibility based on both need and merit, our sample is comprised exclusively of low-income students who were generally successful in high school, potentially limiting the generalizability of our findings.

Sample

We restricted this analysis to students who completed four surveys: the initial survey and the end-of-year survey for their first, second, and third years on campus. We limited our sample in this way to compare the magnitude of the relationship between constructs over time. Were we to include all students who responded to the survey at each individual wave, differences in associations over time could reflect either the changing composition of the sample or the evolving relationship between the constructs in the model. Across the two cohorts, 2778 students were included in the sample frame. Two thousand two hundred twenty-five students completed the initial survey, 1745 of whom also completed the first year survey. Of those who completed the first year survey, 1315 completed the second year survey. Of those, 1020 also completed the third year survey. Of those, 1003 had complete demographic information (e.g., race/ethnicity, sex, high school GPA, ACT score, and expected family contribution). Of those, 793 had complete responses for the items in our key constructs (mattering to campus, academic validation, and interactions with faculty), and 789 also had complete cumulative GPA data (provided by University of Nebraska administrative records) across all 3 years. Table 1 summarizes the demographic characteristics of each analytic sample, with columns indicating the sample used to estimate each of the theorized models described above.

As shown in Table 1, over one-third of students in our sample were racially minoritized, while about two-thirds of students were female. The average high school GPA among students in our sample was 3.6, and students earned an average of 23.5 on the ACT. Average expected family contribution was under $3000. Table 2 disaggregates

Table 1 Characteristics of students in analytic samples

	Figure 1 Mean or %	Figures 2, 3 Mean or %
Students of color	0.397	0.395
Female students	0.682	0.683
High school GPA	3.628	3.627
ACT score	23.540	23.540
Expected family contribution	2940.068	2947.207
N	793	789

Table 2 Disaggregation of characteristics of students of color in analytic sample

	N	Avg. HS GPA	Avg. ACT	Avg. EFC
Asian	59	3.60 (0.31)	21.27 (5.51)	2247.88 (2660.80)
Black	42	3.32 (0.37)	20.19 (4.12)	1664.41 (2551.31)
Latina/o/x	184	3.47 (0.41)	20.53 (3.61)	1475.67 (2337.13)
Multiracial/other	30	3.70 (0.30)	23.70 (3.63)	3026.83 (2734.33)
Total	315	3.50 (0.39)	20.92 (4.19)	1793.20 (2505.41)

HS GPA high school GPA. *ACT* composite ACT score, *EFC* expected family contribution

students by race/ethnicity, demonstrating that most of the racially minoritized students in our sample are Latina/o/x.

Measurement of Key Constructs

This analysis focused on four main constructs: student-initiated course-related interactions with high school instructors; student-initiated course-related interactions with college instructors; academic validation, mattering to campus, and cumulative GPA. Table 3 provides a brief overview of the items included in each of these constructs. Students responded to each item on a Likert-type scale. As discussed in greater detail below, we treated each of the psychosocial outcomes as a latent construct and conducted confirmatory factor analyses as part of our structural equation models to estimate each.

Our analysis also included several observed variables. Cumulative GPA and ACT score were observed variables we received from the University of Nebraska system. Student demographic characteristics were reported on their initial scholarship application. The measure of race/ethnicity included options for Latina/o/x, Black, Asian, multiracial, and White; students could also indicate they did not wish to respond. Latina/o/x students represent the largest share of students of color in our sample. We disaggregate race/ethnicity into three categories: Latina/o/x students, Black, Asian, and multiracial students, and White students. Gender was reported as a male/female binary.

With this understanding of our theoretical model, data sources, and measurement of key constructs, we turn now to a detailed description of our methods.

