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# A Mixed-Methods Analysis of Perceived Costs and Assets Among Underrepresented College Students

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**ABSTRACT**

Educational choices and behaviors are powerfully shaped by students' motivational beliefs, including their perceptions of *cost* (i.e., the negative aspects of academic engagement). Although the past decade has seen an abundance of research examining students' cost perceptions using Situated Expectancy-Value Theory (SEVT), surprisingly little is known about the cost landscape for college students who are institutionally underrepresented (URS) – i.e., Black, Latine, Indigenous, and/or those who are first in their family to attend college (First-Gen). We used a mixed-methods approach with liberal arts students to (a) compare cost perceptions among 113 URS and 303 non-URS *via* survey measures and (b) explore the costs, assets, and support resources leveraged by 14 URS *via* semi-structured interviews. URS reported higher emotional and psychological costs than their non-URS peers, with effect sizes in the small-to-medium range. Differences in psychological cost remained even after adjusting for final course grades. Thematic analysis revealed that URS experienced a complex set of costs (academic underpreparedness, identity liminality, insufficient institutional supports) and utilized a rich set of assets to mitigate those costs (values-driven engagement, self-reliance, community grounded supports). Findings extend SEVT by framing cost within identity-context dynamics and highlighting opportunities for institutions to reduce barriers while leveraging students' cultural strengths.

**KEYWORDS**

Higher education; perceived cost; situated expectancy-value theory; strengths-based; underrepresented student motivation

Decades of research using Situated Expectancy-Value Theory (SEVT; Eccles et al., 1983; Eccles & Wigfield, 2020) has shown that students' educational choices and behaviors are powerfully shaped by their motivational beliefs—most proximally their *expectations* for success and the *value* they place on the task or domain. Value reflects a balance between forces that draw students toward academic engagement (e.g., interest, importance, usefulness) and those that push them away. These pushing forces are referred to as costs and include (a) *effort cost*—time and energy demands and whether they feel worthwhile, (b) *opportunity cost*—sacrifice of other valued activities, and (c) *emotional/psychological cost*—negative emotional states and social costs of failure (Eccles & Wigfield, 2020; Wigfield & Eccles, 2020). This latter type of cost has more recently been bifurcated into *emotional cost,* referring to negative emotional consequences, and *psychological cost,* referring to concerns about failure that threaten ego or identity (see Song et al., 2023)—a distinction we use in the present study.

Although costs have long been part of the SEVT framework, they have only been the focus of empirical attention more recently. Nonetheless, the emerging evidence paints a consistent picture

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of cost as quite costly. Higher cost perceptions predict lower academic achievement, persistence, and retention among college students (Perez et al., 2019; Robinson et al., 2019; Song et al., 2023; Wu & Corpus, 2023).

## Why costs may be elevated for underrepresented students (URS)

Very little research, however, has examined cost perceptions among students who are underrepresented within higher education. In the present study, we focused on students who identified as Black, Latine, or Indigenous and/or as first-generation college students (i.e., those whose parents do not have a bachelor's degree) because they have historically experienced lower representation within many selective institutions (Montague, 2023; National Center for Education Statistics, 2024; Nichols, 2020; Perez & Montague, 2024; Redford & Hoyer, 2017). Although these diverse identities represent distinct lived experiences, they share a common institutional position of underrepresentation within historically elite, economically privileged, primarily White institutions.[1] Consequently, institutionally underrepresented students (URS) arguably encounter overlapping structural, cultural, and interpersonal experiences that may shape motivational costs.

One source of these overlapping experiences is unequal access to educational opportunities before college. For racially minoritized students, these disparities stem in part from inequities in school funding and learning opportunities (Sosina & Weathers, 2019), with poor quality K-12 schooling predicting low persistence in college (Bottia et al., 2021; Guillory & Wolverton, 2008). Likewise, first-generation students report lower educational expectations and less preparation for college entrance examinations during their secondary schooling than their continuing-generation peers (Redford & Hoyer, 2017), ultimately receiving lower SAT scores (Atherton, 2014). Although these educational disparities arise through different structural pathways, they converge in leaving many URS less familiar with the academic expectations and resources of selective colleges.

Unequal educational opportunity represents only one aspect of institutional underrepresentation. Many URS must also learn to navigate institutional cultures whose norms, expectations, and values differ from those of their home communities. One well-documented example occurs among first-generation college students, whose endorsement of interdependent values (e.g., helping one's community) creates a mismatch in collegiate settings that emphasize independence (e.g., finding one's passion), ultimately hindering academic performance (Stephens et al., 2012). More broadly, both first-generation and racially marginalized students describe cultural dissonance as they navigate educational environments shaped by predominantly White, middle-class norms, often reporting disconnection from home communities, competing cultural expectations, and—for some racially marginalized students—the burden of representing their broader racial or ethnic group (Archer et al., 2022; Azmitia et al., 2018; Covarrubias et al., 2019; Tabron & Venzant Chambers, 2019). Among high-achieving Black students, these cultural tensions may take the form of what Tabron and Venzant Chambers (2019) describe as racial opportunity costs—the perceived sacrifices associated with succeeding in White-normed academic environments. Taken together, these experiences point to a shared challenge of institutional underrepresentation: navigating tensions between one's home communities and the cultural norms of selective institutions.

Beyond navigating institutional structures and cultures, underrepresentation may also heighten uncertainty about whether one belongs in an elite educational context. Such uncertainty may be reinforced by race-based (Harper, 2015; Harwood et al., 2012) and class-based (Azmitia et al., 2018) microaggressions, limited opportunities to participate in campus life because of work obligations, and the relative absence of peers or mentors who share salient aspects of students' identities (Archer et al. 2022; Strayhorn, 2012). These experiences matter because a sense of belonging is a fundamental human need and an important predictor of academic achievement and engagement, particularly among racially marginalized (Strayhorn, 2012; Walton & Cohen, 2007, 2011) and first-generation (Gillen-O'Neel, 2021; Totonchi et al., 2023) college students. In evaluative

settings such as the classroom, belonging uncertainty may also increase vulnerability to stereotype threat, heightening concerns about confirming negative stereotypes and undermining confidence and performance (Spencer & Castano, 2007; Steele & Aronson, 1995). Together, these experiences suggest that institutional underrepresentation may heighten uncertainty about social acceptance, academic competence, and one's place within the college community.[2]

From the perspective of SEVT, these shared experiences provide several pathways through which institutional underrepresentation may increase students' perceptions of cost. The structural and cultural experiences described above may increase both the effort required to succeed and the sacrifices students perceive they must make to persist academically. This would likely increase effort cost as students work to catch up through additional study hours, tutoring, and office hour visits. Similarly, academic engagement may carry elevated opportunity costs for URS, who could perceive that time devoted to coursework or participating in campus life comes at the expense of more immediate employment opportunities or the fulfillment of community commitments. These competing demands may exacerbate the feelings of cost regarding what must be given up to pursue higher education.

URS may also experience heightened emotional cost due to both workload-related stress and culturally specific tensions. For example, both first-generation and Latine students report achievement guilt associated with surpassing family members' educational attainment (Covarrubias & Fryberg, 2015), thus intensifying the emotional burden of academic persistence. The shared experiences described above—including belonging uncertainty, identity-related threats, and cultural tensions—may also elevate psychological cost (Archer et al., 2022; Matthews & Wigfield, 2024). Consistent with this framework, racially marginalized students who report stereotype threat in their first year of a STEM major subsequently report increases in perceived cost (Totonchi et al., 2021). These findings suggest that psychological cost may represent one downstream consequence of the self-concept concerns and identity threats associated with institutional underrepresentation.

## Current evidence

What, then, is the state of the evidence regarding cost perceptions among institutionally underrepresented students? The limited empirical literature is actually somewhat mixed. Not surprisingly, several studies have found higher effort and opportunity costs for URS compared to their peers (Beymer & Rosenzweig, 2023; Goldman et al., 2022). Among adolescents attending urban schools, for example, Black students reported significantly higher effort and opportunity cost in mathematics than White students; these cost differences accounted for the achievement gap between Black and White girls (McKellar et al., 2024). Similarly, first-generation students in an introductory psychology course at a large university reported higher effort and opportunity costs than continuing-generation peers, along with lower exam scores (Goldman et al., 2022). Such findings align with the mechanisms described above.

