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**On Institutional Belongingness and Academic Performance:
Mediating Effects of Social Self-Efficacy and Metacognitive Strategies**

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Abstract

Educational researchers have provided evidence that students who see themselves as valued members of their university (institutional belongingness) tend to have higher academic performance than students with a weaker sense of institutional belongingness. The current research draws on social cognitive theory to inspect two mechanisms that might explain this correlation: social self-efficacy and metacognitive strategies. We tested a double-mediation model with a large sample of students ($n = 1,480$) from one higher education institution in New Zealand. Using structural equation modeling, social self-efficacy and metacognitive strategies were meaningful contributors to the relation between institutional belongingness and Grade Point Average (GPA). Our discussion focuses on how universities can design strategies that promote belongingness and, in turn, improve how students interact, learn, and perform.

Keywords: belonging, performance, social self-efficacy, metacognition, university

Introduction

Academia has the potential to serve as a platform where diverse, agentic members of society (students) can gain and transform knowledge for personal growth and public advancement. Such forms of progress may be slowed, stopped, or reversed when students are not seen as valued members of their respective universities. The empirical research has been consistent: students who find themselves in an environment where they feel welcomed, supported, respected, and safe tend to have better academic outcomes than those who do not feel this way (Jiang & Jiang, 2015; Suhlmann et al., 2018). However, relatively little is known about *how* belongingness affects performance (Won et al., 2018). For theoretical and practical purposes, researchers, educators, and institutions need to identify the mechanisms that could explain the positive correlation between institutional belongingness and university performance.

In the current research, we draw on Bandura's (1986, 2001) social cognitive theory to better understand the belongingness-performance dynamic. Specifically, we work on key assumptions that (a) student behavior is influenced by one's unique perception of the social environment; (b) individuals will strive for a sense of agency over important events in their lives; and (c) individuals can increase their sense of agency by reflecting on the environment and adjusting their behavior in ways that increase the likelihood for goal attainment (Schunk & DiBenedetto, 2020). From this perspective, academic performance can be better understood by examining students' perceptions of, and interactions with, the learning environment. Specifically, we propose that institutional belongingness has the potential to empower students when performing social, interactive tasks with peers and teaching staff (social self-efficacy in the classroom). Further, we propose that a stronger sense of institutional belongingness and greater social self-efficacy may allow students to concentrate

on academic activities, including reflecting on their learning (metacognitive strategies) and performing academically (grades).

Institutional Belongingness (IB) in University

Researchers have offered increasingly more sophisticated and nuanced understandings of belongingness (Baumeister & Leary, 1995; Freeman et al., 2007; Mahar et al., 2013; Tinto, 2020; Slaten et al., 2016; Strayhorn, 2018; Thomas, 2018; Walton & Brady, 2017). Indeed, belongingness has been viewed through multiple lenses. From a psychological perspective, belongingness is often described as a subjective experience in which an individual feels valued and respected by a group. These interpersonal relationships are also presumed to fulfill universal social needs (Baumeister & Leary, 1995; Kuh et al., 2005; Strayhorn, 2018). From a sociological perspective, these subjective experiences are viewed as psychosocial mechanisms which stem from broader structures and conditions (Berkman et al., 2000). As such, belongingness has a neighboring, but distinct position from adjacent terms such as relatedness and connectedness (e.g., Deci & Ryan, 2000). In the current research, we integrate and present several sources of extant literature for purposes of dimensional clarity (e.g., Karcher & Lee, 2002; Thomas, 2018; Van Orden et al., 2012). Specifically, we accept the term “relatedness” as the perceived amount of social support a student receives in *specific* relationships. In contrast, “belongingness” focuses on the perceived amount of social support a student receives *in general* (i.e., at a group level). As such, belongingness emphasizes one’s active engagement and perceived connection to a particular social group (Mallinckrodt & Wei, 2005; Slaten et al., 2016). Meanwhile, “connectedness” can be viewed as a higher-order construct that incorporates specific and general sources of social support. We acknowledge that each student’s perceptions are inextricably bounded by meso- and macro-level systems (Berkman et al., 2000). These include their social network structure and

integration (e.g., size, range, reachability, and density) and socio-structural conditions (e.g., culture, socioeconomic factors, and social change).

We highlight these distinctions because the outcome of belongingness—a perception of respect, safety, and “mattering”—represents a powerful bond between the individual and group (Hausmann et al., 2009). This bond implies a sense of reciprocity: the individual not only benefits from group membership but may also have formed a tacit commitment to the group (Tinto, 2017). Indeed, these bonds can occur at various levels, ranging from smaller communities (e.g., students who have the same major) to the institution as a whole (Freeman et al., 2007). Although these levels offer diverse perspectives of the student experience, we agree with Tinto (2017) that viewing perceived belongingness at the broad, institutional level may be advantageous for two reasons. First, students’ perceptions of belongingness are directly shaped by the institutional climate through a range of daily interactions with staff and students (Stebbleton et al., 2014), including academic, social, and professional services domains (Thomas, 2012). Investigating students’ generalizations about the broader institution may help understand individuals’ general intentions, actions, and performance outcomes (e.g., Hausmann et al., 2007). Second, examining students’ generalized sense of belongingness captures the widest subjective parameter. Examining belongingness with smaller communities (e.g., being a chemistry major or enrolled in a particular course) may not necessarily offer enough variety of settings and experiences to represent a full sense of belongingness (Sidanius et al., 2004). In the current research, we focus on the broadest subjective level of analysis, employing the term institutional belongingness (IB) to aid clarity and precision.