Table 3 Summary of focal constructs

Construct	Items	Responses	Sample item
Interactions with high school instructors	3	1 (Very rarely) 5 (Very often)	Visited informally before or after class about course content
Interactions with college faculty	3	1 (Very rarely) 5 (Very often)	Met in his or her office about a course
Academic validation	4	1 (Strongly disagree) 7 (Strongly agree)	Faculty believe in my potential to succeed academically
Mattering to campus	8	1 (Strongly disagree) 7 (Strongly agree)	There are people at {INSTITUTION} who are generally supportive of my individual needs
Cumulative GPA	N/A	1.0–4.0 scale	N/A; received from University of Nebraska system

Methods

Analytic Strategy

We used structural equation modeling (Kline, 2015) for our analyses. Structural equation modeling leverages the covariances among variables to estimate not just the relationships between observed variables, but also to estimate underlying latent constructs. Models can therefore be considered to have two parts: the measurement model, which estimates the relationship between observed items and the theoretical latent constructs, and the structural model, which estimates the relationships among the latent constructs and any included exogenous variables. In the present study, the measurement model captured the relationships between individual survey items and our four psychosocial constructs of interest, as summarized in Table 3. Figures 1 through 3, described above, illustrated the structural part of our structural equation model. We estimated the measurement and structural models simultaneously using maximum likelihood. Estimating all coefficients simultaneously allowed for more accurate estimation of error terms, facilitating statistical inference. Our model drew on longitudinal data; as such, we allowed students' responses to the same item asked at different points in time to covary.

We leveraged between-student variation in reported feelings of mattering, validation, and interactions with faculty, as well as variation in cumulative GPA over time. In this approach, we estimated whether higher or lower levels of validation and interactions with faculty relative to reported levels across the sample predicts higher or lower cumulative GPA or mattering. A different conceptualization would have been to leverage within-student variation in reported feelings of mattering, validation, and interactions with faculty to estimate the relationship between validation and interactions with faculty, respectively, and mattering or cumulative GPA. In this approach, we would have estimated whether higher or lower levels of validation and interactions with faculty relative to one's own average feelings are predictive of higher or lower feelings of mattering or cumulative GPA relative to one's average outcomes. However, between-student variation is useful from a policy perspective because it allows institutions to identify students who are not having validating experiences as early as their first semester and intervene to ensure all students have a validating agent on campus. By waiting to collect enough data to accurately gauge whether students' feelings of academic validation in a given semester are above or below average relative to their experience, institutions may miss a key opportunity to provide students with appropriate support.

Inferences Supported

We estimated the extent to which interactions with faculty, academic validation, mattering to campus, and cumulative GPA related to each other over time; we did not identify the causal impact of feelings of validation on feelings of mattering or cumulative GPA. There were two sources of selection that limited our ability to draw causal inference. First, all the students in our sample are enrolled in college, the result of a complex chain of decisions and contextual factors (e.g., Klasik, 2012). Second, we relied on survey data to measure our key constructs, and students chose whether or not to complete the survey at each wave. While our data were drawn from a larger evaluation of TSLC that allowed researchers to make causal inferences about the impact of the program (e.g., Melguizo et al., 2021), here

we pooled survey responses across the treatment and control groups. All results presented below should be interpreted as descriptive associations amongst our key constructs of academic validation, interactions with faculty, mattering to campus, and cumulative GPA for relatively high-achieving, low-income students, most of whom are also first-generation college students and many of whom are racially minoritized.

Results

Table 4 summarizes the direct, indirect, and total effects estimated in each of the structural equation models presented above. Latent constructs are indicated with an L. The leftmost panel shows results from the model presented above in Fig. 1, wherein validation and interactions with faculty lead to students' self-reported feelings of mattering to campus in their third year. The middle panel shows results from the model illustrated in Fig. 2, wherein validation and interactions with faculty lead to students' cumulative GPA at the end of their third year. Finally, the rightmost panel shows how validation and mattering relate to students' third year cumulative GPA, as theorized in Fig. 3. All three models demonstrate good fit, with root mean squared errors of approximation (RMSEAs) less than 0.06, standardized root mean squared residuals less than 0.08, and comparative fit indices (CFIs) and Tucker–Lewis indices (TLIs) around 0.95 (Hu & Bentler, 1999). Standardized coefficients are shown. Measurement models are shown in the Appendix.

Mattering to Campus

Results in the leftmost panel of Table 4 show a direct, positive, and significant relationship between the extent to which students feel validated by instructors in their first and second years and their feelings of mattering to campus in their third year (standardized total effects of 0.049 and 0.105, respectively; $p < 0.05$). Similarly, the frequency with which students interact with their instructors in high school, their first year in college, and their second year of college are significantly and positively associated with their feelings of mattering to campus at the end of their third year on campus (standardized total coefficients of 0.089 ($p < 0.01$), 0.053 ($p < 0.05$), and 0.064 ($p < 0.1$), respectively). These results suggest that it is not just whether students interact with their instructors, but how much validation students perceive through those interactions that predicts enhanced psychosocial outcomes for students.

