Id: 1399256

Participatory Educational Research (PER)
Vol.11(3), pp. 43-58, May 2024
Available online at http://www.perjournal.com
ISSN: 2148-6123
http://dx.doi.org/10.17275/per.24.33.11.3

The Mediating Role of Self-Efficacy in The Relationship Between Self-Determination Motive and Academic Engagement Among Undergraduate Students

Thaer A. GHBARI*
Department of Educational Psychology, The Hashemite University, P.O Box 330127, Zarqa 13133, Jordan. ORCID: 0000-0001-8226-9676

Ghalib S. BADAREEN
Department of Educational Psychology, The Hashemite University, P.O Box 330127, Zarqa 13133, Jordan ORCID: 0000-0002-2112-6185

Rana T. AL-SMADI
Department of Educational Foundations and Administration, Yarmouk University, P.O Box 566, Irbid 21163 – Jordan. ORCID: 0000-0002-7024-4882

Jalal K. DAMRA
Department of Educational Psychology, The Hashemite University, P.O Box 330127, Zarqa 13133, Jordan ORCID: /0000-0002-7248-2964

Nizar A. SHAMMOUT
Department of Educational Psychology, The Hashemite University, P.O Box 330127, Zarqa 13133, Jordan ORCID: /0000-0002-3486-542X

Article history

Received:
02.12.2023

Received in revised form:
09.02.2024

Accepted:
15.04.2024

Key words:
Mediating role, self-efficacy, self-determination, academic engagement, higher education

Academic engagement (AE) is an educational concern, and universities seek to increase its level by identifying the factors affecting it. Self-determination theory (SDT) and self-efficacy (SE) have been assumed to affect academic engagement directly or indirectly. Recognizing the significance of investigating AE and the factors influencing it, a notable research gap is spotted in the exploration of the mediating influence of SE in the relationship between SDT and AE. The current study tried to fill this gap and aimed to reveal the levels of self-determination, self-efficacy, and academic engagement of undergraduate students as well as the mediating role of self-efficacy in the relationship between the self-determination motive and academic engagement. After applying the relevant measures to a sample of 240 undergraduate students, the results showed that self-efficacy and autonomy as a dimension of self-determination had a medium level, while the level of relatedness was high; moreover, the level of academic engagement was high and self-efficacy was low. Autonomy and competence as components of self-determination were also revealed to directly and indirectly affect academic engagement. The results also demonstrated the mediating role of self-efficacy in the relationship between self-determination motive and

* Correspondency: thaera@hu.edu.jo

academic engagement. In light of the previous findings, there are some important implications, through which the teachers and faculty members can identify the factors affecting AE to help students increase their participation in educational activities. Psychological Counsellors can also use the findings to help students in coping with academic life challenges and positively interacting with their educational environment.

Introduction

Higher Education Institutions (HEIs), particularly universities, express concerns about the diminished level of participation exhibited by their students in both planned academic and extracurricular activities. This issue stems from a scientifically supported phenomenon: as students' progress in their educational progress, their enthusiasm for the learning process tends to wane (Veiga et al., 2012). This waning passion is accompanied by increased feelings of boredom and reduced enthusiasm, potentially jeopardizing their overall sense of well-being and academic accomplishments.

Diligent attempts have been made to pinpoint the factors contributing to students' reluctance to engage actively in academic pursuits, resulting in what is referred to as low levels of academic engagement. These factors encompass a weak inclination for achievement (Jagacinski et al., 2019), the extended duration of academic study (Jarvis & Sefert, 2002), low self-efficacy (Seifert & O'Keefe, 2001), limited cognitive aptitude (King & McInerney, 2014), and the nature of relationships shared with educators and peers (Mendoza & King, 2021).

Furthermore, endeavors have been undertaken to explore the intricate relationship between academic engagement and various other variables. These variables encompass the school environment and academic accomplishment (Van Ryzin, 2011), self-determination theory (SDT) (Noels et al., 2016), as well as motivation levels (Nayir, 2017).

As per the Self Determination Theory (SDT), individuals possess a range of inherent motivational reservoirs that interact with their surrounding social context (Ryan & Deci, 2017). Consequently, they are naturally inclined to harmonize their behavior by attaining these motivational reservoirs. As a result of this process, individual plays an active role in shaping his\her motivation (Yoo, 2015). This proactive involvement in turn facilitates the satisfaction of their psychological needs, including autonomy, competence, and relatedness. These satisfied needs subsequently stimulate individual to invest effort and participate in educational endeavors (Curran & Standage, 2017). Moreover, it is deemed essential to satisfy these needs in a hierarchical fashion, Wood (2020) indicated that attaining competence followed by a sense of relatedness with teachers impacts students' autonomy, subsequently fostering their academic engagement. So, the primary focus of the current study is to delve into this intricate process, exploring how the dynamic interplay between these motivational factors and psychological needs influences individuals' active engagement in educational tasks.

Relating Academic Engagement to Self-Determination Theory Perspective

Academic Engagement (AE) embodies a psychological commitment where students invest their energy, effort, and resources to grasp or accomplish something of educational significance (Newmann et al., 1992). Recently, AE has been conceptualized as a student's deliberate allocation of time and effort to attain educational objectives (Skinner et al., 2009; York et al., 2015). This multifaceted notion encapsulates favorable behavioral indicators

including active participation, attendance, and attentive involvement within the classroom activities. Moreover, it encompasses the psychological dimension associated with one's affiliation with the educational institution, entailing emotions of care and respect (Olson & Peterson, 2015).

The construct of AE is fundamentally underpinned by three essential dimensions: behavioral, emotional, and cognitive engagement (Archambault et al., 2009; Skinner et al., 2009; Wang et al., 2017). Behavioral engagement encompasses adherence to rules, regulations, and involvement in extracurricular activities. Emotional engagement delves into the array of experiences, sentiments, attitudes, and perceptions students harbor toward their academic milieu. This encompasses aspects such as students' intrinsic interest, thirst for knowledge, and an overarching fondness for the learning environment. The cognitive engagement refers to the cognitive processes entwined with a student's learning journey (Fredricks & McColsKey 2012).