Belongingness and Academic Performance

Academic and social engagement, surroundings, and personal space shape a student’s belongingness (Ahn & Davis, 2020). In the current research, we focus on psychological

mechanisms relating to academic and social engagement. Broadly, extant research has linked greater belongingness to better well-being, self-esteem, motivation, learning processes, and academic performance (Allen et al., 2018; Hausmann et al., 2007; Slaten et al., 2018; van Horne et al., 2018; Walker, 2012; Won et al., 2018). Lacking belongingness may correspond to rejection, isolation, and marginality—factors that relate to mental health difficulties (Hagerty et al., 2002). Belongingness is among the most frequently cited factors affecting student success (Glass & Westmont, 2014; Hausmann et al., 2007). In a meta-analysis of studies between 1970 and 2012, Moallem (2013) reported a positive correlation ($r = .22$) between school belongingness and performance. Strayhorn (2018) summarizes these observations succinctly: positive interpersonal experiences at university increase student belongingness, and belongingness leads to student success.

The belongingness-performance association may differ across student cohorts. For instance, Glass and Westmont (2014) reported that not only was belongingness positively associated with grades, but the trend was also stronger among international students ($\beta = .34$) than domestic students ($\beta = .22$). Student age may also be relevant to belongingness, as mature students may be less likely to feel included and connected than traditional students (Hurtado & Carter, 1997; Kuh, 2009). Belongingness may differ according to one's study progression, as first-year students who lacked positive social encounters would be more likely to have departed from the institution. Thus, attrition effects would likely leave undergraduate students who were further along in their studies would tend to represent a sample of individuals who were at least able to cope with a (potential) lack of belongingness. That said, despite more academic experience, first-year post-graduate students may begin their studies at a new institution, and their belongingness could be different from final-year undergraduate students.

In the current research, we draw on the literature mentioned above to structure our conceptual diagram (Figure 1). We propose that when a student feels as though they belong at the institutional level, they are more likely to feel confident in their ability to interact socially in their classrooms and reflect more on their learning progress as a whole.

The Role of Social Self-efficacy in the Classroom (SSEC)

Self-efficacy is a core dimension of human agency and refers to one's beliefs in their capabilities to produce desired outcomes (Bandura, 1986, 2001). From this social cognitive view, being an agent is to exert self-regulatory control (Stajkovic et al., 2018). If people do not believe they can influence their environment through their actions, they have little incentive to put forth effort when facing a challenge (Stajkovic et al., 2018). Most literature tends to frame self-efficacy as a future-oriented, predictive construct; thus, it is usually assumed that self-beliefs of competence are expected to lead to future goals and outcomes (Klassen & Usher, 2010).

Educational research has emphasized cognitive and task-oriented (“academic”) features of self-efficacy. Indeed, meta-analyses and literature reviews describe academic self-efficacy as one of the strongest correlates of performance (Honicke & Broadbent, 2016; Klassen & Usher, 2010; Richardson et al., 2012). Academic self-efficacy tends to be positively associated with belongingness (e.g., Battistich et al., 1995; Roeser et al., 1996), as a supportive environment may give rise to more positive academic self-evaluations. However, a spotlight on the cognitive and task-oriented dimensions of self-efficacy has eclipsed the social dimensions of self-efficacy in education. Learning effectively and performing well depend on individuals' perceived capabilities to adjust within the social environment. Thus, students need to be actively engaged with others and see themselves as valued and respected members of the academic community (Stebbleton et al., 2014; Strayhorn, 2012; Tinto, 2020). In this research, we focus on social self-efficacy and is conceptualized as

one's beliefs in their capabilities to engage in social, interactive tasks in ways that initiate and maintain interpersonal relationships (Bandura et al., 1999; Smith & Betz, 2000). Social self-efficacy has been linked to prosocial tendencies (Bandura et al., 1999) and indicators of well-being such as loneliness and life satisfaction (e.g., Dussault & Deaudelin, 2001; Wei et al., 2005). It would be reasonable to expect that university students who feel welcomed, supported, and safe within the broader institution would feel competent in their ability to interact socially. Indeed, Freeman et al. (2007) provided empirical evidence that meaningful, positive associations exist between institutional belongingness and academic self-efficacy, and institutional belongingness and social acceptance at university. Surprisingly, there are no studies to our knowledge that have examined the association between social self-efficacy and IB representing a general student population¹.

Few studies have examined the relation between social self-efficacy and academic performance. We argue that there is value in understanding this dynamic. Building on a social cognitive perspective, we contend that a student who feels capable of interacting successfully with members in the social milieu would demonstrate greater course-related engagement. Such engagement might include talking about the course before a lecture begins, confirming assignment deadlines, and asking for strategies that aid their learning. Therefore, it is reasonable to assert that social self-efficacy in the classroom would be associated with better academic outcomes. Of the limited research, results have yielded mixed findings (Dunbar et al., 2018). Upon inspection of the literature (e.g., Bandura et al. 1996; Carroll et al., 2009; Meng et al., 2015; Patrick et al., 1997; Raskauskas et al., 2015), we noticed that social self-efficacy had been measured at general and situation-specific levels of analysis. Wherein most studies focused on students' general social self-efficacy beliefs, only

¹ Brubacher, McMahon, and Keys (2018) reported a moderate, positive association between social self-efficacy and school belonging; however, their study represented a sample of 98 African American and Latinx adolescent students with an intellectual or physical disability. It would be reasonable to expect individual and group differences between their results and those from a general student population in higher education.

Patrick et al. (1997) considered situational specificity. Rather than asking about individuals' overall confidence in interacting with other people (which could be questioned as a measure of personality), Patrick et al. (1997) focused on students' confidence in interacting with peers and teachers in the classroom. To better understand how IB might influence academic performance, we examine social self-efficacy with situational specificity in mind. We focus on social self-efficacy in the classroom (SSEC) to accurately estimate students' confidence in their ability to interact socially in the learning environment.