Yet not all findings point in the same direction. Some studies report *similar* or even *lower* levels of effort cost (Robinson et al., 2019) and psychological cost (Christiaans et al., 2024) for URS compared to their non-URS peers—at least at the beginning of a new semester. One possible explanation is that institutionally underrepresented students require especially robust motivation as they navigate systemic barriers, leading them to initially underplay the costs of engagement (Christiaans et al., 2024). It is difficult to draw any firm conclusions, however, because there are only a handful of studies on URS' cost perceptions.

These inconsistencies may also be reflective of two key limitations in the small body of existing research. First, studies tend to measure only one or two types of cost—most commonly effort and opportunity cost—and to operationalize other types of cost inconsistently. Historically, the terms emotional and psychological cost were used nearly interchangeably (see Eccles & Wigfield, 2020; Wigfield & Eccles, 2020). This umbrella construct included a mixture of costs related to stress,

anxiety, and other negative emotions as well as fear of failure and ego threat. But recent empirical work has shown that emotional and psychological/ego costs load onto distinct factors and show different associations with academic correlates (Jiang et al., 2020; Robinson & Shankar, 2025; Song et al., 2023). When both emotional and psychological costs are measured, emotional cost appears to be the stronger negative predictor of achievement outcomes, signaling its importance (Robinson & Shankar, 2025; Song et al., 2023). Yet psychological cost is also essential to consider because it appears to be especially salient for minoritized students (Robinson & Shankar, 2025) and may capture identity-relevant challenges, including fear of confirming negative stereotypes or experiencing ego threat in evaluative contexts. Such challenges may be particularly pronounced for URS navigating privileged, predominantly White spaces (e.g., Covarrubias & Fryberg, 2015; Matthews & Wigfield, 2024; Tabron & Venzant Chambers, 2019). It is imperative, then, for research with URS to assess a comprehensive range of costs, including separate indicators of both emotional and psychological cost.

Second, nearly all investigations have focused on STEM fields. This is a logical starting point given the heavy workloads, time demands, and competitive "weed-out" structures that characterize many STEM courses (Seymour & Hunter, 2019). For URS, these costs are compounded by a lack of diversity, which undermines belonging and interest (Rainey et al., 2018). At the same time, STEM disciplines account for only 22% of bachelor's degrees (National Center for Education Statistics, 2024), and they carry a distinct set of demands and belief systems (Eccles & Wang, 2016). As echoed by recent scholars (Beymer, Allen, et al., 2026; Goegan et al., 2021), limiting research to STEM domains provides an incomplete picture of the costs experienced by URS in higher education.

## Goals of the present study

The first goal of the present study, then, was to examine students' cost perceptions with a comprehensive set of indicators (effort, opportunity, emotional, psychological) and within a broader educational context. Liberal arts contexts are especially useful for this exploration because they embody a broad form of education with characteristics and values that may shape URS' experience of cost. Across institution types, a liberal arts education generally includes (a) an ethos of intellectual openness and critical thinking rather than vocational training, (b) peer classroom interaction as a central instrument of learning, and (c) a culture of close, supportive student-faculty relationships (Seifert et al., 2008).

From a cost perspective, the liberal arts focus on intellectual discovery may be perceived as less practical than technical training with direct pathways to employment. Accordingly, URS from under-resourced backgrounds may experience heightened opportunity and emotional costs, questioning whether they can afford the luxury of self-edification without a clear return on investment (Covarrubias et al., 2019). Similarly, the emphasis on peer and faculty relationships may be fraught for URS who perceive a disconnect between their own backgrounds and those of predominantly White, affluent peers and professors (see Matthews & Wigfield, 2024). When knowledge is constructed through peer discourse, URS who doubt their belonging or the legitimacy of their perspectives in privileged academic settings may face added psychological costs. Thus, the liberal arts context offers a rich opportunity to examine URS' cost perceptions beyond the narrow purview of STEM fields.

A second goal of the present study was to identify the assets and resources institutionally underrepresented students draw upon to manage these costs. Thus, we balanced our analysis of between-group differences in cost with in-depth interviews that centered the perspectives of URS (Kumar & DeCuir-Gunby, 2023; López, 2022; Matthews & Wigfield, 2024). Using an asset-based lens, we considered the personal and community strengths URS bring to higher education and the supports they view as essential for success. Such a lens not only avoids the perpetuation of

deficit thinking (see Kumar & DeCuir-Gunby, 2023) but also helps to identify how institutions can maximize URS' motivation and achievement by leveraging their assets and developing culturally responsive supports.

## Design and hypotheses

We addressed these goals with an explanatory sequential mixed-methods design (Creswell & Plano Clark, 2018) that coupled (a) quantitative analyses comparing cost perceptions of URS and non-URS reported *via* survey measures with (b) qualitative analyses of of interviews that centered URS' experiences of costs, assets, and support resources. Although relatively rare in the cost literature, such integration has been used effectively to validate survey instruments (e.g., Flake et al., 2015) and contextualize students' experiences of cost (e.g., Wu and Corpus 2023; Robinson & Shankar, 2025). For example, Bergey et al.'s (2019) mixed-methods approach illustrated that Latino preservice teachers' perceived costs were shaped by their socio-cultural contexts in ways that survey measures alone did not capture.

The quantitative phase of the present study focused on hypothesis testing of between-group differences in cost. We compared URS and non-URS using validated cost scales. An open-ended survey item supplemented the scales, allowing students to describe cost experiences in their own words, unconstrained by measures developed with majority-White samples (see DeCuir-Gunby & Schutz, 2014). In the qualitative phase, we extended our analysis by examining interview transcripts to build an explanatory framework for how URS experience and navigate costs within the context of a selective, predominantly White institution of higher education. By sequencing the methodologies in this way, the qualitative analysis helped us interpret and elaborate on the survey findings, deepening our understanding of URS' experiences.

As Matthews and Wigfield (2024, p. 189) observed, "simply existing in an academic space where one's identity is marginalized exacts its own cost." Accordingly, we expected URS to report higher costs than their non-URS peers on quantitative scales. There was little basis for formal hypotheses regarding the cost subtypes (effort, opportunity, emotional, psychological), but we anticipated that psychological cost may be especially salient for URS (Robinson & Shankar, 2025). We also expected URS to describe what is "costly" about their courses in unique ways (Kumar et al., 2018), perhaps including costs related to under-resourced K-12 backgrounds, tensions with home communities, or identity threats. Our expectations regarding assets and supports were similarly exploratory but guided by prior research leveraging URS' identity-based strengths to promote academic success (Hernandez et al., 2021). In particular, we thought URS might describe drawing on campus social supports (Azmitia et al., 2018; Fong et al., 2019), self-reliance (Covarrubias et al., 2019; Robinson & Shankar, 2025), and connection to home communities (Fong et al., 2019; Guillory & Wolverton, 2008). Together, these expectations underscore our central aim: to illuminate both the costs URS face and the assets they draw upon to persist.

## Survey phase

### Method

#### Participants and procedure

The study was conducted at a selective, predominantly White, affluent liberal arts college in the Western United States. The institution reflects the liberal arts characteristics described above, as well as a strong focus on academic rigor and mastery rather than grade-based markers of achievement. With approval from the authors' Institutional Review Board, the entire student body ($N = 1346$) was invited to participate in an online survey. Recruitment took place during the second month of the Fall 2024 semester *via* fliers posted around campus and in the student

body newsletter. In order to encourage participation from URS, the study was also advertised within campus organizations serving students from historically marginalized communities (i.e., Black, Latine, Indigenous, and/or First Gen). Students were told that the survey would take 15 min to complete and that they would receive a notebook/pen and entry into a raffle for a cash prize.

The final sample included 416 participants (31% response rate) distributed across all four undergraduate years (26% first-year students, 23% sophomores, 21% juniors, and 29% seniors). Participants were 55% female, 27% nonbinary, 18% male, 4% other (groups were not mutually exclusive). They described their race/ethnicity as 66% White, 24% Asian/Asian American, 15% Hispanic/Latine, 6% Black/African American, 4% Middle Eastern, 4% Indigenous, 1% Pacific Islander; 21% of the sample identified with multiple race/ethnicity groups. Regarding family educational status, 12% identified as a first-generation college student (First-Gen) and 88% reported at least one parent had graduated from a four-year college. Of the First-Gen students, 51% also reported a marginalized racial/ethnic identity (i.e., Black, Latine, and/or Indigenous).

