Received 1 January 2025
Revised 6 April 2025
23 June 2025
Accepted 24 June 2025

# Vietnamese and American student commitment: the impact of exercise self-efficacy and collectivism

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## Abstract

**Purpose** – This study examines the relationship between exercise self-efficacy (ESE) and student commitment (SC) to address challenges in business school student engagement and retention. We aim to close the empirical gap between ESE and SC and explain the role of cultural values by exploring how individualism and collectivism (IC) shape the ESE–SC relationship within different cultural contexts.

**Design/methodology/approach** – Over 1,300 undergraduate students from the United States of America and Vietnam participated in three studies. Study 1 used regression analyses to examine ESE–SC in a USA university. Study 2 investigated potential moderating effects of IC in Vietnam. Study 3 tested the replicability of findings with a diverse USA sample, further analyzing the relationship between ESE, SC and IC.

**Findings** – Study 1 found a negative ESE–SC relationship. Study 2 observed a positive ESE–SC relationship in Vietnam. Study 3 confirmed the positive ESE–SC relationship and demonstrated significant IC moderation.

**Research limitations/implications** – We used self-reported measures and a cross-sectional design with undergraduate student samples. Findings contribute to the self-efficacy and commitment literature, underscoring the instrumental role of cultural dimensions in moderating the relationship between ESE and SC, while advancing scholarship on commitment and providing evidence that ESE can be a significant predictor of academic outcomes.

**Practical implications** – For business schools, promoting ESE among students could serve as a strategic tool for enhancing SC, which ultimately supports and enhances their retention and accreditation targets.

**Originality/value** – Empirical support for an ESE–SC relationship reveals that cultural values moderate the ESE–SC relationship.

**Keywords** Student commitment, Exercise self-efficacy, Individualism/collectivism

**Paper type** Research article

## 1. Introduction

Many universities are facing declining student enrollment and retention rates, which have in turn led to reduced funding and associated challenges in maintaining academic programs, services and human resource needs, including faculty staffing (Williams and Usher, 2022).

**JEL Classification —** I12, I23, I31



*Funding:* This research was supported with funding provided by the Randall Lewis Center for Well-Being and Research Faculty Fellowship that the second and third authors were participants.

*Declaration:* The authors are not aware of any potential conflict of interest in the research or with the journal/editorial team handling this submission.

Journal of Asian Business and Economic Studies
Vol. 32 No. 3, 2025
pp. 174-186
Emerald Publishing Limited
2515-964X
DOI 10.1108/JABES-01-2025-0001

As such, universities should be particularly open to novel approaches to student recruitment and subsequent engagement.

Student well-being represents a promising avenue to encourage engagement. Struggles with mental health, feelings of isolation and an attendant lack of self-care all negatively impact academic performance (Awadalla *et al.*, 2020; Wyatt *et al.*, 2017). Physical fitness, as a central dimension of well-being, has been linked to improved academic outcomes, including concentration, energy levels and confidence (Altermann and Gröpel, 2024; Grasdalsmoen *et al.*, 2020), and students who possess these qualities are more likely to be committed to their academic institutions (Shang *et al.*, 2021).

Exercise self-efficacy (ESE), defined as one's belief in their own ability to maintain physical fitness despite challenges, is an important predictor of whether one achieves a sufficient level of physical fitness (Kroll *et al.*, 2007; Medrano-Ureña *et al.*, 2020). Given that students with higher ESE are likely to also display greater resilience, time management and coping skills (Kundakcı *et al.*, 2024; Abun *et al.*, 2019), this may in turn enhance their academic engagement and subsequent institutional commitment.

This research examines the relationship between ESE and student commitment (SC), defined as "... a student's overall satisfaction, sense of belonging, impression of educational quality, and willingness to attend the institution again" (Strauss and Volkwein, 2004, pp. 203–204). We also explore the moderating role of individualism-collectivism (IC) in this relationship. Across three studies, involving over 1,300 undergraduate students from the United States and Vietnam, we aim to provide a basis for recommendations on institutional policies and resources to enhance ESE and its potential to improve SC and associated positive outcomes.