In accordance with SDT, three core components of needs have been suggested (Ryan & Deci, 2017). The first is *autonomy*, encompassing the aspiration to attain specific objectives and the necessity to experience control and accountability over one's actions. It involves the degree to which an individual perceives their conduct as unconstrained and aligned with their personal interests and desires, employing their unique resources, interests, and capabilities (Van Assche et al., 2018). The second component, *competence*, pertains to the sensation of effectiveness that emerges during an individual's interaction with their social surroundings and the utilization of opportunities for skill development and the showcasing of capabilities (Deci & Ryan, 2000). Lastly, *relatedness* refers to the emotional connection with others, feelings of empathy and being reciprocally cared for, and a sense of belonging to a larger group and society (Ryan & Deci, 2017). When these three needs are adequately fulfilled within an educational setting, students are more prone to enthusiastically engage in their learning endeavors and personal activities (Hsu et al., 2019). Conversely, if these foundational needs remain unmet, it can give rise to behavioral and emotional challenges, leading to psychological states and behavioral responses that impede a student's ability to engage healthily (Meyer, 2008).

Research investigating the correlation between AE and SDT has yielded inconsistent outcomes. Certain studies have illuminated a positive link between the three facets of SDT, teacher-student relationships (Archambault et al., 2020), autonomous motivation (Benlahcene et al. 2021), and behavioral engagement (Dincer et al., 2019; Wood, 2019; Yoo, 2015). Lan and Hew (2020), for instance, found that the SDT predicts strongly in AE in Massive Open Online Courses (MOOC) context, where the competence component has the largest effect on AE. Conversely, other investigations have revealed contradictory results. For instance, in the study by Rotgans & Schmidt (2011), autonomy was observed not to significantly impact cognitive engagement. Instead, cognitive engagement seemed to be influenced by group activities characterized by social support. Another example is the study by Kuchinski-Donnelly (2018), which did not uncover a direct association between autonomy and relatedness with regard to emotional engagement. Meanwhile, Lan and Hew (2020) found that a small negative impact of relatedness on AE. However, a predictive relationship was identified between competence and emotional engagement. Given these conflicting findings, it is advisable to explore potential mediators that could either bolster or hinder this relationship, with self-efficacy being one such mediator warranting examination.

Relating AE and self determination to Self–Efficacy

In 1986, Bandura provided a definition for self-efficacy (SE) as "individuals' assessments of their capacity to arrange and carry out the necessary steps to achieve particular performances ascribed to them" (p. 391). Those possessing limited SE in relation to certain tasks may tend to evade such tasks. Conversely, individuals characterized by elevated levels of SE tend to exhibit heightened involvement and sustained determination when pursuing their objectives (Bandura, 1977).

Bandura (1994) outlined four key factors that contribute to the enhancement of SE. Firstly, personal performance achievements play a pivotal role. These encompass an individual's past accomplishments, including their most recent successful undertaking, which bolster their SE convictions. Conversely, unsuccessful attempts can undermine their SE beliefs. Secondly, the vicarious experiences by observing the mastery achievements of others. When students witness their peer's achieving success, it tends to elevate their SE. Conversely, witnessing instances of failure can instill the notion of potential failure within themselves (Bandura, 2010). Thirdly, social persuasion, which entails convincing individuals that they possess the necessary resources and capabilities to triumph. Direct encouragement from others aids in dispelling self-doubt. Fourthly, emotional states that involves the interactions between the mood status and stress; and emotional and physical conditions that influence an individual's perception of their competence in a given situation. For instance, an individual who experiences extreme stress before a public speaking engagement might develop a diminished sense of SE in such circumstances (Bandura, 1982).

Direct relations have been established between engagement and SE, where an individual's awareness of their abilities directly impacts their inclination to participate in academic pursuits (Alemayehu & Chen, 2021; Nartgün et al., 2019; Nogueira & Veiga, 2014; Ozkal, 2019; Sökmen, 2019; Tomás et al., 2018; Wu et al., 2020).

Conversely, the relationship between SDT and SE presents a degree of ambiguity. There are instances where the association between SDT and SE is relatively weak, while in other cases, SDT can amplify SE through the intermediary role of a resilience factor, as indicated by Develos-Scadalan and Berkus (2018). In different scenarios, the constituents of SDT - autonomy, relatedness, and competence- can contribute to the cultivation of students' SE, as highlighted by Ringeisen and Bürgermeister (2015). Meng (2020) additionally noted that the fulfillment of autonomy and competence correlates directly with SE, and indirectly with job satisfaction, with SE serving as a mediator between them. However, the linkage between relatedness satisfaction and job satisfaction was not mediated by SE, as relatedness satisfaction did not predict SE. Furthermore, it's worth noting that these two variables may impact problem-solving abilities in the context of group work, as explored by Cho et al. (2023).

The Current Study

Recognizing the significance of investigating AE and the factors influencing it, a notable research gap exists in the exploration of the mediating role of SE in the relationship between SDT and AE. Specifically, the present study endeavors to scrutinize the direct and indirect associations between AE and SDT, while delving into whether SE acts as a mediating factor within these relationships. This approach seeks to attain a holistic comprehension of the intricate interplay between the two variables.

The present research aims to tackle the following questions:

(1) What is the extent of academic engagement among undergraduate students?
(2) What is the level of self-determination motive observed among undergraduate students?
(3) To what degree do undergraduate students exhibit self-efficacy?
(4) To what extent does self-efficacy mediate the relationship between self-determination and academic engagement?