Our category of URS included those who identified as Black, Latine, or Indigenous and/or as First-Gen ($n = 113$; 23% of whom had intersectionality across racial/ethnic identity and First-Gen status). We grouped these students with distinct forms of marginalization together because of their shared experiences associated with institutional underrepresentation in a context that has historically served very economically privileged and primarily White students. Combining across URS subgroups was also necessary in order to have group sizes that were adequately powered for hypothesis testing ($n = 113$ URS, $n = 303$ non-URS).[3]

## Measures

Surveys included the cost items listed below, demographic indicators, and additional measures unrelated to the present study.

***Cost scales.*** Students were asked which of their current classes is the most challenging, greatest source of struggle, or elicits the most negative feelings about what must be invested or given up to engage it. They then listed the specific course name before indicating their agreement with a variety of cost-related perceptions about the class using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Flake et al.'s (2015) measure was used to assess effort cost (e.g., This class requires too much effort; 5 items, $\alpha = .88$), opportunity cost (e.g., "I have to sacrifice too much to be in this class"; 4 items, $\alpha = .89$), and emotional cost (e.g., "This class is too stressful"; 6 items, $\alpha = .86$). Psychological cost was assessed with Song et al.'s (2023) 6-item measure, which was adapted from Perez et al. (2014, 2019; e.g., "I worry that others will think I am a failure if I do not do well in this class"; $\alpha = .88$). Items tapping the four different types of cost were interleaved. The full list of items is provided in the supplemental materials.

***Open-ended cost.*** Students provided narrative descriptions of their cost experiences in their selected course by responding to the following open-ended prompt: "I want to understand what makes your 'most challenging' course so challenging. In your own words, please describe the nature of the struggle. What has been difficult, and why do you think that is?"

***Final course grades.*** Final grades in students' "most costly" class were collected from institutional records with participants' consent, which was granted by 93% ($n = 388$) of the sample. In some cases ($n = 24$) letter grades were not available because students ultimately withdrew from the class or the class was ungraded (e.g., credit/no credit). Thus, final course grades were available for 364 students (87.5% of the sample).

### Coding of open-ended responses

In order to code students' open-ended descriptions of cost, we independently read through the full set of responses while blind to students' identity markers and other survey responses. We generated a large set of initial codes using both content from the narratives themselves (inductive approach) and relevant constructs from the motivation literature (deductive approach). Through extensive discussion of 60 randomly selected cases (15% of the dataset), we refined the codes and specified their inclusion/exclusion criteria. This resulted in a final scheme of 35 unique codes (Table 1). Both authors independently coded another 60 randomly-selected cases (15% of the dataset), none of which had been discussed during coding scheme refinement. Inter-rater reliability was strong (99% agreement; $\kappa = .86$). The first author coded the remainder of the data. One code was dropped due to extremely low frequency, and codes were then grouped into higher order categories or themes (Table 1).

## Results

Prior to hypothesis testing, we examined the types of classes that students considered most costly. Classes represented the full range of academic disciplines, with 40% of students listing classes in STEM fields, 30% in the humanities, and 29% in the social sciences. The distribution of disciplines listed as costly was nearly identical for URS (STEM = 39%, humanities = 28%, social sciences = 33%) and non-URS (STEM = 41%, humanities = 31%, social sciences = 28%).

### Cost scales

Descriptive statistics and correlations among the four cost subscales and final course grades are presented in Table 2. Students endorsed psychological cost most strongly, with scores for effort, opportunity, and emotional cost closer to the mid-point of the scale. Effort, opportunity, and emotional cost were substantially positively correlated with one another. Psychological cost was significantly but weakly positively correlated with effort and opportunity cost, and moderately positively correlated with emotional cost. All four cost indicators were significantly negatively correlated with final course grades, with emotional cost being the strongest predictor.

### Differences in cost by URS status

In order to test the hypothesis that URS would experience higher costs than non-URS, we conducted a series of independent-samples *t*-tests. A sensitivity power analysis conducted in G*Power indicated that the study had 80% power to detect an effect size of .31 ($\alpha = .05$, two-tailed). As shown in Table 3, URS had significantly higher levels of emotional cost and psychological cost than their non-URS peers, with effect sizes in the small-to-medium range. There was no difference in effort cost or opportunity cost.

Because final course grades were lower for URS ($M = 2.99$, $SD = .81$) than non-URS ($M = 3.32$, SD = .76), $t(362) = 3.56$, $p < .001$, $d = .44$, we used ANCOVA to examine differences by URS status in cost perceptions controlling for final course grades. The analytic sample for these analyses ($N = 363$) was slightly smaller because final course grades were not available for the full sample ($N = 416$). Using this more conservative approach, URS had significantly higher levels of psychological cost than non-URS, $F(1, 361) = 12.88$, $p < .001$, partial $\eta^2 = .03$. There was no difference in effort cost [$F(1, 361) = .68$, $p = .41$, partial $\eta^2 = .002$], opportunity cost [$F(1, 361) = .50$, $p = .48$, partial $\eta^2 = .001$], or emotional cost [$F(1, 361) = 2.70$, $p = .101$, partial $\eta^2 = .01$].[4]

**Table 1.** Prevalence of higher-order categories and code frequencies for the nature of cost by URS status.

| | URS ($n = 113$) | Non-URS ($n = 303$) |
|---|---|---|
| **Time demands** | $M = .74$, $SD = .94$ | $M = .73$, $SD = .83$ |
| Heavy workload | 40% | 45% |
| Feeling behind | 11% | 9% |
| Opportunity cost – Academic | 11% | 10% |
| Opportunity cost – Nonacademic | 8% | 6% |
| Exhaustion | 5% | 5% |
| **Well-being** | $M = .62$, $SD = .79$ | $M = .42$, $SD = .72$ |
| Stress | 28% | 21% |
| Performance worry | 24% | 11% |
| Negative self-implications | 10% | 10% |
| **Class structure** | $M = .53$, $SD = .70$ | $M = .53$, $SD = .75$ |
| Unreasonable expectations or policies | 22% | 16% |
| Logistical difficulties | 15% | 18% |
| Disorganized or confusing instruction | 8% | 8% |
| Problematic professor behavior | 6% | 3% |
| Self-directed learning | 1% | 6% |
| Unexpected content | 1% | 3% |
| **Perceived competence and self-regulation** | $M = .53$, $SD = .68$ | $M = .50$, $SD = .61$ |
| Lack background | 22% | 17% |
| Class participation difficulties | 8% | 11% |
| Self-regulation challenges | 7% | 11% |
| Help-seeking difficulties | 5% | <1% |
| Disability | 5% | 3% |
| Low perceived ability | 4% | 6% |
| Still hard despite efforts | 1% | 2% |
| **Difficulty of curriculum** | $M = .50$, $SD = .68$ | $M = .42$, $SD = .60$ |
| Difficult material | 36% | 32% |
| Quick pace | 10% | 7% |
| Cumulative nature | 3% | 2% |
| Reputation on campus | 2% | 2% |
| **Task value** | $M = .46$, $SD = .71$ | $M = .39$, $SD = .65$ |
| Required for graduation or career | 13% | 11% |
| Personally meaningful pursuit | 12% | 9% |
| Impression management | 10% | 5% |
| Lack interest | 8% | 10% |
| Irrelevant content | 4% | 4% |
| **Peers** | $M = .30$, $SD = .57$ | $M = .21$, $SD = 0$ .48 |
| Comparison to peers | 19% | 14% |
| Problematic peer dynamics | 6% | 4% |
| Identity-based disconnection | 4% | 1% |
| Compensatory comments | 12% | 12% |

*Note.* Descriptive statistics for each higher-order category were calculated by totaling the frequency scores for all codes that fell under the category.

**Table 2.** Correlations and descriptive statistics for cost items and final course grade.

| Variable | 1 | 2 | 3 | 4 | *M* | *SD* |
|---|---|---|---|---|---|---|
| 1. Effort cost | | | | | 4.55 | 1.19 |
| 2. Opportunity cost | .69*** | | | | 3.89 | 1.42 |
| 3. Emotional cost | .67*** | .55*** | | | 4.66 | 1.21 |
| 4. Psychological cost | .14** | .14** | .42*** | | 5.35 | 1.30 |
| 5. Final course grade | −.19*** | −.13* | −.32*** | −.13* | 3.24 | .78 |

*$p < .05$. ** $p < .01$. *** $p < .001$.