## 2. Study 1

### *2.1 Literature review*

ESE is broadly understood as an individual's confidence in their ability to engage in and sustain physical activity, even when (or *especially when*) confronted with obstacles or challenges that might stymie such activity (Kroll *et al.*, 2007; Wang *et al.*, 2022). The extant empirical literature in fields such as health psychology has increasingly recognized that individuals with higher ESE are more likely to adopt and maintain regular physical activity routines in ways which produce various positive outcomes, including better overall management of one's health (Bebeley *et al.*, 2017; Zhang *et al.*, 2024).

ESE, although a distinct construct from general self-efficacy (GSE) – defined as one's belief in their ability to achieve goals across diverse life domains – is an important proxy for it and not merely a subset within it (Cornick, 2015; Luszczynska *et al.*, 2005). One's perceived mastery over their physical health has been shown to be significantly associated with general self-mastery (Schutte and Malouff, 2016). Because exercise is often difficult and strenuous, an underlying belief in one's capacity to successfully engage in physical activity will have broader predictive implications over other difficult pursuits in one's life. Given that such studies have shown that higher GSE is associated with increased persistence in goal-directed behaviors (Wolf *et al.*, 2018), higher ESE, as a proxy for GSE, may also have broader implications for outcomes beyond health – perhaps including academic outcomes.

Within the context of academic pursuits, self-efficacy has been shown to be associated with higher levels of student engagement and performance (Honicke and Broadbent, 2016; Khan, 2023). Students with greater self-efficacy are more likely to set, meet and exceed high academic standards; persevere through scholastic difficulties and develop effective coping strategies for handling academic stress (Popa-Velea *et al.*, 2021; Sharififard *et al.*, 2020). Consistent with studies in other domains (e.g. Shu, 2022), heightened levels of engagement, persistence and performance are predictive of increased SC (Cownie, 2019).

Additionally, more research has highlighted a reciprocal, feedback-looping dynamic for which not only does ESE promote engagement in physical activity, but increased participation

in physical exercise can, in turn, raise one's level of ESE. As Wang *et al.* (2022, p. 3) conclude in a study of college students, "the higher the degree of physical exercise, the higher the college students' exercise self-efficacy" (p. 3), noting that physically active students build both confidence in their fitness-related abilities and an accompanying sense of competence more broadly. This cyclical relationship indicates that interventions promoting actual exercise behavior – rather than confidence and capability alone – may be particularly potent in maintaining sustainable changes in students' self-efficacy. Gao *et al.* (2025) also provide compelling evidence for a predictive relationship between physical exercise behavior and academic self-efficacy, mediated in part through increased academic engagement. Their large-scale study of college students found that physical exercise behavior significantly and positively predicted academic self-efficacy, noting that improvements in physical fitness could lead to broader gains in academic confidence.

In terms of specific exercise interventions, the work of Collins *et al.* (2019) identifies resistance training (RT) – broadly conceived as exercise designed to increase physical strength and endurance through working muscles against external physical forces – as a particularly promising modality for improving aspects of "the self," including GSE and self-worth. Unlike more general aerobic activities, RT interventions may yield more salient and tangible gains in strength and capability, which in turn provides more direct feedback on effort and progress – both key drivers of efficacy.

Taken together, we hypothesize that higher versus lower levels of ESE will predict higher levels of SC. Specifically, students with greater confidence in their ability to maintain *physical* fitness, even when confronted with the difficulties of *academic* life, are more likely to carry these attributes over to other domains in a way that should predict academic commitment.

*H1*. Exercise self-efficacy has a positive association with student commitment.

### *2.2 Methods and analysis*

*2.2.1 Procedure.* Participants were students recruited from a mid-sized private university in the Western United States. All participants were entered into a drawing for one of five $20 Amazon.com gift cards. A total of 337 participants completed the survey. After removing participants who submitted incomplete surveys, the final sample consisted of 305 participants.

In the final sample of 305 participants, 79.5% identified as female. The majority of participants (54%) were between 18 and 24 years of age. Most participants (79.7%) were employed at least part-time.

*2.2.2 Measures. ESE.* The independent variable was ESE. The 10-item, 4-response scale developed by Kroll *et al.* (2007) was used to measure ESE (sample item: I am confident that I can find means and ways to be physically active and exercise). The scale demonstrated acceptable reliability ($\alpha = 0.92$).

