

ASSESSING AND ENHANCING POSTSECONDARY STUDENTS' COURSE-LEVEL SENSE OF BELONGING: A COMPREHENSIVE APPROACH ACROSS ONLINE AND FACE-TO-FACE MODALITIES

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Abstract

This research addresses the critical topic of sense of belonging in high education, focusing specifically on the course level and within the online learning context. Utilizing a quantitative approach, our study aimed to create and assess the Brief Course Belonging Scale (BCBS) for its applicability across diverse postsecondary learning environments. Conducted at a prominent US southeastern university, a psychometric investigation was undertaken. The findings affirm the unidimensional nature of BCBS data across delivery contexts, establishing convergent validity by demonstrating positive associations between BCBS scores, university-level belonging, connectedness, and academic motivation. Discriminant validity was established through minimal associations with loneliness. While detecting differential item functioning in one item, this did not compromise the validity or reliability of scores. The study concludes with psychometric implications regarding the domain-specificity of the course delivery context and recommends the administration of the BCBS to a broader, more diverse student population.

Introduction

The landscape of higher education has witnessed a significant shift with the increasing prevalence of fully online courses, driven not only by pedagogical considerations but also by external factors such as the global pandemic starting in 2020 (AACSU, 2019). This transition, while offering new opportunities, has brought to the forefront unresolved issues related to student persistence, retention, and graduation rates. The need for a comprehensive understanding of postsecondary students' experiences, particularly their sense of belonging, is paramount to address the challenges associated with diverse learning contexts. This study aims to explore and enhance postsecondary students' course-level sense of belonging across online and face-to-face modalities. The concept of sense of belonging holds substantial importance in higher education, influencing various outcomes prioritized by institutions, including mental health and graduation rates (Gopalan & Brady, 2020;

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Hurtado & Carter, 1997; Tinto, 2017). Despite the recognized significance of this construct, few studies have delved into postsecondary students' sense of belonging at the course level and specifically within the online learning context. This research gap is further exacerbated by a scarcity of quantitative studies in this domain (Decker & Beltran, 2016; Hewson, 2018).

Existing instruments designed to quantify sense of belonging, such as the Psychological Sense of School Membership (PSSM) (Goodenow, 1993), have limitations, particularly in their applicability to postsecondary students in fully online programs. The evolving landscape of higher education demands a nuanced and context-specific approach to measuring sense of belonging, necessitating the development of a novel instrument.

Moreover, the global shift toward online learning has introduced unique challenges, including feelings of isolation, anxiety, and a sense of being a "second-class citizen" among online learners (O'Shea et al., 2015; Peacock & Cowan, 2018). The potential impact of these challenges on students' sense of belonging in online courses is a critical area for exploration.

Problem Statement:

The limited research on postsecondary students' course-level sense of belonging, particularly in online learning environments, underscores the need for a comprehensive and context-specific instrument. Existing measures lack the necessary psychometric evidence to enable a comparative investigation of differences in students' sense of belonging across learning contexts, whether fully online or face-to-face.

In response to these challenges and opportunities, this study seeks to develop and evaluate the Brief Course Belonging Scale (BCBS), a novel instrument tailored to measure postsecondary students' sense of belonging to other students within the same course. By focusing on both online and face-to-face delivery contexts, the BCBS aims to provide instructors with valuable insights into the dynamics of belonging within their courses, facilitating targeted interventions to enhance students' sense of connection and engagement.

Postsecondary Students' Sense of Belonging

A sense of belonging among postsecondary students has been associated with persistence, retention, and graduation (Tinto, 2017)—key metrics of student success closely tracked by higher education administrators. Despite two decades of research on postsecondary students' sense of belonging, this construct remains conceptually elusive and difficult to measure due to constant advancements in higher education (Slaten et al., 2018). Maslow (1943) proposed the foundational concept that belonging influences positive peer and self-esteem, and is essential for self-actualization. The "belongingness hypothesis" (Baumeister & Leary, 1995, p. 500), expanded the conceptualization of belonging as maintained and frequent conflict-free interaction with others, as well as committed, stable, and genuine bonds. Within education, students' sense of belonging is described as "the extent to which students feel personally...supported by others in the school social environment" (Goodenow, 1993, p. 80). Scholars similarly recognize the relational nature of the construct. However, conceptual discrepancies persist, and proposed definitions vary widely (Walton & Brady, 2017). Also, this construct has been evidenced at postsecondary institutions to influence indicators of student well-being and achievement, such as academic motivation and social connectedness (e.g., Arslan et al., 2022; Cheung & Datu, 2021; Francis et al., 2019; Kosovich et al., 2015; Waters & Charles Higgins, 2021; Waters & Johnstone, 2022). In contrast, loneliness, depression, and disengagement, as well as feelings of invisibility, shyness, and devaluation, have been associated with feeling like one does not belong in these spaces (e.g., Gunn et al., 2012; Yildirim et al., 2022). This suggests that the learning context—including virtual or online settings—may influence how students experience a sense of belonging. Even though students may share similarities across modalities, there may be unexpected group characteristics that could lead to differences in belonging.

Sense of Belonging in Online Learning Contexts

Investigating postsecondary online students' sense of belonging is concerning limited, given the rapid expansion into online learning contexts. Researchers have identified that students who are enrolled in fully online programs desire to feel a sense of belonging in the online learning contexts before attending to academic duties (Peacock & Cowan, 2018). Also, fully online students deliberately seek opportunities to interact with others beyond basic engagement to compensate for a lack of physical presence (e.g., Delahunty et al., 2014). Hewson (2018) identified unintended negative psychological effects of the online learning experience, which include anxiety, stress, guilt, and hyper-competitiveness. O'Shea et al. (2015) reported that "online learners identify themselves as 'second-class citizens' or 'just an online student'" (p. 55). Unexpectedly, rather than making higher education more accessible, online learning may isolate and stifle the social and academic experience of vulnerable students (Hewson; O'Shea et al.). To be sure, face-to-face contexts elicit similar psychological reactions, but the variability between the two learning contexts might be more nuanced than currently understood.