Method

Study Sample

A sample of 240 undergraduate students was purposefully selected to participate in the study. Among them, 154 participants were female, constituting 64% of the sample, while 86 participants were male, accounting for 36%. The average age of the participants was 19.4 years. They were enrolled in the academic year 2022/2023. This diverse group was drawn from a range of academic majors across three distinct universities in the north, the middle, and the south of Jordan. Participants were provided with instructions and notifications through Microsoft Teams and Facebook groups, directing them to complete the survey designed using Google Forms. The study's ethical standards were meticulously upheld at all participating institutions before commencing data collection. The investigation was carried out in compliance with the Helsinki Declaration of 1989, and the research protocol received approval from the Ethics Committee of the Department of Educational Psychology and Counselling at (No.6/10/2022/2023).

Instruments

Academic Engagement Scale (AES)

This scale was initially developed by Fredricks and McClosky (2012) and later adapted by Kerby (2007). It was selected due to its distinctiveness from other scales, as it evaluates AE across three dimensions rather than a single general dimension. Additionally, it is well-suited for the university context that the current study focuses on. Moreover, its widespread usage by numerous researchers (Abdelrahman & Zghoul, 2018; Tannoubi et al., 2023) further supports its validity and reliability. It was translated by Abdelrahman and Zghoul (2018). The scale encompasses three distinct dimensions: Behavioral Engagement, comprising 12 items; Emotional Engagement, comprising 6 items; and Cognitive Engagement, consisting of 14 items. The original scale demonstrates acceptable factorial validity and reliability, indicating its practicality and effectiveness. (Marco et al, 2016). The fit indices affirmed the adequacy of the three-factor model, with RMSE (Root Mean Square Error) measuring .052 and SRMR (Standardized Root Mean Square Residual) recording .038. The item loadings demonstrated a range from .49 to .81. New psychometric properties were extracted for this scale, including discriminant validity, where the values ranged from .283 to .666 for behavioral engagement, .487 to .705 for emotional engagement, and .394 to .746 for cognitive engagement. Internal consistency was assessed using Cronbach's Alpha coefficient, the vales were .802, .870, .896 for behavioural, emotional, cognitive engagement, respectively. Participants provided responses on a 5-point Likert scale, ranging from "never" (1) to "always" (5). The assessment of the level of engagement in learning was categorized as

follows: 1-2.33 for low level of engagement, 2.34-3.66 for medium level, and 3.67-5 for high level.

Basic Psychological Needs Scale (BPNS)

The Basic Psychological Needs Scale (BPNS) is a self-report inventory introduced by Cardella et al. (2020) to evaluate basic psychological requirements specifically designed to assess the basic psychological needs of university students. The BPNS underwent translation into Arabic by the primary author and was subsequently back-translated into English by the third author. To ensure translation consistency, both the translated and original versions were reviewed by an authorized translator. Comprising 12 items, the BPNS mirrors the three fundamental dimensions delineated in the SDT: autonomy (4 items), competence (4 items), and relatedness (4 items). The original version has a good construct validity. The fit indices verified the appropriateness of the three-factor model, yielding an RMSE (Root Mean Square Error) of .021 and an SRMR (Standardized Root Mean Square Residual) of .038. Item loadings demonstrated a spectrum from .59 to .86, and the scale's reliability was assessed through internal consistency, exemplified by a Cronbach's alpha coefficient of 0.90. New psychometric properties were extracted for this scale. Construct validity was determined by calculating the correlation coefficient between the score of each item and its corresponding dimension. The coefficient values ranged between .252 and .606, which are considered appropriate for assessing construct validity. Internal consistency using Cronbach's Alpha coefficient was conducted, the vales were .754, .709, and .768 for autonomy, competence, and relatedness, respectively. Respondents indicated their agreement on a 5-point Likert scale, ranging from "never" (1) to "always" (5). The assessment of the level of engagement in learning was categorized as follows: 1-2.33 for low level of engagement, 2.34-3.66 for medium level, and 3.67-5 for high level.

Self-Efficacy Scale (SES)

The SES constitutes an original self-report inventory devised by Owen and Fromen (1988), encompassing a total of 33 items. The selection of this scale was based on its suitability for university students, as it has been utilized in numerous previous studies (Muhammad & Ardini, 2022; Yasartürk, 2019). For the purpose of this study, new psychometric properties were extracted and assessed. To establish validity, the corrected item-total correlation between each item and the overall score was evaluated, yielding values spanning from .52 to .73. Subsequently, 8 items were excluded from the scale due to their corrected item-total correlation falling below .20, resulting in a final count of 25 items. Respondents rated their responses on a 5-point Likert scale, which ranged from "strongly low confidence" (1) to "strongly high confidence" (5). The internal consistency of the total score exhibited a value of .88.

Procedures

The surveys were crafted using Google Forms, a platform chosen for its accessibility to a broad spectrum of students. Following the acquisition of necessary permissions from the respective universities for instrument administration, six classes were randomly selected from these institutions. Subsequently, notifications were disseminated across student groups on platforms like Facebook and Microsoft Teams, utilized for various course-related interactions.

Students were presented with the instruments' instructions, elucidating how to appropriately navigate and respond to the scales. The students then perused all the items within the scales,

dedicating an average of approximately 30 minutes to furnish their responses. Over a span of five days, the surveys were hosted on Google Forms to accumulate data. Subsequently, the collected data was extracted and imported into AMOS and SPSS v.23 for comprehensive analysis, involving a diverse range of statistical techniques including means, standard deviations, correlation matrices, and path analysis.

Results

Descriptive analysis

Basic statistics were calculated to examine the levels of variables and correlations between them as shown in table 1.

Table 1. Means, Standard deviations, and correlations between measured variables.