*SC.* The dependent variable of Study 1 was SC. SC was measured using 14-item Likert scale items selected from the Strauss and Volkwein (2004) scale. The Strauss and Volkwein (2004) scale includes institutional commitment, social integration, classroom experience and student effort factors to measure a student's commitment to their university (sample item: Indicate your level of satisfaction with the university in general). The scale demonstrated acceptable reliability ($\alpha = 0.86$).

*Controls.* Four variables served as controls. The first measured participants' employment status. The second asked participants to indicate which racial categories they identified the most. The third allowed participants to select the gender they most strongly identified with. The fourth was the participants' age.

Version 7.4 of the MPlus statistical software package was used to analyze data (Muthén and Muthén, 2017). Testing of Hypothesis 1 involved the estimation of an ordinary least squares (OLS)

regression equation. Maximum likelihood parameter estimation was used to estimate the regression because it is robust to non-normality and non-interdependence of variables.

*2.2.3 Results.* Hypothesis 1 proposed that ESE would have a positive association with SC. This hypothesis was not supported. ESE had a negative association with SC ($\beta = -0.21$, $p < 0.01$). See Table A1 [1] for descriptive statistics, Table A2 [1] for variable correlations and Table A3 [1] for regression results.

### *2.3 Discussion*

Contrary to our hypothesis, Study 1 revealed a negative relationship between increased ESE and SC, suggesting that students with higher ESE reported *lower* levels of commitment to their university. These results may underscore the complexity of the relationship between self-efficacy and commitment in the context of higher education. One possible explanation for the observed negative relationship is that students with higher levels of ESE may possess a stronger sense of personal independence, which could *reduce* or *diminish* their psychological reliance on the institution and, in turn, their affective commitment to it. High-ESE students may be those who explicitly couch maintaining physical fitness and self-discipline in *individually* goal-oriented terms. Such a heightened sense of self in these pursuits may reduce the emotional bond they feel toward the university, in turn resulting in *lower* levels of commitment.

An additional explanation may be that high-ESE students are those who, given their better sense of self-reliance, view the challenges of university life as simply less daunting. Resultantly, they may feel less dependent on the university as a source of support and perceive the resources and structures of their academic institution as less integral to their success. Moreover, students with greater ESE are almost certainly those who allocate more time and effort to their physical activities, which could possibly come at the expense of opportunities to more actively engage in university life.

Finally, cultural factors, such as the values of individualism versus collectivism, may influence how students perceive their relationship with the institution. Similarly, future studies could investigate whether specific personality traits, such as independence or self-reliance, moderate this relationship.

In conclusion, the results of Study 1 have shown that the hypothesized positive relationship between ESE and SC warrants provisional skepticism. And although the findings contradict the original hypothesis, they also provide fertile ground for new research avenues to better understand what seems to be a more complex relationship between ESE and SC than previously assumed. Our next study builds on these counterintuitive findings by exploring potential theoretical explanations for the observed relationship and testing whether cultural factors moderate the ESE–SC relationship.

## 3. Study 2

### *3.1 Literature review*

The unexpected negative relationship between ESE and SC observed in Study 1 prompts a closer examination of the underlying mechanisms that might explain this finding. While self-efficacy, in general, is often associated with positive outcomes such as persistence and goal achievement, the specific context of ESE may involve different dynamics.

As aforementioned, one possible explanation for the observed negative ESE–SC relationship lies in the role of personal autonomy and independence. A more individually-focused student might be someone who conceives of themselves in more individualistic terms – reflected in both their pursuit of physical fitness goals as individual ends and a perception of an academic institution as something they need not rely on to facilitate such individually oriented goals.

At its core, the IC cultural framework helps us understand how people relate to others and the social groups or institutions around them. In more individualistic cultures – such as those often found in Western contexts such as the United States, the Antipodes or Western Europe – people tend to see themselves as independent agents, responsible for their own success and primarily motivated by personal goals. In contrast, collectivist cultures – more common in many Asian, African and Latin American societies – emphasize interdependence, shared responsibility and group harmony. People in these settings are more likely to view their achievements as deeply connected to their families, communities or institutions (Fatehi *et al.*, 2020; Triandis and Gelfand, 2012). Applied to the present context, this means that a student with high confidence in their ability to maintain personal fitness might, in an individualistic culture, see less need for institutional support and therefore feel less committed to their university. But in a collectivist culture, that same confident student might feel a strong sense of loyalty and belonging to their academic institution, viewing it as an integral, communitarian part of their growth and success.