Differences in experiences of belonging, specifically in higher education, remain an issue with increasing complexity (Hurtado & Carter, 1997; Strayhorn, 2012). The variety of learning contexts (i.e., face-to-face, online, and hybrid courses; Allen & Seaman, 2013; Green, 2022), increases the potential of further marginalizing students that are from vulnerable groups (Hussain & Jones, 2021). Since distance education programs receive less support and resources, students who are fully online are particularly susceptible to being disadvantaged (e.g., O'Shea et al., 2015; Peacock & Cowan, 2018). Addressing these important issues of equity related to the sense of belonging due to the educational environment, specifically the online learning context, at higher education institutions may better improve enrollment, achievement, and retention efforts. Online learning contexts present opportunities for instructors to attend to these issues resulting from the online learning context, including students' sense of belonging (e.g., Bautista & Escofet, 2015; Thomas et al., 2014). Understanding postsecondary students' sense of belonging—and its measurement—in both online and face-to-face learning contexts subsequently improves the academic experiences of all students.

Measuring Postsecondary Students' Sense of Belonging

The use of existing instruments to measure students' sense of belonging has recently gained momentum as higher education institutions deliberately focus on the sense of belonging to address student retention issues (e.g., Angelino et al., 2007; Slaten et al., 2018). Despite efforts to improve students' sense of belonging in postsecondary settings, there is a gap in the available instruments for this construct. Existing instruments (i.e., Hoffman et al., 2002; Slaten et al.) are widely used but have been presented with limited validity evidence. Studies have recognized the importance of measuring belonging (e.g., Hurtado & Carter, 2007; NCES, 2012), but the most used—Goodenow's (1993) Psychological Sense of School Membership (PSSM)—focuses on adolescent students. Though the PSSM is a popular choice for a sense of belonging research, concerns have been expressed about the psychometrics of the PSSM (You et al., 2011) and its age appropriateness given that it is not developed for use with postsecondary students.

Single items on national surveys (e.g., NCES, 2012) present psychometric limits and alternative instruments with improved psychometric qualities for sampled data have been developed (e.g., Slaten et al., 2018; Whiting et al., 2018). For instance, the Simple School Belonging Scale (SSBS) scale by Whiting was developed in response to multidimensionality issues demonstrated by the PSSM but specifically designed for adolescents, not postsecondary students. However, a brief instrument that has been developed for and field-tested with postsecondary students taking courses and studying in an online environment is not available. Few studies address this distinct issue (e.g., Decker & Beltran, 2016; Hewson, 2018). More pressing, the existing instruments were not developed with the intention of measuring the sense of belonging in an online course or for use with postsecondary students completing their degree in a fully online program while living at a distance

from the physical campus. Ultimately, the development of a robust instrument to measure postsecondary students' sense of belonging can only help higher education institutions address contemporary issues, including the growing demand for online education.

Theoretical Framework

This investigation is situated in two concurrent frameworks: Bandura's social cognitive theory (SCT, 1986) and Tinto's model of retention (2017). The personal factors of students' beliefs (i.e., sense of belonging), environmental factors of the academic context (i.e., course context), and behavioral factors of student achievement (i.e., retention) are appropriately situated within SCT. Tinto's model of student motivation and persistence (in compliment to SCT) allows for these relationships to be examined more concretely. Like SCT, Tinto highlighted bidirectional relationships of students' sense of belonging and other personal motivation and environmental factors, which include online and face-to-face learning contexts. According to Tinto, a sense of belonging maintains and enhances motivation, thus supporting student persistence. So, students' sense of belonging, and its relationship with self-efficacy and perceptions of the curriculum, comprises a student's motivation to persist towards achievement goals. Together, these two theoretical frameworks capture the dynamic relationships between individual and institutional factors to best frame how a sense of belonging can be conceptualized for postsecondary students and its influence on behaviors associated with student success.

Purpose

The purpose of our study was to extend the research on students' sense of belonging by developing a new Brief Course Belonging Scale (BCBS) that measures postsecondary students' sense of belonging to other students within the same course in both online (i.e., students enrolled in online courses and learning from a distance from the university) and face-to-face (i.e., students who attended classes on the physical campus of the university) course delivery contexts. The BCBS was developed to assist course instructors so that they can become more aware of the level of sense of belonging occurring within their course(s) and to use this information to strengthen belonging among students in their course(s). Specifically, we wanted to assess the internal structure (i.e., dimensionality and differential item functioning [DIF] across course delivery contexts) of data on the BCBS. So that appropriate and defensible claims about students' sense of belonging to other students within the same course can be made, a fair and reliable instrument should be relieved of potential issues of validity based on group differences (e.g., course delivery context). Bandalos (2018) stated that "If unintended consequences are found, researchers should determine, to the degree possible, whether these are due to sources of test invalidity such as test irrelevance or construct underrepresentation" (p. 296). By developing and evaluating sense of belonging instruments that are context-specific, like the BCBS, researchers and practitioners alike can ensure fair measurement and better understand how to measure belonging in online and face-to-face contexts. Additionally, convergent and discriminant validity evidence was assessed by examining how BCBS scores correlated with related and different constructs.

First, we hypothesized that data from the BCBS is unidimensional. Second, we wanted to know if items on the BCBS behave differently across online and face-to-face course delivery contexts. If items do behave differently by course contexts, we wanted to know if these differences are large enough to meaningfully impact the measurement scoring. Third, after removing any item(s) from the BCBS which behave differently across contexts, is there a difference in mean BCBS scores across contexts? Specifically, we hypothesized that scores in the online context will be slightly lower than scores in the face-to-face context given that face-to-face courses tend to lend themselves to more interactions. Fourth, we expected scores on the BCBS to have the strongest positive relationship with scores from instruments measuring the sense of belonging at the university level and social connectedness (Slaten et al., 2018; Whiting et al., 2018). Fifth, we expected medium to strong

positive correlations between BCBS and academic motivation scores. Finally, scores on the BCBS were predicted to have the weakest negative relationship with loneliness scores (Slaten et al., 2018).

