

Faculty Mentoring Behaviors and Intellectual Self-Confidence Among College Seniors

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Abstract

Faculty–student interactions are important to college seniors’ academic development and intellectual self-confidence. This study examined which faculty mentoring behaviors were most strongly associated with intellectual self-confidence among graduating seniors. Using secondary data from the 2008 College Senior Survey, multiple linear regression was conducted with 27,166 students from four-year colleges and universities in the United States. Four mentoring behaviors were analyzed: asking a professor for advice outside class, receiving educational guidance, participating in faculty-supported research opportunities, and receiving emotional support and encouragement. The model was statistically significant, $F(11, 27,154) = 91.79$, $p < .001$, but explained a modest proportion of variance in intellectual self-confidence ($R^2 = .037$). **Conclusion:** Emotional support showed the strongest positive association, followed by research opportunities and educational guidance, while student-initiated advice-seeking was negatively associated. Findings should be interpreted cautiously due to the cross-sectional design and small effect sizes.

Keywords: faculty–student interaction, intellectual self-confidence, college seniors, mentoring behaviors, multiple linear regression

1. Introduction

Faculty–student interactions are increasingly recognized as a foundational element of high-quality undergraduate education. During the final year of college, these interactions take on particular significance: seniors stand at the threshold between academic life and graduate study or professional careers, making faculty mentorship a potentially decisive influence on their sense of intellectual readiness. Prior research has consistently demonstrated that mentoring relationships can positively shape students’ academic self-efficacy, professional identity, and broader engagement in the learning environment (Balgopal et al., 2022; Kelley et al., 2020). Self-efficacy is an individual’s belief in their

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capacity to perform tasks successfully and achieve goals is especially consequential during this transitional period, influencing students' motivation, persistence, and willingness to pursue advanced academic or professional pathways (Kelley et al., 2020). Beyond formal instruction, the broader educational climate plays a critical role in shaping students' sense of belonging and intellectual confidence. Campus environments communicate implicit messages about whether students are valued, capable members of the academic community. When students encounter cues that undermine belonging or engagement, their willingness to participate fully in academic life and their confidence in their own intellectual abilities can be meaningfully diminished (Brady et al., 2025). Conversely, when faculty actively engage students with encouragement and intellectual challenge, students are more likely to take academic risks, deepen their learning, and develop stronger academic identities (Brady et al., 2025; Quaisley et al., 2023). Despite the well-documented benefits of faculty mentorship in general, substantially less is known about which specific mentoring behaviors carry the greatest influence on students' intellectual self-confidence particularly during the senior year. Faculty mentoring is not a monolithic construct; it can take the form of offering research opportunities, providing emotional encouragement, delivering academic guidance, or fielding student-initiated questions outside of class. Each of these behaviors may relate differently to how students perceive their own intellectual capabilities. Understanding these distinctions matters practically. Intellectual self-confidence shapes students' willingness to engage in demanding academic work, pursue competitive graduate programs, and navigate professionally challenging environments. If particular mentoring behaviors are more predictive of this outcome than others, institutions and faculty can more intentionally direct their developmental efforts. This study addresses that question by examining the relative influence of four specific faculty mentoring behaviors on college seniors' intellectual self-confidence using secondary data from the 2008 College Senior Survey (CSS).

The literature suggests that faculty–student interaction is related to student development, but prior studies differ in the mechanisms they emphasize. Some research highlights informal contact and relational connection as central to academic self-concept and motivation (Komarraju et al., 2010; McKinsey, 2016), whereas other work emphasizes structured mentoring, coaching, and research participation as routes through which students gain confidence, belonging, and professional identity (Ahmed et al., 2021; de Lacalle & Soenke, 2024; National Academies of Sciences, Engineering, and Medicine, 2019). These strands of research are complementary but not identical: relational support may operate through encouragement and belonging, research opportunities may operate through mastery experiences, and academic guidance may operate through reduced uncertainty and clearer educational planning.