Moving down the leftmost panel of Table 4, we see that initial levels of mattering to campus have strong, positive relationships with future reported levels of mattering to campus. Students' reported feelings of mattering to campus at the end of years one and two have strong, significant total effects on their feelings of mattering in their third year (standardized coefficients 0.208 and 0.306, respectively, $p < 0.01$). This suggests that efforts to increase students' psychosocial outcomes might benefit from focusing on students' early experiences on campus to form a sustaining, positive cycle over time.

Female students tend to report higher feelings of mattering to campus at the end of their third year than do male students (standardized total coefficient is 0.108; $p < 0.01$). Latina/o/x students tend to report lower feelings of mattering to campus at the end of 3 years (standardized total coefficient of $- 0.083$; $p < 0.1$). We find no statistically significant difference between Black, Asian, and multiracial students and White students in their reported feelings of mattering to campus in their third year; although the total standardized effect is

Table 4 Direct, indirect, and total effects on year 3 outcomes (standardized coefficients)

Validation and faculty interactions to year 3 mattering

	Direct	Indirect	Total
Year 1 validation (L)		0.049** (0.01)	0.049** (0.01)
Year 2 validation (L)	0.105** (0.029)		0.105** (0.029)
HS faculty interactions (L)		0.089*** (0.012)	0.089*** (0.012)
Year 1 faculty interactions (L)		0.053** (0.014)	0.053** (0.014)
Year 2 faculty interactions (L)	0.064* (0.025)		0.064* (0.025)
Year 1 mattering (L)	0.208*** (0.039)	0.179*** (0.023)	0.387*** (0.036)
Year 2 mattering (L)	0.306*** (0.048)		0.306*** (0.048)
Latina/o/x	− 0.074** (0.046)	− 0.008 (0.028)	− 0.083* (0.053)
Black, Asian, multiracial	− 0.044 (0.05)	− 0.008 (0.031)	− 0.051 (0.057)
Female	0.062* (0.037)	0.046** (0.023)	0.108*** (0.043)
HS GPA	0.028 (0.054)	0.004 (0.033)	0.031 (0.062)
ACT score	− 0.027 (0.005)	0.018 (0.003)	− 0.009 (0.006)
N	793		

Validation and to year 3 GPA

	Direct	Indirect	Total
Year 1 validation (L)		0.056** (0.011)	0.056** (0.011)
Year 2 validation (L)	0.044* (0.013)		0.044* (0.013)
HS faculty interactions (L)		0.044* (0.014)	0.044* (0.014)
Year 1 faculty interactions (L)		0.071** (0.018)	0.071** (0.018)
Year 2 faculty interactions (L)	− 0.016 (0.015)		− 0.016 (0.015)
HS GPA		0.223*** (0.034)	0.223*** (0.034)
Year 1 GPA	0.719*** (0.026)	0.005 (0.004)	0.725*** (0.026)
Latina/o/x	− 0.049** (0.028)	− 0.057** (0.03)	− 0.106*** (0.041)
Black, Asian, multiracial	− 0.06** (0.03)	− 0.021 (0.032)	− 0.08** (0.044)
Female	0.091*** (0.023)	0.105*** (0.024)	0.197*** (0.032)
ACT score	0.086*** (0.003)	0.309*** (0.003)	0.395*** (0.004)
N	789		

Validation and mattering to third year GPA

	Direct	Indirect	Total
Year 1 validation (L)		0.049* (0.012)	0.049* (0.012)
Year 2 validation (L)	0.06* (0.017)		0.06* (0.017)
Year 1 mattering (L)		0.056** (0.024)	0.056** (0.024)
Year 2 mattering (L)	− 0.036 (0.027)		− 0.036 (0.027)
HS GPA		0.224*** (0.034)	0.224*** (0.034)
Year 1 GPA	0.72*** (0.026)	0.005 (0.004)	0.725*** (0.026)
Latina/o/x	− 0.049** (0.028)	− 0.057** (0.03)	− 0.105*** (0.041)
Black, Asian, multiracial	− 0.06** (0.03)	− 0.019 (0.032)	− 0.08** (0.044)
Female	0.092*** (0.023)	0.105*** (0.024)	0.197*** (0.032)
ACT score	0.088*** (0.003)	0.309*** (0.003)	0.396*** (0.004)
N	789		