Variable	Autonomy	Competence	Relatedness	SE	AE
Autonomy	1.00				
Competence	.17	1.00			
Relatedness	.10	.18	1.00		
SE	.22	.36	.04	1.00	
AE	.20	.24	.14	.25	1.00
Mean	2.34	3.55	3.71	1.71	3.92
SD	.17	.20	.89	.37	.69
N	240	240	240	240	240

Table 1 showed the components of SDT ranging from moderate (Autonomy, *M*= 2.34, *SD* = .17; competence, *M*= 3.55, *SD*= .20) to high level (relatedness, *M*= 3.71, *SD*= .89). The level of the AE was at high level (*M*= 3.92, *SD*= .69), while the SE level was low (*M*= 1.71, *SD*= .37). Additionally, all correlations between the variables were positive and significant.

Main analysis

To examine the mediating role of the SE in the relationship between SDT and AE, path analysis was used based on structural equation modeling (SEM) as shown in figure 1 showings the results of the hypothetical model with all indicatorss showing a good fit and the direct and indirect paths of the connections of autonomy, competence, relatedness, and SE with AE.

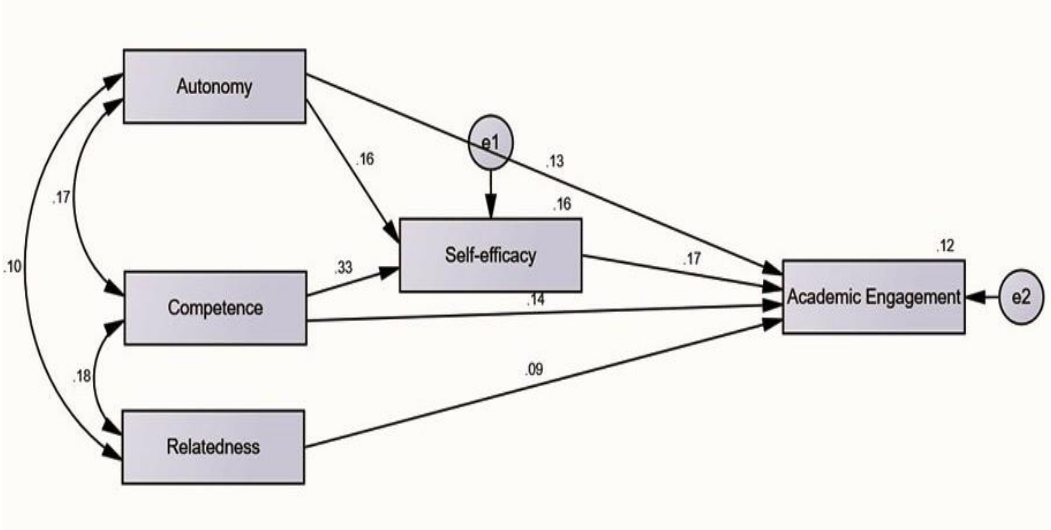

Figure 1. *The path diagram of the mediating role of SE*.

The fundamental (default) model demonstrated a commendable level of fit (as illustrated in Figure 1). All the fitness indices met the predefined acceptable criteria, and each interrelationship found its rationale within the confines of the theoretical framework. The Chi-square goodness of fit test yielded a non-significant result, (1) =.0385, p =.535. The RMSEA (root mean square error of approximation) stood at 0.000, and the associated p-close value was also non-significant (p =.643). Both the CFI (comparative fit index) and TLI (Tucker-Lewis index) surpassed the threshold of .95, with CFI recording 1.000 and TLI standing at 1.081. This collective evidence underscores the model's robust fit. The model's elucidation involved four direct causal pathways and two indirect causal pathways, all contributing to a significant positive prediction of AE, as elaborated in Table 2.

Table 2. *Regression weights of direct paths in the path diagram.*

			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate (β)
Competence	--- >	SE	.615	.112	5.507	***	.332
Autonomy	--- >	SE	.356	.131	2.711	.007	.164
Autonomy	--->	AE	.527	.255	2.066	.039	.130
SE	--->	AE	.311	.124	2.521	.012	.167
Relatedness	--->	AE	.074	.048	1.532	.126	.095
Competence	--->	AE	.485	.229	2.120	.034	.141

In Table 2, it is evident that the standardized direct effects of competence (β =.332, p <.05) and autonomy (β =.164, p < .05) on SE emerged as noteworthy positive predictors of SE (p < .05). Autonomy exhibited a standardized β value of .130, marking it as a significant positive predictor of AE (p <.05). Similarly, SE showcased a standardized β value of.167, also indicating its substantial positive prediction of AE (p < .05). Competence, with a standardized β value of.141, stood out as a positive predictor of AE (p < .05). Furthermore, the table unveiled that relatedness failed to manifest a significant direct effect on AE, with its β value amounting to.095 (p > .05).

Table 3. *Standardized indirect effects.*

	Autonomy	Competence	SE	Relatedness
SE	.000	.000	.000	.000
AE	.027	.055	.000	.000

Table 3 shows the standardized indirect effects of autonomy and competence on AE. The indirect effect, through SE, is computed as the product of the path coefficient from autonomy to SE and the path coefficient from SE to AE, (.164) x (.167) =.027. The indirect effect, through SE, is computed as the product of the path coefficient from competence to SE and the path coefficient from SE to AE, (.332) x (.167) =.055.

Table 4. *Standardized Total Effects of Direct and Indirect Effects of Autonomy and Competence on Engagement*

	Autonomy	Competence	SE	Relatedness
SE	.164	.332	.000	.000
AE	.157	.196	.167	.095

Table 4 shows the standardized total effects (direct and indirect effects) of autonomy and competence on AE. The total effect of autonomy on AE is computed as the sum of direct and indirect effects, (.164) x (.167) +.130 =.157. The total effect of competence on AE is computed as the sum of direct and indirect effects, (.332) (.167) +.141 =.196.

Discussion

The analysis of descriptive results unveiled a moderate level of autonomy and competence within the study sample, while relatedness exhibited a notably high level. This result may be attributed to the fact that students entering their university may find themselves influenced by the constrained autonomy they have grown accustomed to in school, where they heavily rely on their teachers (Bozack et al. 2022). Thus, universities bear the responsibility of nurturing students' autonomy, as it significantly enhances their academic achievement and competence.