Recent studies also indicate that student confidence and adjustment are shaped by broader learning conditions, including pedagogical design, supervised practice, international student transitions, and academic climate (Figueiredo & Kulari, 2024; Fernandes & Hernández-López, 2026; Jawabreh et al., 2025; Xiong et al., 2022). However, these studies do not directly isolate the relative associations of discrete faculty mentoring behaviors with intellectual self-confidence among U.S. college seniors. This distinction is

important because evidence from adjacent educational settings cannot be assumed to apply uniformly to undergraduate seniors in four-year U.S. institutions.

The present study therefore addresses a specific gap: it compares four conceptually distinct mentoring behaviors within the same analytic model rather than treating faculty interaction as a single broad construct. The four behaviors were selected because they map onto theoretically different pathways in Bandura's self-efficacy framework: emotional support corresponds most closely to verbal persuasion and affective reassurance; research opportunities correspond to mastery experiences; educational guidance may reduce ambiguity about academic progress; and asking a professor for advice outside class represents student-initiated help-seeking, which may reflect either engagement or pre-existing uncertainty. This framing provides a clearer rationale for why the behaviors might show different associations with intellectual self-confidence.

Research Question and Hypothesis

This study was guided by the following research question:

Among faculty mentoring behaviors asking a professor for advice outside class (ACT22), faculty provision of educational guidance (FACPRV03), research project opportunities (FACPRV02), and emotional support and encouragement (FACPRV04) which has the greatest and least impact on college seniors' intellectual self-confidence (RATE14)?

Two competing hypotheses were tested:

H₀: No faculty mentoring behavior significantly impacts intellectual self-confidence.

H₁: Specific faculty mentoring behaviors are significantly associated with intellectual self-confidence, with varying magnitudes of association.

Theoretical Framework

This study is grounded in Bandura's (1977) social cognitive theory, and specifically its core construct of self-efficacy is the belief in one's capacity to execute the actions needed to achieve specific outcomes. Self-efficacy influences how individuals approach challenges, how much effort they invest, and how they respond to setbacks. In the higher education context, academic self-efficacy has been shown to shape students' persistence, course engagement, and academic achievement (Kelley et al., 2020). Within Bandura's framework, self-efficacy beliefs are formed and strengthened through four primary sources: mastery experiences (direct success in tasks), vicarious learning (observing others succeed), verbal persuasion (encouragement from credible others), and physiological states. Faculty mentoring behaviors map onto several of these sources in meaningful ways. Emotional support and encouragement constitute a direct form of verbal persuasion faculty communicating belief in a student's abilities. Research opportunities provide mastery experiences, allowing students to engage in authentic scholarly work and experience intellectual competence first-hand. Academic guidance, meanwhile, can reduce uncertainty and help students interpret their progress favorably, supporting more positive emotional and motivational states.

This theoretical lens also informs the study's conceptualization of intellectual self-confidence as a domain-specific form of self-efficacy: students' beliefs about their intellectual capabilities relative to peers. By anchoring the analysis within social cognitive

theory, observed differences in the predictive strength of mentoring behaviors are interpreted not merely as statistical differences but as theoretically meaningful distinctions in the mechanisms through which faculty support shapes student confidence. Faculty-initiated, affirming behaviors are expected to function as more potent self-efficacy inputs than student-initiated help-seeking, which may reflect pre-existing low confidence rather than build new confidence.

2. Research Methods

Research Design

This study employed quantitative, correlational, and predictive research design using secondary survey data. A correlational design is appropriate because the study sought to examine statistically significant associations between faculty mentoring behaviors and intellectual self-confidence without experimental manipulation. Predictive modeling via multiple linear regression was subsequently employed to assess how well the independent variables explained variance in the dependent outcome, and to compare the relative strength of each mentoring behavior. Because the data are drawn from a secondary survey source, causal relationships cannot be established; however, the design permits the identification of meaningful predictive associations consistent with the theoretical framework.