At the individual level, the likelihood of someone having such an individualistic orientation is almost certainly going to be modulated by the wider culture that they have experienced and been embedded in not just at the institutional level but also at the wider macro-national level, and thus, it is important to consider the potential influence of cultural values in shaping someone's degree of individualism (Oyserman and Lee, 2008; Westjohn *et al.*, 2022). Previous research (e.g. Wennberg *et al.*, 2013) has demonstrated that cultural values can moderate the relationship between self-efficacy and various outcomes. For example, studies (e.g. Luthans *et al.*, 2006) have found that the effects of self-efficacy on work-related outcomes such as job satisfaction and organizational commitment differ across individualistic and collectivist cultures. As such, the distinction between individualistic and collectivistic cultures could offer a useful lens by which to examine how cultural context may shape the relationship between ESE and SC.

Taken together, there may be a potential moderating role for the encompassing construct of IC that is expressly rooted in the idea that cultural values can shape how individuals interpret and respond to their sense of self-efficacy. In individualistic cultures, students with high ESE may prioritize personal autonomy and perceive the university as less central to their success, leading to lower levels of commitment. Conversely, in collectivist cultures, high ESE may be less likely to detract from SC, as collectivist values encourage students to maintain strong ties to the institution, even when they are personally confident in their abilities.

*H1*. Exercise self-efficacy is negatively associated with student commitment.

*H2*. Individualism/collectivism moderates the negative relationship between exercise self-efficacy and student commitment such that the relationship between exercise self-efficacy and student commitment is strengthened for individualistic individuals and weakened for collectivistic individuals.

### *3.2 Methods and analysis*

*3.2.1 Procedure.* Participants for Study 2 were undergraduate students between the ages of 18–24 enrolled at a university located in a major city in Vietnam. Course credit was offered for completion of the study's survey. A total of 513 participants completed the survey and most (67.3%) identified as female.

*3.2.2 Measures. ESE.* Like Study 1, the 10-item, 4-response choice ESE scale developed by Kroll *et al.* (2007) was used to measure the independent variable ESE. For Study 2's sample, the ESE scale demonstrated acceptable reliability ($\alpha = 0.90$).

*SC.* As with Study 1, organizational commitment was measured using the Strauss and Volkwein (2004) SC scale, which contains 14 Likert-scale items. The scale demonstrated acceptable reliability ($\alpha = 0.88$).

*Individualism-collectivism.* IC, the moderator, was measured using the scale developed by Triandis and Gelfand (2012), which contains 16 Likert scale response items (sample item: It is important to me that I respect decisions made by my groups). The scale demonstrated acceptable reliability ($\alpha = 0.86$).

*Controls.* Three variables served as controls. The first variable was *employment*, which measured whether participants were employed part-time, full-time or unemployed. The second control variable was *gender* measured using a single item, which allowed participants to select which gender they most strongly identified with. The third control variable was *marital status*, which was measured with a single self-response item that allowed participants to indicate whether they were married, widowed, divorced, separated or never married.

Version 7.4 of the MPlus statistical software package was used to analyze data (Muthén and Muthén, 2017). Testing of Hypothesis 1 involved the estimation of an OLS regression equation. Hypothesis 2, which involved moderation, was tested with bootstrapped moderation models that simultaneously examined the interaction term and independent variables' relation to SC as the dependent variable. Maximum likelihood parameter estimation was used to estimate regression models because of its robustness to non-normality and non-interdependence of variables.

*3.2.3 Results.* Hypothesis 1 proposed a negative relationship between ESE and SC. In contrast to Study 1, ESE had a positive association with SC ($\beta = 0.16$, $p < 0.01$). Hypothesis 2 proposed that IC would moderate the relationship between ESE and SC. Both ESE ($\beta = 0.13$, $p < 0.01$) and IC ($\beta = 0.23$, $p < 0.001$) had a positive association with SC. The interaction between ESE and IC was negative and only approached statistical significance ($\beta = -12$, $p = 0.08$). See Table A4 [1] for descriptive statistics, Table A5 [1] for variable correlations and Table A6 [1] for regression results.

