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Examining the Predictive Role of Faculty Teaching Practices and Sense of Belonging on Student Retention Intent Across Diverse Undergraduate Populations

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Abstract: **Student retention remains a persistent challenge in higher education, with increasing attention directed toward the roles of faculty teaching practices and students' sense of belonging. While prior research suggests that belonging is associated with student success, the extent to which it predicts retention outcomes remains unclear. This study examines the predictive relationships among faculty teaching practices, sense of belonging, and retention intent across a broad undergraduate population. Using a quantitative, cross-sectional correlational design, data were collected from undergraduate students (N = 84) using validated instruments, including the Teaching Practices Inventory (TPI), the Institutional Integration Scale (IIS-8) for sense of belonging, and the IIS-2 for retention intent. Data were analyzed using rank-based multiple regression and binary logistic regression to assess the extent to which teaching practices and belonging predict retention intent. The results indicate that faculty teaching practices significantly predict sense of belonging ($\beta = .60$, $p < .001$), with engagement-oriented practices playing a central role. However, neither faculty teaching practices ($\beta = .09$, $p = .409$) nor sense of belonging ($\beta = -.11$, $p = .337$) significantly predict retention intent. These findings suggest that while instructional practices enhance students' psychological experience, they do not directly influence persistence-related decisions. The study contributes to the literature by clarifying the distinction between proximal outcomes (belonging) and distal outcomes (retention) and by highlighting the role of external factors in shaping persistence. The findings support a multi-theoretical perspective integrating Tinto, Strayhorn, and Bean and Metzner, and underscore the need for multi-factor institutional strategies to improve student retention.**

Keywords: **Student retention; Sense of belonging; Faculty teaching practices; Undergraduate students; Student engagement; Higher education; Retention intent; Online and post-traditional learners.**

1. INTRODUCTION

Student retention remains a persistent and critical challenge in higher education, particularly among undergraduate populations. Despite sustained institutional efforts to improve persistence, attrition rates remain substantial, with nearly one-third of students failing to return after their first year of enrollment (National Student Clearinghouse Research Center [NSCRC], 2025). This ongoing challenge has significant implications for institutional effectiveness, financial sustainability, and student success outcomes. As a result, retention has become a central focus in higher education research and practice, requiring a deeper understanding of the factors that influence students' decisions to remain enrolled. Contemporary undergraduate persistence is increasingly shaped by external pressures, including financial stress, employment demands, flexibility expectations, and mental health concerns, which may weaken the direct influence of institutional experiences on enrollment decisions (EAB, 2025)

Within this context, increasing attention has been directed toward students' psychological and relational experiences, particularly sense of belonging, as a key determinant of academic success. Sense of belonging reflects students' perceptions of being valued, supported, and connected within the academic environment (Strayhorn, 2019). Empirical research consistently demonstrates that belonging is associated with engagement, motivation, and academic performance (Allen et al., 2023; Xu & Jaggars, 2023). Students who experience a strong sense of belonging are more likely to participate actively in their learning and persist in their studies, whereas those who feel disconnected are at greater risk of attrition.

The problem addressed in this study is the persistently high rate of undergraduate student attrition and the limited empirical understanding of how specific faculty teaching practices and students' sense of belonging interact to influence retention outcomes across diverse student populations.

Faculty teaching practices represent a critical mechanism through which students' academic and psychological experiences are shaped. Instructional behaviors such as interactive learning activities, structured course design, and timely feedback contribute to students' engagement and perceptions of support (Wieman & Gilbert, 2014). These practices are not isolated but operate as interconnected components of effective teaching, influencing how students experience the learning environment. Prior research has shown that engagement-driven teaching practices, including collaborative learning and active participation, are particularly influential in fostering students' sense of belonging (Freeman et al., 2014; Theobald et al., 2020). However, while teaching practices are linked to engagement and belonging, their relationship with retention outcomes remains less clearly defined.

Theoretical models provide important insight into these relationships. Tinto's (1993, 2017) Student Integration Model emphasizes the role of academic and social integration in promoting student persistence, while Bean and Metzner's (1985) Attrition Model highlights the importance of external and environmental factors, particularly for non-traditional students. Strayhorn's (2019) framework further positions sense of belonging as a central psychological construct influencing student success. Although these models collectively suggest that instructional experiences and belonging should influence retention, empirical evidence remains mixed, particularly in contemporary undergraduate populations characterized by increased diversity in age, enrollment status, and modality of study.

A critical gap in the literature exists in understanding how specific faculty teaching practice dimensions relate simultaneously to sense of belonging and retention intent across broad undergraduate populations. Much of the existing research examines these constructs independently or within narrowly defined student groups, limiting the generalizability of findings. Although sense of belonging is frequently positioned as a predictor of persistence, recent evidence suggests that the relationship may be multidimensional, conditional, and context dependent, particularly among online and post-traditional learners (Nguyen, 2026; Dulfer, 2025). This gap limits the ability of institutions to design targeted, evidence-based strategies for improving student persistence.

The purpose of this study is to examine the predictive relationships among faculty teaching practices, students' perceived sense of belonging, and retention intent across a broad undergraduate student population. Specifically, the study investigates whether distinct teaching practice subscales predict belonging and retention intent, and whether belonging itself predicts retention intent. By addressing these relationships, the study contributes to the literature by clarifying the role of instructional and psychological factors in retention processes and by assessing whether improving students' academic experiences translates into increased likelihood of retention or advance a new dimension to retention issues.

Research Questions and Hypotheses

The study examines the predictive relationships among faculty teaching practices, sense of belonging, and retention intent through the following research questions and hypotheses.

Research Question 1a (RQ1a): To what extent do faculty teaching practice subscales predict students' sense of belonging?

$H_0$1a: Faculty teaching practice subscales do not significantly predict students' sense of belonging.

$H_1$1a: Faculty teaching practice subscales significantly predict students' sense of belonging.