## *Cost across academic disciplines*

Because the previous research on cost perceptions for URS in higher education has focused exclusively on STEM domains, we next explored whether higher costs for URS differed by academic discipline using a series of 2 (URS/non-URS) by 2 (STEM/non-STEM) ANCOVAs, with final

**Table 3.** Perceived cost by URS status and academic discipline.

| | URS | non-URS | |
|---|---|---|---|
| | *M* (*SD*) | *M* (*SD*) | *t* (414) = |
| **Effort cost** | **4.72 (1.21)** | **4.49 (1.18)** | **1.80, *p* = .07, *d* = .20** |
| STEM | 4.84 (1.21) | 4.64 (1.16) | |
| non-STEM | 4.48 (1.22) | 4.28 (1.16) | |
| **Opportunity cost** | **4.07 (1.48)** | **3.83 (1.40)** | **1.55, *p* = .12, *d* = .17** |
| STEM | 4.60 (1.49) | 4.02 (1.32) | |
| non-STEM | 3.56 (1.33) | 3.60 (1.38) | |
| **Emotional cost** | **4.97 (1.21)** | **4.54 (1.19)** | **3.23, *p* = .001, *d* = .36** |
| STEM | 5.53 (.98) | 4.67 (1.17) | |
| non-STEM | 4.47 (1.26) | 4.35 (1.18) | |
| **Psychological cost** | **5.75 (1.03)** | **5.20 (1.36)** | **3.89, *p* < .001, *d* = .43** |
| STEM | 5.94 (1.15) | 5.08 (1.37) | |
| non-STEM | 5.71 (1.03) | 5.24 (1.35) | |

*Note:* Bolded descriptives and *t*-tests for each cost subtype are based on the full sample ($n = 113$ URS; $n = 303$ non-URS). Unbolded descriptives broken down by STEM/non-STEM academic discipline are based on the subsample for whom final grades were available ($n = 85$ URS; $n = 278$ non-URS).

course grades as a covariate. We combined courses in the humanities and social sciences into a broader category of non-STEM courses in order to maintain a sufficient sample size for each subgroup and because both domains tend to use a discussion-based format and include topics related to culture, identity, and economic privilege. A sensitivity power analysis conducted in G*Power (with a sample of 363, 4 groups, 1 covariate, $\alpha = .05$) indicated 80% power to detect an effect size f of .15 (partial $\eta^2 = .02$). Descriptive statistics are presented in Table 3 and complete test statistics are included in the supplemental materials.

For effort cost, there were no significant main effects of URS status or academic discipline nor was the interaction term significant. For opportunity cost, only the main effect of academic discipline was significant, with STEM courses incurring higher opportunity cost than non-STEM courses, $F(1, 358) = 14.15$, $p < .001$, partial $\eta^2 = .04$. For emotional cost there were significant main effects of both URS status, $F(1, 358) = 4.87$, $p = .028$, partial $\eta^2 = .01$, and academic discipline, $F(1, 358) = 11.42$, $p < .001$, partial $\eta^2 = .03$. Emotional costs were higher for URS than non-URS and higher for STEM than non-STEM courses, although the effect size indicator for URS status was smaller than the minimum detectable effect size identified in our sensitivity power analysis and should be interpreted with caution. Finally, for psychological cost, only the main effect of URS status was significant, with URS reporting higher psychological cost than non-URS, $F(1, 358) = 12.76$, $p < .001$, partial $\eta^2 = .03$. Overall, these analyses indicate higher emotional and psychological costs among URS than non-URS and additionally suggest that STEM classes may be more costly in terms of opportunity and emotional costs than non-STEM classes. Although interaction tests were likely underpowered, there was little evidence that elevated costs for URS are specific to a particular academic discipline.

### *Open-ended costs*

We addressed the hypothesis that URS would describe what is "costly" about their courses in unique ways by analyzing participants' open-ended descriptions of their cost experiences. Responses were provided by 411 of the 416 participants and were typically a few sentences in length ($M_{words} = 71.1$, $SD = 52.69$). Frequencies for each of the 34 codes grouped into 7 higher-order categories are presented in Table 1 by URS status. Category endorsement was examined quantitatively by summing the total number of codes endorsed for each category. For example, for the *time demands* category, a participant could score between 0 and 5, depending on how many of the five codes underneath the category were reflected in their open-ended survey responses. Thus, the maximum score for each category varied depending on how many codes comprised it. A series of independent-samples *t*-tests was used to compare prevalence of

categories for URS versus non-URS. Descriptive statistics for category prevalence by URS status are included in Table 1.

URS described many aspects of cost consistent with non-URS: heavy workload, difficult material, and unreasonable expectations. Indeed, there was no difference in the prevalence of higher-order categories related to time demands, class structure, perceived competence and self-regulation, difficulty of curriculum, task value, and peers, all $ts(414) < 1.57$, $ps > .12$, $ds < .17$. There was, however, a significant difference in prevalence of the well-being category, with URS reporting more costs related to well-being than non-URS, $t(414) = 2.45$, $p = .015$, $d = .27$. Examining individual codes reveals that URS tended to report more stress and performance worry than their non-URS counterparts. Indeed, performance-related worries emerged as a defining cost for many URS: nearly a quarter mentioned it, more than double the rate of their non-URS peers. The worried response of one student who identified as Black and Asian reflected the full range of cost subtypes: "if I fail or mess up, I have to spend exponentially more time, money and energy to make up for my failures. Also it's an intro class, so if I mess up, I feel like that would be mortifying."

For other URS, performance-worry responses primarily reflected emotional costs, with references to anxiety and fear. One student who identified as Asian and Latine wrote that "the professor keeps putting me on the spot … which makes me anxious because I feel like my classmates are laughing at me." Another student who identified as Latine and first-generation explained: "I keep getting bad grades … I don't understand what I'm doing wrong and I'm too scared to talk to [my instructors]." Other students described performance worries that were directly tied to their social identities, echoing a type of psychological cost. For example, one student who identified as a Latine wrote:

> I come from a Spanish speaking family but this [Spanish] course is so demanding … I place more pressure on myself as my parents and family would look down on me if I don't pass a class to learn my own culture and heritage.

These accounts underscore how URS faced not only academic hurdles but also emotional and psychological costs that could make persistence feel especially fraught.

A final set of analyses explored whether the nature of cost may differ not only by URS status but also by academic discipline. We conducted a series of 2 (URS/non-URS) × 2 (STEM/non-STEM) ANOVAs for each of the seven higher-order cost categories. While some cost categories were more prevalent in STEM vs non-STEM courses (e.g., class structure, difficulty of curriculum), only the category of task value revealed an interaction between URS status and academic discipline, $F(1, 408) = 7.24$, $p = .007$, partial $\eta^2 = .02$. URS reported more costs related to task value in non-STEM ($M = .65$, $SD = .79$) than STEM ($M = .21$, $SD = .47$) disciplines, whereas non-URS students did not differentiate by academic discipline (STEM $M = .36$, $SD = .65$; non-STEM $M = .40$, $SD = .64$). Descriptive statistics for prevalence of higher-order categories by URS status and academic discipline are included in the supplemental materials.

## Interview phase

Building from the survey phase, the goal of the interview phase was to develop an explanatory framework for how institutionally underrepresented students experience and navigate costs. Centering URS voices added nuance and explanatory depth while positioning them as sources of insight into both the costs of higher education and the assets they bring (DeCuir-Gunby & Schutz, 2014). Moreover, semi-structured interviews allowed for new or expanded definitions of cost beyond those identified in the previous literature. We explicitly asked URS about identity-relevant costs given evidence that students are reluctant to share race-based experiences when not explicitly prompted to do so (Bergey et al., 2019; Robinson & Shankar, 2025). Indeed, in the

open-ended survey data of the present study, racialized experiences were present but not prominent.