### *3.3 Discussion*

Contrary to our expectations, we found the relationship to be positive and not negative, as had been observed in Study 1. In this sample of Vietnamese students, those with higher levels of ESE reported stronger psychological attachment to their academic institution, indicating a positive association between self-efficacy and institutional commitment.

Moreover, while the interaction term between ESE and IC fell just short of a desirable level of statistical significance, the results nevertheless suggest that IC might play some role in the ESE–SC relationship. In this sample, students with a higher sense of collectivism seemed to more highly value their relationships with the university and its underlying support opportunities, *even though* they also possessed a high sense of mastery over their own physical self.

There are several potential explanations for the shift from a negative to a positive ESE–SC relationship in this study. One explanation could be related to the cultural context of conducting research in a significantly more collectivist culture. In collectivist cultures, group membership and loyalty to institutions, such as universities, are valued more highly than in individualistic cultures (Fukushima *et al.*, 2009). As a result, students may be more likely to view their personal achievements as contributing not only to their *individual* success but also to the success and reputation of the group (in this case, the university).

As such, students with higher ESE might feel a *stronger* sense of responsibility to their university and perceive their own physical fitness and well-being as integral to that sense of responsibility. This could explain why students with high ESE in a collectivist culture might report higher levels of commitment to their institution.

However, the moderation effect was not as strong as anticipated. One possible reason for this could be the relatively homogeneous nature of the sample in terms of cultural values. Because Vietnam is predominantly collectivist, there may have been less variability in actual collectivist tendencies, which may have made significant moderating effects less likely to emerge. Such a limitation suggests that further research is needed to explore and replicate this potential moderator in a cultural context that differs along the dimensions of IC.

## 4. Study 3

### *4.1 Context*

Based on the results of Study 2, Study 3 hypothesizes that the positive relationship between ESE and SC observed in the collectivist context of Vietnam will be replicated in an individualistic culture. However, we also hypothesize that the moderating effect of IC may be weaker in this context, given the stronger emphasis on personal autonomy in individualistic cultures (Helwig, 2006).

*H1.* Exercise self-efficacy has a positive association with student commitment.

*H2.* Individualism/collectivism moderates the positive relationship between exercise self-efficacy and student commitment such that the relationship between exercise self-efficacy and student commitment is strengthened for individualistic individuals and weakened for collectivistic individuals.

### *4.2 Methods and analysis*

*4.2.1 Procedure.* Participants for Study 3 were a representative sample of undergraduate students enrolled at four-year universities in the United States recruited by Qualtrics. A total of 550 participants completed the survey and most (51.1%) identified as female.

*4.2.2 Measures. ESE.* Similar to Studies 1 and 2, ESE was measured using the Kroll *et al.* (2007) scale. For Study 3, the scale demonstrated acceptable reliability ($\alpha = 0.89$).

*SC.* Like Studies 1 and 2, SC was measured as the dependent variable using Strauss and Volkwein's (2004) SC scale. The scale demonstrated excellent reliability ($\alpha = 0.96$).

*Individualism-collectivism.* Similar to Study 2, IC, the moderator, was measured using the Triandis and Gelfand (2012) scale. The scale demonstrated acceptable reliability ($\alpha = 0.86$).

*Controls.* Four variables served as controls. The first control variable, *age*, was measured with a single item where participants indicated their age range (18–24 years old to over 55 years old). The second control variable, *gender,* was measured using a single item, which allowed participants to select the gender they most strongly identified with. The third control variable, *race,* was measured using a single item where participants indicated which racial group they most closely identified with. The fourth control variable was *employment*, which measured whether participants were employed part-time, full-time or unemployed.

Version 7.4 of the MPlus statistical software package was used to analyze data (Muthén and Muthén, 2017). Hypotheses were tested in the same manner as in Study 2.