Research Question 1b (RQ1b): To what extent do faculty teaching practice subscales predict students' retention intent?

$H_0$1b: Faculty teaching practice subscales do not significantly predict students' retention intent.

$H_1$1b: Faculty teaching practice subscales significantly predict students' retention intent.

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Research Question 2 (RQ2): To what extent does students' sense of belonging predict their retention intent?

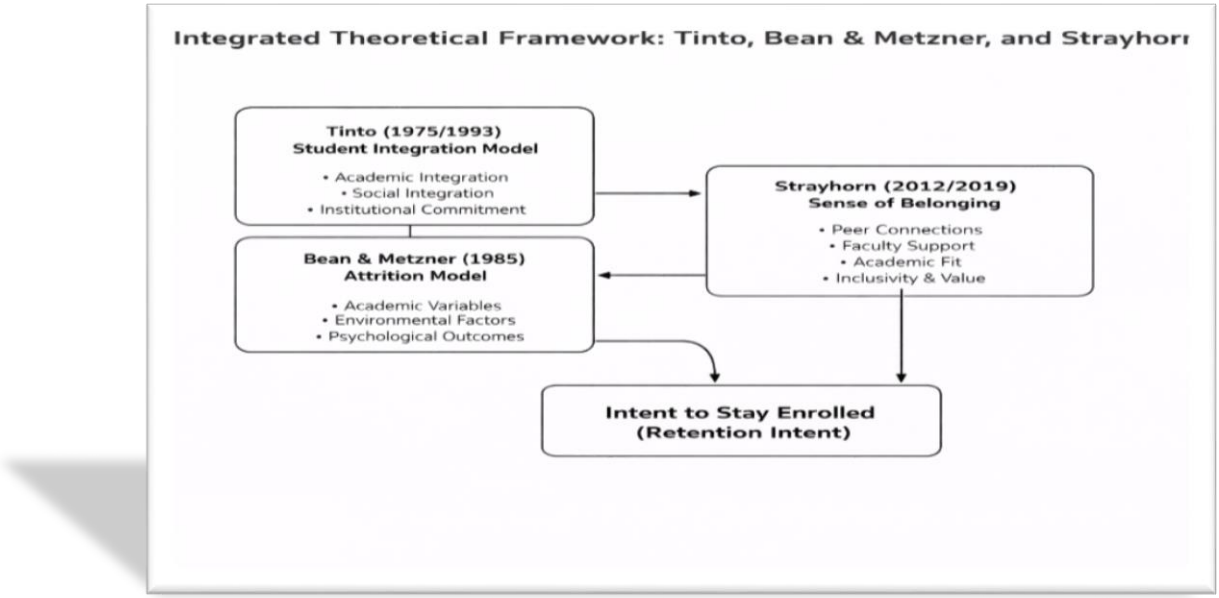
$H_0 2$: Sense of belonging does not significantly predict retention intent.

$H_1 2$: Sense of belonging significantly predicts retention intent.

2. THEORETICAL FRAMEWORK

This study is grounded in three complementary theoretical frameworks: Tinto's Student Integration Model, Bean and Metzner's Attrition Model, and Strayhorn's Sense of Belonging Theory. Together, these frameworks provide a multidimensional perspective on student persistence by integrating academic experiences, psychological processes, and external influences (Figure 1). Tinto (1993, 2017) posits that student persistence is driven by academic and social integration, emphasizing the role of institutional experiences in fostering engagement and continuity. Similarly, Strayhorn (2019) conceptualizes sense of belonging as a fundamental psychological need, arguing that students' perceptions of being valued and supported are critical to their academic success. In contrast, Bean and Metzner (1985) highlight the importance of environmental and external factors, particularly for non-traditional students, suggesting that persistence decisions are often shaped by influences beyond the institutional context.

Figure 1 Integrated Theoretical Framework



Although these frameworks collectively suggest that teaching practices, belonging, and retention are interconnected, the empirical literature reveals important inconsistencies. Prior research has frequently examined belonging and retention as broadly associated constructs, often assuming a direct relationship between the two (Allen et al., 2023; Xu & Jaggars, 2023). At the same time, studies on faculty teaching practices have largely focused on engagement and learning outcomes, with less attention given to how specific instructional dimensions simultaneously influence both psychological outcomes (e.g., belonging) and behavioral outcomes (e.g., retention) (Wieman & Gilbert, 2014). Furthermore, much of the existing research is based on context-specific or traditional student populations, limiting the generalizability of findings to contemporary undergraduate populations characterized by diversity in age, enrollment status, and modality of study.

Consequently, a critical gap exists in the literature regarding the lack of integrated empirical testing of these relationships within a unified model. Specifically, there is limited research examining whether distinct faculty teaching practice subscales predict both sense of belonging and retention intent simultaneously, and whether sense of belonging itself functions as a predictor of retention across a broad undergraduate population. Additionally, the prevailing assumption that belonging directly leads to persistence has not been consistently validated, particularly in diverse and post-traditional student contexts.

This study addresses this gap by empirically examining the predictive relationships among faculty teaching practices, sense of belonging, and retention intent within a single analytical framework. By disaggregating teaching practices into specific subscales, the study provides greater precision in identifying which instructional components influence students'

psychological experiences. Furthermore, by directly testing the relationship between belonging and retention intent, the study moves beyond theoretical assumption to empirical validation. In doing so, the study contributes to the literature by clarifying the role of instructional and psychological factors in student persistence and by highlighting the potential influence of external conditions in shaping retention decisions in contemporary higher education.

Review of Related Literature

Student retention remains a central concern in higher education, particularly across increasingly diverse undergraduate populations. Retention is influenced by a combination of academic, psychological, and environmental factors, though the relative importance of these factors varies across student contexts. Traditional on-campus retention literature has emphasized the role of academic and social integration, with Tinto (1993, 2017) suggesting that students persist when they develop meaningful connections within the institutional environment. Empirical studies support this view, demonstrating that engagement, institutional connection, and classroom interaction contribute to higher retention outcomes among residential students (Allen et al., 2023; Xu & Jaggars, 2023). However, as higher education has expanded to include online and post-traditional learners, retention has increasingly been understood as a multi-dimensional process extending beyond institutional experiences.