Method

Participants

Based on the sampling design, 127 online and 123 face-to-face courses were included. The resulting sample was asked to participate in a survey about their experiences on campus for internal reporting to SAL and TLAI. During the last three weeks of the semester, partners in IR invited a sample of randomly selected students ($N = 2,643$) from randomly selected courses ($J = 250$) that met the inclusion criteria to participate in this university-wide survey. Participants came from 146 courses (response rate = 58.4%). Participants in the sample ($n = 305$; response rate = 11.5%) who were interested and provided their explicit consent, as required by the protocol approved by the IRB. The sample consisted of primarily female (70.5%) students, taking online courses (56.7%), seeking a graduate degree (71.8%, Undergraduate = 10.2%, Professional = 18%), and identified as White or Caucasian (70.8%, Asian = 4.6%, Black or African American = 6.9%, Hispanic or Latino = 4.9%, Multiracial = 3.6%, Decline or Unknown = 8.5%) with an average age was 31.9 years ($SD = 10.5$).

Measures

Brief Course Belonging Scale

The current study examined postsecondary students' sense of belonging to other students in their course. Initially, a pool of 20 items was written by the authors based on themes regarding postsecondary students' qualitative descriptions of sense of belonging in online and face-to-face modalities (Author et al., 2021), considering the current sense of belonging instruments (Goodenow, 1993; Slaten et al., 2018; Whiting et al., 2018), and according to guidelines for best practices in educational and psychological measurement (AERA et al., 2014; Bandalos, 2018). A set of 20 items were iteratively refined based on expert reviews and cognitive interviewing until the final set of items was determined.

First, content and field experts ($n = 5$) in education and psychology who conduct research on the sense of belonging, higher education, and post-secondary students, and/or applied psychometric techniques were purposefully selected to complete a process-based review (Rubio et al., 2003) for (a) phrasing clarity; (b) item retention or removal; and (c) importance to the measurement of belonging. Of the original 20 items, 6 items were deleted based on content and field experts' recommendation that these items were poorly worded, redundant, and/or irrelevant to the construct. Next, cognitive interviews (Peterson et al., 2017) were conducted with a sample of students ($N = 6$) specifically recruited for their experience with both online and face-to-face courses. An open-response protocol was established to describe the clarity of the item, as well as any phrasing revisions, and to provide feedback on construct relevance. Cognitive interviews were conducted to saturation and common responses across the interview sessions were reflected in the refinement of items until the intended meaning was clearly communicated by students during each interview. After cognitive interviewing, 11 items were proposed. The second round of higher education professionals and field experts ($n = 8$) provided another qualitative review which confirmed the 11 items refined at the end of the cognitive interviews. The integration of the qualitative data and iterative item writing process informed an intentional and thoughtful approach to measure postsecondary students' sense of belonging to other students in online and face-to-face contexts. The 11-item BCBS ($\alpha = .96$) uses a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

University Belonging Questionnaire

The 24-item University Belonging Questionnaire (UBQ; Slaten et al., 2018) was developed specifically for use with students to measure overall university belonging ($\alpha = .94$) and is consists of three subscales—university affiliation ($\alpha = .93$), support ($\alpha = .91$), and relationships ($\alpha = .92$). Each item on the UBQ is rated

on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). A higher score on the UBQ represents a stronger sense of belonging at the university.

Expectancy-Value-Cost Scale

The 10-item Expectancy-Value-Cost Scale (EVC; Kosovich et al., 2015) measures students' overall academic motivation ($\alpha = .83$) on three theoretically separate and important motivational constructs – E ($\alpha = .87$), V ($\alpha = .93$) and C ($\alpha = .78$). The EVC uses a 6-point Likert-type response format ranging from 1 (strongly disagree) to 6 (strongly agree). A higher score on the EVC represents greater overall academic motivation.

Social Connectedness Scale

The 8-item Social Connectedness Scale (SCS; Lee & Robbins, 1995) measures the emotional distance from others

($\alpha = .94$). Each item is rated on a 6-point Likert-type scale ranging from 1 (strongly agree) to 6 (strongly disagree). A higher score on the SCS represents a closer emotional connection to others.

UCLA Loneliness Scale

The 20-item UCLA Loneliness Scale (UCLALS; Russell et al., 1980) assesses global loneliness ($\alpha = .91$). The UCLALS uses a 4-point Likert-type scale ranging from 1 (never) to 4 (always). A higher score on the UCLA Loneliness Scale represents greater feelings of global loneliness.

Procedure

Students were invited to participate in this study based on specific inclusion criteria. First, eligible courses were selected (excluding hybrid courses). To include only fully online and only fully face-to-face students, only courses active at the time of data collection were sampled and certain types of courses were excluded (e.g., experiential learning [internships, co-ops], study abroad, dissertation writing, and compressed video). Only sections that had more than five students were included. Courses from both modalities were then matched by course characteristics, based on the course (e.g., MATH 109 face-to-face and MATH 109 online), level (e.g., 100- and 200-level courses), department, and college. Next, eligible students were selected. Online students were classified as those who were seeking a degree from a fully online program, learning from a distance. Face-to-face students were classified as those who were seeking a degree from a traditional program and attending classes on the physical campus of the university. If a student met the inclusion criteria and appeared in the participant pool more than once, then we randomly selected a single occurrence.

Our study was conducted at a predominantly White institution that offers a robust selection of courses and program degrees as fully online opportunities. Data were collected in partnership with Institutional Research (IR), Student and Academic Life (SAL), and Teaching, Learning and Academic Innovation (TLAI) units. Campus partners were interested in learning more about the experience of enrolled students (i.e., their perceived sense of belonging to other students in their courses). Based on consultation with IR, an intricate sampling design and inclusion criteria were established to reflect the typical participation rates at the university and student characteristics of both online and face-to-face student populations.

The survey was configured for randomization at both instrument and item levels to address any potential issues associated with participant fatigue or local item dependency. Also, a three-form design (Pokropek, 2011) was used to reduce the cognitive load on participants. In this design, three forms of the survey were developed so that all participants responded to the instruments measuring the primary constructs of interest (i.e., BCBS, EVC). Participants were randomly assigned one of the instruments measuring the related constructs (i.e., SCS, UCLALS), as well as one of the subscales of the UBQ. The BCBS and EVC were paired together as a block within the survey and presented first to mitigate any possible measurement error due to the priming of other constructs. Data were anonymized prior to any data analyses.