*4.2.3 Results.* Hypothesis 1 proposed a positive relationship between ESE and SC. Similar to Study 2, ESE had a positive association with SC ($\beta = 0.53$, $p < 0.001$). Hypothesis 2 proposed that IC would positively moderate the relationship between ESE and SC. Both ESE ($\beta = 0.29$, $p < 0.01$) and IC ($\beta = 0.36$, $p < 0.001$) had a positive association with SC. The interaction between ESE and IC was positive and significant ($\beta = 0.14$, $p = 0.03$). Interpretation of the simple slope test indicates that participants scoring higher on individualism (t-value = 4.5, $p < 0.001$) had a steeper slope than participants scoring higher on collectivism (t-value = 2.16, $p < 0.05$). This result suggests that participants with higher levels of individualism and who are more efficacious with regard to exercise had higher levels of SC. This result supports Hypothesis 2. See Table A7 [1] for descriptive statistics, Table A8 [1] for variable correlations and Table A9 [1] for regression results.

### *4.3 Discussion*

The results of Study 3 confirm a positive relationship between ESE and SC, in concordance with the findings from Study 2. This consistency across the latter two studies of the present work suggests that ESE may indeed have some instrumental causal influence in enhancing students' commitment to their academic institutions, even when assessed in different cultural contexts. Moreover, the interaction between ESE and IC was significant in Study 3, further

lending support to the notional hypothesis that cultural values moderate the relationship between ESE and SC. Specifically, the findings in Study 3 reveal that the positive relationship between ESE and SC is stronger among individuals with higher individualistic tendencies, putatively highlighting the role played by individualism within an individualistic culture in increasing the alignment between personal efficacy and institutional commitment.

This substantive and significant interaction finding contrasts with the marginal moderation effect observed in Study 2, conducted in a collectivist cultural setting, where collectivism appeared to buffer or modulate the potential independence-oriented tendencies associated with high ESE. Across these latter two studies, the results suggest that, contrary to the findings of Study 1, while ESE does predict SC positively, the degree and direction of this effect could be shaped both by the relative degree of individualism versus collectivism in both the student themselves and the wider cultural milieu in which their pursuit of higher education takes place. In individualistic contexts, promoting self-efficacy might directly enhance institutional commitment, as students likely perceive their university experience as a platform for personal achievement. This alignment may explain why, in Study 3, individualism could be interpreted as a catalyst for the ESE-SC relationship, with its impact observed more substantially than it is in collectivist settings.

## 5. General discussion

The results from the three studies present a complex and nuanced understanding of the relationship between ESE and SC. Study 1, conducted in the United States, revealed a negative association between ESE and SC, contrary to expectations. This result suggests that students with high ESE may cultivate a stronger sense of independence, potentially diminishing their reliance on institutional support and their consequent emotional attachment to the university. These findings underline the context-specific nature of ESE's impact, suggesting that while self-efficacy is generally linked to positive outcomes, its influence may vary depending on other individual and cultural factors.

In contrast, Study 2, conducted in Vietnam, found a positive relationship between ESE and SC, rejecting our *a posteriori* hypothesis to the contrary. The study introduced IC as a potential cultural moderator of this relationship, with results provisionally suggesting that the collectivist orientation prevalent in Vietnamese culture may amplify institutional commitment even among students with high ESE. Collectivist values emphasize interdependence and group cohesion, and we deduced that this might lead students with high ESE to perceive their personal fitness achievements as contributing not only to their own success but also to the success and reputation of their university. Although the moderation effect of IC on the ESE–SC relationship was only marginally significant, the findings nevertheless provisionally attest to the role of cultural context in shaping how self-efficacy translates into SC.

Study 3, also conducted in the United States, reinforced the positive ESE–SC relationship observed in Study 2 within an individualistic cultural framework. The interaction effect of IC in this study was substantive and significant and revealed that individualistic tendencies might strengthen the relationship between ESE and SC. We speculated that students with high ESE may interpret both their academic and fitness achievements as reflections of their self-reliance *and* that their universities are perceived as platforms for individual growth and success, which enhances their psychological attachment to the institution and suggests that, in such settings, personal autonomy exhibits a discrete, contextual and causal relationship to institutional loyalty.

Taken together, these findings highlight the multifaceted and context-dependent nature of the ESE–SC relationship under examination. Cultural values, of which IC is but one, appear to play some moderating role and serve to reveal that variations in students' perceptions of self-efficacy could influence their sense of institutional attachment. Collectivist contexts may buffer the independence-oriented tendencies associated with high ESE, in turn engendering stronger institutional ties, while, contrastingly, individualistic contexts may synchronize the senses of personal efficacy and institutional commitment.