### Positionality

Throughout the research, both authors engaged in reflection about how their identities related to the research question and to participants' experiences. The first author is a White woman from a middle-class background, positioning her as an outsider to the experiences of URS navigating higher education at a predominantly White institution. As a psychology professor and scholar focusing on motivational processes, she seeks to act as an ally to marginalized students. She approaches her work with a commitment to supporting students' academic motivation, fostering their development as whole persons, and working toward dismantling systemic barriers. She recognizes that her perspectives are shaped by relative privilege, which both limits her understanding and underscores the importance of centering the voices of URS. The second author is a Black, African woman from a middle-class background. As an international student and POC, she shares with participants the potential for belongingness uncertainty and the developmental stage of negotiating identity and motivation in college. On the other hand, her international background and access to educational privilege prior to college situate her differently from many URS whose experiences are shaped by systemic barriers within the U.S. education system. She approaches this work with a sensitivity to cross-cultural educational transitions and the intersections of privilege and marginalization, grounding her interpretations in humility and a commitment to centering participants' voices.

## Methods

### Participants and procedure

The interview phase focused on participants who identified as Black, Latine, Indigenous, and/or First-Gen. From the 113 URS who completed the survey, 24 students were invited the following semester to participate. Selection criteria ensured representation of each major demographic group within the URS subsample, variation in reported cost perceptions, and balance in gender and class year. 14 students agreed to participate (58% response rate; see Table 4 for demographic characteristics). Semi-structured interviews were conducted *via* Zoom by the second author and lasted approximately 30-45 min. Interviews were recorded and later transcribed for analysis. All participants received $20 as compensation for their time.

### Interview protocol

Using a semi-structured format, students were asked to identify a class that was costly, explain the nature of that cost, and describe any assets or support resources they drew upon to manage it. Numerous prompts encouraged elaboration about each of these components. Prompts about the nature of cost were informed by codes from the open-ended survey data that flagged stress or worry about performance, concerns about impression management, and help-seeking difficulties as especially salient (see Table 1). Prompts were also guided by literature on the experiences of URS in higher education relating to expectancies and values, sense of belonging, and racial opportunity costs in their costly class and beyond. Questions about assets focused on the mitigating strategies they applied or resources that were helpful in the costly class. Finally, participants were asked to reflect on whether they had encountered other costly classes that improved over time, and to describe the broader strategies they used to sustain motivation in school. The full interview protocol is included in the supplemental materials.

**Table 4.** Demographic information for interview participants.

| Pseudonym | Race/Ethnicity | Generation status | Gender | Class year |
|---|---|---|---|---|
| Aiyana | Black | Cont-gen | F | 2 |
| Ethan | White | First-gen | M | 3 |
| Gabriela | Latina | Cont-gen | F | 2 |
| Jada | Black | First-gen | F | 1 |
| Julia | Latine | Cont-gen | F, NB | 3 |
| Lucia | Latina, White | Cont-gen | F | 1 |
| Mai | Asian | First-gen | F | 1 |
| Maria | Latina | Cont-gen | F | 1 |
| Mateo | Latino, White | First-gen | TM | 2 |
| Nina | Black, Latina, White | Cont-gen | F | 3 |
| Quinn | Indigenous, White | Cont-gen | NB | 2 |
| Rosa | Indigenous, Latina | First-gen | F | 3 |
| Sofia | Latina | Cont-gen | F | 2 |
| Zuri | Black | Cont-gen | F | 3 |

*Note*: Cont-gen: continuing generation student; First-gen: first generation student; F: female; M: male; NB: nonbinary; TM: transgender male. 1 = first-year, 2 = sophomore, 3 = junior.

### Analytic approach

Thematic analysis (Braun & Clarke, 2012) was used to analyze the interview transcripts. We began by reading through each transcript and making notes on content potentially relevant to the research questions. Next, we generated an initial set of codes using a primarily inductive approach that drew heavily on the content of the data themselves. Through extensive discussion of six transcripts, codes were refined and inclusion/exclusion criteria specified. The final coding scheme comprised 56 unique codes – 29 describing the nature of cost and 27 describing strategies and assets for managing costs (Table 5). Both authors independently coded four transcripts (28.5% of the dataset) that had not been used during scheme refinement. Agreement was strong (96%; $\kappa = .87$) and the second author coded the remaining transcripts.

Following coding, we grouped related codes into broader patterns to develop tentative themes (see Table 5). We considered each tentative theme in relation to the full dataset, in part by composing a short analytic summary for each participant in order to assess whether their costs and mitigating strategies were adequately represented. (See supplemental materials.) Through an iterative process, we refined each theme, naming it to accurately convey its content, and extracting illustrative quotes from the transcripts. We also engaged in negative case analysis to ensure that themes were sufficiently nuanced to account for data that appeared to challenge initial interpretations (Creswell, 1998).

To validate our approach, we drew on established strategies for qualitative research (Creswell, 1998; Lincoln & Guba, 1985; Whittemore et al., 2001). We employed method triangulation, using the interview phase to corroborate, elaborate on, and complicate findings from the survey phase. We also employed analyst triangulation, with both authors contributing to all phases of study design, execution, and interpretive analysis. To enhance credibility and authenticity, we conducted negative case analysis and drew extensively on participants' quoted responses to ground each theme in the data. We aimed to establish criticality and integrity by iteratively reviewing the interview transcripts, testing the fit of themes against the full dataset, and considering the analytic summary for each participant to assess whether our interpretations captured the complexity of their experiences. These procedures were informed by the reflexive insights afforded by the second author's insider status as a member of the URS community and by both authors' familiarity with the institutional context.

## Results

Although participants ultimately spoke about their experiences in multiple contexts, each began the interview by discussing costs in the context of one particular class. These classes represented

**Table 5.** Code frequencies grouped by theme.

| Code | Percent of sample ($n = 14$) |
|---|---|
| **Theme 1: The perception of academic unpreparedness creates stress and erodes confidence.** | |
| Insufficient preparation pre-college | 43 |
| Anxiety over not doing well | 93 |
| Low confidence/helplessness | 93 |
| Understanding less than peers | 71 |
| Impression management concerns | 71 |
| Overthinking | 43 |
| Hard content | 57 |
| Heavy workload | 50 |
| Class requires too much effort | 43 |
| **Theme 2: Students experience liminality as they negotiate differences in background, worldview, and representation across contexts.** | |
| No space to express identity | 57 |
| Hypervisibility | 50 |
| Feel different due to identity, background, SES | 100 |
| Can't pursue same opportunities as peers | 29 |
| Frustrated by imposition of insular thinking | 71 |
| Feel disconnected from home community | 36 |
| Pushback from home community | 36 |
| Invisible minoritized identity | 21 |
| Trying to assimilate to classroom culture | 21 |
| Demands of personal life | 50 |
| Difficulty balancing schoolwork with employment | 36 |
| **Theme 3: Students leverage identity, values, and purpose to persist through difficulty.** | |
| Drawing on values and belief systems | 36 |
| Putting things into perspective | 64 |
| Cognizant of how actions affect home community | 43 |
| High value course content | 93 |
| Powering through | 64 |
| Help seeking despite discomfort | 43 |
| Embracing the liberal arts model | 21 |
| Seeing oneself gain skills and knowledge | 14 |
| **Theme 4: Supportive faculty and peers facilitate success, while their absence heightens struggle.** | |
| *Absence of supports is harmful* | |
| Professor unsupportive | 79 |
| Office hours negative or unhelpful | 50 |
| Unreasonable expectations | 71 |
| Confusing instruction | 36 |
| Peers unsupportive | 64 |
| *Presence of supports is helpful* | |
| Professor supportive | 86 |
| Office hours helpful | 93 |
| Broader institutional supports | 93 |
| Peer content support | 86 |
| Connection to classmates | 71 |
| Knowing that others are also struggling | 43 |
| **Theme 5: In the face of institutional gaps, students draw upon personal resources and community connections.** | |
| Turning to outside content resources | 29 |
| Self-regulation | 93 |
| Agentic engagement | 21 |
| Support from or appreciation for home community | 79 |
| Support from those with shared identity | 50 |
| Support from friends | 71 |
| Letting go of impression management | 21 |
| Letting go of certain standards | 43 |
| **Additional codes** | |
| Low value course content | 71 |
| Problematic class structure or timing | 43 |

(*continued*)

Table 5. Continued.

| Code | Percent of sample ($n = 14$) |
|---|---|
| Course pacing is too fast or slow | 29 |
| Difficulty balancing schoolwork with other classes | 21 |
| Identity is made salient in some disciplines more than others | 29 |
| Taking a break | 43 |
| Hobbies and self-care | 36 |
| Dropping or withdrawing from the class | 21 |
| Arriving to college well-equipped | 14 |

a wide range of academic disciplines, including STEM domains ($n = 8$; 57%), social sciences ($n = 3$; 21%), and humanities ($n = 3$; 21%).