These findings also offer insights into the participants' developmental stage, placing them within the context of transitioning from late adolescence to the early stage of young adulthood. This developmental period is marked by dynamic shifts, and a review of developmental characteristics could shed light on the elevated levels of relatedness and AE. During this phase, individuals experience heightened social connections and interactions with peers (Almeida & Cruz, 2010). As the circle of friends expands, relationships inevitably grow more intricate, with youths increasingly investing time with older friends. Remarkably, this can amount to as much as 44% of their time, particularly with friends of the same gender (Van Hasselt & Hersen, 1992). This tendency contributes to the context underlying the observed levels of relatedness and AE, unveiling a complex interplay between social dynamics and academic involvement during this developmental juncture.

The diminished levels of SE which was found in this study could plausibly be linked to the challenging circumstances stemming from the COVID-19 pandemic and the sweeping transformations in the students' daily lives, work routines, and educational practices (Hong et al., 2022). It's widely recognized that the COVID-19 outbreak escalated the demands placed upon students in both university and school settings due to the heavy reliance on online and remote learning (Damra et al. 2023). This explanation could be supported by Bandura's (1997) suggestion that facing stressful situations without previous training could lower low SE. Therefore, the teacher and the school play crucial roles in bolstering students' SE (Baily et al. 2017). The high AE can be analyzed based on the encompassing theoretical, practical, and personal tasks and assignments that students are tasked with factors. Each serving as a driver for striving to attain high grades. Additionally, religious, personal, and national celebrations contribute to this heightened AE. Students' active participation in these endeavors plays a pivotal role in enhancing their overall AE. This finding aligns with prior research conducted by Nayir (2017), Noels et al. (2016), and Van Ryzin (2011), all of which underscore the capacity of a school or university environment that promotes meaningful learning to foster high levels of AE.

The established model exhibited three distinct causal pathways, each originating from autonomy, competence, and SE and leading directly to AE. Furthermore, the model revealed two additional indirect causal pathways: one stemming from autonomy to SE to AE, and the other originating from competence to SE to AE. These findings underscore the significant positive predictive influence of SDT on AE. The outcomes also confirm the pivotal mediating role of SE in the intricate relationship between SDT and AE, corroborating the insights offered by various researchers (Archambault et al., 2020; Chiu, 2022; Dincer et al., 2019; Gonzalez & Paoloni, 2014; Wood, 2019; Yoo, 2015).

This phenomenon can be elucidated by the individual's sense of competence, encompassing a feeling of efficacy in navigating environmental demands. Simultaneously, their sense of autonomy, marked by authenticity and the capacity to exercise volition, reinforces the perception of having the necessary abilities, skills, self-assuredness, behavioral control, and meaningful interactions with others. This collective sense of competence and autonomy heightens intrinsic motivation, compelling active engagement across various academic tasks within the university context (Ryan & Deci, 2000). Furthermore, meeting these significant psychological needs enhances motivational characteristics and states, fostering autonomous motivation and intrinsic aspirations, thereby facilitating meaningful psychological engagement with the academic sphere (Deci & Ryan, 2015). At the university level, there is a notable presence of academic freedom, largely facilitated by professors who offer substantial autonomy support. This, in turn, amplifies the degree of AE, and this is consistent with the results of Jiang and Tanaka (2022). One specific facet of autonomy, such as the freedom to choose group work, has been identified as impactful in facilitating AE, as evidenced by research findings (Poort et al., 2020). Concurrently, literature underscores the positive influence of peer connections and collaboration on AE (Drezner & Pizmony-Levy, 2021; Herrmann, 2013). These findings collectively highlight the interplay between various motivational elements and social dynamics in shaping robust AE.

The outcomes also unveiled the direct influence of autonomy and competence on SE. An examination of both SE and SDTs underscores their shared theoretical underpinnings (Garrin, 2014; Sweet et al., 2012). Competence and autonomy, pivotal facet of SDT, can effectively impact mastery, a core constituent of SE (Garrin, 2014). Duchatelet and Donche (2019) highlighted a direct correlation between autonomy and competence with SE, ultimately leading to improved achievement. Hence, it is imperative for instructors to foster autonomy and competence to enhance SE.

Interestingly, SE did not function as a mediator in the relationship between relatedness and AE. This might be elucidated by the notion that an individual with a strong sense of relatedness doesn't necessarily require a high degree of SE to engage in tasks and activities. Within such contexts, the elements inherent to SE, such as mastery, competence, and confidence, can be compensated through collaborative teamwork. This interpretation aligns with the findings of Meng (2020), which indicated that while autonomy and competence satisfaction directly influence SE, relatedness satisfaction does not exert a comparable effect on SE.

Implications and Future Directions

The previous results can benefit teachers and faculty members by identifying the factors affecting AE and thereby enhance student participation in educational endeavors. It is essential for educators to prioritize the support of students' autonomy and competence, as

these factors contribute to the development of their relationship with SE and AE. Counselors and mental health advisors at universities can also use the findings to help students in coping with academic life challenges and positively interacting with their educational environment. By doing so, they facilitate students' adjustment to university life, aligning with the primary objective of their profession.

Regarding future studies, following the identification of associations SDT, SE, and AE, there is a suggestion to investigate the impact of these variables on AE through experimental research. Such experimental studies would enable testing their effects in practical settings. Additionally, future research could explore other factors influencing AE, including the Big Five personality traits theory and the dynamics of the student-educator relationship. Furthermore, there is potential for research within the realm of positive psychology to delve into this area.

Limitations

It's essential to interpret the findings of the present study within the context of several limitations. Firstly, there is an imbalance in the gender distribution of participants, and the sampling methods employed may pose challenges when attempting to generalize the results to other populations and research contexts. Secondly, the study relied on self-report scales for data collection, which introduces the potential for participant bias in their responses, including the possibility of both false positives and false negatives. Additionally, the administration of the scales via Google Forms makes it challenging to ascertain the precise administration process.