Data Source and Sample

Data were drawn from the 2008 College Senior Survey (CSS), administered by the Cooperative Institutional Research Program (CIRP) at the Higher Education Research Institute (HERI) at UCLA. The CSS targets graduating seniors at four-year colleges and universities across the United States and is administered via paper or web-based instruments. The initial dataset included 40,728 respondents. During data cleaning, all instances of missing values coded as 'NA' were replaced with blank cells using Excel's Find and Replace function, and rows with any missing values on key study variables were removed using the 'Go To Special' function. Following these procedures, the final analytic sample comprised 27,166 complete observations.

The use of 2008 data is justified by the unusually large national sample, the senior-year focus of the CSS, and the availability of multiple faculty interaction items that allow comparison across distinct mentoring behaviors. The dataset is therefore useful for examining foundational associations between mentoring behaviors and intellectual self-confidence. Since 2008, higher education has experienced major changes in digital communication, online and hybrid learning, student mental health awareness, equity-oriented advising, and expectations for faculty availability. These changes may alter how students initiate contact with faculty and how faculty provide guidance, support, and research opportunities.

Variables

Dependent Variable. Intellectual self-confidence (RATE14) is a self-rating item in which students compare their intellectual ability to that of the average person their age. Responses range from 1 (Lowest 10%) to 5 (Highest 10%), with higher scores indicating greater intellectual self-confidence.

Independent Variables. Four faculty mentoring behaviors served as independent variables, each measured on a 3-point frequency scale (1 = Not at all, 2 = Occasionally, 3 = Frequently):

- **ACT22:** Asked a professor for advice outside of class. These variables capture student-initiated mentoring and reflect the frequency with which students sought faculty input beyond the formal classroom context.
- **FACPRV03:** Faculty provided advice and guidance about the student's educational program. This variable measures how often professors proactively offered academic direction regarding courses, degree requirements, and educational planning.
- **FACPRV02:** Faculty provided an opportunity to work on a research project. This variable captures the frequency of hands-on research mentorship, reflecting faculty inclusion of students in active scholarly work.
- **FACPRV04:** Faculty provided emotional support and encouragement. This variable captures the affective dimension of the faculty–student relationship, measuring how often faculty expressed care, belief in the student, and motivational support.

Control Variables. Student sex (SEX) and racial/ethnic group (RACEGROUP) were included as controls to account for demographic characteristics that may independently influence intellectual self-confidence. Race/ethnicity was dummy coded with American Indian as the reference category.

Data Analysis

Data was analyzed using Stata. Following data cleaning, descriptive statistics including means, standard deviations, and frequency distributions were computed for all key variables using the summarize and tabulate commands. Pearson bivariate correlations were then examined using the pwcorr command to assess initial relationships between the mentoring behaviors and the outcome variable, and to screen for multicollinearity concerns among predictors.

A Variance Inflation Factor (VIF) test confirmed that multicollinearity was not a substantial concern. Multiple linear regression was then employed using the regress command with the beta option to obtain standardized coefficients, enabling direct comparison of the relative predictive strength of each variable. Because preliminary Breusch–Pagan/Cook–Weisberg tests (estat hettest) detected heteroskedasticity indicating that the variance of residuals was not constant across predicted values the final regression model was re-estimated with robust standard errors using the vce(robust) option. This adjustment ensures that the reported t-values, p-values, and confidence intervals remain valid despite the violation of the homoscedasticity assumption. Regression diagnostics including residual-versus-fitted plots (rvfplot) and histograms of residuals confirmed approximate linearity and normality of residuals.

3. Results

Sociodemographic Characteristics of Study Participants

Table 1 presents the sociodemographic profile of the 27,166 respondents included in the analysis. The sample was predominantly female (64.8%) and racially homogeneous, with White students comprising 79.0% of respondents. Smaller proportions identified as

multiracial (5.2%), Black (4.8%), Asian (4.6%), Hispanic (3.9%), Other (2.2%), and American Indian (0.3%). English was the native language of the vast majority of respondents (94.2%), and nearly all students were enrolled full-time at the time of the survey (94.9%). Approximately half expected to earn a master's degree as their highest qualification (46.5%), while 18.5% intended to pursue a law degree and 17.7% reported a bachelor's degree as their highest planned credential. Politically, most students identified as middle-of-the-road (39.8%) or liberal (31.0%), while 24.6% identified as conservative.