*5.1 Scholarly implications*

This research contributes to the self-efficacy and commitment literature in several meaningful ways. First, it provides further evidence to support the domain-specific nature of self-efficacy, demonstrating that ESE, although having been previously linked to broader self-regulatory capacities (Mu *et al.*, 2024; Wang *et al.*, 2022), has its own distinct implications for institutional commitment. The unexpected, negative findings in Study 1 could challenge the traditional understanding of self-efficacy as uniformly positive and might suggest that, absent appropriate culture modulation, the autonomy conferred by high-ESE students may reduce their affective ties to their educational institutions.

Further, this work underscores the instrumental role of cultural dimensions, particularly IC, in moderating the relationship between ESE and SC. The results reveal that collectivist cultural values may buffer the negative impacts of ESE on SC observed in individualistic contexts and, in turn, engender a stronger sense of institutional loyalty. In total, these findings extend the self-efficacy literature by integrating insights from cultural psychology and providing a more localized perspective on how self-belief systems interact with sociocultural frameworks to produce emergent collective or organizational outcomes of interest.

Third, the studies advance the extant scholarship on commitment by emphasizing the dynamic interplay between personal and contextual factors. The positive relationship between ESE and SC in Studies 2 and 3 suggests that personal mastery, when aligned with cultural values, can enhance psychological attachment to institutions. However, the findings also highlight the potential trade-offs between independence and institutional loyalty within differentially individualistic or collectivistic cultural contexts. Any future research efforts to better understand more the granular influences of culture on this aspect of individual psychology could yield even more enlightening findings still.

Finally, this research bridges domain-specific self-efficacy with broader educational commitment, providing evidence that ESE can be a significant predictor of academic outcomes. By linking physical fitness, a tangible and actionable pursuit with myriad practicable modalities and strategies, to individual-level psychological constructs, through to organizational-level outcomes of interest, the present studies provide a modest but instructive basis for pursuing further cross-disciplinary research spanning health psychology, educational management and organizational behavior.

*5.2 Practitioner implications*

Our findings also have practical implications for university business schools and potentially educational institutions more broadly. For business schools, promoting ESE among students could serve as a strategic tool for enhancing SC, which ultimately supports and enhances their retention and accreditation targets. Programs promoting ESE could be integrated into the school's existing repertoire of student services generally or physical fitness initiatives more narrowly and could be framed as a vehicle to facilitate both academic and personal development.

Moreover, our studies have revealed that cultural considerations are crucial when designing any interventions to promote ESE. For institutions in collectivist societies, initiatives could emphasize the interconnectedness of personal achievements with group success. For example, group fitness programs or team-based challenges could reinforce the dual benefits of self-efficacy and institutional loyalty. Conversely, in individualistic cultures, individually focused and personalized fitness goals that are aligned with academic milestones might resonate more strongly with students' values within these cultural contexts.

Another promising avenue for promoting SC through increases in students' ESE in business schools would involve the integration of ESE-related content into core curricula or co-curricular learning modules – particularly any subjects that are focused on leadership, organizational behavior or personal development. Business schools and management educators can design workshops, seminars or even credit-bearing courses that explicitly connect physical discipline and self-regulatory practices to established managerial

competencies and critical attributes such as resilience, goal-setting and time management. By drawing explicit conceptual and practical parallels between students' experiences with physical challenges and their development as future leaders, institutions can reinforce the relevance of ESE not only to individual well-being but also to the kinds of self-directed behaviors and regulatory capacities demanded in contemporary business environments.

Beyond business schools, these insights have broader generalizability. Any institution, academic or otherwise, that is grappling with retention challenges could benefit from incorporating physical fitness initiatives as a means of promoting commitment. The alignment of ESE with institutional goals suggests that enhancing students' self-belief systems, even in non-academic domains, can imbue them with a deeper sense of connection to their wider environment. Consequently, it seems reasonable to deduce that in a professional setting, the *non-vocational* domain of ESE could nevertheless contribute to commitment to one's chosen vocation and their organization more broadly. We would applaud any such future research efforts to extend our findings to non-academic settings.