Reference

Abdelrahamn, A. & Zghoul, R. (2018). A Causal Model of the Relationship among Psychological Needs, Goal Orientations and Engagement in Learning. *Journal of Al-Quds Open University for Educational and Psychological Research and Studies, 8*(24), 181-196.

Alemayehu, L. & Chen, H. (2021). The influence of motivation on learning engagement: the mediating role of learning self-efficacy and self-monitoring in online learning environments. *Interactive Learning Environments*, 1-14. https://doi: 10.1080/10494820.2021.1977962

Almeida, L. S., & Cruz, J. F. A. (2010). Transição e adaptação académica: reflexões em torno dos alunos do 1o ano da Universidade do Minho. In J. L. Silva, F. Vieira, A. A. Carvalho, A. Flores, I. Viana, J. C. Morgado, N. Van Hanttum-Janssen (Eds.), *Ensino superior em mudança: tensões e possibilidades. Actas do Congresso Ibérico* (pp. 429-439). Braga: CIEd. ISBN 978-972-8746-80-3.

Archambault, I., Janosz, M., Morizot, J., & Pagani, L. (2009). Adolescent behavioral, affective, and cognitive engagement in school: relationship to dropout. *Journal of School Health, 79*(9), 408–415. https://doi.org/10.1111/j.1746-1561.2009.00428.x.

Archambault, I., Pascal, S., Tardif-Grenier, K., Dupéré, V., Janosz, M., Parent, S., Pagani, L., (2020). The contribution of teacher structure, involvement, and autonomy support on student engagement in low-income elementary schools. *Teachers & Teaching, 26*(5/6), p428-445. https://doi.org/10.1080/13540602.2020.1863208

Bailey, J., Lombardi, D., Cordova, J., & Sinatra, G. (2017). Meeting students halfway: Increasing self-efficacy and promoting knowledge change in astronomy. *Physical*

Review Physics Education Research, 13(2). https://doi.org/10.1103/PhysRevPhysEducRes.13.020140

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215. https://doi.org/10.1037//0033-295X.84.2.191

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122–147. https://doi.org/10.1037/0003-066X.37.2.122

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4., pp. 71-81). New York: Academic Press.

Bandura, A. (2010). *Self-Efficacy*. In The Corsini Encyclopedia of Psychology. John Wiley & Sons, Inc. http://onlinelibrary.wiley.com/doi/10.1002/9780470479216.corpsy0836/abstract

Benlahcene, A., Kaur, A. and Awang-Hashim, R. (2021). Basic psychological needs satisfaction and student engagement: the importance of novelty satisfaction. *Journal of Applied Research in Higher Education, 13*(5), 1290-1304. https://doi.org/10.1108/JARHE-06-2020-0157

Bozack, A. R., Vega, R., Mccaslin, M., & Good, T. L. (2008). Teacher Support of Student Autonomy in Comprehensive School Reform Classrooms. *Teachers College Record, 110*(11), 2389-2407. https://doi.org/10.1177/016146810811001110

Cardella, G.M., Hernández-Sánchez, B.R., Sánchez-García, J.C. (2020). Basic Psychological Needs as a Motivational Competence: Examining Validity and Measurement Invariance of Spanish BPNSF Scale. *Sustainability, 12*(13), 5422. https://doi.org/10.3390/su12135422

Chiu, T. (2022). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education, 54*, 14-30. https://doi. 10.1080/15391523.2021.1891998

Cho, C. H., Lee, Y., Kim, H., Kim, Y., & Song, H. D.. (2023). The Effect of Self-determination and Self-efficacy for Group Work on Problem-Solving Skills Mediated by Learning Engagement in Corporate Flipped Learning Environment. Global Creative Leader: Education & Learning, 13(2), 133-165.

Curran, T. & Standage, M. (2017). Psychological Needs and the Quality of Student Engagement in Physical Education: Teachers as Key Facilitators. *Journal of Teaching in Physical Education, 36*(3), 262-275. https://doi.org/10.1123/jtpe.2017-0065

Damra, J. K., Akour, M. M., & Al Omari, O. (2023). Stress and loneliness: exploring adolescents' use of social media as a coping strategy during COVID-19. *Nursing children and young people*, 10.7748/ncyp.2023.e1456. Advance online publication. https://doi.org/10.7748/ncyp.2023.e1456

Deci, E. L., & Ryan, R. M. (2000). The "What" and"Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/https://doi.org/10.1207/S15327965PLI1104_01

Deci, E. L., & Ryan, R. M. (2015). Self-Determination Theory. In J. Wright (Eds), *International Encyclopedia of the Social & Behavioral Sciences* (Second Edition), (pp. 486-491)

Develos-Sacdalan, K., & Bozkus, K. (2018). The Mediator Role of Resilience between Self-Determination and Self-Efficacy. *Education Science and Psychology, 4*(50), 49-60

Dincer, A., Yesilyurt, S., Noels, K., Vargas Lascano, D.I. (2019). Self-Determination and Classroom Engagement of EFL Learners: A Mixed-Methods Study of the Self-

System Model of Motivational Development. *SAGE Open*, *9* (2), 1-15. https://doi.org/10.1177/2158244019853913

Drezner, N. D., & Pizmony-Levy, O. (2021). I Belong, Therefore, I Give? The Impact of Sense of Belonging on Graduate Student Alumni Engagement. *Nonprofit and Voluntary Sector Quarterly*, *50*(4), 753–777. https://doi.org/10.1177/0899764020977687

Duchatelet, D & Donche, V. (2019). Fostering self-efficacy and self-regulation in higher education: a matter of autonomy support or academic motivation?. *Higher Education Research & Development*, *38*(4). 733-747, DOI: 10.1080/07294360.2019.1581143

Fredricks, J. A. & McClosky, W.(2012). The Measurement of Student Engagement: A Comparative Analysis of Various Methods and Student Self-report Instruments. In S. L. Christenson, A. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (Chpt. 37, pp. 763-782). New York: Springer.