Data Analysis

Preliminary Analysis

Due to several items having low response frequency (< 5) in the two lowest agreement categories we chose to collapse the four categories into three (i.e., Strongly disagree or Disagree = Disagree; Agree = Agree; Strongly agree = Strongly agree). Combining response categories was employed to produce more reliable thresholds (Reise et al., 2021) and reliably distinguish sense of belonging scores without reducing the data so much that reliability was diminished, or quality of model fit inflated (Rutkowski et al., 2019). Also, intraclass correlation coefficients (ICCs) and design effect (DEFF) values were computed for each item based on an intercept-only multilevel ordinal logistic regression. Furthermore, the expected unidimensional nature of the BCBS was investigated by computing eigenvalues and using parallel analysis to provide evidence concerning the dimensionality of the data (Horn, 1965).

Confirmatory Factor Analysis

Considering the nested structure of data (i.e., students within courses), a within-cluster construct with a saturated level-2 was anticipated to allow for cluster-level variability with a saturated model of the covariances among the clusters (Stapleton et al., 2016). Although this model is a realistic approximation of the construct of students' sense of belonging to others within a course, issues of model convergence occurred when a multilevel approach was used with item-level indicators. Thus, a multilevel confirmatory factor analysis (CFA) was not feasible with the current data, but it was possible to conduct single-level CFAs using the TYPE = COMPLEX option in Mplus 8.6 (Muthén & Muthén, 2021) to provide standard errors which account for clustering of persons in courses.

Unidimensional CFAs were estimated separately for the online sample and the face-to-face sample with the weighted least squares with mean and variance correction (WLSMV) estimator. Exact fit was concluded if the χ^2 was not significant ($p > .05$). Otherwise, the approximate fit was concluded if standardized root mean square residual (SRMR) was $\leq .08$ and large absolute residual correlations were not observed (Asparouhov & Muthén, 2018). Small absolute residual correlations were defined as those less than or equal to .10 (Kline, 2016). Convergent validity evidence for the BCBS was provided by computing the average variance extracted (AVE) and composite reliability (i.e., coefficient omega). Acceptable level evidence of convergent validity is established when AVE is at least 0.50 (Fornell & Larcker, 1981) and composite reliability is at least 0.80 (Nunnally and Bernstein, 1994).

Hierarchical Ordinal Logistic Regression

Hierarchical ordinal logistic regression (HOLR) was used to assess DIF based on course delivery context, accounting for both the polytomous item response options used to collect data on the BCBS and the nested nature of the data. The HOLR procedure uses likelihood ratio testing (LRT) among three models for each item to determine the significance of uniform and non-uniform DIF. Model 1 employs the total score as a predictor of the item score. Model 2 adds the grouping variable (online vs. face-to-face) as a predictor. If Model 2 fits the data significantly better than Model 1, uniform DIF is indicated. Model 3 adds the interaction between total score and grouping variable as a predictor. If Model 3 fits the data significantly better than Models 1 or 2, nonuniform DIF is indicated. To adjust for multiple comparisons being conducted, α was adjusted using the Bonferroni technique. Since there are 11 items in the BCBS, we used an α of $.05/11 = .0045$ as our indicator of statistical significance for the presence of nonuniform DIF (Crane et al., 2004). To determine the importance of DIF in each item, the expected score standardized difference (ESSD) effect size (Meade, 2010) was computed for each item and values > 0.2 were considered for removal.

Multilevel Analysis

Differences in BCBS mean scores between the online and face-to-face groups were assessed using a multilevel modeling approach. The significance of the grouping variable (online vs. face-to-face) as a predictor of BCBS mean scores were tested using LRT between an intercept-only model and a model where the grouping variable was included as a predictor at the between (class) level. The effect size of this mean difference was computed as a partially standardized regression coefficient with only the outcome standardized (Lorah, 2018).

Correlational Analysis

Correlational evidence of validity for BCBS scores was obtained by estimating the relationship between the scores of the BCBS and those of the UBQ, ECV, SCS, and UCLALS by computing the Pearson correlation coefficient in Mplus using the TYPE = COMPLEX option. Specifically, convergent evidence was established when a specifically hypothesized high positive correlation existed between scores on the BCBS and UBQ and SCS scores, whereas discriminant evidence was established when a specifically hypothesized low negative correlation existed between scores on the BCBS and UCLALS.

Results

Preliminary Analysis

Item-level ICCs and DEFF values ranged from .000-.349 and 1.000-1.291, respectively, for the online sample, whereas ICCs and DEFF values ranged from .000-.092 and 1.000-1.134, respectively, for the face-to-face sample. Total scores show similar levels of dependence on course, ICC = .198 and DEFF = 1.165 for the online group and ICC = .006 and design effect = 1.008 for the face-to-face group. These values indicate that clustering cannot be ignored. Additionally, the first eigenvalues were 9.10 in the online group and 8.65 in the face-to-face group; the second eigenvalue was less than 1. Parallel analysis suggests extracting a single dimension for both online and face-to-face groups.

Table 1. Factor loading for unidimensional confirmatory factor analysis models

Item	Statement	Standardized factor loadings	
		All items model (Online/Face-to-face)	Item 3 removed model (Online/Face-to-face)
BCBS1	I feel like my contributions during class activities matter to other students in this course.	0.80 / .76	0.80 / .76
BCBS2	I feel appreciated by other students in this course.	0.96 / .90	0.96 / .89
BCBS3	I want to keep in touch with other students after this course is over.	0.75 / .82	
BCBS4	I feel like other students in this course encourage me to do well.	0.96 / .89	0.96 / .89
BCBS5	I feel respected by other students in this course.	0.98 / .92	0.98 / .92
BCBS6	I feel like other students in this course accept me for who I really am.	0.93 / .95	0.93 / .95
BCBS7	I can be myself with other students in this course.	0.90 / .90	0.90 / .90
BCBS8	I feel like other students in this course understand my ideas when I share what I am thinking.	0.97 / .84	0.97 / .84
BCBS9	I feel supported by other students in this course.	0.96 / .96	0.96 / .96
BCBS10	If I face academic challenges in this course, I feel comfortable asking other students for help.	0.81 / .83	0.81 / .83

BCBS11	I feel included by other students in this course.	0.92 / .94	0.92 / .94
Average Variance Extracted (AVE)		.82 / .78	.85 / .79
Composite Reliability (omega)		.95 / .96	.95 / .96