### *5.3 Limitations*

Despite the aforementioned scholarly and practitioner contributions, the present research is not without empirical and methodological limitations. Firstly, the reliance on self-reported measures introduces potential biases, such as social desirability and response consistency, which may have influenced the observed relationships. Future studies could incorporate objective measures of physical fitness and third-party measures of institutional engagement to further validate and shore up the present findings.

Secondly, the cross-sectional designs employed necessarily limit any robust causal inference. While all studies established a relationship between ESE and SC, and Studies 2 and 3 between ESE, IC and SC, none of these studies can definitively confirm directional causality. Longitudinal research that tracked students' ESE and SC over time would provide a clearer understanding of any putative causal relationships among these variables.

Third, the homogeneity of cultural samples in Studies 2 and 3 may have constrained the ability to fully detect the moderating effects of IC. For instance, the predominantly collectivist Vietnamese sample, while consistent with its broader cultural milieu, may not effectively capture within-group variability. Expanding future research efforts to more heterogeneously diverse cultural contexts could yield more instructive insights into the moderating role of IC, as well as any other influential cultural factors.

Finally, the scope of the study focuses primarily on undergraduate students, potentially limiting generalizability to other business school populations, such as graduate students or professionals undertaking executive education. Exploring these relationships in more diverse academic and professional settings could provide a broader understanding of ESE's implications for SC more broadly.

## 6. Conclusions

Our research highlights the complex and intricate relationship between ESE and SC and reveals the cultural and contextual nuances that influence the relationship between these constructs. While ESE subsequently emerged as a positive predictor of SC in Studies 2 and 3, the prior negative association found in Study 1 underscores the need for a deeper understanding of this predictive relationship across educational and cultural settings.

The findings seem to strongly suggest that cultural values, and namely IC, play some role in shaping the ESE–SC relationship. The findings suggest that collectivist values may engender institutional loyalty among high-ESE students, while individualistic tendencies may reveal an alignment between personal achievements and academic commitment for similarly high-ESE students. These insights could yield valuable lessons for educators and administrators seeking to enhance student retention through culturally targeted strategies.

By integrating physical fitness initiatives with institutional goals, universities might be able to leverage ESE to build stronger psychological connections with their students and yield greater commitment from them in kind. However, it appears from our findings that practitioners must purposively tailor any such initiatives to align with both wider cultural dynamics and specific individual needs. Future research should explore these relationships longitudinally and across diverse contexts to apply the theoretical and practical insights from these studies in a more informed and refined manner.

In closing, we submit that this work highlights the potential of ESE as a lever for increasing SC. By bridging individual and cultural psychology with educational commitment, the present studies provide a modicum of support for the worthwhileness of academic institutions promoting and utilizing ESE as an innovative vehicle for addressing the challenges in student retention and institutional engagement that are confronting many contemporary universities.

**Ethical statement**

Our research was approved by the University of La Verne Institutional Review Board (IRB). The letter indicating approval is uploaded with this submission. The letter states, in part, "The amendment application for the research project, cited above, was received an administrative review by the Institutional Review Board (IRB) Director/Chair. It was determined that the research activity in its amended form is approved. The project may proceed to completion, or until the date of expiration of IRB approval, Exempt."

**Acknowledgments**

This paper was previously presented at the Joint Asian Conference on Business and Economic Studies (J-ACBES 2024), organized by the *Journal of Asian Business and Economic Studies* (JABES) and the University of Economics Ho Chi Minh City (UEH), in collaboration with Universitas Padjadjaran (UNPAD, Indonesia) and Udayana University (UNUD, Indonesia). The conference represents the joint integration of several previous prestigious events, including the 6th Asian Conference on Business and Economic Studies (6th ACBES), the 8th Global Advance Research Conference on Management and Business Studies (8th GARCOMBS) and the International Conference on Economics and Business at Udayana University (2nd ICONICS). The Joint Conference was hosted at Udayana University, Bali, Indonesia, during August 28–30, 2024. The authors would like to express sincere gratitude to the editor and the two anonymous referees for their constructive and valuable feedback on the manuscript. Special thanks are also extended to the participants of J-ACBES 2024 for their insightful comments and suggestions that contributed to the improvement of this paper.

**Note**

1. Please see it in the Online Appendix.

**Supplementary material**

The supplementary material for this article can be found online.

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