Sense of belonging has emerged as a key psychological construct within this framework. Defined as students' perceptions of being valued, supported, and connected, belonging is consistently associated with engagement, motivation, and academic success (Strayhorn, 2019). Students who report higher levels of belonging are more likely to participate in learning activities and persist academically, while those with lower belonging are at greater risk of disengagement (Allen et al., 2023). Despite these associations, recent studies suggest that belonging may function primarily as a proximal outcome of student experience, rather than a direct predictor of retention behavior, particularly in non-traditional and online populations (Xu & Jaggars, 2023).

Faculty teaching practices play a critical role in shaping students' academic and psychological experiences and are best understood as multidimensional and interconnected instructional components (Wieman & Gilbert, 2014). Faculty presence and engagement-oriented instructional practices remain critical in fostering belonging across both in-person and online learning environments (Adlington, 2024; Stevenson, 2025). The Teaching Practices Inventory (TPI) framework conceptualizes teaching practices across several subscales, including course information, supporting materials, in-class activities, assignments, and feedback and assessment. Each of these dimensions contribute differently to student engagement and perception of the learning environment. For example, course information and organization provide structure and clarity, which are associated with reduced uncertainty and increased student confidence. Supporting materials, such as supplemental resources and guided content, enhance comprehension and accessibility, particularly for diverse learners.

Among these subscales, in-class activities (or interactive learning practices) have been identified as particularly influential. Active learning strategies, including discussions, collaborative tasks, and problem-based learning, have been shown to significantly improve student engagement and performance (Freeman et al., 2014; Theobald et al., 2020). These practices foster interaction and participation, which are critical mechanisms for developing a sense of belonging. Similarly, assignments that promote critical thinking and application of knowledge contribute to students' sense of academic involvement, while feedback and assessment practices, particularly timely, constructive, and personalized feedback enhance students' perceptions of instructor support and responsiveness. Research indicates that feedback is one of the strongest instructional predictors of students' perceived connection to the learning environment (Wieman & Gilbert, 2014).

The influence of these teaching practices becomes even more complex in online learning environments. Online students often lack the physical and social integration opportunities available to on-campus students, making instructional design and faculty presence more critical for fostering engagement and belonging. Studies show that online learners benefit from structured course design, clear communication, interactive discussion forums, and consistent instructor feedback (Xu & Jaggars, 2023). However, online students are also more likely to be post-traditional, balancing work, family, and other responsibilities. As a result, their retention decisions are strongly influenced by external factors, as emphasized in Bean and Metzner's (1985) model. Recent studies indicate that online and post-traditional learners often experience belonging differently from traditional residential students, with faculty support, flexibility, and institutional responsiveness emerging as central influences on student experience (A Sense of Belonging in Online Post-Traditional Students, 2024; WGU Labs, 2025). While teaching practices may enhance belonging in online contexts, their direct impact on retention remains less consistent.

Despite substantial research on retention, belonging, and teaching practices, important gaps remain. Much of the literature examines these constructs independently or within specific student populations, limiting the ability to understand their combined effects. Additionally, while teaching practices are recognized as critical to engagement, there is limited empirical research examining how specific teaching practice subscales simultaneously influence both sense of belonging and retention outcomes. Furthermore, the assumption that belonging directly predicts retention has not been consistently validated across diverse undergraduate populations that include both on-campus and online learners.

The need exist for integrated research that examines faculty teaching practices, sense of belonging, and retention within a unified framework across a broad undergraduate population. Such an approach allows for a more comprehensive understanding of how instructional and psychological factors interact and whether they meaningfully influence retention outcomes. Addressing this gap is essential for informing evidence-based strategies that align teaching practices with institutional efforts to improve student persistence.

3. METHODS AND DESIGN

This study employed a quantitative, cross-sectional, predictive correlational design to examine the relationships among faculty teaching practices, students' sense of belonging, and retention intent. A quantitative approach was appropriate given the study's objective to measure variables and test predictive relationships using statistical analysis. The cross-sectional design allowed for the collection of data at a single point in time, enabling the examination of associations among variables across a broad undergraduate population.

Participants consisted of undergraduate students aged 18 years and older, recruited using a non-probability purposive sampling approach. The study targeted a diverse undergraduate population, including students enrolled in on-campus, online, and hybrid learning environments, as well as both traditional and post-traditional learners. Recruitment was conducted through online platforms and student-oriented communities, allowing for broad participation across varied educational contexts. While this approach facilitated access to a heterogeneous sample, it also limits the generalizability of the findings.

Data were collected using a structured survey instrument consisting of three primary measures assessing faculty teaching practices, sense of belonging, and retention intent. Faculty teaching practices were measured using an adapted version of the Teaching Practices Inventory (TPI) developed by Carl Wieman and Sarah Gilbert (2014). The instrument was operationalized across five subscales: course information, supporting materials, in-class activities, assignments, and feedback and assessment. These subscales capture distinct but interrelated dimensions of instructional practice, reflecting course design, delivery, engagement, and evaluation. Items were measured using Likert-type scales, with higher scores indicating greater use of effective teaching practices.

Sense of belonging was measured using the Institutional Integration Scale (IIS-8) (Pascarella & Terenzini, 1980, 1983), a validated instrument widely used to assess students' academic and social integration within higher education. The IIS-8 consists of eight Likert-type items that evaluate students' perceptions of connection, support, and inclusion within the academic environment. In this study, the scale demonstrated acceptable internal consistency ($\alpha = .769$).