### *Theme 1: the perception of academic underpreparedness creates stress and erodes confidence*

Many URS reported entering college feeling underprepared for rigorous coursework, a perception often rooted in systemic inequities such as underfunded schools and limited access to advanced academic opportunities. These disparities left students feeling disadvantaged compared to peers. As Rosa reflected on her predominantly Hispanic home community, "We didn't have lots of school funding … so biology class in high school was not the best as it could have been … it was obvious that people in my class had a much better education than me."

This perception of starting "behind" was widespread and created persistent stress. Students spoke of struggling to keep pace and the constant awareness of what they lacked. Ethan explained, "I didn't understand everything as well as everyone else did. All this made it somewhat alienating at times." For Ethan and many others, this gap fueled a diminished sense of belonging, leading to hesitancy about speaking up or seeking help. Some recounted moments of acute distress, such as Zuri who felt "terrified about being judged by other people for not doing basic arithmetic very well" or nearly crying after receiving critical feedback from a professor.

Participants also described their relative lack of preparation as an ongoing weight rather than a temporary hurdle. The feeling of being "behind" resurfaced in group work, where students felt they contributed less, or in everyday academic tasks, where they worried their performance would confirm negative assumptions about their abilities. Over time, these experiences eroded confidence and reinforced cycles of withdrawal and self-doubt. Academic underpreparedness, thus, functioned as both a psychological cost—undermining self-efficacy and generating ego threat—and an emotional cost, marked by chronic stress and anxiety.

### *Theme 2: Students experience liminality as they negotiate differences in background, worldview, and representation across contexts*

URS' costs also encompassed negotiations of identity, belonging, and representation. Their effort to navigate spaces where they felt peripheral, while also redefining their place in home communities, was a sustained form of social and emotional labor—one that, for some, was as taxing as the academic work itself. One dimension of this experience was the sense of being fundamentally different from peers, both in visible identity markers and in life experience. Students described how casual conversations revealed deep contrasts in background, lifestyle, and worldview. As Sophia put it:

> It is weird not being surrounded by people that even look like me or have the same lifestyle. Some people talk about things they do over breaks or places they go, and I'm like, I've been to Canada once, and I drove. But all these people are like, "I'm going on spring break to Europe."

Seemingly innocuous classroom moments could also carry weight, subtly reinforcing students' outsider status. Mai explained that "when we do introductions … I have to say my name twice because, you know, people won't be able to get it." For her, this was a reminder of difference that

others never had to consider. Similarly, peers often lacked the context to understand everyday realities shaped by working-class or immigrant backgrounds: "people are out of touch sometimes … I have friends who are like, 'Well just quit one of your jobs.' I know they mean well, but they just don't understand," explained Mateo.

For many, these differences were amplified by tokenism and hypervisibility. Being one of the only students of color in class could make discussions about race or ethnicity feel like a spotlight. "There's always those professors that look at you whenever we talk about anything racial or ethnic … everyone's silent and expects you to be the spokesperson," Gabriela explained. Sophia described being singled out for cultural "expertise" she didn't necessarily possess: "My classes will discuss stuff relating to Mexico or Peru, and my professors will be like, 'Oh, do you have any knowledge about this thing?' And I'm like, 'Um … okay.' I don't know how I'm supposed to know everything." In other cases, the burden was in suppressing parts of identity, as when Gabriela was told to avoid wearing her hoop earrings in professional settings.

Constraints extended beyond social interactions into structural opportunity gaps. Students noted that the familial obligations that shaped their college trajectories often made it impossible to pursue the same extracurricular or professional opportunities as peers. As Rosa explained, "When applying for internships … there's this pressure to pursue things beyond your hometown … I wish I had the advantage and privilege to do that but I have to go home. I have to work and support my family when I'm not here." Others described feeling excluded from campus social life when it revolved around activities they could not afford.

Connections to home communities also shifted in complex ways. For some, geographic distance reduced access to language and cultural practices: "If I don't make the active step to cook my mom's food or to … speak in Portuguese, I'm going to lose it," Nina reflected. Others, like Maria, worried about being perceived differently at home, fearing that immersion in a new environment meant "straying further from the person I would be if I was back home." For some, however, the shift felt liberating; college affirmed existing values, empowering them to act more openly on long-held convictions. For instance, Ethan reflected on the political beliefs of his home community: "I always knew that I was left-leaning, but there was nothing I could do when it came to making friends." After meeting like-minded peers, he explained, "my relationships have definitely changed because I've become a lot less … tolerant of those beliefs."

### *Theme 3: Students leverage identity, values, and purpose to persist through difficulty*

Many URS framed their education as larger than themselves, viewing success as a way to honor family and community sacrifices. Importantly, these connections were not experienced solely as pressure, but as a powerful source of purpose, grounding, and motivation that anchored students during moments of self-doubt, frustration, or fatigue. Coming from an immigrant family, Aiyana explained, "They've sacrificed a lot for me, and I don't want it to be in vain." Similarly, Mai described how her family's history inspired her efforts: "a really big part of why I want to perform so well in classes is because I know that people like me, like my parents, didn't get the chance to do this … I'm going to be the change that they need."

Students also drew on family values as a source of direction and strength in the face of challenge. Rosa described her persistence as a product of her upbringing: "I just got into a mindset where I decided to attempt to understand because I think that the most honest and moral thing that you can do is try. That's just how I was raised." Similarly, Zuri credited her mother's words as a constant motivator: "At the root of it is my mother's voice … the truth is, there is no try, there is only do … follow the plan, not the feeling." Across accounts, academic effort was intertwined with the legacies of their communities, positioning persistence not just as individual achievement but as a form of collective responsibility.

Some students also managed academic challenges by reframing them. As exemplified by Jada, many used the reminder of their long-term goals to push through temporary dips in motivation:

"I've already come this far so I don't want this one thing to be the thing that sets me back- … chemistry will not win, I will win." Julia described a similar process of detaching performance from self-worth, which helped her "get out of my head and stop acting like this has anything to do with who I am as a person," and made coursework feel "significantly easier." These mindset shifts protected students' sense of belonging and integrity, which allowed them to continue engaging even in moments of doubt.

Others took a more pragmatic approach, emphasizing discipline and commitment over fluctuating motivation. While this approach was sometimes born of necessity, it also underscored a clear sense of direction and purpose. As Gabriela explained,

> College is the only path I've got. I can't drop out. I'm here because this school offered me the best financial compensation out of any other school so I kind of have to do it, you know? The stakes are kind of high. For me, my family has sacrificed a lot for me to be here.

Taken together, these accounts suggest that persistence was sustained not just by resilience, but by meaning-making processes that tied academic success to something larger than the self.

### *Theme 4: Supportive faculty and peers facilitate success, while their absence heightens struggle*

Participants emphasized that the presence or absence of supportive relationships within the academic environment shaped their ability to succeed as much as their own motivation did. Peers played a vital role, with study groups and shared struggle fostering both academic support and a sense of belonging. Faculty support was equally powerful. Rosa recalled one professor as "a source of comfort and familiarity … she affirmed to me that she was here to help and that no questions were stupid." Others praised instructors who contextualized material to acknowledge diverse educational backgrounds: "sometimes they actually adjust plans for the semester in order to make it easier for students. I feel like it's so much more conducive to learning," Julia reflected. She also described the impact of professors who went above and beyond to support students: "he understood that I was coming from a very different environment where I had not really been in academic circles before … he took an hour to explain to me what the paper is supposed to be. He was very patient and also just asked about my family and stuff like that."

By contrast, unapproachable or dismissive professors became sources of frustration and alienation. Rosa, who went to see her professor about her lack of high school preparation reported, "he made it clear that this was more of a me problem than a him problem." For others, hopes for a class grew dim even after seeking help; as Mateo put it, "He wasn't very accommodating … I felt like succeeding was impossible." Peers could also undermine collaboration through condescension or exclusion. Quinn recounted her experiences in physics lab where classmates "would actually yell at me and not let me touch anything … They very clearly thought I was entirely incompetent." Other URS described peers who dismissed their contributions, acted with haughty superiority, or created "weird and uncomfortable" dynamics that eroded their sense of belonging.