Herrmann, K. J. (2013). The impact of cooperative learning on student engagement: Results from an intervention. *Active Learning in Higher Education*, *14*(3), 175–187. https://doi.org/10.1177/1469787413498035

Garrin, J.M. (2014). Self-Efficacy, Self-Determination, and Self-Regulation: The Role of the Fitness Professional in Social Change Agency. *Journal of Social Change*, *6*(1), 41–54. https://doi.org/10.5590/JOSC.2014.06.1.05

Gonzalez, A. & Paoloni, P. (2014). Self-Determination, Behavioral Engagement, Disaffection, and Academic Performance: A Mediational Analysis. *Spanish Journal of Psychology*, *17*, e82, 1–10. https://doi.org/10.1017/sjp.2014.82

Hassan, N. & Bao, Y. (2020). Impact of "e-Learning crack-up" perception on psychological distress among college students during COVID-19 pandemic: A mediating role of "fear of academic year loss". *Children and Youth Services Review*, *118*, 1-9. https://doi.org/10.1016/j.childyouth.2020.105355

Hong, J. C.; Liu, X.; Cao, W.; Tai, K. H.; Zhao, L. (2022). Effects of Self-Efficacy and Online Learning Mind States on Learning Ineffectiveness during the COVID-19 Lockdown. *Educational Technology and Society*, *25*(1),142-154. https://www.jstor.org/stable/48647036

Hsu, H. C. K., Wang, C. V., & Levesque-Bristol, C. (2019). Reexamining the impact of self-determination theory on learning outcomes in the online learning environment. *Education and Information Technologies*, *24*(3), 2159–2174. https://doi.org/10.1007/s10639-019-09863-w

Jagacinski, C. M., Kumar, S., & Keith, M. G. (2019). Expanding the nomological network of work avoidance: antecedents and consequences across contexts. *The Journal of Experimental Education*, *88*(2), 221–244. https://doi.org/10.1080/00220973.2019.1635564.

Jarvis, S., & Seifert, T. L. (2002). Work avoidance as a manifestation of hostility, helplessness, and boredom. *Alberta Journal of Educational Research*, *48*(2), 174–187. https://doi.org/10.11575/ajer.v48i2.54921

Jiang, J., & Tanaka, A. (2022). Autonomy support from support staff in higher education and students' academic engagement and psychological well-being. *Educational Psychology*, *42*(1), 42–63. https://doi.org/10.1080/01443410.2021.1982866

Kerby, M. B. (2007). *Measuring Student Engagement Activity Levels and Persistence: A Study of a Four-Year Comprehensive University*. [Unpublished doctoral dissertation], University of Louisville. The United States.

King, R. B., & McInerney, D. M. (2014). The work avoidance goal construct: examining its structure, antecedents, and consequences. *Contemporary Educational Psychology, 39*(1), 42–58. https://doi.org/10.1016/j.cedpsych.2013.12.002.

Kuchinski-Donnelly, D. (2018). *Emotional engagement: The relationships among autonomy, competence, relatedness, and emotional engagement in graduate nursing students in the online learning environment* (Publication No. 10817447). [Unpublished Doctoral Dissertation]. ProQuest Dissertations and Theses Global.

Lan, M., Hew, K.F. (2020). Examining learning engagement in MOOCs: a self-determination theoretical perspective using mixed method. *International Journal of Educational Technology in Higher Education 17*(7). https://doi.org/10.1186/s41239-020-0179-5

Meng, Q. (2020). Chinese university teachers' job and life satisfaction: examining the roles of basic psychological needs satisfaction and self-efficacy. *The Journal of General Psychology, 3,* 1-22. https://doi.org/10.1080/00221309.2020.1853503

Mendoza, N. B. & King, R. B. (2021). The social contagion of work avoidance goals in school and its influence on student (dis)engagement. *European Journal of Psychology of Education*, https://doi.org/10.1007/s10212-020-00521-1

Meyer, J., Gagne (2008). Employee Engagement From a Self-Determination Theory Perspective. *Industrial and Organizational Psychology, 1*, 60–62. https://doi.org/10.1111/j.1754-9434.2007.00010.x

Muhammad, A., & Ardini, A. (2022). A survey on students' academic self-efficacy on international program bridging course. *ELTICS (English Language Teaching and English Linguistics) Journal, 7*(2), 129-144.

Nartgün, S.S.; Kahraman, Z.Y.; & Coskun, A. (2019). The Relationship between Self-Efficacy and Self-Determination Based on English as a Foreign Language Learners' Perceptions. *Journal on Educational Psychology, 12*(4), 1-10. https://doi.org/10.26634/jpsy.12.4.15548

Nayir, F. (2017). The Relationship between Student Motivation and Class Engagement Levels. *Eurasian Journal of Educational Research*, 71, 59-77 2017

Newmann, F., Wehlage, G., & Lamborn, S. (1992). The significance and sources of student engagement. In F. Newmann (Ed.), *Student engagement and achievement in American secondary schools* (pp. 11- 39). New York, NY: Teachers College, Columbia University. https://doi. 10.4236/ojapps.2014.45022.

Noels, K.A.; Chaffee, K.; Lou, N. M.; & Dincer, A.(2016). Self-Determination, Engagement, and Identity in Learning German: Some Directions in the Psychology of Language Learning Motivation. *Fremdsprachen Lehren und Lernen, 45*(2), 12-29

Nogueira, J., & Veiga, F. (2014). Relationships as a basis of engagement? Self-efficacy and school engagement of pupils in school. In F. Veiga (Coord.), *Envolvimento dos Alunos na Escola: Perspetivas Internacionais da Psicologia e Educação / Students' Engagement in School: International Perspectives of Psychology and Education* (pp. 373-385). Lisboa: Instituto de Educação da Universidade de Lisboa.