Table 1

Sociodemographic Characteristics for Participants

Variables	Category	n (%)
Sex	Male	9,567 (35.2%)
	Female	17,599 (64.8%)
Race/ethnicity	American Indian	84 (0.3%)
	Asian	1,252 (4.6%)
	Black	1,303 (4.8%)
	Hispanic	1,058 (3.9%)
	White	21,455 (79.0%)
	Other	605 (2.2%)
	Two or more races/ethnicities	1,409 (5.2%)
Native English speaker	No	1,572 (5.8%)
	Yes	25,594 (94.2%)
Enrollment status	Full-time undergraduate	25,770 (94.9%)
	Part-time undergraduate	1,108 (4.1%)
	Not enrolled	288 (1.1%)
Highest degree planned	Bachelor's degree	4,802 (17.7%)
	Master's degree	12,629 (46.5%)
	PhD/EdD	1,668 (6.1%)
	MD/DO/DDS/DVM	1,521 (5.6%)
	JD (Law)	5,022 (18.5%)
Political views	Far right	319 (1.2%)
	Conservative	6,686 (24.6%)
	Middle-of-the-road	10,799 (39.8%)
	Liberal	8,421 (31.0%)
	Far left	941 (3.5%)

Note. N = 27,166. Percentages may not sum to 100 due to rounding.

Descriptive Statistics and Bivariate Correlations

Table 2 presents descriptive statistics and bivariate correlations for the key study variables. Intellectual self-confidence (RATE14) had a mean of 3.96 (SD = 0.75), indicating that, on average, respondents rated themselves slightly above the midpoint on this measure. Among the mentoring variables, asking a professor for advice outside class (ACT22) had the lowest mean (M = 1.60, SD = 0.58), suggesting that this behavior

occurred least frequently. Higher mean scores were observed for faculty guidance about educational programs (FACPRV03; $M = 2.29$, $SD = 0.63$), research project opportunities (FACPRV02; $M = 2.29$, $SD = 0.62$), and emotional support and encouragement (FACPRV04; $M = 2.37$, $SD = 0.61$), indicating these faculty-provided behaviors were more common.

Intellectual self-confidence was positively and significantly associated with faculty provision of educational guidance ($r = .12$, $p < .001$), research opportunities ($r = .13$, $p < .001$), and emotional support ($r = .14$, $p < .001$). Of these, emotional support had the strongest positive bivariate correlation with intellectual self-confidence. In contrast, asking a professor for advice outside class was negatively associated with intellectual self-confidence ($r = -.06$, $p < .001$), a pattern that foreshadows the negative regression coefficient reported below. The four mentoring variables were moderately correlated with one another ($r \approx .48$), indicating they represent related but conceptually distinct dimensions of faculty support, with no evidence of problematic multicollinearity.

Table 2: Bivariate Correlations for Intellectual Self-Confidence and Faculty Mentoring Variables

Variable	M	SD	1	2	3	4	5
1. Intellectual self-confidence (RATE14)	3.96	0.75	—				
2. Asked professor for advice (ACT22)	1.60	0.58	-.06***	—			
3. Faculty educational guidance (FACPRV03)	2.29	0.63	.12***	-.06***	—		
4. Research project opportunity (FACPRV02)	2.29	0.62	.13***	-.08***	.48***	—	
5. Emotional support (FACPRV04)	2.37	0.61	.14***	-.05***	.48***	.48***	—

Note. *** $p < .001$.

Regression Results: Predictors of Intellectual Self-Confidence

Table 3 presents result from the heteroskedasticity-robust multiple regression model predicting intellectual self-confidence from the four faculty mentoring behaviors and the two demographic control variables. The overall model was statistically significant, $F(11, 27,154) = 91.79$, $p < .001$, but accounted for only 3.7% of the variance in intellectual self-confidence ($R^2 = .037$). This low explanatory power indicates that the included variables capture only a small portion of the factors related to intellectual self-confidence. Given the exceptionally large sample size, even very small associations can reach statistical significance; therefore, the results should be interpreted with attention to substantive as well as statistical significance.