Retention intent was measured using the Institutional Integration Scale (IIS-2), a two-item validated measure assessing students' intention to remain enrolled at their current institution (Pascarella & Terenzini, 1980, 1983). Responses were collected using a Likert-type format and subsequently dichotomized to reflect high versus low retention intent for logistic regression analysis. The IIS-2 demonstrated acceptable reliability ($\alpha = .706$) for a short scale. These instruments provided a comprehensive assessment of instructional practices, psychological experience, and persistence-related outcomes. The use of established and validated measures enhances the construct validity and reliability of the study.

Qualtrics panel online survey platform was used for data collection with participation being voluntary and anonymous. Participants were provided with an informed consent statement prior to survey initiation. The survey required approximately 5–7 minutes to complete, and no identifying information was collected. Inclusion criteria required that participants be currently enrolled undergraduate students aged 18 years or older.

The study adhered to ethical standards for research involving human participants. Participation was voluntary, informed consent was obtained, and responses were collected anonymously to ensure confidentiality. No personally identifiable information was collected, and participants were free to withdraw at any time.

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Pre-hypotheses Testing

Prior to inferential analysis, an exploratory data analysis (EDA) was conducted to examine the distributional properties of the study variables, including faculty teaching practices (FTI subscales), sense of belonging (IIS-8), and retention intent (IIS-2). The analysis included descriptive statistics, skewness and kurtosis, boxplot inspection, and tests of normality. Data were analyzed using a combination of descriptive and inferential statistical techniques. Prior to analysis, assumptions were evaluated, including normality using the Shapiro–Wilk test, which indicated non-normality for key variables. Accordingly, rank-based multiple regression (Conover & Iman, 1981) was used to examine the extent to which faculty teaching practice subscales predicted sense of belonging (RQ1a). For analyses involving retention intent (RQ1b and RQ2), binary logistic regression was employed due to the dichotomous nature of the dependent variable. Statistical significance was evaluated at the $p < .05$ level.

Test of Outliers

The test of outliers (Table 1) shows that most variables exhibited negative skewness, indicating a tendency toward higher response values, reflecting generally positive perceptions of teaching practices and belonging. Moderate left skew was observed for belonging, in-class activities, and feedback, suggesting clustering at higher ratings. Assignments and retention intent were closest to normal distribution, with minimal skewness and near-normal kurtosis.

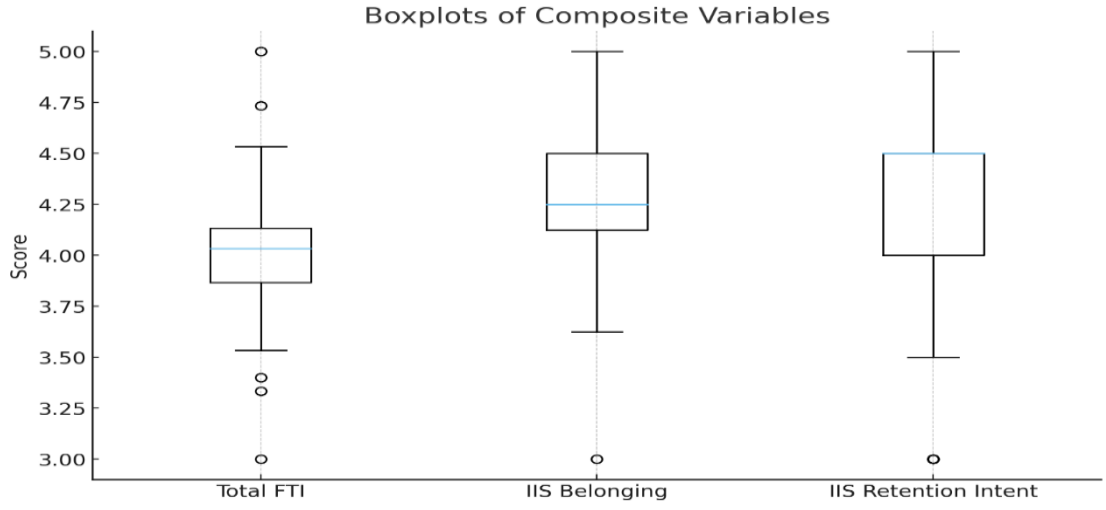
Kurtosis values indicated that several variables (e.g., course information, FTI total) were moderately peaked, suggesting some concentration around the mean, while others remained within acceptable ranges. Overall, the distributions were slightly skewed but acceptable for analysis, with no evidence of severe non-normality.

Table 1: Results of Test of Outliers

Variable	Skewness	Kurtosis	Interpretation
IIS Belonging	–0.671	1.712	Moderate left skew
IIS Retention Intent	–0.440	–0.284	Mild left skew; near-normal kurtosis
FTI Course Info	–0.543	3.452	Left skew
FTI Supporting Materials	–0.189	1.746	Slight left skew; moderate kurtosis
FTI In-Class Activities	–0.779	0.769	Moderate left skew; slightly peaked
FTI Assignments	–0.074	–0.086	Near normal distribution
FTI Feedback Assessment	–0.723	1.565	Moderate left skew; moderate kurtosis
FTI Total	–0.120	2.145	Mild left skew; moderately peaked

Boxplot

Figure 2 is a boxplots showing high central values across all variables, with moderate variability. Retention intent exhibits the greatest spread, while teaching practices are more concentrated. A few mild lower-end outliers are present, but no extreme outliers. Overall, distributions are slightly skewed toward higher values.



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Test of Normality

Table 2 shows the result of the Shapiro–Wilk test indicated that sense of belonging (p = .589) and faculty teaching practices (p = .179) did not significantly deviate from normality, whereas retention intent (p = .006) significantly deviated from a normal distribution. Overall, the data violated normality and the ordinal nature of the data warranted a nonparametric test.

Table 2: Test of Normality

Variable	W Statistic	p-value	Interpretation
Sense of Belonging	0.984	.589	Normal
Retention Intent	0.944	.006	Not Normal
Faculty Teaching Practices	0.973	.179	Normal

Descriptive `Statistics

Table 3 shows that all variables showed high to very high mean scores, indicating strongly positive perceptions. Belonging and retention intent were very high, while teaching practices were consistently high, with in-class activities highest. Low standard deviations indicate limited variability and clustered responses.