Olson, A. L., & Peterson, R. L. (2015, April). *Student Engagement*. Strategy Brief. Lincoln, NE: Student Engagement Project, University of Nebraska-Lincoln and the Nebraska Department of Education. http://k12engagement.unl.edu/student-engagement.

Otundo, J. O., & Garn, A, C. (2019). Student Interest and Engagement in Middle School Physical Education: Examining the Role of Needs Supportive Teaching. *International Journal of Educational Psychology*, *8*(2), 137-161. doi: 10.17583/ijep.2019.3356

Owen, S.V. & Fromen, R.D. (1988*). Development of a college academic self-efficacy scale*. [Paper presented]. Annual of the national council on measurement in education, New Orleans, LA.

Poort, I, Jansen, E & Hofman, A. (2022) Does the group matter? Effects of trust, cultural diversity, and group formation on engagement in group work in higher education. Higher Education Research & Development, 41(2), 511-526. doi:10.1080/07294360.2020.1839024

Seifert, T. L., & O'Keefe, B. A. (2001). The relationship of work avoidance and learning goals to perceived competence, externality and meaning. *British Journal of Educational Psychology, 71*(1), 81–92. https://doi.org/10.1348/000709901158406.

Ozkal, N. (2019). Relationships between self-efficacy beliefs, engagement and academic performance in math lessons. *Cypriot Journal of Educational Science. 14*(2), 190–200

Ringeisen, T & and Bürgermeister, A. (2015). Fostering students' self-efficacy in presentation skills: The effect of autonomy, relatedness and competence support. (Eds) In K. Moore, S. Howard, P. Buchwald, *Stress and Anxiety: Application to Schools, Well-Being, Coping and Internet Use*. Berlin: Logos Verlag.

Rotgans, J.I., Schmidt, H.G. (2011) Cognitive engagement in the problem-based learning classroom. *Advances in Health Sciences Education volume 16*, 465–479. https://doi.org/10.1007/s10459-011-9272-9

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY, US: Guilford Press.

Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection. *Educational and psychological Measurement, 69*(3), 493–525. https://doi.org/10.1177/0013164408323233.

Sökmen, Y. (2019). The role of self-efficacy in the relationship between the learning environment and student engagement. *Educational Studies, 47*(1), 19-37. https://doi.org/10.1080/03055698.2019.1665986

Tannoubi A, Quansah F, Hagan JE, Jr, Srem-Sai M, Bonsaksen T, Chalghaf N, et al. (2023). Adaptation and validation of the Arabic Version of the University Student Engagement Inventory (A-USEI) among sport and physical education students. *Psych, 5*(2):320–35. doi: 10.3390/psych5020022

Tomás, J., Gutiérrez, M., & Georgieva, S. (2018). The effects of self-efficacy, hope, and engagement on the academic achievement of secondary education in the Dominican Republic. *Psychology in the Schools, 57*(2), 191-203. https://doi. 10.1002/pits.22321

Van Assche, J.; van der Kaap-Deeder, J.; Audenaert, E.; De Schryver, M.; Vansteenkiste, M. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength?. *Journal of Personality, 86* (6), 1017–1036. https://doi.10.1111/jopy.12372.

Van Hasselt, V. & Hersen, M. (1992). *Handbook of Social Development A Lifespan Perspective*. New York: Springer.

Van Ryzin M.J (2011). Protective factors at school: reciprocal effects among adolescents' perceptions of the school environment, engagement in learning, and hope. *Journal of youth and adolescence, 40* (12), pp. 1568-80. https://doi. 10.1007/s10964-011-9637-7

Veiga, F., Galvao, D., Almeida, A., Carvalho, C., Janeiro, I., Nogueira, J., Conboy, J., Melo, M., Taveira, M., Festas, M., Bahia, S., Caldeira, S., & Pereira, T. (2012, November). *Student's Engagement in School: Literature Review*. [paper presented]. ICERI2012 Conference, Madrid, Spain.

Wang, M.-T., Fredricks, J., Ye, F., Hofkens, T., & Linn, J. S. (2017). Conceptualization and assessment of adolescents' engagement and disengagement in school: a multidimensional school engagement scale. *European Journal of Psychological Assessment, 35*(4), 592–606. https://doi.org/10.1027/1015-5759/a000431.

Wood, R. (2019). Students' Motivation to Engage with Science Learning Activities through the Lens of Self-Determination Theory: Results from a Single-Case School-Based

Study. *EURASIA Journal of Mathematics, Science and Technology Education, 15*(7),1-22. https://doi.org/10.29333/ejmste/106110

Wood, R. (2020). Investigating the enhancement of students' engagement with learning activities through the lens of self-determination theory. *European Journal of Teaching and Education, 2*(2), 152–182. https://doi.org/10.33422/ejte.v2i2.263

Wu, H., Li, S., Zheng, J., & Guo, J. (2020). Medical students' motivation and academic performance: the mediating roles of self-efficacy and learning engagement. Medical Education Online, 25(1), 1-7. https://doi. 10.1080/10872981.2020.1742964

Yaşartürk, F. (2019). Analysis of the relationship between the academic self-efficacy and leisure satisfaction levels of university students. *Journal of Education and Training Studies, 7*(3), 106-115. doi:10.11114/jets.v7i3.3988

Yoo, J. (2015). Perceived Autonomy Support and Behavioral Engagement in Physical Education: A Conditional Process Model of Positive Emotion and Autonomous Motivation. *Perceptual and Motor Skills, 120*(3), 731–746. https://doi.org/10.2466/06.PMS.120v20x8

York, T. T., Gibson, C., & Rankin, S. (2015). Defining and measuring academic success. *Practical Assessment. Research & Evaluation, 20*(5), 1-20. Retrieved from http://pareonline.net/getvn.asp?v=20&n=5