Among the faculty mentoring predictors, emotional support and encouragement (FACPRV04) showed the strongest positive standardized association with intellectual self-confidence ($B = 0.103$, $\beta = .084$, $p < .001$). Opportunities to work on a research project

(FACPRV02) showed the second strongest positive association ($B = 0.085$, $\beta = .070$, $p < .001$), followed by faculty guidance about students' educational programs (FACPRV03; $B = 0.063$, $\beta = .053$, $p < .001$). In contrast, asking a professor for advice outside class (ACT22) was statistically significant and negatively associated with intellectual self-confidence ($B = -0.049$, $\beta = -.038$, $p < .001$), indicating that students who more frequently sought advice outside class reported slightly lower intellectual self-confidence after controlling for the other variables in the model. The standardized coefficients were small in magnitude, so these patterns should be understood as modest associations rather than strong practical differences.

Among the control variables, sex was statistically significant ($B = -0.124$, $\beta = -.079$, $p < .001$), indicating that female students reported lower intellectual self-confidence than male students in this model. None of the race/ethnicity dummy variables reached statistical significance (all $p > .05$), suggesting no statistically significant differences in intellectual self-confidence across racial/ethnic groups relative to the American Indian reference category once mentoring behaviors and sex were controlled.

Table 3: Heteroskedasticity-Robust Multiple Regression Predicting Intellectual Self-Confidence From Faculty Mentoring Behaviors and Demographic Controls

Predictor	B	Robust SE	β	t	p
Asked professor for advice outside class (ACT22)	-0.049	0.008	-.038	-5.97	< .001
Faculty educational guidance (FACPRV03)	0.063	0.009	.053	7.11	< .001
Research project opportunity (FACPRV02)	0.085	0.009	.070	9.51	< .001
Emotional support and encouragement (FACPRV04)	0.103	0.009	.084	11.26	< .001
Sex	-0.124	0.010	-.079	-12.86	< .001
RACEGROUP: Asian	0.041	0.094	.011	0.44	.662
RACEGROUP: Black	0.155	0.094	.044	1.65	.098
RACEGROUP: Hispanic	0.101	0.094	.026	1.08	.282
RACEGROUP: White	0.048	0.091	.026	0.53	.596
RACEGROUP: Other	0.145	0.097	.028	1.50	.134
RACEGROUP: Two or more races/ethnicities	0.101	0.094	.030	1.08	.279

Note. $R^2 = .037$; $F(11, 27,154) = 91.79$, $p < .001$. Reference category for RACEGROUP is American Indian. Robust standard errors used due to detected heteroskedasticity (Breusch–Pagan test). β = standardized regression coefficient.

4. Discussion

This study sought to identify which faculty mentoring behaviors were most strongly associated with college seniors' intellectual self-confidence. The findings demonstrated that the four mentoring behaviors examined did not relate to intellectual self-confidence in the same way. In the final heteroskedasticity-robust regression model, emotional support and encouragement from faculty showed the strongest positive association, followed by research project opportunities and educational guidance. By contrast, asking a professor for advice outside of class was negatively associated with intellectual self-confidence. Taken together, the pattern of results supports rejection of the null

hypothesis, but the low R^2 and small standardized coefficients indicate that the substantive magnitude of these relationships is modest.

Emotional Support as the Dominant Predictor

Emotional support and encouragement from faculty showed the strongest positive association with intellectual self-confidence among college seniors. This finding is theoretically coherent within Bandura's (1977) self-efficacy framework: verbal persuasion by credible sources such as a respected faculty member expressing genuine belief in a student's intellectual potential is a well-established source of self-efficacy beliefs. When students feel affirmed by those whose academic judgments they respect, they may be more likely to internalize confidence in their own abilities.

This interpretation aligns with prior research. Felten and Lambert (2020) emphasized that relationship-rich educational experiences are central to student success, and NASEM (2019) similarly highlighted the importance of mentoring characterized by genuine care and developmental investment. For college seniors specifically, affirmative faculty relationships may carry heightened importance: at a stage defined by transitions and uncertainty about future pathways, being affirmed by a trusted academic authority may be related to how students understand their own intellectual standing.