Table 3 Descriptive Statistics for Study Variables (N = 84)

Variable	Mean	SD	Min	Max	POMS	Effect Size Meaning
IIS Belonging (8 items)	4.27	0.33	3.00	5.00	.82	Very High
IIS Retention Intent (2 items)	4.26	0.55	3.00	5.00	.81	Very High
FTI Total (15 items)	4.01	0.29	3.00	5.00	.75	High
FTI Course Information	3.81	0.43	2.33	5.00	.70	High
FTI Supporting Materials	3.87	0.37	2.67	5.00	.72	High
FTI In-Class Activities	4.36	0.44	3.00	5.00	.84	Very High
FTI Assignments	3.86	0.45	2.67	5.00	.72	High
FTI Feedback & Assessment	4.16	0.36	3.00	5.00	.79	High

Demographic Statistics

Table 4 shows demographic characteristics of participants. The sample was predominantly young to mid-adult, with the largest group aged 25–34 (47.6%), followed by 18–24 (26.2%).

Table 4 Demographic Characteristics of Participants

Variable	Category	Frequency (n)	Percent (%)
Age	18–24	22	26.2
	25–34	40	47.6
	35–44	9	10.7
	45–54	8	9.5
	55+	5	6.0
Gender	Male	35	41.7
	Female	42	50.0
	Prefer not to say	1	1.2
	Missing/Did not report	5	6.0
Enrollment Status	Full-time	54	64.3
	Part-time	30	35.7
Mode of Study	Online	54	64.3
	Campus / In-Person	26	31.0
	Hybrid	4	4.8

Gender distribution was relatively balanced, with a slight majority of female participants (50.0%). Most students were full-time (64.3%) and primarily enrolled in online programs (64.3%), indicating a sample largely reflective of post-traditional and online learners

Hypotheses Testing

Because the data violated normality assumptions, non-parametric analyses were employed. Prior to conducting regression-based predictive analyses, Spearman rank-order correlation was performed to examine the strength and direction of relationships among the variables. Spearman correlation is appropriate for ordinal data and non-normal distributions, providing a robust assessment of associations without requiring normality. The results of the correlation analysis informed subsequent regression modeling by identifying significant relationships among faculty teaching practices, sense of belonging, and retention intent**.**

Table 5 presents the results of the Spearman Rank Correlation. The results indicate that sense of belonging is significantly and positively associated with key teaching practice subscales, particularly in-class activities ($\rho = .344$, $p < .05$), assignments ($\rho = .311$, $p < .05$), and most strongly feedback and assessment ($\rho = .440$, $p < .01$). In contrast, retention intent shows no significant relationships with any teaching practice subscale or with belonging ($\rho = .126$, ns), suggesting a lack of direct association.

Additionally, the teaching practice subscales are moderately intercorrelated, supporting their structure as a coherent, multidimensional construct. These correlation patterns directly align with the regression results: the presence of significant associations between teaching practices and belonging explains the significant predictive model for belonging, while the absence of significant correlations involving retention intent explains the non-significant regression results for retention.

Table 5 Spearman Rank-Order Correlation Matrix for Study Variables (N = 84)

Variables	1	2	3	4	5	6	7
1. Belonging	—	.126	.107	.024	.344*	.311*	.440**
2. Retention Intent	.126	—	–.189	–.077	.178	–.052	–.152
3. FTI Course Information	.107	–.189	—	.309*	.279	.321*	.306*
4. FTI Supporting Materials	.024	–.077	.309*	—	.366*	.299*	.394*
5. FTI In-Class Activities	.344*	.178	.279	.366*	—	.340*	.365*
6. FTI Assignments	.311*	–.052	.321*	.299*	.340*	—	.355*
7. FTI Feedback & Assessment	.440**	–.152	.306*	.394*	.365*	.355*	—

Note. Spearman rank-order correlations were used due to non-normality of variables and the ordinal nature of survey items. ($p < .05$, ** $p < .01$*)*

Hypotheses Testing

To address the research questions, a series of non-parametric correlation and regression analyses were conducted to examine the relationships among faculty teaching practices, sense of belonging, and retention intent. Consistent with the study's predictive framework, Research Question 1a (RQ1a) assessed the extent to which faculty teaching practice subscales predict sense of belonging, while Research Question 1b (RQ1b) examined their predictive effect on retention intent. Research Question 2 (RQ2) evaluated whether sense of belonging predicts retention intent. Hypotheses corresponding to each research question were tested using Spearman rank-order correlations to establish initial associations, followed by regression analyses to determine the extent of predictive relationships among variables.

RQ1a, b.

The model predicting sense of belonging was statistically significant ($\chi^2 = 18.72$, $p = .002$) with a moderate effect size ($R^2 = .27$). Among the predictors, only in-class activities significantly predicted belonging ($\beta = .41$, $p = .001$) with a meaningful effect, while all other teaching practice subscales were non-significant.

In contrast, the model predicting retention intent was not significant ($\chi^2 = 1.64$, $p = .896$) with a small effect size ($R^2 = .034$). None of the teaching practice subscales significantly predicted retention intent, and all effects were weak.

Overall, the results indicate that teaching practices—particularly in-class activities—predict belonging, but do not predict retention intent.

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Table 6 Results for RQ1a, b.