Table 4 (continued)

Validation and faculty interactions to year 3 mattering			Validation and to year 3 GPA			Validation and mattering to third year GPA		
Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
RMSEA 0.036	SRMR	0.043	RMSEA 0.046	SRMR	0.042	RMSEA 0.043	SRMR	0.036
CFI 0.948	TLI	0.941	CFI 0.949	TLI	0.934	CFI 0.957	TLI	0.949

Validation, faculty interactions, and mattering are latent constructs. Items covary over time. HS: High school. Validation consists of four items, all of which are included at both time 1 and time 2. Faculty interaction is measured with three items; two items were included for both the high school and college measures, while the same three items were used throughout college and one item was only asked with respect to high school. Mattering included the same six items for times 1, 2, and 3, with an additional two items included at time 3. Relationships between the listed constructs/variables and main outcome are shown (e.g., the right end of Figs. 1, 2, and 3). Full results available upon request. *p<.1, **p<.05, ***p<.01

negative (− 0.051) it is imprecise. Future work should examine differences in psychosocial outcomes across students with different racial and ethnic identities to understand whether this finding is due to a lack of statistical power or reflective of varied lived experiences and supports on campus.

There is no statistically significant relationship between students' high school achievement and feelings of mattering to campus at the end of 3 years on campus. These results suggest that while students' experiences on campus are important for predicting psychosocial outcomes, faculty, staff, and other institutional agents should also be responsive to students' social identities to promote psychosocial outcomes such as feelings of mattering to campus.

Third Year GPA

The middle panel of Table 4 shows how validation and interactions with faculty relate to students' cumulative GPA over their first 3 years. It is clear from this analysis that past achievement predicts later achievement. Both high school and first year GPA are significantly predictive of third year cumulative GPA (total standardized coefficients of 0.223 and 0.725, respectively; $p < 0.01$). Similarly, there is a positive and significant relationship between students' ACT score and third year cumulative GPA (standardized total effect is 0.395; $p < 0.01$).

Students' interactions with faculty in both high school and the first year of college are indirectly and significantly related to their third year cumulative GPA (total standardized effects are 0.044 and 0.071, respectively; $p < 0.1$ and $p < 0.05$, respectively). However, the frequency of students' interactions with faculty in their second year is not significantly related to third year cumulative GPA. This suggests that students' early experiences, both in high school and during their initial transition into college, continue to significantly predict their longer-term academic outcomes.

Consistent with prior literature and theory, academic validation is significantly and positively related to students' academic achievement. Students' self-reported feelings of validation in both their first and second years significantly predict their third year cumulative GPA (total standardized effects of 0.056 and 0.044, respectively; $p < 0.05$ and $p < 0.1$, respectively). In short, students' early and ongoing perceptions of the extent to which faculty validate their capabilities as scholars are important predictors of longer-term academic success.

Female students tend to have higher cumulative third year GPAs than do male students (standardized coefficient is 0.197; $p < 0.01$), Latina/o/x and Black, Asian, and multiracial students tend to have lower third year GPAs than their White peers (standardized total coefficients are − 0.106 ($p < 0.01$) and − 0.080 ($p < 0.05$), respectively). This suggests the need for continued evaluation of course structures and pedagogical practices to ensure there are equitable opportunities for success across groups.

Mattering and Third Year GPA

The rightmost panel of Table 4 shows the relationships between students' reported feelings of validation and mattering in their first 2 years and their cumulative GPA over their first 3 years. As with the results shown in the middle panel, past academic achievement is the strongest predictor of future grades. The total standardized effects of high school and first

year GPA are 0.224 and 0.725, respectively; both relationships are significant at the 1% level.