Confirmatory Factor Analysis

CFAs indicate exact fit was not met for the online group, $\chi^2(44) = 98.992$, $p < .001$, and face-to-face group, $\chi^2(44) = 98.992$, $p < .001$. However, both online (SRMR = .035, CFI = .995, RMSEA = .097, RMSEA 90% CI [.072, .123]) and face-to-face (SRMR = .041, CFI = .991, RMSEA = .110, RMSEA 90% CI [.089, .131]) groups exhibited approximate fit, as SRMR was $< .08$ and r_{residual} tended to be low. In both face-to-face and online groups, 4 out of 55 r_{residual} had absolute value $> .100$ (largest = .159 and .110, respectively). As shown in Table 1, standardized factor loadings were large ($> .70$) in both groups. Average variance extracted ($\text{AVE}_{\text{face-to-face}} = .78$, $\text{AVE}_{\text{online}} = .82$) and composite reliability ($\omega_{\text{face-to-face}} = .95$, $\omega_{\text{online}} = .96$) were high.

Hierarchical Ordinal Logistic Regression

Results of the HOLR DIF analyses are summarized in Table 2. Only BCBS3 yielded a significant test of uniform DIF; no items displayed non-uniform DIF. The ESSD effect size for BCBS3 was -0.404, indicating that BCBS scores in the online group can be expected to be 0.404 standard deviations lower than in the face-to-face group as a result of DIF. The size of this effect is concerning, and BCBS3 was removed from the instrument for all further analyses. Previous analyses (i.e., CFAs) were performed based on the revised 10-item set, with largely unchanged results; reliability estimates, specifically, were unchanged when rounded to two decimal places.

Multilevel Analysis

The model with the course delivery context grouping variable as a predictor of BCBS mean score fit better than the intercept-only model, $\chi^2(1) = 5.000$, $p = .025$. The outcome-standardized regression coefficient (i.e., effect size) was -1.326, indicating that BCBS scores are 1.3 standard deviations lower for the online group than the face-to-face group.

Correlational Analysis

As expected, BCBS scores correlated significantly with UBQ, SCS, EVC, and UCLALS scores, in order of decreasing magnitude of correlation (Table 3). Relative to UBQ scores, BCBS scores correlated more strongly with EVC but less strongly with SCS and ULCALS scores.

Table 2. Hierarchical ordinal logistic regression testing for differential item function (DIF)

Item	LL Model 1	LL Model 2	LL Model 3	Overall DIF p	Uniform DIF p	Nonuniform DIF p	ESSD
BCBS1	-201.423	-199.382	-199.219	.110	.043	.568	0.260
BCBS2	-104.890	-104.679	-104.028	.422	.516	.254	-0.071
BCBS3	-202.300	-197.257	-197.133	.006	.001*	.618	-0.404
BCBS4	-124.540	-123.794	-123.776	.466	.222	.850	-0.125
BCBS5	-83.214	-82.785	-82.540	.510	.354	.484	0.036
BCBS6	-98.820	-97.709	-97.706	.328	.136	.938	0.084
BCBS7	-125.690	-125.497	-125.495	.823	.534	.950	0.031
BCBS8	-123.782	-122.582	-121.792	.137	.121	.209	0.100
BCBS9	-101.625	-100.292	-100.284	.262	.103	.899	0.091
BCBS10	-173.131	-172.678	-172.411	.487	.341	.465	-0.118
BCBS11	-98.744	-98.729	-98.589	.856	.862	.597	-0.038

Note LL = log-likelihood; Model 1: total score as a predictor of the item score; Model 2: total score and grouping variable as predictors of the item score; Model3: total score, grouping variable, and their interaction as predictors of the item score; Overall DIF p = test of significance for Model 3 vs. Model 1; Uniform DIF p = test of significance for Model 2 vs. Model 1; Nonuniform DIF p = test of significance for Model 3 vs. Model 2; ESSD = expected score standardized difference. $*p < .05/11$.

Table 3. Observed correlations of postsecondary students' sense of belonging to others within the course and scores on related measures

Measure	1	2	3	4	5
1. Course-level belonging ^a	.95				
2. University-level belonging ^b	.47*	.96			
3. Academic motivation ^c	.40*	.30*	.89		
4. Social connectedness ^d	.39*	.47*	.20*	.95	
5. Loneliness ^e	-.35*	-.42*	-.13*	-.80*	.93
Mean	3.21	3.14	4.89	4.67	1.98
Standard Deviation	0.57	0.53	0.73	1.28	0.51
Skew	-0.09	-0.27	-0.67	-0.87	0.43
Excess Kurtosis	-0.72	-0.25	0.50	-0.01	-0.37
Internal Consistency (α)	.96		.83	.94	.91

Note. Descriptive statistics are based on item averages. Observed correlations are below the diagonal; omega ($\square$) reliability values are provided on the diagonal. Constructs were measured by: ^a10-item Brief Course Belonging Scale; ^bUniversity Belonging Questionnaire (UBQ; Slaten et al., 2018); ^cExpectancy-Value-Cost Scale (EVC; Kosovich et al., 2015); ^dSocial Connectedness Scale (SCS; Lee & Robbins, 1995); ^eUCLA Loneliness Scale (UCLALS; Russell et al., 1980). $*p < .05$.

Discussion

This study extends inquiries into postsecondary students' sense of belonging (Hurtado & Carter, 2007; Slaten et al., 2018) by providing empirical evidence—across online and face-to-face course delivery contexts—to support the use and interpretation of scores from a new instrument developed to measure students' sense of belonging with other students in the same course. The data from this new instrument provided support for the definition of this construct as students' perceptions of affirming interpersonal relationships among students informed by interactions in a common academic experience. Findings support our first hypothesis of a unidimensional treatment of BCBS data for both delivery contexts, which is aligned with findings by Whiting et al. (2018), but different from the UBQ (Slaten et al., 2018). The BCBS extends beyond prior work by providing insights into the factor structure within online and face-to-face samples.