Research Opportunities for Intellectual Validation

The second strongest positive association was the opportunity to work on a research project with faculty. Research involvement may serve as a form of intellectual validation: when faculty invite students into scholarly work, they may implicitly communicate that the student is capable of contributing to knowledge creation. This shifts the student's role from passive recipient of instruction to active intellectual agent a transformation that maps onto mastery experiences, which Bandura (1977) identified as a major source of self-efficacy. These findings are consistent with scholarship linking undergraduate research experiences to stronger academic self-concept and professional identity (de Lacalle & Soenke, 2024; Weinberg et al., 2021; Quaisley et al., 2023). Importantly, the association between research involvement and intellectual self-confidence may extend beyond discipline-specific skill acquisition into students' sense of who they are intellectually and what they are capable of achieving. Faculty who includes undergraduates in research activities, even in limited roles may therefore be contributing to confidence-related development as well as scholarly preparation.

Academic Guidance and the Negative Effect of Advice-Seeking

Faculty provision of educational guidance was also positively associated with intellectual self-confidence, though with a weaker standardized coefficient than emotional support or research involvement. This is understandable given that academic guidance helping students understand their programs, degree requirements, and future options may operate more indirectly on self-confidence, primarily by reducing academic uncertainty and enhancing students' sense of clarity and preparedness. This finding is consistent with prior studies showing that mentoring is related to self-efficacy partly through clearer expectations and a more confident sense of future possibilities (Ahmed et al., 2021; Kelley et al., 2020; Balgopal et al., 2022).

The most counterintuitive finding was the negative association between asking a professor for advice outside class and intellectual self-confidence. Help-seeking of this

kind may be a marker of perceived inadequacy or uncertainty rather than a cause of it students may seek advice during periods of academic difficulty or uncertainty, contexts that are naturally associated with lower self-assurance (Brady et al., 2025). This explanation is plausible but speculative because the available data do not measure students' prior confidence, reasons for seeking advice, or the quality of those conversations.

Taken together, the directional pattern across all four predictors is consistent with a possible distinction between faculty-provided and student-initiated mentoring. The three behaviors positively associated with intellectual self-confidence emotional encouragement, research opportunities, and educational guidance all represent actions faculty provided to students.

Gender Differences in Intellectual Self-Confidence

Female students reported significantly lower intellectual self-confidence than male students after controlling for all mentoring variables and race/ethnicity. The finding is consistent with literature suggesting that intellectual confidence is shaped by social expectations, institutional norms, and environmental cues about who is regarded as intellectually capable (Balgopal et al., 2022; Brady et al., 2025; Trinidad et al., 2024). The persistence of this gap even after accounting for mentoring behaviors raises an important subsidiary question: do certain faculty mentoring behaviors moderate the gender difference in intellectual self-confidence? If emotional encouragement and research involvement are differentially associated with intellectual self-confidence among female students, targeted efforts to ensure these experiences are equitably distributed may help reduce this persistent gap.

5. Conclusions

This study set out to identify which faculty mentoring behaviors were most strongly associated with college seniors' intellectual self-confidence. Using data from 27,166 graduating seniors in the 2008 College Senior Survey and a heteroskedasticity-robust multiple regression framework, the findings revealed variation in the strength and direction of associations between specific mentoring behaviors and intellectual self-confidence.

Among the four behaviors examined, emotional support and encouragement showed the strongest positive association ($\beta = .084$), followed by research project opportunities ($\beta = .070$) and educational guidance about students' programs ($\beta = .053$). All three represent faculty-provided forms of support. Asking a professor for advice outside class the only student-initiated behavior in the model was negatively associated with intellectual self-confidence ($\beta = -.038$), a finding interpreted cautiously as possibly reflecting selection whereby students who already feel less confident are more likely to initiate such consultations. Female students reported lower intellectual self-confidence than male students ($\beta = -.079$), consistent with broader patterns in the literature. Race/ethnicity was not a significant predictor once mentoring behaviors and sex were controlled.