After accounting for the association between prior and third year GPA, both first year academic validation and first year feelings of mattering to campus have significant indirect relationships with third year GPA. The standardized total coefficient for first year validation is 0.049 ($p < 0.1$), and the standardized total coefficient for first year mattering is 0.056 ($p < 0.05$). Additionally, second year validation has a significant direct relationship with third year GPA (total standardized coefficient of 0.060; $p < 0.1$), although second year mattering is not significantly associated with third year GPA. This again emphasizes the importance of validation for predicting students' longer-term academic outcomes. Validation and mattering are strongly related constructs, with an estimated covariance of 0.422 ($p < 0.01$) in year one and 0.513 ($p < 0.01$) in year two, suggesting that these two constructs may work synergistically to promote students' academic success.

We again find that female students tend to have higher third year cumulative GPAs than do male students (standardized total coefficient is 0.197; $p < 0.01$), that racially minoritized students tend to have lower third year cumulative GPAs than do White students (standardized total coefficient is -0.105 ($p < 0.01$) for Latina/o/x students and -0.080 for Black, Asian, and multiracial students ($p < 0.044$)), and ACT score is positively associated with third year cumulative GPA (standardized total coefficient is 0.396; $p < 0.01$).

Limitations

While this study makes several contributions to the literature by offering a nuanced and empirical exploration of the relationships between academic validation, mattering, faculty interactions, and cumulative GPA over time, there are several limitations of the current study that should be addressed in future research. First, while we contribute to the literature by looking at academic validation longitudinally, this study is descriptive in nature and does not establish the extent to which early levels of academic validation cause students to earn higher GPAs or experience stronger feelings of mattering to campus. Future research could evaluate interventions explicitly designed to alter students' feelings of academic validation and use causal mediation techniques to estimate the impact of these interventions on students' longer-run outcomes like cumulative GPA.

Second, our findings may be limited in terms of generalizability, as our sample consists of low-income students enrolled in four-year public institutions, over two thirds of whom are first-generation college students, roughly 40% of whom are racially minoritized, and whose average high school GPA was 3.6. Among racially minoritized students, about two-thirds of students in our sample were Latina/o/x, and about one-third identified as Black, Asian, or multiracial. Future work should broaden this sample to more meaningfully disaggregate students' race and ethnicity and test the different relationships between these psychosocial constructs and student outcomes. Understanding the relationships between academic validation, faculty interactions, mattering to campus, and GPA in the broad population of undergraduate students with various demographic backgrounds enrolled across institutional settings will require replication of our work as well as future efforts with a more expansive survey sample.

Third, our sample size is limited (less than 800 students), making it difficult to estimate certain paths. Future survey work should account for the levels of attrition we observe from

our original survey sample and adjust a priori power calculations accordingly to ensure adequate sample sizes to estimate longitudinal models.

Finally, our work focuses specifically on academic validation, one component of the broader concept of validation put forth by Laura Rendón. Future work should further develop and validate scales designed to measure academic and interpersonal validation, focusing on who provides validating messages to students and the contexts in which those validating messages are conveyed. In particular, the scale used in our study emphasizes the role of faculty in and outside of the classroom. This centering of faculty as validating agents is not without critique. For example, Gildersleeve (2011) argued that a more explicit deconstruction of institutional power and promotion of individual agency would create the circumstances in which students could validate each other, foster their self-efficacy, and engage in critical reflection. It is not that faculty-initiated engagement is unimportant. Instead, faculty can communicate that students matter by co-constructing students' histories and futures, engaging in public pedagogies, fostering dialogic community building (e.g., grassroots organizing), and serving as facilitators of neo-critical validation. Future work should build on these critiques by developing survey measures that account for traditional conceptualizations of academic validation and student-to-student validation, and faculty members' epistemological approach to validation. A fuller validation measure may better explain how psychosocial and academic outcomes are produced in the postsecondary space.

Discussion and Conclusion

This study's research findings offer several contributions to our understanding of the relationship between academic validation and students' cumulative GPA and feelings of mattering to campus. First, our work highlights the predictive power of students' interactions with high school teachers for their postsecondary achievement. Much of the research scholarship on validation, with some noteworthy exceptions (Linares & Muñoz, 2011), include high school achievement as an explanatory variable without examining students' interactions with high school teachers as a predictor. Future work, however, should more closely examine the practices, supports, and mindsets that enable high school teachers to best position students for postsecondary success.