By definition, social self-efficacy occurs in a group context (Loeb et al., 2016). Therefore, we hold three assumptions in the current study. First, we expect SSEC to be shaped by students' generalized perceptions of the institution. If first-year students feel respected and supported at their university, they may transfer this outlook when they enter their classrooms. Second, we acknowledge that the association between SSEC and institutional belongingness (IB) is complex. This association is likely to be (a) reciprocal (i.e., social self-efficacy at the classroom level would contribute to a global perception of IB), and (b) time-sensitive (i.e., perceptions of belongingness would change over time as students interact with or disengage from the social environment). However, early in the university transition, we theorize that a general impression of the institution would have considerable weight on students' self-perceptions in the classroom. Third, we expect SSEC to differ across student cohorts. For instance, researchers have focused on international students' SSEC, particularly second language learners. SSEC is linked to better university adjustment (Zhang & Goodson, 2011) and lower acculturative stress (Lin & Betz, 2009) among international students. Lin and Betz (2009) found that SSEC is sensitive to the language medium a student is expected to speak. We consider such group differences in the current research, as such characteristics may influence the relation between IB and academic performance.

SSEC may mediate the relation between IB and academic performance. We postulate that when students have greater IB, they see themselves as more capable of interacting socially in the classroom. With a favorable view of the social environment, students may experience the agency needed to strive for academic success. For example, if an individual feels respected by members of the institution, they would feel less threatened when they need to participate in group discussions. In turn, SSEC may help students focus more on their coursework and less on whether others are judging them, producing better performance outcomes (e.g., Patrick et al., 1997). In the current study, we expect positive correlations to exist for IB, SSEC, and academic performance (Hypothesis 1). We expect SSEC to mediate the direct relation between IB and academic performance (Hypothesis 2; see Figure 1, paths a_1 and b_1).

The Role of Metacognitive Strategies (MCS)

Self-regulated learning is a dynamic process in which students are active participants who are cognitively, motivationally, and behaviorally engaged in an academic task (e.g., Zimmerman, 2000; Zimmerman & Moylan, 2009). Metacognition is at the heart of self-regulated learning (Dent & Koenka, 2016), and MCS represent one's deliberate adjustment to their learning strategies if the current approaches are not working. Typical examples of MCS include goal setting, planning, self-monitoring, self-control, and self-evaluation (e.g., Zeidner et al. 2000; Winne, 2018). MCS that are practiced successfully are often linked to better performance (e.g., Sitzmann & Ely, 2011).

Belongingness may serve as an antecedent of MCS. For instance, theories of self-regulated learning often adopt social cognitive views in which it is assumed that metacognitive strategies are shaped by the social environment (e.g., Patrick et al., 2007; Pintrich & Zusho, 2007). Within the belongingness literature, Baumeister et al. (2005) has reasoned that self-regulation is likely to suffer when individuals are concerned about social

exclusion. Thus, belongingness can impact students' confidence in their ability to use self-regulated learning strategies (Kennedy & Tuckman, 2013) and perform well on academic tasks (Slaten et al., 2018). Won et al. (2018) reported that university students with greater belongingness tended to use strategies aligned with self-regulated learning. They found that IB was positively linked to MCS, and peer group belongingness was positively linked to peer-based learning strategies (e.g., study groups).

By extension, the use of MCS could be enhanced if students also experience belongingness. This trend could be further strengthened if students have positive social self-efficacy in the classroom (SSEC). For instance, students who feel a sense of IB and SSEC could be more willing to seek and receive help from their lecturers, other staff, and classmates. In turn, such social exchanges may promote MCS, thereby facilitating academic performance. Indeed, it is plausible that the use MCS could be lower if students are preoccupied with a lack of IB

The Current Study

Our study aims were twofold. First, to confirm positive correlations between institutional belongingness (IB), social self-efficacy in the classroom (SSEC), metacognitive strategies (MCS), and academic performance (Year GPA). Second, to test whether SSEC and MCS could mediate the direct relation between IB and Year GPA.

Alongside Figure 1, study hypotheses were:

1. *Hypothesis 1: IB will be positively correlated with SSEC, MCS, and Year GPA.*
2. *Hypothesis 2 : SSEC (M_1) will mediate the direct relation between IB (X) and Year GPA (Y); path a_1 and b_1 ;*
3. *Hypothesis 3: MCS (M_2) will mediate the direct relation between IB (X) and Year GPA (Y); path a_2 and b_2 ;*

4. *Hypothesis 4: SSEC (M_1) and MCS (M_2) will, in serial, mediate the direct relation between IB (X) and Year GPA (Y); paths a_1 , d_{21} , and b_2 .*

Methods

Sample

Our sample comprised 1,480 undergraduate and postgraduate students (Female = 60.8%, Male = 38.6%, Gender Diverse = 0.5%) attending one public university in New Zealand. The average student age was 24.68 years ($SD = 9.01$), and the median age was 21 years old. A detailed description of the sample can be found in the Supplementary Materials.

Procedures

With the support of the institutional research team, the university population ($N = 9,082$) was invited to complete an online questionnaire about their experiences at university. Email invitations were sent in May (the second term of the academic year), and the questionnaire was available for three weeks. Demographic information and student grades were linked to questionnaire responses based on participants' student ID. The dataset was then anonymized, and we were granted exemption from the institution's human ethics committee (2019/02/EX).

Participants ($n = 1,566$) initially accessed the questionnaire, resulting in a response rate of 17.24%. 86 cases had more than 10% of the questionnaire items missing. These were identified and deleted, as imputation with a small amount of missing is considered valid (Little & Rubin, 2002). Using a final sample of 1,480 participants, missing values were imputed using expectation maximization procedures. We checked the validity of imputation, and no systematic cause of missingness was identified.

Instruments

In this section, we describe the self-report items (which had been created by the institution). We present the ideal factor structure using an exploratory factor analysis (EFA) and estimates of internal consistency. Last, we present the details of Year GPA.

Institutional Belongingness (IB). Five items were used to measure students' sense of belonging at the broad, institutional level. Relying on critical features of belongingness, items focused on students' perceptions of being valued, included, and respected by members of the university. Participants responded to a five-point Likert-style scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items were "I feel welcomed by [institution]" (IB1), "I have a sense of meaning or purpose at [institution]" (IB2), "I feel safe at [institution]" (IB3), "I belong to the [institution's] community" (IB4), and "The [institution] thinks I matter as an individual" (IB5).