The overall model explained only 3.7% of variance in intellectual self-confidence. This modest explanatory power is important for interpreting the findings: the model was statistically significant, but the small R^2 and small standardized coefficients indicate limited practical significance. The results therefore support a cautious conclusion: among the mentoring behaviors measured in the CSS, proactive, relational, and affirming forms of faculty support especially emotional encouragement and research involvement were

more strongly linked to intellectual self-confidence than student-initiated advice-seeking. These associations should be understood as one small part of a much broader set of academic, institutional, demographic, psychological, and social factors that shape intellectual self-confidence.

Implications

The findings carry implications for faculty practice, institutional programming, and higher education policy, but these implications should be proportionate to the modest effect sizes. At the faculty level, the results suggest that mentoring extending beyond academic instruction to include emotional encouragement and developmental affirmation is positively associated with students' intellectual self-concept. Faculty who wishes to support their students' intellectual confidence might consider intentionally incorporating affirming feedback, explicitly acknowledging intellectual growth, and communicating belief in students' capabilities as a routine element of teaching and advising relationships. These practices are theoretically supported and low risk, but the present findings alone do not establish their causal impact.

At the institutional level, these findings related to research involvement are consistent with the developmental value of expanding undergraduate research experiences not only as professional preparation, but as potential contexts for building intellectual confidence. Institutions that create structured pathways for students to participate in faculty-led research, particularly for students from groups historically underrepresented in such activities, may support confidence development alongside skill development. Given the significant gender gap in intellectual self-confidence documented in this study, targeted efforts to connect female students with research opportunities and emotionally supportive faculty mentors appear worthy of consideration, while recognizing that the present model explains only a small portion of the variation in confidence.

For academic advisers and student affairs professionals, the negative association between student-initiated advice-seeking and intellectual self-confidence warrants careful interpretation. Rather than assuming that advice-seeking lowers confidence, institutions should consider that students who seek advice may already be experiencing uncertainty. Proactive outreach from faculty and advisers particularly during critical academic transitions such as the senior year may help identify students who would benefit from guidance. Future studies should test whether proactive advising structures are associated with subsequent changes in intellectual self-confidence over time.

Limitations

Several limitations should be considered when interpreting these findings. First, the CSS relies exclusively on self-reported data, which introduces the possibility of response bias, social desirability bias, recall bias, and measurement error, particularly for subjective outcomes such as intellectual self-confidence. Students' self-assessments of their own confidence and their retrospective reports of mentoring frequency may not fully capture the quality, duration, or context of these experiences. Some students may overreport positive interactions with faculty because such responses appear socially desirable, while others may underreport support if they interpret mentoring narrowly or fail to recall informal interactions.

Second, the cross-sectional design of the CSS precludes causal inference. The observed relationships between mentoring behaviors and intellectual self-confidence are correlational in nature, and alternative explanations cannot be ruled out. A longitudinal or experimental designs would be necessary to establish temporal ordering and draw stronger directional conclusions.

Third, the use of secondary data limits the variables available for analysis. Several potentially important confounders could not be accounted for, including prior academic ability (SAT scores were listed in the dataset codebook but contained no usable data in the analytic file), mental health status, socioeconomic status, financial stress, peer influence, academic major, institutional selectivity, faculty availability, and the overall institutional climate. The modest R^2 of .037 indicates that 96.3% of the variance in intellectual self-confidence remains unexplained by this model, likely reflecting these unmeasured factors and the complex nature of psychosocial outcomes.

Finally, the data are drawn from 2008, and the landscape of faculty–student interaction has evolved considerably since then. The rise of digital communication, learning management systems, online and hybrid learning formats, expanded undergraduate research infrastructure, and heightened attention to student mental health, belonging, and equity have likely altered both the frequency and character of faculty–student interactions. The 2008 CSS remains valuable for examining foundational associations in a large national sample, but contemporary applicability should be treated cautiously. Replication with more recent data would strengthen the generalizability of these findings to current higher education contexts.

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