Second, our results suggest that proactive faculty outreach and affirmations of students' abilities are more strongly related to students' psychosocial outcomes than are student-initiated interactions with faculty. In other words, our work reinforces previous findings that proactive faculty outreach matters (Cole & Griffin, 2013). Our work suggests that seemingly small changes to instructors' pedagogy, such as intentionally encouraging students to participate in class discussions and providing constructive feedback, may be effective strategies for improving student outcomes. Perez et al. (2021) describe additional validating practices, including providing structured opportunities for reflection and using culturally relevant texts in instruction. Universities or departments interested in improving students' psychosocial outcomes and achievement may consider providing faculty training on incorporating validating practices into their course-related interactions with students. Such training should then be studied to determine their relationship with faculty practices and student outcomes.

Third, our results affirm the importance of academic validation and feelings of mattering to campus to predict students' academic achievement in college. The longitudinal

model reveals interesting nuances in these relationships' timing. Results suggest that students' early feelings of validation and mattering in their first year may be more strongly tied to students' third year outcomes than are students' second year experiences and perceptions. These findings suggest that there should be a particular emphasis on students' early postsecondary experience to affirm their importance and value to the institution and faculty members.

Fourth, our results suggest that institutions need to continue and strengthen efforts to ensure all students have equitable opportunities to succeed in the classroom and build connections on campus. At the end of students' third year, cumulative GPAs were, on average, higher among female students than among male students, and lower among racially minoritized students than among their peers. Similarly, feelings of mattering to campus were significantly lower for Latina/o/x students than White students at the end of 3 years on campus. Future work should explore how validation may be tailored across student populations to facilitate equitable achievement and experiences.

Finally, our work highlights the importance of longitudinal data collection and analysis. The concepts that we study, academic validation, faculty interactions, mattering, and achievement, are not novel. Still, there is relatively little empirical quantitative work examining how they relate to each other over time. To fully support students' success, researchers and policymakers need to understand how the dynamic college environment students experience shapes their outcomes and how they support students need may change over time.

Appendix

See Tables 5, 6, and 7.

Table 5 Factor loadings of faculty–student interactions, academic validation, and mattering to campus (measurement model, structural paths between validation, faculty interactions, and mattering to campus)

	Standardized coefficient	OIM standard error	P value
HS faculty–student interactions (L)			
Discuss course content before/after class	0.808	(Constrained)	
Talk about ideas from class outside class	0.728	0.063	0.000
Email for info about class	0.531	0.057	0.000
Year 1 faculty–student interactions (L)			
Discuss course content before/after class	0.756	(Constrained)	
Attend office hours	0.743	0.062	0.000
Email for info about class	0.602	0.056	0.000
Year 2 faculty–student interactions (L)			
Discuss course content before/after class	0.761	(Constrained)	
Attend office hours	0.797	0.064	0.000
Email for info about class	0.598	0.050	0.000
Year 1 validation (L)			
Receive helpful feedback	0.771	(Constrained)	
Encouraged to participate	0.819	0.033	0.000
Faculty believe in potential	0.890	0.035	0.000
Faculty cares about development	0.772	0.041	0.000
Year 2 validation (L)			
Receive helpful feedback	0.727	(Constrained)	
Encouraged to participate	0.747	0.033	0.000
Faculty believe in potential	0.811	0.035	0.000
Faculty cares about development	0.667	0.041	0.000
Year 1 mattering to campus (L)			
People on campus are sad when I fail	0.701	(Constrained)	
People on campus are generally supportive of needs	0.809	0.028	0.000
People on campus are happy for accomplishments	0.840	0.028	0.000
People on campus concerned for my future	0.706	0.032	0.000
People on campus interested in me as a person	0.805	0.030	0.000
Other students are happy for me when I do well in class	0.757	0.029	0.000
Year 2 mattering to campus (L)			
People on campus are sad when I fail	0.710	(Constrained)	
People on campus are generally supportive of needs	0.828	0.028	0.000
People on campus are happy for accomplishments	0.867	0.028	0.000
People on campus concerned for my future	0.745	0.032	0.000
People on campus interested in me as a person	0.837	0.030	0.000
Other students are happy for me when I do well in class	0.774	0.029	0.000
People are disappointed when I don't meet expectations	0.663	0.035	0.000
I feel pressure to succeed to make those I value proud	0.537	0.038	0.000
Year 3 mattering to campus (L)			
People on campus are sad when I fail	0.714	(Constrained)	
People on campus are generally supportive of needs	0.808	0.028	0.000
People on campus are happy for accomplishments	0.817	0.028	0.000
People on campus concerned for my future	0.728	0.032	0.000