Across accounts, support was not simply a matter of availability but of whether it was culturally responsive, validating, and accessible. When present, it was transformative; when absent, it compounded struggle and deepened alienation.

### *Theme 5: Resourcefulness and community connections help students navigate higher education*

When existing academic supports did not fully meet students' needs, participants drew upon both personal initiative and community networks to bridge the gaps. For some, this meant turning to tools like Khan Academy or YouTube, while others relied on independent study to master the

material: "I started to do more math outside of the homework, outside of studying, and just figured it out on my own," Julia recalled. Resourcefulness also took the form of creatively seeking expertise from community members, such as the multicultural resource center (MRC) staff who could explain the "nitty-gritty details that my professor … didn't want to or just didn't have the time to do" as Rosa explained. In all accounts, students framed these efforts not as ideal but as strategies that helped them move forward when available supports did not fully address their needs.

This resourcefulness extended further into agentic advocacy, as when participants directly confronted instructors or pushed for changes in teaching practices. Zuri recalled, "I did give them advice and they did change the way they teach. I'm a very honest person and … I believe in feedback." Similarly, Mateo described confronting a professor about unreasonable expectations: "A third of your class has absolutely no clue what's going on and another third is kind of lost. So please change the curriculum a bit." Such examples highlight the agency students exercised, advocating not only for themselves, but often for their peers as well.

Identity-based campus spaces (e.g., MRC, BIPOC housing) were especially important for helping students manage other institutional gaps, providing validation that URS' struggles reflected broader patterns rather than personal shortcomings. Gabriela reflected, "If I wasn't in a BIPOC community, I would think I was going insane." Others echoed this sentiment, describing POC spaces as places to momentarily exhale. Alongside campus networks, family remained a steady support: Maria found relief in, "just talking to my mom … because I feel like nobody here can actually understand," while others leaned on siblings whose college experiences normalized their own struggles and reinforced the idea that challenges could be overcome.

## General discussion

### *URS experience elevated psychological (and emotional) costs*

The present study considered costs and assets among URS enrolled at a selective, predominantly White, liberal arts institution. Like some previous research (Christiaans et al., 2024), we found no significant differences between URS and non-URS in either effort or opportunity cost (but see Beymer & Rosenzweig, 2023; Goldman et al., 2022). Regardless of URS status, students reported substantial levels of these costs, with group means well above the scale midpoint and frequent references in open-ended responses. Interviews echoed these findings with about half of the sample describing effort costs (e.g., excessive workload) and opportunity costs (e.g., balancing academics with personal life). These costs were therefore salient but not distinctive to URS, and appeared secondary to psychological and emotional costs. For example, effort and opportunity costs were represented in only a minority (29%) of the analytic summaries we constructed for each URS interview, consistent with research suggesting such costs may be redundant with other burdens for URS (Robinson & Shankar, 2025).

By contrast, psychological costs loomed especially large for URS, consistent with the limited body of work on perceived cost among minoritized college students (Christiaans et al., 2024; Robinson & Shankar, 2025). The significant difference in psychological cost between URS and non-URS remained even after controlling for final course grades, suggesting that URS' elevated costs were not simply a byproduct of lower performance but rooted in broader identity-context dynamics. Thematic analysis of interview responses reinforced this interpretation, especially within the theme of identity liminality. This theme reflected psychological costs through participants' experiences of self-doubt, belonging uncertainty, and the burden of representation—patterns identified in previous research among URS attending selective, privileged, and/or predominantly White institutions (Archer et al. 2022; Tabron & Venzant Chambers, 2019; Totonchi et al., 2023; Walton & Cohen, 2011). Our findings extend these perspectives by situating

identity-based costs within the broader SEVT framework of cost (see Matthews & Wigfield, 2024).

URS also initially appeared to have higher emotional costs than non-URS. When controlling for final course grades, however, the group difference dropped to nonsignificant, suggesting that the negative emotional consequences associated with task engagement for URS relate largely to performance-related difficulties (e.g., frustration when learning difficult material, stress of challenging assessments, anxiety over poor grades). This is perhaps not surprising given that final course grades were more strongly related to emotional cost than psychological cost across the full sample, consistent with prior research (Jiang et al., 2020; Robinson & Shankar, 2025; Song et al., 2023).

Although controlling for final course grades clarifies underlying associations, doing so may no longer represent the way emotional cost manifests in the real world. Academic performance is not independent of students' structural and educational experiences; thus, to the extent that URS encounter systematic barriers that shape performance outcomes, controlling for grades may attenuate meaningful variation in emotional cost rather than simply isolating it. Consistent with this interpretation, URS reported significantly more costs related to well-being in their open-ended survey responses compared to non-URS, particularly in reference to stress and performance-related worry. Interview data further underscored the salience of emotional cost for URS, especially the chronic stress that comes from feeling underprepared for a rigorous academic environment (see Azmitia et al., 2018; Guillory & Wolverton, 2008). Together, these findings suggest that it would be premature to dismiss the relevance of emotional costs for URS, even when statistical controls reduced observed group differences.

These patterns carry implications for how cost is measured in diverse student populations. Our findings suggest that existing survey scales are generally adequate for capturing the *amount* of perceived cost for URS, but only when they encompass the full range of subtypes, particularly emotional and psychological costs. Although some research traditions have focused primarily on emotional cost (e.g. Flake et al., 2015) and others on psychological cost (e.g., Perez et al., 2014, 2019), the present findings underscore the importance of including both. Emotional cost appears especially powerful in predicting achievement outcomes (see Jiang et al., 2020; Song et al., 2023), whereas psychological cost captures identity-related processes that are especially salient for institutionally underrepresented students. The present study thus joins recent investigations demonstrating the empirical distinctiveness of emotional and psychological costs (e.g., Song et al. 2023) and highlights the need for consistently and clearly defined operationalizations of these subtypes across the literature. At the same time, although existing survey measures appeared effective in assessing *how much* cost students reported, they may be incomplete regarding *why* costs were experienced. This limitation aligns with Matthews and Wigfield's (2024) argument that costs permeate every phase of the SEVT model. Expanding current measures of psychological cost in particular to include items that assess identity threat arising from cultural dissonance, representational burdens, and belonging uncertainty would provide a fuller picture of URS' cost experiences.

In addition to measurement considerations, it is important to consider how costs are experienced in both STEM and non-STEM contexts. STEM classes have a reputation for being especially costly, and they did incur higher opportunity and emotional costs than non-STEM classes overall for both URS and non-URS. At the same time, our findings indicate that costs pervade a wide range of academic disciplines (see Beymer, Allen, et al., 2026) and, in some cases, may even be more pronounced in non-STEM courses for URS. In our analyses on the nature of cost, URS—but not non-URS—reported significantly higher costs related to task value in non-STEM than STEM classes. These task value-related costs reflected a diverse set of experiences, including situations perceived as uninteresting or irrelevant, as well as those with high stakes (e.g., required for graduation) or involving discussions of personally meaningful material. This latter aspect was

consistent with several participants' descriptions of humanities and social science classrooms as sites where racialized costs were especially salient—for example, during discussions of particular cultures or identities that heightened feelings of hypervisibility. Differences in disciplines, then, may structure how cost is experienced, with non-STEM environments potentially activating more explicit forms of cost related to identity variables (e.g., race, ethnicity, social status). Consistent with this reasoning, there was a notable absence of racialized cost experiences among minoritized students in Robinson and Shankar's (2025) study, who were recruited exclusively from STEM disciplines.

### URS bring strengths and assets

Interviews revealed powerful assets leveraged by institutionally underrepresented students to address costs and inspire persistence. Many participants described motivation rooted in collective responsibility, framing college success as both personal achievement and fulfillment of community hope and sacrifice. Such narratives echo Covarrubias et al. (2019), who found that first-generation students draw motivation from balancing emerging independence with family commitments, challenging dominant narratives of autonomy. These accounts also align with literature showing that URS often persist *via* meaning-making and the desire for community uplift (Azmitia et al., 2018; Fong et al., 2019; Guillory & Wolverton, 2008). In this way, what might otherwise appear solely as cost was often reframed as purpose.