Social Self-efficacy in the Classroom (SSEC). Four items were used to measure students' perceived competence in interacting with members in their enrolled courses. Participants responded to a five-point Likert-style scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items were: "I am confident in my ability to talk to lecturers" (SSEC1), "I am confident in my ability to talk to other [institution] staff" (SSEC2), "I am confident in my ability to participate in class discussions" (SSEC3), and "I am confident in my ability to ask a question in class" (SSEC4).

Metacognitive Strategies (MCS). As a very brief measure, four items were used to measure students' generalized use of metacognitive strategies at university. Participants responded to a five-point Likert-style scale ranging from 1 (strongly disagree) to 5 (strongly agree). Each item was designed to measure one of the four most common types of metacognitive strategies represented in the self-regulated learning literature (for a review, see Dent & Koenka, 2016). We focused on the following actions: (a) planning ("I have a long-term plan for what I am learning at [institution]"; MCS1), (b) self-monitoring ("I take time to

reflect on what I have been learning”; MCS2), (c) self-control (“I try to relate what I learn to what I already know or have experienced”; MCS3), and (d) self-evaluation (“I have a deep understanding of my personal learning strategies”; MCS4).

We performed Exploratory Factor Analysis (EFA) in SPSS version 25 to inspect the initial structure based on the 13 items designed to represent three factors: IB, SSEC, and MCS. Through analysis using maximum likelihood (ML) estimation and oblique (direct oblimin) rotation, results indicated that factor analysis was appropriate and could be supported based on results of the KMO test (.82) and Bartlett’s test; approximate $\chi^2(78) = 7,421.706$, $p < .001$. Three factors emerged with eigenvalues greater than one: Factor I (4.21, 32.40%), Factor II (2.19, 16.87%), and Factor III (1.69, 13.01%). The total variance explained by three factors was 62.28%. Based on the pattern matrix (see Supplementary materials), it was clear that (a) four items loaded onto Factor I and represented SSEC, (b) five items loaded onto Factor II and represented IB, and (c) four items loaded onto Factor III and represented MCS. Internal consistency was acceptable; SSEC ($\alpha = .84$), IB ($\alpha = .80$), and MCS ($\alpha = .78$).

Year Grade Point Average (GPA). We measured students’ performance by using GPA scores at the end of the academic year. GPA was extracted from internal transcripts based on students’ enrolled coursework. At this institution, GPA ranges from -1 (E), 0 (D), 1 (C-), to a maximum of 9 (A+).

Statistical Plan

We conducted our analyses in three steps. First, we examined descriptive statistics for the variables of interest. Second, we performed confirmatory factor analysis (CFA) to establish the measurement model validity based on three latent variables of IB, SSEC, and MCS, and one manifest variable of Year GPA. We evaluated solutions for the measurement

model based on absolute and relative indexes². Bivariate correlations for the confirmed variables were then inspected to verify Hypothesis 1.

Third, we performed structural equation modeling (SEM) procedures in R using the lavaan package (Rosseel, 2012). Based on our conceptual diagram (Figure 1), we sought to verify Hypotheses 2-4. As discussed in the literature review, we included four covariates in our structural model: (1) student's year at university (UniYear, C_1), (2) age (Age, C_2), (3) post-graduate status (PGSt, C_3), and (4) first language as other than English (ESL, C_4). We included these covariates to ensure that results were not skewed by including students whose experiences and outcomes differed because of their time at university, life experience, or English proficiency. Model fit indexes used for the structural model were the same as those employed in the measurement model. Once the structural model fit was confirmed, we inspected direct, indirect, and total effects. Coefficients of determination (R^2) were obtained as effect size values.

Results

Descriptive Statistics

Table 1 presents means, standard deviations, and estimates of skewness and kurtosis for the variables of interest. In preparation for SEM procedures, preliminary assumption testing was conducted, with no serious violations of normality detected,

Measurement model

To establish measurement model validity, we performed CFA using lavaan (Rosseel, 2012). Three latent variables (IB, SSEC, and MCS) and one manifest variable (Year GPA)

² Absolute indexes were chi-square (χ^2), a test of the difference between observed and estimated covariance matrices (p-values should ideally be greater than .05), and Root Mean Square Error of Approximation (RMSEA) with its confidence intervals. RMSEA values and confidence intervals should be less than .10 for acceptable fit and values less than .06 for good fit (Schreiber et al., 2006; Schumacker & Lomax, 2012). Relative indexes were Comparative Fit Index (CFI), a population measure of model misspecification, and Tucker–Lewis Index (TLI), representing relative fit by considering model parsimony. For relative indexes, values greater than .90 indicate acceptable model fit, whereas values greater than .95 indicate good model fit (Schreiber et al., 2006).

were included in the measurement model. We used Maximum Likelihood (ML) estimation over other methods because most of the items in our dataset were normally distributed (Kline, 2005). Our baseline model was associated with acceptable fit to the data; $\chi^2 (62) = 622.659$, $p < .001$, CFI = .922, TLI = .904, RMSEA = .078 [90% CI = .073, .084]. All factor loadings were statistically significant at the $p < .001$ level, and standardized estimates ranged from .494 to .881.

Although model fit appeared acceptable, we inspected modification indices (MI) as is standard practice with CFA. MI output suggested that allowing the covariance between measurement error terms for two pairs in the SSEC scale (SSEC3-SSEC4 and SSEC1-SSEC2) would improve model fit. For both pairs, it seemed theoretically sensible to estimate these parameters. SSEC3 and SSEC4 were designed to measure students' self-efficacy to interact socially in the physical/virtual learning environment, and SSEC1 and SSEC2 were designed to measure students' self-efficacy to approach academic staff for information. Including these error covariances greatly improved the model; $\chi^2_{\text{change}} (2) = 304.266$, $p < .001$. The modified measurement model yielded good fit to the data; $\chi^2 (60) = 324.204$, $p < .001$, CFI = .964, TLI = .953, RMSEA = .055 [90% CI = .049, .060].