The results also addressed our question about whether BCBS items behave differently across delivery contexts. Although uniform DIF was detected for one item (BCBS 3), removing BCBS3 had negligible effects on factor structure and reliability, but it was still removed to arrive at the final 10-item BCBS. The detection of this difference provides insight into the existing literature about online course delivery contexts as having unique aspects, at times different from traditional, face-to-face course delivery contexts (e.g., Hewson, 2018; Thomas et al., 2014). Furthermore, a content inspection of BCBS3 reveals uniform differences in perception regarding keeping in touch with students after the course is over. This suggests that the differences in perceptions across course delivery contexts regarding keeping in touch with classmates is constant across the continuum of report students' sense of belonging. This type of item-level difference should be considered but, as evidenced by the psychometric investigation conducted herein, the removal of the problematic item did not influence the results. These conclusions inform practitioners and researchers about specific issues, such as

classroom culture and interpersonal relationships, as they develop strategies and interventions to boost belonging in their courses.

Results also supported our hypothesis about mean differences by showing that students enrolled in online courses have a lower level of belonging than students enrolled in face-to-face courses. This finding is important because it squarely indicates the importance of placing urgency among faculty teaching students in fully online courses to nurture opportunities for positive interactions and to develop healthy relationships, despite remote or virtual constraints. In addition to understanding the internal structure of BCBS scores and mean differences across course delivery contexts, data collected on social connectedness and loneliness demonstrated that for both fully online and fully face-to-face students, social connectedness increased, whereas loneliness decreased, a sense of belonging to other students within the same course increased. Other proposed belonging instruments showed similar strong positive correlations with UBX scores and connectedness, medium to strong positive correlations with academic motivation, and weak negative correlations with loneliness.

Implications

After a post-pandemic world (where the online course delivery context became a norm), data should be collected during a time when instruction is delivered without interruption. With the rapid push into online learning, the current study can serve as more of a pilot to inform a wider data collection process for future semesters. Once the BCBS is further purified as a brief instrument to measure postsecondary students' sense of belonging to other students within the same course, scores from the BCBS can be analyzed along with student success metrics, as well as other student beliefs (i.e., self-efficacy and perceptions about the curriculum) to test the model recommended by Tinto (2017) and comparisons across course delivery contexts and student demographics could be made. This would fully actualize the potential of an instrument like this to help inform policies and practices that are influenced by these students' sense of belonging. However, before Tinto's model of student persistence can be tested in both online and face-to-face modalities, psychometrically sound instruments need to be developed for the different types of course delivery contexts as well as diverse student populations. Domain-specific measurement of social cognitive constructs has been recommended over general measurement by Bandura (2006).

Limitations

The BCBS was designed in close collaboration with content and field experts, soliciting feedback from the target population, and developed in accordance with best practice (e.g., Bandalos, 2018). Despite careful intention, our study has certain limitations. First, issues with the sample prevents the generalizability. The results are sample-dependent, and limited in both size, diversity, and convenience, reducing the ability to conduct the multilevel CFA that was intended and capture the variety of experiences. Second, students who appeared in multiple courses based on the inclusion criteria should have been retained and techniques for cross-classified data structure should have been employed, rather than excluding these students, which would have increased the generalizability of the findings. Third, the decision to collapse data collected from four to three response categories. Although this is an acceptable practice (e.g., Rutkowski et al., 2019), important information was lost and statistical analyses were constrained; thus, making findings sample dependent and replication necessary. Fourth, the data collection coincided with the host institution decisions to move to completely remote instruction in response to the global pandemic beginning in Spring 2020, the semester scheduled for data collection. Although students were on Spring Break at the point of data collection and had not adjusted to the change in course delivery context, it is uncertain whether there was an influence on how students—specifically, face-to-face students—responded to the BCBS. Thus, the self-reports from students about how their sense of belonging to others in their course was perceived before the university response to

move all instruction to an online context was likely tainted by the global pandemic. However, this sociocultural event is known to affect all respondents the same way.

Future Research

Future research should focus on the expansion of the BCBS to a larger sample to allow further psychometric testing. The psychometric evaluation for this new instrument was limited. With the BCBS as a unique instrument that measures postsecondary students' sense of belonging at a course level, the same inclusion criteria can be followed as the one used in this study, but with the expansion of the cluster sizes to allow for the multilevel analyses that was originally intended and to allow for students to represent multiple courses and therefore use cross-classified multilevel models. Second, the specific context of the course level should be investigated since ongoing work on a sense of belonging at the institution level is being actively pursued (e.g., Slaten et al., 2018; Tinto, 2017). Third, the sample should be expanded to understand the experience of diverse student populations with a given course (e.g., Hurtado & Carter, 1997; Hussain & Jones, 2019; Strayhorn, 2012; Vaccaro & Newman, 2016). Fourth, as online courses and programs expand to include more undergraduate students, the BCBS should be collected from both graduate and undergraduate students, since this sample was majority of graduate students due to the established inclusion criteria. Fifth, perhaps additional cognitive interviewing opportunities should be offered to further refine the BCBS, prior to expanded data collection. Research conducted by Lewis et al. (2019) on the sense of belonging and microaggressions experienced at historically White institutions demonstrates the profound need for further research on this construct, should practitioners and researchers alike truly hope to improve retention and graduation for historically marginalized students.

Conclusion

Our study pursued a line of inquiry on postsecondary students' sense of belonging to other students within the same course building on limited, although seminal, research regarding the measurement of this complex and elusive construct. Goodenow and Grady (1993) situated their research on students' sense of belonging at the classroom level but focused on students in middle grades—a drastic developmental difference from postsecondary students.

Slaten et al. (2018) conducted research on postsecondary students' sense of belonging, but at the university or institution level, not at the course level. Although Slaten's instrument is comprehensive, consisting of 24 items that make up three subscales, there are currently no brief instruments for use with postsecondary students, despite researchers (i.e., Öğülmüş & Vuran, 2021; Whiting et al., 2018) demonstrating that brief scales can be psychometrically robust and can serve as an adequate alternative instrument to longer, extended versions (Arslan, 2021). In response to the rapidly changing higher education landscape that is venturing into online education, this line of research was pursued across two distinct course delivery contexts—online and face-to-face.

Decades of work address a sense of belonging in a variety of contexts, however, this study uniquely addresses a timely and relevant issue that has been exacerbated by current events: online learning as the future of higher education. Also, the psychometric issues that occurred as part of this instrument development study set a path for even further conversations about belonging within the evolving context of online learning. From this study, findings support the domain-specificity of the course delivery context—online or face-to-face—as an important consideration to ensure reliable measurement that can provide validity evidence for appropriate interpretations.