Outcome Variable	Predictor	β	SE	χ^2	p	Effect Size
Sense of Belonging	Course Information	.14	.09	$\chi^2 = 2.81$	.094	.04
	Supporting Materials	.11	.08	$\chi^2 = 2.31$	.128	.03
	In-Class Activities	**.41***	.12	**$\chi^2 = 10.94$***	**.001***	**.17***
	Assignments	.09	.07	$\chi^2 = 1.79$	.181	.02
	Feedback & Assessment	.07	.08	$\chi^2 = 1.39$	.240	.02
	Model χ^2 (5)	—	—	**18.72***	**.002***	—
	Nagelkerke R^2	—	—	—	—	**.27 (M)**
Retention Intent	Course Information	.15	.45	Wald = 0.11	.739	OR = 1.16
	Supporting Materials	.41	.55	Wald = 0.56	.454	OR = 1.51
	In-Class Activities	.32	.49	Wald = 0.42	.518	OR = 1.38
	Assignments	.40	.49	Wald = 0.66	.417	OR = 1.49
	Feedback & Assessment	−.05	.50	Wald = 0.01	.921	OR = 0.95
	Model χ^2 (5)	—	—	1.64	.896	—
	Nagelkerke R^2	—	—	—	—	.034 (Small)

Note. Sense of belonging model estimated using nonparametric regression. Retention intent coded as 0 = low intent (1–3) and 1 = high intent (4–5). Odds ratios (Exp(B)) represent the change in likelihood of retention for a one-unit increase in each predictor. Values close to 1.0 indicate minimal practical effect. The model was not statistically significant ($p > .05$), and the overall explanatory power was small (Nagelkerke $R^2 = .034$).

RQ2

Table 7 presents the results for RQ2. The binary logistic regression analysis indicated that sense of belonging did not significantly predict retention intent ($p = .252$). The overall model was not statistically significant ($\chi^2 = 1.31$) and demonstrated a small effect size (Nagelkerke $R^2 = .03$), suggesting that belonging had a weak and non-significant influence on retention intent.

Table 7 Binary Logistic Regression Results for Sense of Belonging Predicting Retention Intent

Predictor	B	SE	Wald χ^2	df	p-value	Exp(B)	Nagelkerke R^2	Model χ^2
Sense of Belonging	0.13	—	—	1	.252	—	.03	1.31

Summary of Results

Table 8 presents the summary of the results. Faculty teaching practices significantly predicted sense of belonging at the model level, with a moderate effect size, but only in-class activities emerged as a significant individual predictor. All other teaching practice subscales were non-significant with small effects.

Table 8 Summary of Effect Sizes for Research Questions 1 and 2

Research Question	Hypothesis Tested	Statistical Result	Decision	Effect Size
RQ1: Faculty → Belonging (Overall Model)	H_{01}: FTI subscales do not predict belonging	$\chi^2(5) = 18.72$, $p = .002$	**Reject H_{01}**	Nagelkerke R^2 = .27 (Moderate)
Course Information	$H_0: \beta_1 = 0$	$\beta = .14$, $p = .094$	Fail to Reject	$f^{2*} = .04$ (Small)
Supporting Materials	$H_0: \beta_2 = 0$	$\beta = .11$, $p = .128$	Fail to Reject	$f^{2*} = .03$ (Small)
In-Class Activities	$H_0: \beta_3 = 0$	$\beta = .41$, $p = .001$	**Reject H_0**	$f^{2*} = .17$ (M1)

Assignments	H_0: $\beta_4 = 0$	$\beta = .09$, $p = .181$	Fail to Reject	$f^{2*} = .02$ (Small)
Feedback & Assessment	H_0: $\beta_5 = 0$	$\beta = .07$, $p = .240$	Fail to Reject	$f^{2*} = .02$ (Small)
RQ1: Faculty → Retention Intent (Overall Model)	H_{01}: FTI subscales do not predict retention intent	$\chi^2(5) = 1.64$, $p = .896$	Fail to Reject H_{01}	Nagelkerke R^2 = .034 (Small)
Course Information	H_0: $\beta_1 = 0$	$\beta = .15$, $p = .739$	Fail to Reject	OR = 1.16 (M2)
Supporting Materials	H_0: $\beta_2 = 0$	$\beta = .41$, $p = .454$	Fail to Reject	OR = 1.51 (ns)
In-Class Activities	H_0: $\beta_3 = 0$	$\beta = .32$, $p = .518$	Fail to Reject	OR = 1.38 (ns)
Assignments	H_0: $\beta_4 = 0$	$\beta = .40$, $p = .417$	Fail to Reject	OR = 1.49 (ns)
Feedback & Assessment	H_0: $\beta_5 = 0$	$\beta = -.05$, $p = .921$	Fail to Reject	OR = 0.95 (Negligible)
RQ2: Belonging → Retention Intent	H_{02}: Belonging does not predict retention intent	$\chi^2(1) = 1.31$, $p = .252$	Fail to Reject H_{02}	Nagelkerke R^2 = .03 (Very Small); OR = 1.14

Note. Sense of belonging model estimated using nonparametric regression. Retention intent model estimated using logistic regression (0 = low intent, 1 = high intent). M1 = moderate. M2 = minimal. Ns = non-significant. *p < .05, **p < .01.

In contrast, faculty teaching practices did not predict retention intent, as both the overall model and individual predictors were non-significant with small to negligible effects. Similarly, sense of belonging did not significantly predict retention intent, indicating a weak relationship. Overall, the findings demonstrate that teaching practices influence belonging, but neither teaching practices nor belonging predict retention intent.

Relationship Mapping of variables in Relation to the Study Results

Figures 3–5 illustrate the conceptual, empirical, and structural relationships among faculty teaching practices, sense of belonging, and retention intent, and collectively align with the study's correlation and regression findings.

Figure 3 (Conceptual Model) presents the hypothesized mediated pathway in which faculty teaching practices influence retention intent through sense of belonging. This model reflects theoretical expectations grounded in prior literature; however, the statistical results do not support this full mediation. While the proposed relationship between teaching practices and belonging is consistent with the data, the expected link between belonging and retention intent is not empirically observed.