Bivariate correlations. As presented in Table 2, results indicated statistically significant correlations among all study variables. These results confirm Hypothesis 1, and present evidence that it would be appropriate for mediation testing to be performed. Moreover, results show that group differences may contribute to student perceptions and performance; thus, these constructs were included in the structural model.

Structural model

Model fit. We used ML estimation and bootstrapping procedures with 10,000 samples to correct potential biases in the data and make use of bootstrapped confidence intervals in the interpretation of indirect (mediation) effects. Results showed acceptable

model fit to data; $\chi^2 (110) = 609.751, p < .001$, CFA = .938, TLI = .917, RMSEA = .055 [90% CI = .051-.060]. Latent and observed paths, tested regression paths, standardized solution estimates, and total variance are presented in Figure 2. We exclude covariates from display in Figure 2 for ease of interpretation; however, estimates for all variables and paths are presented in Table 3.

Direct effects. Results provided further support for Hypothesis 1, showing that students who felt a stronger sense of belongingness reported greater confidence in their abilities to interact socially in their classes (path a_1) and more reflective practices in terms of their academic studies and university progress (path a_2). We also expected that IB would be positively associated with Year GPA. Using a separate regression model in which IB predicted Year GPA, the direct effect (excluding the four covariates) was weak, positive, and statistically significant (path c ; $B = .314, SE = .100, \beta = .096, p = .002$)³.

We expected higher SSEC to be associated with better academic performance. Results supported this hypothesis, showing that students with higher SSEC had a higher GPA at the end of the academic year (path b_1). We expected greater MCS to correspond to better performance, supported in the results (path b_2).

We found noteworthy trends regarding four covariates. As described in Table 3, IB was higher among students who were further along in their studies (UniYear); however, older students reported a relatively weaker sense of belongingness. Older students who were further along in their academic studies reported higher SSEC and MCS than younger students in the early stages of their undergraduate studies (e.g., traditional first-year students). Moreover, students for whom English is a second or other language reported less social self-

³ The direct effect in which the four covariates was also weak, positive, and statistically significant ($B = .427, SE = .097, \beta = .131, p < .001$).

efficacy. Lastly, students who were further along in their studies (UniYear) were associated with a higher GPA, and ESL students were associated with a lower GPA.

Indirect and total effects. To test Hypothesis 2, we inspected unstandardized estimates and their corresponding standard error terms and bootstrapped confidence intervals to confirm that specific indirect effects were statistically significant. The specific indirect path in which SSEC was included as the sole mediating variable (a_1*b_1) was statistically significant. Since zero was not within the bias-corrected, bootstrapped confidence interval with 10,000 samples ($\text{BootCI}_{\text{lower}} = .122$, $\text{BootCI}_{\text{upper}} = .314$). We concluded that SSEC has the potential to mediate the direct effect of IB on Year GPA. To test Hypothesis 3, we inspected the specific indirect path in which MCS was included as the sole mediating variable (a_2*b_2). This path was statistically significant. Since zero was not within the bootstrapped confidence interval ($\text{BootCI}_{\text{lower}} = .077$, $\text{BootCI}_{\text{upper}} = .272$), we concluded that MCS has the potential to mediate the direct effect of IB on Year GPA. Thus, Hypothesis 2 and 3 were confirmed.

For Hypothesis 4, the specific indirect path in which SSEC and MCS were included as serial mediators ($a_1*d_{21}*b_2$) was statistically significant ($B = .028$, $SE = .010$; $p = .003$). Since zero was not within the bootstrapped confidence interval ($\text{BootCI}_{\text{lower}} = .014$, $\text{BootCI}_{\text{upper}} = .053$), we concluded that when both of the intervening variables were taken into consideration, they have the potential to mediate the direct effect of IB on Year GPA.

Results confirm a statistically significant total indirect effect of IB on GPA ($B = .396$, $SE = .065$; $p < .001$). Bootstrapped confidence intervals did not include zero ($\text{BootCI}_{\text{lower}} = .276$, $\text{BootCI}_{\text{upper}} = .530$), therefore showing that the direct relation between IB and Year GPA appears to be sensitive to mediating effects. Collectively, we estimated a statistically significant total effect on Year GPA ($B = .431$, $SE = .098$, $p < .001$; $\text{BootCI}_{\text{lower}} = .237$, $\text{BootCI}_{\text{upper}} = .624$).

Coefficients of Determination (R^2). To understand the proportion of variance accounted for by exogenous variables on endogenous variables in our structural model, we consider R^2 values presented in Figure 2 and Table 3. As shown, 2.30% of the total standardized variance in IB was explained by the four covariates included in the model. We found that IB and the measured covariates explained 23.50% of the total variance in SSEC. 30.10% of the total standardized variance in MCS was explained by IB, SSEC, and the measured covariates. Lastly, 12.90% of the total standardized variance in Year GPA was explained in the structural model. We believe that the R^2 coefficient estimated for Year GPA is especially noteworthy when considering the contextual meaning and measurement of academic performance (Funder & Ozer, 2019): it may be difficult to predict a considerable amount of variance in global, composite estimates of academic performance such as GPA⁴.

Discussion

The purpose of the current research was to better understand the association between university students' sense of institutional belonging and academic performance. Using social cognitive theory, we expected that students who see themselves as valued members of their institution (institutional belongingness) would have better grades than students with a weaker sense of institutional belongingness. We tested two mechanisms by which this association might take place: (a) students' confidence in their perceived ability to interact socially with other members in their classes (social self-efficacy in the classroom) and (b) the self-regulatory approaches that students use as they reflect on their learning progress at university (metacognitive strategies). Data from this large, New Zealand sample supported all four research hypotheses. We present new evidence that mediational processes may help understand how belongingness contributes to academic performance. Our findings are

⁴ Importantly, however, it is also worth emphasizing that this coefficient of determination explains a reasonable proportion of variance in Year GPA, but this estimate is attributed to both the predictor (X) and the mediators ($M1$ and $M2$), but neither alone (Fairchild et al., 2009; Lachowicz, Preacher, & Kellet, 2018; MacKinnon, 2008).

consistent with previous studies (e.g., Baumeister & Leary, 1995; Freeman et al., 2007; Mahar et al., 2013; Tinto, 2017, 2020; Slaten et al., 2016; Strayhorn, 2018; Walton & Brady, 2017) in that belongingness matters: it contributes to not only how students perform, but also social and learning-related dynamics that correspond to better academic performance.