References

American Association of State Colleges and Universities. (2019). *Top 10 Higher Education Policy Issues for 2019*. Washington, DC: American Association of State Colleges and Universities. AACSU.

- American Educational Research Association, American Psychological Association, National Council on Measurement in Education, & Joint Committee on Standards for Educational and Psychological Testing. (2014). *Standards for educational and psychological testing*. AERA.
- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*.
- Babson Survey Research Group and Quahog Research Group.
<http://www.onlinelearningsurvey.com/reports/changingcourse.pdf>
- Angelino, L. M., Williams, F. K., & Natvig, D. (2007). Strategies to engage online students and reduce attrition rates. *Journal of Educators Online*, 4(2), 1-4.
https://www.thejeo.com/archive/archive/2007_42/angelino_finalpdf
- Arslan, G. (2021). Psychological well-being in college students: Psychometric properties of the Brief Inventory of Thriving (BIT) and the Comprehensive Inventory of Thriving (CIT). *Journal of School and Educational Psychology*, 1(1), 6-16. <https://doi.org/10.47602/josep.v1i1.6>
- Arslan, G., Yıldırım, M., & Zangeneh, M. (2022). Coronavirus anxiety and psychological adjustment in college students: Exploring the role of college belongingness and social media addiction. *International Journal of Mental Health and Addiction*, 20, 1546–1559. <https://doi.org/10.1007/s11469-020-00460-4>
- Asparouhov, T. & Muthén, B. (2018). *SRMR in Mplus* (Technical Report). <http://www.statmodel.com/download/SRMR2.pdf>
- Bandalos, D. L. (2018). *Measurement theory and applications for the social sciences*. Guilford Press.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (Vol. 5, pp. 307-337). Information Age Publishing.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529.
<https://doi.org/10.1037/0033-2909.117.3.497>
- Bautista, G. & Escofet, A. (2015). Competences for teaching and learning in an E-learning setting. In B. H. Khan & M. Ally (Eds.), *International handbook of E-learning: Theoretical perspectives and researcher* (Vol. 1, pp. 171-179). Routledge.
- Cheung, H. Y. C., & Datu, J. A. (2022). What Personal, Social, and Contextual Factors Promote Happiness among Children and Adolescents with Autism Spectrum Disorder? A Review with Implications for Researchers and Practitioners. *Journal of Happiness and Health*, 2(1), 31–51.
<https://doi.org/10.47602/johah.v2i1.12>
- Crane, P. K., van Belle, G., & Larson, E. B. (2004). Test bias in a cognitive test: Differential item functioning in the CASI. *Statistics in Medicine*, 23(2), 241–256. <https://doi.org/10.1002/sim.1713>

- Decker, J. & Beltran, V. (2016). Students' sense of belonging in online classes: Does age matter? *International Journal of Online Pedagogy and Course Design*, 6(3), 14-25. DOI: <https://doi.org/10.4018/IJOPCD.2016070102>
- Delahunty, J., Jones, P. & Verenikina, I. (2014). Movers and shapers: Teaching in online environments. *Linguistics and Education*, 28, 54-78. <https://doi.org/10.1016/j.linged.2014.08.004>
- Fornell, C. and Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.2307/3151312>
- Francis, M. K., Wormington, S. V., & Hulleman, C. (2019). The costs of online learning: examining differences in motivation and academic outcomes in online and face-to-face community college developmental mathematics courses. *Frontiers in Psychology*, 10, 2054. <https://doi.org/10.3389/fpsyg.2019.02054>
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools*, 30(1), 79-90. [https://doi.org/10.1002/15206807\(199301\)30:1<79::AID-PITS2310300113>3.0.CO;2-X](https://doi.org/10.1002/15206807(199301)30:1<79::AID-PITS2310300113>3.0.CO;2-X)
- Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education*, 62(1), 60–71. <https://doi.org/10.1080/00220973.1993.9943831>
- Gopalan, M., & Brady, S. T. (2020) College students' sense of belonging: A National Perspective. *Educational Researcher*, 49(2), 134-137. <https://doi.org/10.3102/0013189X19897622>
- Green, Z. A. (2022). Generalized Self-Efficacy Shields on the Negative Effect of Academic Anxiety on Academic Self-Efficacy During COVID-19 Over Time: A Mixed-Method Study. *Journal of School and Educational Psychology*, 2(1), 44–59. <https://doi.org/10.47602/josep.v2i1.17>
- Gunn, J. F. III, Lester, D., Haines, J., & Williams, C. L. (2012). Thwarted belongingness and perceived burdensomeness in suicide notes. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 33(3), 178-181. <https://doi.org/10.1027/0227-5910/a000123>
- Hewson, E. R. F. (2018). Students' emotional engagement, motivation and behaviour over the life of an online course: Reflections on two market research case studies. *Journal of Interactive Media in Education*, 1, 1–13, <https://doi.org/10.5334/jime.472>
- Hoffman, M., Richmond, J., Morrow, J., & Salomone, K. (2002). Investigating "Sense of Belonging" in first-year college students. *Journal of College Student Retention: Research, Theory & Practice*, 4(3), 227–256. <https://doi.org/10.2190/DRYC-CXQ9-JQ8V-HT4V>
- Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, 70(4), 324-345. <https://doi.org/10.2307/2673270>
- Hussain, M., & Jones, J. M. (2021). Discrimination, diversity, and sense of belonging: Experiences of students of color. *Journal of Diversity in Higher Education*, 14(1), 63–71. <https://doi.org/10.1037/dhe0000117>