Figure 4 (Empirical Model) reflects the observed relationships and directly corresponds to the statistical findings. The significant pathway from teaching practices to sense of belonging is supported by both the Spearman correlations, which show positive associations between belonging and key teaching practice subscales (e.g., in-class activities, assignments, and feedback), and the regression results, where the model predicting belonging was significant and primarily driven by in-class activities. In contrast, the absence of significant pathways to retention intent mirrors the statistical results, as neither correlation nor regression analyses identified meaningful relationships between retention intent and any predictor.

Figure 5 (Structural Model) extends these findings by representing teaching practices as a latent multidimensional construct, consistent with the observed intercorrelations among subscales. This model confirms that teaching practices operate as a coherent construct that significantly predicts belonging. However, consistent with both correlation and regression results, retention intent remains unexplained, with no evidence of direct or indirect effects.

Across all three figures, the relationship mapping progresses from a theoretical model to an empirically supported structure, demonstrating that teaching practices influence students' psychological experience (sense of belonging), but do not extend to persistence-related outcomes (retention intent). Overall, the figures provide a visual synthesis of the statistical results, confirming that the relationship mapping is empirically grounded, with significant pathways retained and unsupported relationships appropriately excluded.

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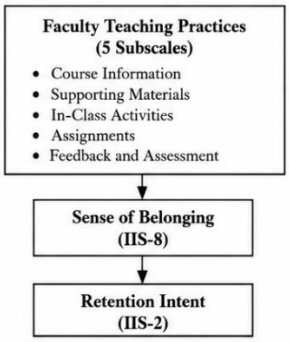
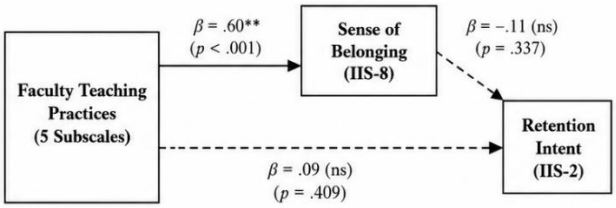
Figure 3. **Conceptual Model of Relationships Among Teaching Practices, Sense of Belonging, and Retention Intent**



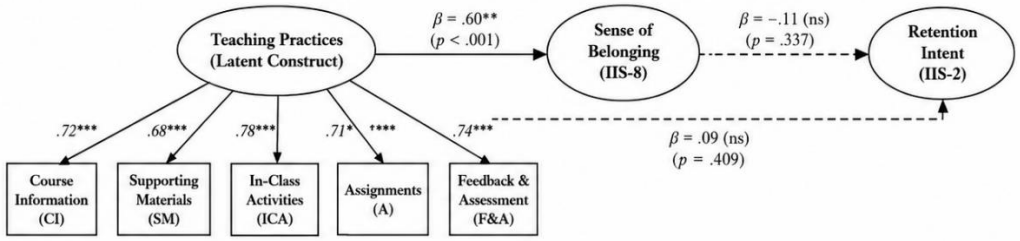
Note. Faculty teaching practices are operationalized through five subscales: course information, supporting materials, in-class activities, assignments, and feedback and assessment.

Figure 4. **Empirically Supported Model of Relationships Among Study Variables**



Note. Solid arrow indicates a statistically significant relationship. Dashed arrows indicate non-significant relationships. $^{**}p < .01$.

Figure 5. **Structural Model of Relationships Among Study Variables**



Note. Ovals represent latent constructs; rectangles represent observed indicators. Standardized coefficients (β) are reported. Solid arrow indicates significant path; dashed arrows indicate non-significant paths. $^{**}p < .01$. $^{***}p < .001$. *ns* = not significant.

4. DISCUSSION

The purpose of this study was to examine the relationships among faculty teaching practices, students' sense of belonging, and retention intent within a broad undergraduate population. The findings provide partial support for existing theoretical frameworks and contribute to a more nuanced understanding of student persistence.

Consistent with prior research, the results demonstrated that faculty teaching practices significantly predict students' sense of belonging, with in-class activities emerging as the strongest predictor. This finding aligns with Strayhorn's (2019) assertion that belonging is shaped through meaningful engagement and interaction, as well as with Tinto's (1993, 2017) emphasis on academic integration as a central mechanism of student success. The significance of in-class activities specifically reinforces evidence from active learning research, which shows that collaborative and participatory instructional strategies enhance student engagement and connection (Freeman et al., 2014; Theobald et al., 2020). These findings confirm that teaching practices are not merely instructional tools but are critical in shaping students' psychological and relational experiences within the learning environment.

However, the results diverge from traditional assumptions regarding persistence. Contrary to expectations, sense of belonging did not significantly predict retention intent, nor did faculty teaching practices directly influence retention outcomes. This finding challenges a commonly held interpretation of Tinto's model, which suggests that integration leads to persistence, and instead supports emerging literature indicating that belonging may function more as a proximal outcome (experience) rather than a distal predictor (behavior) (Allen et al., 2023; Xu & Jaggars, 2023). In this study, belonging appears to reflect how students feel about their academic environment, but not necessarily how they act in terms of enrollment decisions.

The absence of a significant relationship between teaching practices and retention intent further reinforces this distinction. While teaching practices enhance belonging, they do not extend to influencing students' decisions to remain enrolled. This pattern is consistent with Bean and Metzner's (1985) model, which emphasizes the role of external and environmental factors, particularly for post-traditional students. Given that the sample was predominantly online and non-traditional, it is likely that retention decisions were influenced by factors such as employment, financial constraints, time availability, and personal responsibilities, which are not directly addressed by classroom-level experiences.

These findings suggest a decoupling between academic experience and retention behavior, highlighting the limitations of relying solely on instructional interventions to improve retention. While faculty teaching practices are essential for fostering engagement and belonging, they represent only one component of a broader system influencing student outcomes. This supports recent research advocating for multi-dimensional retention frameworks, where institutional, environmental, and personal factors interact to shape persistence decisions (Xu & Jaggars, 2023). The findings also suggest that belonging may function more effectively as a proximal indicator of academic experience than as a direct behavioral predictor of persistence. This interpretation aligns with recent literature emphasizing that belonging enhances engagement, motivation, and student experience, while persistence decisions may depend more heavily on external contextual factors (Nguyen, 2026; Xu & Jaggars, 2023).