First, we report a small, positive correlation between institutional belongingness and end-of-year GPA. Whereas some researchers have presented more robust correlations (Bandura et al. 1996; Patrick et al., 1997; Raskauskas et al., 2015), we believe this relatively small correlation could be attributable to group differences as well as the use of a global estimate of academic performance (Year GPA). To better understand the belongingness-performance relation, it would be useful for researchers to incorporate dispositional, cultural, and contextual variables in future studies. For example, it is essential to consider cultural interpretations of belongingness and personality variables (such as extraversion). It is important to examine potential differences that exist as a function of the environment itself; for instance, students enrolled in specific subject disciplines, and class formats (e.g., lectures, tutorials, and labs) differ in belongingness and related outcomes.

Our findings confirm that belongingness may aid students in their confidence to participate in the institution (e.g., social opportunities in the classroom). Such social self-efficacy beliefs may help students feel less daunted, less fixated on worries of being judged, and more willing to initiate conversation and ask questions. When this occurs, students may gain course- and university-related knowledge that they might not otherwise be able to access. For instance, institutional belongingness may encourage individuals to converse with fellow students during break times about course assignments and how to use the institution's Moodle system to feel better equipped to participate in class discussions with classmates and form a study group. These activities would presumably aid academic performance.

The results also demonstrate that belongingness and social self-efficacy are linked to greater use of metacognitive strategies in students' approaches to learning. From a social cognitive perspective (Bandura, 1986, 2001), students who are comfortable interacting in the social environment may develop metacognitive strategies through direct experiences (e.g., developing skills by interacting with lecturers and academic support staff) as well as vicarious experiences (e.g., seeing how others approach a task and modeling). Indeed, suppose a student does not feel as though they belong. In that case, they may fail to access direct and vicarious experiences that relate to better learning, therefore disrupting self-regulation (Baumeister et al., 2005) and academic outcomes.

Although recommendations based on the current study are premature, our findings connect to evidence-based approaches that facilitate belongingness in higher education. Universities might consider three overlapping spheres where students interact within the institution (e.g., Thomas, 2012): academic (e.g., lectures and labs), social (e.g., clubs and societies), and professional services (e.g., mental health and career services). Keeping in mind belongingness and its connection to these respective spheres, universities might first conduct educational research that aims to know what it means for students to "belong" at their particular institution. Since social network structures and social integration underpin perceptions of belongingness, a critical first step would be to understand students' needs and preferences. Next, universities might identify existing resources and strategies that relate to belongingness. This might include detecting strategic gaps; that is, what students are asking for but the institution is not (perceived as) doing. This knowledge may prioritize efforts focusing on student-capacity building, staff capacity-building, and institutional management coordination (Thomas, 2012). Third, it could be beneficial for institutions to develop strategic plans that focus on belongingness and constructive alignment. For instance, an English-speaking institution may promote a dedication to supporting international students.

However, in practice, students for whom English is not their first language might lose the sense of belongingness they otherwise expected if staff frequently use idioms in their classes. Given structural hierarchies, it is also quite possible for one department to be using strategies that promote belongingness, which another department is either unaware of or not employing. Lastly, institutions (and the staff within them) need to model inclusive behavior. For this to occur, universities might focus on providing training opportunities for staff and students to promote inclusive pedagogy and taking action against exclusionary practices.

Limitations

Although the current study comprised a large New Zealand sample of university students, several limitations should be included in future research. First, we used items and scales that had not been previously validated. It is, therefore, possible that the short scales do not fully represent the depth of our respective constructs. Drawing conclusions across studies on these factors should be taken with the appropriate caution. As explained in the Methods section, items in this dataset had been selected by the institution. To add support for the reliability and validity of these constructs, we anchored variables based on theory and performed exploratory and confirmatory factor analyses. Future studies should validate these items or opt for previously validated measures. Second, as is the case with structural equation modeling, we cannot confirm causality or causal order among the variables in this study. Theoretical premises are those in which broader views of the institution contribute to more narrowed views in the classroom and learning environment; however, it is also possible that reverse and cyclical patterns take place as a student interacts with the environment. For instance, students' confidence in interacting with classmates may modify or affirm their broader sense of institutional belonging. We recommend that further research be conducted to understand the temporal order of these phenomena better, perhaps using longitudinal models that offer the ability to draw changes from one variable to the next. Third, our

research focused on a global level of analysis for all variables of interest. We focused on institutional belongingness as opposed to class-specific belongingness. For instance, we inspected social self-efficacy in students' classrooms rather than in social events or residence halls; metacognitive strategies in general rather than strategies used for specific tasks or courses; and Year GPA as opposed to a specific course grade. As this research was exploratory in nature, we chose to take a birds-eye view to identify potential associations. Further research is needed to determine whether such results are consistent at a domain- or task-specific scope.

Conclusion

When the relation between institutional belongingness and end-of-year GPA was examined, social self-efficacy in the classroom and metacognitive strategies emerged as important, mediating variables (both independently and in serial). Whilst controlling for student differences, institutional belongingness contributed to a small, positive correlation with end-of-year GPA. When the mediators were included in the structural model, the direct relation was no longer statistically significant. Therefore, a broad sense of belonging appears to be an important component of academic performance.

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Table 1.