- Kline, R. B. (2016). *Methodology in the social sciences. Principles and practice of structural equation modeling (4th ed.)*. Guildford Press.
- Kosovich, J. J., Hulleman, C. S., Barron, K. E., & Getty, S. (2015). A practical measure of student motivation: Establishing validity evidence for the Expectancy-Value-Cost Scale in middle school. *The Journal of Early Adolescence*, 35(5-6), 790-816. <https://doi.org/10.1177/0272431614556890>
- Lee, R. M., & Robbins, S. (1995). Measuring Belongingness: The Social Connectedness and the Social Assurance Scales. *Journal of Counseling Psychology*, 42(2), 232-241. <https://doi.org/10.1037/0022-0167.42.2.232>
- Lewis, J., Mendenhall, R., Ojiemwen, A., Thomas, M., Riopelle, C., Harwood, S. & Hunt, M. (2019). Racial microaggressions and sense of belonging at a Historically White University. *American Behavioral Scientist*. <https://doi.org/10.1177/0002764219859613>
- Lorah, J. (2018). Effect size measures for multilevel models: Definition, interpretation, and TIMSS example. *Large Scale Assessments in Education*, 6(1), 1-11. <https://doi.org/10.1186/s40536-018-0061-2>
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396. <https://doi.org/10.1037/h0054346>
- Meade, A. W. (2010). A taxonomy of effect size measures for the differential functioning of items and scales. *Journal of Applied Psychology*, 95(4), 728. <https://doi.org/10.1037/A0018966>
- Muthén, L. K., & Muthén, B. O. (2020). *Mplus user's guide* (Version 8.6) [Computer software]. <https://www.statmodel.com>
- National Center for Education Statistics (2012). *Beginning postsecondary students longitudinal study*. NCES. <https://nces.ed.gov/surveys/bps/>
- Nunnally, J.C. and Bernstein, I.H. (1994). The assessment of reliability. *Psychometric Theory*, 3, 248-292.
- Öğülmüş, K., & Vuran, S. (2021). Book Review: Positive Behavioral Supports for the Classroom. *Journal of School and Educational Psychology*, 1(1), 35–38. <https://www.journalofschoolpsychology.com/index.php/josep/article/view/8>
- O'Shea, S., Stone, C. & Delahunty, J. (2015). "I 'feel' like I am at university even though I am online." Exploring how students narrate their engagement with higher education institutions in an online learning environment. *Distance Education*, 36(1), 41-58. <https://doi.org/10.1080/01587919.2015.1019970>
- Peacock S., & Cowan, J. (2018) Towards online student-directed communities of inquiry, *Journal of Further and Higher Education*, 42(5), 678-693, <https://doi.org/10.1080/0309877X.2017.1302569>
- Peterson, C. H., Peterson, N. A., & Powell, K. G. (2017). Cognitive interviewing for item development: Validity evidence based on content and response processes. *Measurement and Evaluation in Counseling and Development*, 50(4), 217-223. <https://doi.org/10.1080/07481756.2017.1339564>

- Pokropek, A. (2011). Missing by design: Planned missing-data designs in social science. *Research & Methods*, 20(1), 81-105. <https://hdl.handle.net/1811/69576>
- Reise, S. P., Hubbard, A., S., Wong, E. F., Schalet, B. D., Haviland, M. G., & Kimerling, R. (2021). Response category functioning on the Healthcare Engagement Measure using the nominal response model. *Assessment*. Advance online publication. <https://doi.org/10.1177/10731911211052682>
- Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research*, 27(2), 94-104. <https://doi.org/10.1093/swr/27.2.94>
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39(3), 472-480. <https://doi.org/10.1037/0022-3514.39.3.472>
- Rutkowski, L., Svetina, D., & Liaw, Y. (2019). Collapsing categorical variables and measurement invariance. *Structural Equation Modeling*, 26(5), 790-802. <https://doi.org/10.1080/10705511.2018.1547640>
- Slaten, C. D., Elison, Z. M., Deemer, E. D., Hughes, H. A., & Shemwell, D. A. (2018). The development and validation of the University Belonging Questionnaire. *The Journal of Experimental Education*, 86(4), 633-651. <https://doi.org/10.1080/00220973.2017.1339009>
- Stapleton, L. M., Yang, J. S., & Hancock, G. R. (2016). Construct meaning in multilevel settings. *Journal of Educational and Behavioral Statistics*, 41(5), 481-520. <https://doi.org/10.3102/1076998616646200>
- Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students*. Routledge. <https://doi.org/10.4324/9780203118924>
- Weston, R., & Gore, P. A. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist*, 34(5), 719-751. <https://doi.org/10.1177/0011000006286345>
- Thomas, L., Herbert, J. & Teras, M. (2014). A sense of belonging to enhance participation, success and retention in online programs. *The International Journal of the First Year in Higher Education*, 5(2), 69-80. <https://doi.org/10.5204/intjfyhe.v5i2.233>
- Tinto, V. (2017). Through the eyes of students. *Journal of College Student Retention*, 19(3), 254-269. <https://doi.org/10.1177/1521025115621917>
- Vaccaro, A., & Newman, B. M. (2016). Development of a sense of belonging for privileged and minoritized students: An emergent model. *Journal of College Student Development*, 57(8), 925-942. <https://doi.org/10.1353/csd.2016.0091>
- Walton, G. M., & Brady, S. T. (2017). The many questions of belonging. In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (pp. 272-293). Guilford Press.

- Waters, L., & Charles Higgins, M. (2021). The impact of a teacher-based positive education intervention on student wellbeing literacy. *Journal of School and Educational Psychology*, 2(1), 22–43. <https://doi.org/10.47602/josep.v2i1.12>
- Waters, L., & Johnstone, A. (2022). Embedding Well-being into School: A Case Study of Positive Education Before and During COVID-19 Lockdowns. *Journal of School and Educational Psychology*, 2(2), 60–77. <https://doi.org/10.47602/josep.v2i2.15>
- Whiting, E. F., Everson, K. C., & Feinauer, E. (2018). The Simple School Belonging Scale: Working toward a unidimensional measure of student belonging. *Measurement and Evaluation in Counseling and Development*, 51(3), 163-178, <https://doi.org/10.1080/07481756.2017.1358057>
- Yıldırım, M., Aziz, I. A., Vostanis, P., & Hassan, M. N. (2022). Associations among resilience, hope, social support, feeling belongingness, satisfaction with life, and flourishing among Syrian minority refugees. *Journal of Ethnicity in Substance Abuse*, 1-16. <https://doi.org/10.1080/15332640.2022.2078918>
- You, S., Ritchey, K. M., Furlong, M. J., Shochet, I., & Boman, P. (2011). Examination of the latent structure of the Psychological Sense of School Membership Scale. *Journal of Psychoeducational Assessment*, 29(3), 225–237. <https://doi.org/10.1177/0734282910379968>