Recent evidence further suggests that online learners often prioritize flexibility, time management, and practical considerations over social connectedness when evaluating persistence decisions (Ng & Viswanathan, 2025). The findings presented in Figures 3–5 challenge the traditional assumption that sense of belonging directly translates into student retention. While the conceptual model reflects the widely held belief that belonging serves as a key mechanism linking academic experiences to persistence, the empirical and structural models disrupt this narrative by demonstrating that, although faculty teaching practices significantly enhance students' sense of belonging, this effect does not extend to retention intent. Instead, the results suggest that belonging functions as a proximal psychological outcome rather than a direct behavioral predictor of persistence.

This shift in understanding reframes retention as a more complex, multidimensional process that cannot be explained by academic and relational experiences alone. Rather than viewing belonging as a sufficient condition for retention, the findings position it as one component within a broader system influenced by external, situational, and individual factors. Consequently, this study advances a new perspective in which teaching practices are essential for fostering meaningful academic experiences, but retention must be understood through a more integrative lens that extends beyond the classroom

Overall, the study contributes to the literature by integrating and differentiating major retention theories. The results support Tinto and Strayhorn in explaining how belonging is formed, while simultaneously reinforcing Bean and Metzner in explaining why students persist or leave. This integrated perspective advances the field by clarifying that belonging is necessary for positive student experience but not sufficient for retention, particularly in contemporary, diverse undergraduate populations.

Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, the use of a non-probability purposive sample limits the generalizability of the results, as the sample may not fully represent the broader undergraduate population. Additionally, the sample was largely composed of online and post-traditional students, which may have influenced the observed relationships, particularly regarding retention.

Second, the study employed a cross-sectional design, capturing data at a single point in time. As a result, causal inferences cannot be made, and the findings reflect associations rather than longitudinal effects on persistence.

Third, the inclusion criteria were broad, including all undergraduate students aged 18 and older without controlling for time since course completion. Participants may have reflected on experiences across different time periods, introducing recall variability.

Fourth, the study relied on self-reported measures, which may be subject to response bias, including social desirability and subjective interpretation of survey items. In addition, retention intent was measured using a dichotomized scale (IIS-2), which may have reduced variability and limited the ability to detect nuanced relationships.

Finally, the study focused primarily on instructional and psychological variables, without incorporating external factors such as financial constraints, employment, or family responsibilities, which are known to influence retention. This omission may explain the lack of significant findings related to retention intent.

5. CONCLUSION

This study examined the relationships among faculty teaching practices, sense of belonging, and retention intent within a broad undergraduate population. The findings indicate that while teaching practices significantly enhance students' sense of belonging, neither teaching practices nor belonging significantly predict retention intent. Teaching practices significantly

influenced students' sense of belonging but did not extend to persistence-related outcomes, suggesting that belonging may represent a proximal academic experience rather than a direct predictor of retention behavior. These results highlight an important distinction between students' academic experiences and their persistence-related decisions.

The study contributes to the literature by clarifying that sense of belonging, although critical for engagement and student experience, does not necessarily translate into retention outcomes, particularly in diverse and post-traditional student populations. Instead, retention appears to be influenced by broader external and contextual factors beyond the scope of classroom-level interactions.

Overall, the findings underscore the need for a multi-dimensional approach to student retention, where effective teaching practices are complemented by institutional strategies that address students' academic, social, and external challenges. By distinguishing between what shapes student experience and what drives persistence, this study provides a more nuanced understanding of retention in contemporary higher education.

Implications of the Study

Implications for Theory

The findings refine existing retention frameworks by demonstrating that sense of belonging functions as a proximal experiential outcome rather than a direct predictor of retention intent. While the significant relationship between faculty teaching practices and belonging supports Tinto's (1993, 2017) and Strayhorn's (2019) emphasis on academic integration and engagement, the absence of a significant pathway to retention aligns more closely with Bean and Metzner's (1985) model, which highlights the influence of external factors. Collectively, the results support a multi-theoretical perspective, suggesting that belonging explains student experience, whereas retention is shaped by broader contextual conditions.

Implications for Practice

The results indicate that improving teaching practices enhances students' sense of belonging but is insufficient to influence retention intent. Institutions should continue to prioritize engagement-driven instructional strategies, particularly interactive learning and feedback, to strengthen student experience. However, retention efforts must extend beyond the classroom to address external barriers, including financial constraints, time demands, and competing responsibilities. Effective retention strategies therefore require integrated, system-level interventions that combine high-quality teaching with targeted institutional support services.

6. RECOMMENDATIONS

Recommendations for Future Research

Future studies should extend this work by incorporating external and environmental variables (e.g., financial stress, employment status, family responsibilities) to better explain retention outcomes, particularly among post-traditional students. Longitudinal designs are also recommended to examine how sense of belonging evolves over time and whether it influences actual persistence rather than self-reported intent. Additionally, future research should explore mediation and moderation effects, such as whether belonging indirectly influences retention through engagement or is moderated by student characteristics (e.g., age, enrollment status, modality). Expanding the sample across multiple institutions would further enhance generalizability and allow for comparisons across diverse educational contexts.

Recommendations for Practice

Institutions should continue to promote evidence-based teaching practices, particularly interactive and engagement-driven strategies, as these significantly enhance students' sense of belonging. However, retention initiatives should not rely solely on instructional improvements. Instead, institutions should adopt holistic, multi-level strategies that address both academic and non-academic barriers, including financial aid support, flexible scheduling, and targeted services for online and part-time learners. Furthermore, institutions should implement early identification systems to detect at-risk students and provide timely interventions that extend beyond the classroom. Aligning teaching practices with broader institutional support systems will be critical for improving both student experience and persistence outcomes.

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