Descriptive statistics of Institutional Belonging, Social Self-Efficacy in the Classroom, Metacognitive Strategies and Year GPA (n = 1,480)

Variable	Min	Max	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Institutional Belonging	1	5	3.60	0.71	-0.59	1.11
Social Self-Efficacy in the Classroom	1	5	3.26	1.01	-0.02	-0.69
Metacognitive Strategies	1	5	3.84	0.73	-0.75	1.21
Year GPA	-1	9	5.53	2.20	-0.69	0.04

Table 2.

Bivariate Correlations between Institutional Belonging (IB), Social Self-Efficacy in the Classroom (SSEC), Metacognitive Strategies (MCS), Year GPA, Student's Year in University (UniYear), Age, Postgraduate (PG) Status, and English as a Second Language (ESL)(n = 1,480)

	1. IB	2. SSEC	3. MCS	4. Year GPA	5. UniYear	6. Age	7. PG Status	8. ESL
1. Institutional Belonging (IB)	1	-	-	-	-	-	-	-
2. Social Self-Efficacy in the Classroom (SSEC)	.216**	1	-	-	-	-	-	-
3. Metacognitive Strategies (MCS)	.323**	.305**	1	-	-	-	-	-
4. Year GPA	.090**	.242**	.203**	1	-	-	-	-
5. UniYear	.111**	-.162**	-.122**	-.069**	1	-	-	-
6. Age	-.128**	.294**	.218**	.106**	-.504**	1	-	-
7. PG Status (Yes = 1)	-.087**	.201**	.135**	.144**	-.201**	.303**	1	-
8. English as a Second Language (Yes = 1)	.027	-.065*	-.043	-.136**	.104**	-.061*	.001	-

Note. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 3.

Unstandardized and standardized coefficients of the results of the structural equation modeling procedures (n = 1,480)

Antecedent	X (IB)				M_1 (SSEC)				M_2 (MCS)				Y (YEAR GPA)						
	B	SE	β	p		B	SE	β	p		B	SE	β	p		B	SE	β	p
X (IB)	-	-	-	-	a_1	.419	.061	.323	< .001	a_2	.316	.044	.370	< .001	c'	.035	.115	.011	.759
M_1 (SSEC)	-	-	-	-	-	-	-	-	-	d_{21}	.135	.028	.204	< .001	b_1	.494	.090	.198	< .001
M_2 (MCS)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	b_2	.506	.133	.134	< .001
C_1 (UNIYEAR)	-.066	.022	-.097	.003		.100	.029	.114	.001		-.034	.018	-.059	.057		.328	.066	.149	< .001
C_2 (AGE)	-.008	.003	-.011	.004		.030	.003	.034	< .001		.014	.002	.024	< .001		-.006	.008	-.003	.448
C_3 (PGST)	.061	.087	.090	.481		.201	.103	.228	.051		.223	.066	.383	.001		-.223	.235	-.101	.343
C_4 (ESL)	.050	.063	.073	.429		-.189	.075	-.215	.012		-.034	.047	-.058	.475		-.779	.184	-.354	< .001
$R^2 = .023$				$R^2 = .235$				$R^2 = .301$				$R^2 = .129$							

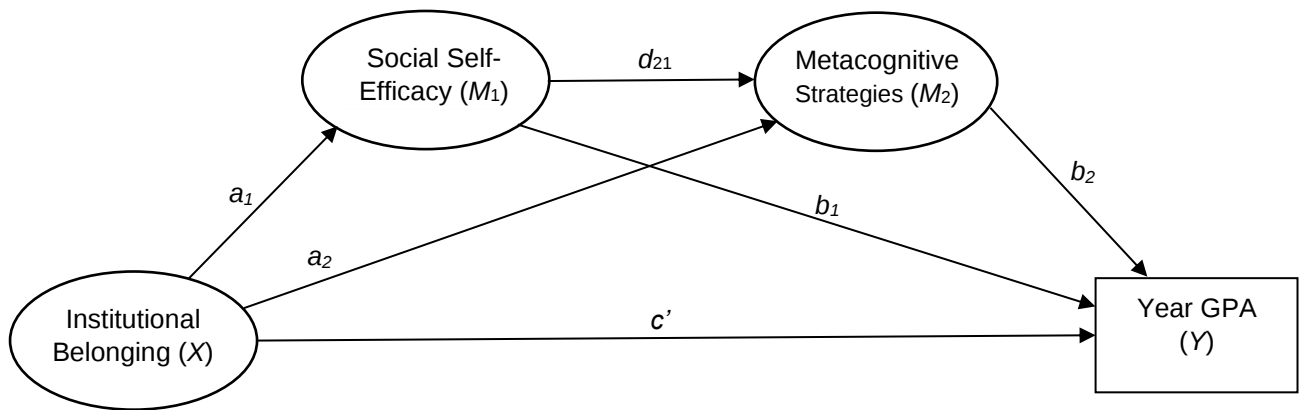


Figure 1.

Conceptual diagram examining (1) the indirect effect of Institutional Belonging (X) on Year GPA (Y) through Social Self-Efficacy (M₁) only through a_1b_1 , (2) the indirect effect of X on Y through M₁ and Metacognitive Strategies (M₂) in in serial = $a_1d_{21}b_2$, and (3) the direct effect of X on Y = c' . UniYear (C₁) and Age (C₂) are included as covariates for X, M₁, M₂, and Y (not displayed).