Table 5 (continued)

	Standardized coefficient	OIM standard error	P value
People on campus interested in me as a person	0.819	0.030	0.000
Other students are happy for me when I do well in class	0.742	0.029	0.000
People are disappointed when I don't meet expectations	0.642	0.035	0.000
I feel pressure to succeed to make those I value proud	0.531	0.038	0.000

Not exact wording of items. See https://pullias.usc.edu/tslc/pass-project-methods/ for full psychometric report. L denotes each latent construct

Table 6 Factor loadings of faculty–student interactions and academic validation (measurement model, structural paths between validation, faculty interactions, and cumulative GPA)

	Standardized coefficient	OIM standard error	P value
HS faculty–student interactions (L)			
Discuss course content before/after class	0.797	(Constrained)	
Talk about ideas from class outside class	0.734	0.058	0.000
Email for info about class	0.556	0.032	0.000
Year 1 faculty–student interactions (L)			
Discuss course content before/after class	0.755	(Constrained)	
Attend office hours	0.746	0.040	0.000
Email for info about class	0.605	0.032	0.000
Year 2 faculty–student interactions (L)			
Discuss course content before/after class	0.774	(Constrained)	
Attend office hours	0.775	0.040	0.000
Email for info about class	0.625	0.032	0.000
Year 1 validation (L)			
Receive helpful feedback	0.778	(Constrained)	
Encouraged to participate	0.827	0.032	0.000
Faculty believe in potential	0.883	0.034	0.000
Faculty cares about development	0.771	0.041	0.000
Year 2 validation (L)			
Receive helpful feedback	0.741	(Constrained)	
Encouraged to participate	0.761	0.032	0.000
Faculty believe in potential	0.800	0.034	0.000
Faculty cares about development	0.664	0.041	0.000

Not exact wording of items. See https://pullias.usc.edu/tslc/pass-project-methods/ for full psychometric report. L denotes each latent construct

Table 7 Measurement model: academic validation, mattering to campus (factor loadings)

	Standardized coefficient	OIM standard error	P value
Year 1 validation (L)			
Receive helpful feedback	0.772	(Constrained)	
Encouraged to participate	0.821	0.033	0.000
Faculty believe in potential	0.890	0.035	0.000
Faculty cares about development	0.771	0.041	0.000
Year 2 validation (L)			
Receive helpful feedback	0.733	(Constrained)	
Encouraged to participate	0.755	0.033	0.000
Faculty believe in potential	0.811	0.035	0.000
Faculty cares about development	0.671	0.041	0.000
Year 1 mattering (L)			
People on campus are sad when I fail	0.696	(Constrained)	
People on campus are generally supportive of needs	0.805	0.034	0.000
People on campus are happy for accomplishments	0.847	0.035	0.000
People on campus concerned for my future	0.698	0.039	0.000
People on campus interested in me as a person	0.809	0.037	0.000
Other students are happy for me when I do well in class	0.761	0.036	0.000
Year 2 mattering (L)			
People on campus are sad when I fail	0.701	(Constrained)	
People on campus are generally supportive of needs	0.822	0.034	0.000
People on campus are happy for accomplishments	0.871	0.035	0.000
People on campus concerned for my future	0.738	0.039	0.000
People on campus interested in me as a person	0.845	0.037	0.000
Other students are happy for me when I do well in class	0.782	0.036	0.000
People are disappointed when I don't meet expectations	0.672	0.046	0.000
I feel pressure to succeed to make those I value proud	0.534	0.053	0.000

Not exact wording of items. See https://pullias.usc.edu/tslc/pass-project-methods/for full psychometric report. L denotes each latent construct

Data Availability The data used for this analysis are restricted-used and under the purview of the Promoting At-promise Student Success project. Interested researchers may apply to access the data. The survey used was for this research was compiled by researchers at the Pullias Center for Higher Education. Certain scales on the survey were used with permission from other research organizations; the survey instrument used for this study may not be used without appropriate permissions for all scales on the survey.

Code Availability All analyses were conducted in Stata; code is available from the authors upon request.

Declarations

Conflict of interest The authors have no conflicts of interest.

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