Alongside family connections, participants stressed the importance of supportive and identity-affirming relationships on campus and beyond. Affinity groups and peers with shared backgrounds provided vital emotional support, belonging, and affirmation, consistent with previous research (Azmitia et al., 2018; Fong et al., 2019). URS also revealed a capacity for self-reliance and a willingness to be resourceful when institutional supports were limited. This finding echoes previous research documenting URS' self-reliance and self-advocacy as critical resources for maintaining motivation (Azmitia et al., 2018; Robinson & Shankar, 2025). Because interviews were conducted exclusively with URS, it is unclear whether these strategies are *more* prominent among URS than their non-URS peers. What is clear, however, is that URS navigated institutional gaps by leveraging both personal and community assets.

Overall, then, the interview responses revealed a rich set of resources and assets URS draw upon to maintain motivation and persistence. Indeed, our mixed-methods design illuminated both the burdens and strengths of URS, offering a more nuanced account of their motivational experiences (Kumar & DeCuir-Gunby, 2023). By centering URS voices, we documented the costs they bear along with the personal and cultural assets that sustain them. This asset-based perspective underscores that institutional change should not only aim to reduce barriers but also to actively engage strengths. For example, interventions that highlight background-specific skills (Hernandez et al., 2021) or leverage family connections (Covarrubias et al. 2019) could transform assets into institutional supports. Harnessing these resources offers a promising pathway for promoting equity.

### Implications for practice

The present findings provide a roadmap for targeted interventions that both reduce costs and amplify assets. Moreover, anchoring this work in SEVT allows institutions to draw on a well-established motivational framework while designing culturally responsive supports.

At the structural level, one direct approach to address academic underpreparation is through college readiness programming such as summer bridge programs and wayfinding resources embedded within residential life or first-year curricula. Importantly, these programs may improve not only actual preparation but also perceptions of readiness, which directly influence

expectations for success—a proximal and powerful SEVT predictor of achievement (Eccles & Wigfield, 2020). Interventions that enhance success beliefs or highlight curricular relevance also have shown promise in sustaining persistence (Durik et al., 2015; Rosenzweig, Wigfield, et al., 2022), and may even compensate for high perceptions of cost at the college level (Breetzke & Bohndick, 2024). Beyond skills development, structural efforts to build identity-relevant community spaces are critical. URS in the present study highlighted the importance of ethnic-themed housing, multicultural centers, and peer mentor programs, echoing evidence of the effectiveness of culturally sensitive educational spaces (Museus et al., 2018; Rheinschmidt-Same et al., 2017). These supports help counteract isolation and identity liminality by providing anchors of belonging and affirmation.

At the faculty and administrator level, there is a need for greater awareness of both the distinctive costs and the assets that URS bring to higher education. Faculty might conduct a "cost audit" of their classrooms—assessing workload, expectations, classroom dynamics, and identity-relevant content—and make adjustments that reduce barriers. Just as importantly, administrators could incorporate knowledge of URS' assets (e.g., interdependence, community-grounded strengths) into the framing of various campus supports. Resources like office hours, mentoring, and affinity spaces could be presented as not merely individualistic aids but also extensions of the supportive communities URS have historically built.

Finally, psychological tools can help reduce perceived costs at the individual level through both reappraisal and self-regulation mechanisms. Encouraging students to reframe their challenges as temporary and normative has been shown to reduce both effort and emotional costs in college physics (Rosenzweig et al., 2020; cf. Rosenzweig, Song, et al., 2022). Recent work has also demonstrated reductions in effort, opportunity, and emotional costs among calculus students who were prompted at regular intervals to select and implement a motivation regulation strategy for the coming week (Beymer, Kim et al., 2025). Notably, this self-regulation approach was effective only for racially marginalized students, suggesting particular relevance for the URS in the present study. Future research should extend these interventions beyond STEM contexts and examine their effects on psychological cost.

In addition to directly reducing costs, short-term interventions have successfully increased persistence of low SES students by prompting reflection on background-specific strengths used to overcome adversity (Hernandez et al., 2021). Building on the assets identified by participants in the present study, URS could be invited to reflect on strengths such as self-reliance, strong community ties, or family-based values as resources for navigating academic challenges. Together, these approaches underscore the promise of multi-level interventions that not only mitigate costs but also leverage the strengths URS already possess.

## Conclusion

In sum, the present research highlights the dual reality of URS' experiences: elevated psychological costs—and to some extent emotional costs—alongside powerful identity-based assets and supports. By documenting these dynamics, we provide a more nuanced understanding of how motivational processes unfold in higher education contexts.

Several limitations should be noted. The findings are drawn from a single liberal arts institution, typical in many ways but marked by a distinct emphasis on academic rigor that may have impacted participants' cost perceptions. Research across a broader range of institutional contexts and disciplinary domains is needed to clarify the generalizability of the present findings, especially given the underpowered exploratory analysis of STEM versus non-STEM contexts. Future research should also examine the particular costs URS may experience in discussion-based classes addressing identity and economic status. Considering how students assess costs in one class relative to their other courses may likewise be illuminating (see Wigfield et al., 2020 on dimensional

comparisons), particularly insofar as such comparisons may reflect dynamics related to Flake et al.'s (2015) concept of outside effort cost.

Another limitation is that we grouped Black, Latine, Indigenous, and first-generation students from diverse racial and ethnic backgrounds under a shared category of underrepresentation in higher education. While our conceptual variable of interest was institutional underrepresentation (and aggregation was necessary for sufficiently powered analyses), it may obscure meaningful differences in the costs and assets these students experience. For example, Black students' experiences are shaped by enduring legacies of exclusion and racial stratification as well as ongoing exposure to racialized stressors that can undermine belonging and psychological well-being (Harper et al., 2009; Williams et al., 2022). Latine students, particularly those who are undocumented, often navigate additional barriers, including limited access to institutional knowledge, language constraints, and restrictive legal and policy decisions that affect access to resources such as financial aid (Baum & Flores, 2011; López & Pérez, 2018). Meanwhile, first generation students and some racially marginalized students whose identities are less visible may face challenges in accessing targeted support or recognition—a pattern echoed in our interview data. Taken together, these differences underscore the need for more explicitly intersectional approaches that attend to variation across race, ethnicity, family education status, and other identity markers, particularly in light of emerging evidence of gender-by-race differences in math-related cost perceptions (McKellar et al., 2024).

Limitations notwithstanding, the present study underscores the need to attend more carefully to the psychological and emotional costs of engagement while simultaneously harnessing URS' assets to foster equity. Reducing barriers while elevating strengths is essential for creating higher education environments in which all students can thrive.

## Notes

1. Indeed, according to institutional records where data for the present study were collected, the student population was 6% Black, 10% Latiné, and 2% Indigenous, with 11% of students indicating that no parent had a bachelor's degree (i.e., first-generation). These figures illustrate the relatively low representation of each group within the institutional context in which the present study was conducted.
2. To be clear, there is certainly heterogeneity within the category of URS and within each of the individual subgroups that make up the larger category. Some racially minoritized college students undoubtedly attended well-resourced K-12 schools and/or come from families with substantial educational experience and social capital. Likewise, some first-generation students identify as White and presumably experience identity-related threats based on racism in a very different way than their racially marginalized peers. Despite these distinct historical and social pathways, however, racially marginalized and first-generation students arguably share common experiences associated with institutional underrepresentation, including unequal opportunity structure, cultural dissonance, and questions of belonging and competence.
3. An a-priori power analysis conducted in G*Power indicated that a sample size of at least 100 participants per group (URS, non-URS) would be sufficient to detect a small-to-medium effect ($d = .40$, based on Goldman et al., 2022) with 80% power at an alpha level of .05 (two-tailed). Although we aimed for this target, final group sizes were determined by participant self-identification during data collection.
4. Although the conceptual focus of the present study was institutional underrepresentation, the reader may be curious about potential differences among URS subgroups. We therefore report separate exploratory analyses comparing racially marginalized with non-racially marginalized students and first-generation with continuing-generation students in the supplemental materials. Because these analyses address a different research question and had substantially lower sensitivity than the primary analyses, they should be interpreted with caution.

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