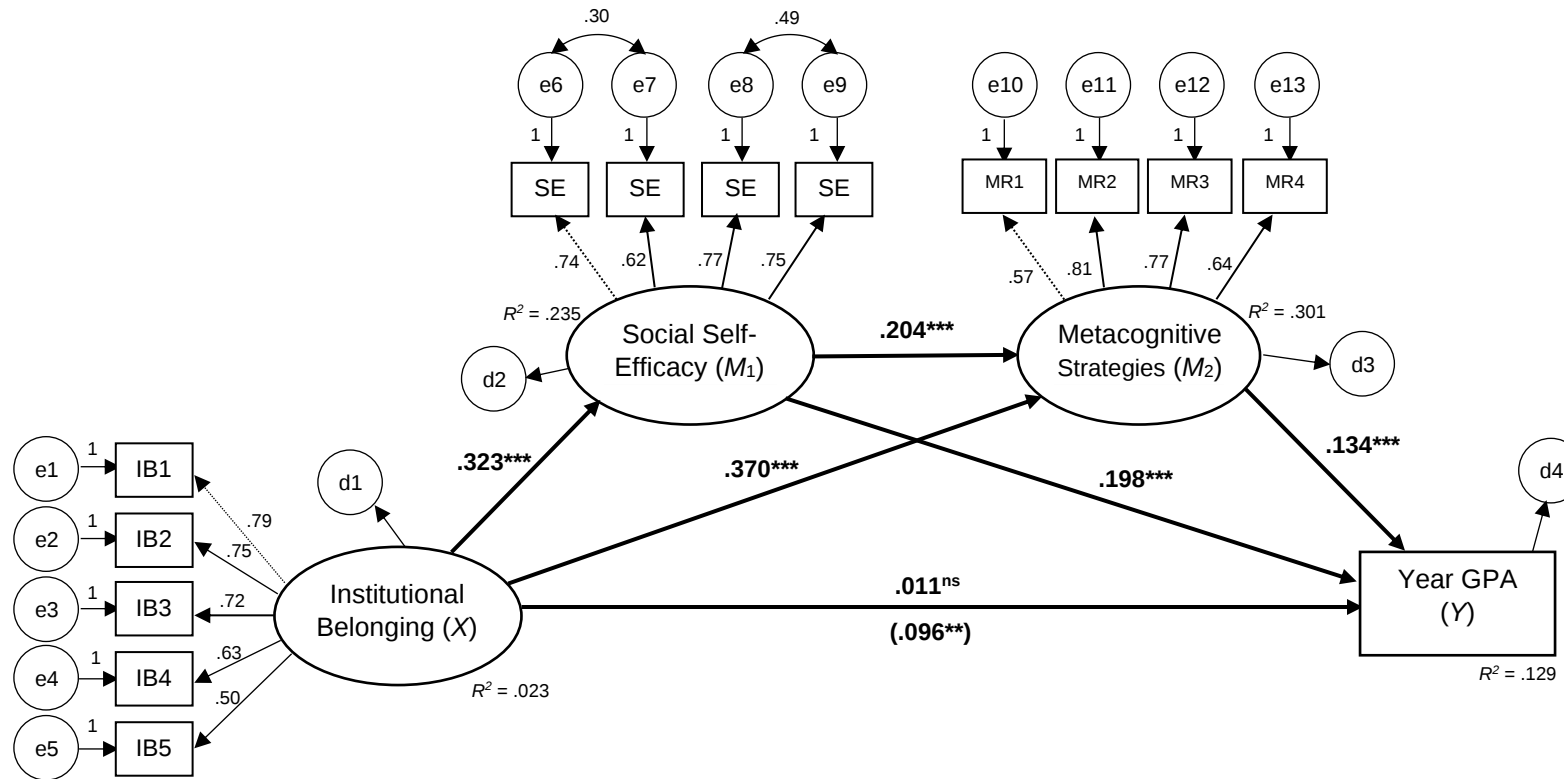


Figure 2.

Standardized coefficients for the structural model examining (1) the indirect effect of X on Y through M₁ only, (2) the indirect effect of X on Y through M₂ only (3) the indirect effect of X on Y through M₁ and M₂, and (4) the direct effect of X on Y = c'. For all latent and observed variables, UniYear (C₁), Age (C₂), PGST (C₃), and ESL (C₄) were included as covariates for X, M₁, M₂, and Y (not displayed but for ease of interpretation). $^{**}p < .01$ $^{***}p < .001$.

Supplementary Materials*Demographic characteristics of the New Zealand university student sample (n = 1,480)*

Categorized variable	%
Female	60.8
Male	38.6
Gender Diverse	0.5
New Zealander and Australian	64.2
Chinese, Japanese and Korean	8.2
Unknown	7.2
European	7.1
India-Southeast Asian	6.4
Maori	3.0
Pasifika	2.0
African, Latin, Middle Eastern	1.8
Domestic (NZ) student	86.2
International student	13.8
English as a first/native language	86.8
English as a second language (ESL)	11.7
Unknown	1.6
First-in-Family (first-generation university) student	24.2
Not First-in-Family student	75.8
1 st year undergraduate	12.1
2 nd year undergraduate	30.4
3 rd year undergraduate	31.8
Other undergraduate	14.1
Postgraduate (Honours)	11.7

Exploratory factor analysis pattern matrix with factor loadings depicting Social Self-Efficacy in the Classroom (SSEC), Institutional Belongingness (IB), Metacognitive Strategies (MCS) using Maximum Likelihood extraction and oblique rotation (n = 1480)

	Factor		
	1	2	3
I am confident in my ability to talk to lecturers. (SSEC1)	.665	.074	-.005
I am confident in my ability to talk to other [institution] staff. (SSEC2)	.546	.136	.007
I am confident in my ability to participate in class discussions. (SSEC3)	.907	-.075	.018
I am confident in my ability to ask a question in class. (SSEC4)	.877	-.134	-.040
I feel welcomed by [institution]. (IB1)	.009	.756	-.063
I have a sense of meaning or purpose at [institution]. (IB2)	.046	.667	-.099
I feel safe at [Institution]. (IB3)	.028	.433	-.119
I belong to [institution's] community. (IB4)	.014	.678	.133
[Institution] thinks I matter as an individual. (IB5)	-.054	.779	.007
I have a long-term plan for what I am learning at [institution]. (MCS1)	-.009	.068	-.551
I take time to reflect on what I have been learning. (MCS2)	.021	-.035	-.800
I try to relate what I learn to what I already know or have experienced. (MCS3)	-.013	-.011	-.795
I have a deep understanding of my personal learning strategies. (MCS4)	.025	.002	-.624

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.^a

a. Rotation converged in 5 iterations.