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Academic Well-Being in Students with Physical-Motor Disabilities: Examining the Mediating Role of School Belonging, Self-Compassion, and Academic Self-Efficacy

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Abstract

Background: Paying attention to well-being in educational contexts is essential in evaluating educational systems' health and dynamics. This research investigated the mediating role of academic self-efficacy in the correlation between school belonging and self-compassion in students with physical-motor disabilities.

Methods: This correlational study employed structural equation modeling as the analytical approach. The statistical population for this study comprised all 12-18-year-old students with physical-motor disabilities in Ahvaz, Iran in 2022. The convenience sampling method was employed to select 282 students with physical-motor disabilities as participants. To collect data, the Academic Well-Being Questionnaire (AWQ), Sense of School Belonging Questionnaire, Self-Compassion Questionnaire-Long Form (SCS-LF), and Students' Academic Self-Efficacy Questionnaire (SASEQ) were used. The proposed model was evaluated using structural equation modeling in SPSS version 27 and AMOS version 24.

Results: The mean and standard deviation of academic well-being, school belonging, self-compassion, and academic self-efficacy were 120.79 ± 23.62 , 66.48 ± 19.46 , 75.45 ± 20.33 , and 98.46 ± 42.53 , respectively. The findings revealed significant correlations between academic well-being and all direct paths except school belonging (P=0.001). Furthermore, the indirect paths of school belonging and self-compassion exhibited significant associations with academic well-being, mediated through the role of academic self-efficacy (P=0.001). Moreover, the model fit criteria, including comparative fit index (CFI) and root mean square error of approximation (RMSEA), were 0.98 and 0.04, respectively.

Conclusion: Based on the results, the modified and final model of the study demonstrated a strong fit with the data. This model serves to identify practical factors contributing to the academic well-being of adolescents with physical-motor disabilities. Holding educational workshops to enhance school belonging and self-compassion in these students can improve their academic self-efficacy and overall well-being.

Keywords: Psychological well-being, Self-compassion, Self-efficacy, Students

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1. Introduction

Adolescence is a critical and vulnerable period in an individual's life, particularly when accompanied by a disability (1). Physical-motor disabilities fall within this category, referring to impairments that restrict one or more significant activities of an individual (2, 3). Approximately, 10% of the global population lives with a disability, which can impact their academic performance (4). Academic performance is particularly crucial during adolescence, as it is characterized by intense emotions and challenges that can be further compounded when coupled with physical disabilities (5).

In recent years, academic well-being has

gained attention as a fundamental component of academic achievement within the realm of psychological well-being (6). Literature suggested a correlation between academic achievement and well-being (7). Academic well-being emphasizes the significance of the educational environment and the role of academic progress in students' social and emotional performance (8). Therefore, addressing well-being in educational contexts is essential to evaluating educational systems' health and dynamics. Improving students' academic wellbeing helps their academic achievement (9, 10).

School belonging is a factor that can influence the academic well-being of adolescents with physical-motor disabilities (11). It refers to students'

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attachment to their school, including their relationships with teachers, staff, and administrators and their sense of belonging within the school community (12). School belonging is fostered through empathy, positive relationships, and a sense of environmental mastery. Students' sense of school belonging is associated with high academic standards, strong teacher support, positive studentadult communication, and a safe physical and social environment (13). Given that adolescents spend a significant portion of their lives in school settings, the school environment and relationships formed with teachers and peers can substantially impact their social and academic outcomes (14). Previous studies by Arslan (7) and Yaghoobi and colleagues (11) demonstrated a link between school belonging and academic well-being.

Self-compassion is another factor influencing adolescents' academic well-being with physicalmotor disabilities. It is a component of psychological well-being rooted in self-acceptance (15). Reves (16) attributed the root of self-compassion to stressful life conditions. He believed it is an effective emotion regulation strategy, allowing positive emotions to emerge from compassion rather than negative or neutral emotional patterns. Self-compassion aligns with self-value and is a novel psychological concept (17, 18). Akhash and colleagues (15) found a positive correlation between high academic engagement, self-compassion, and better academic performance. Khodapanah and Tamnaei Far (19) also identified a significant direct correlation between the sense of coherence and self-consciousness with academic well-being.

School belonging and self-compassion can influence the academic well-being of adolescents with physical-motor disabilities by impacting their academic self-efficacy (20). Studies indicated that individuals with high academic self-efficacy are not afraid of academic tasks such as reading, writing assignments, answering questions in class, and taking exams (21). They tend to excel in completing projects, achieve high grades, exhibit more excellent academic compatibility than their peers, and adopt various learning styles (22). Mudzkiyyah and colleagues (23) reported that academic self-efficacy significantly influences the well-being of students in boarding schools. Sahraei and co-worker (24) reported that students' selfefficacy affects their learning-related emotions and, in turn, their academic performance.

Considering the concerns of families and education professionals regarding academic failure and disengagement, it is essential to identify influential factors affecting the academic well-being of adolescents with physical-motor disabilities. Such identification will facilitate the planning, developing, and improving of educational programs to ensure optimal outcomes for the educational institution and these adolescents. Accordingly, this study aimed to investigate the mediating role of academic self-efficacy in the correlation between school belonging and self-compassion in students with physical-motor disabilities. Based on this, the conceptual model of the research is presented in Figure 1.

2. Methods

This correlational study utilized structural equation modeling as the analytical approach. The statistical population for this study consisted of all students aged 12-18 with physical-motor disabilities in Ahvaz, Iran during 2022-2023 academic year. The study participants were selected based on specific

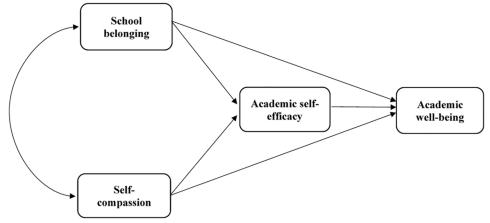


Figure 1: The figure shows the conceptual model of research.

criteria: they had to be adolescent students aged 12-18 and covered by the Ahvaz Welfare Organization. In structural equation studies, the recommended sample size typically ranges from 15 to 20 subjects per path, and the overall sample should exceed 200 individuals. They were following the guidelines outlined by Loehlin and Beaujean (25); a total of 250 subjects was considered adequate to test the proposed model and research hypotheses. However, 290 individuals were chosen using convenience sampling to account for potential sample loss. After removing incomplete questionnaires, the final sample consisted of 282 participants. The inclusion criteria included the absence of psychological disorders, non-use of psychological medications, no sensory impairments (such as blindness or deafness), current school attendance, and no history of school dropout. On the other hand, the exclusion criteria included unwillingness to complete the questionnaires and the presence of distorted or unreliable responses.

2.1. Procedure

After receiving research approvals and ethical clearance for the current study (code: IR.IAU. AHVAZ.REC.1402.031), a list of students aged 12 to 18 with physical and motor disabilities was acquired by contacting the Welfare Organization of Ahvaz City, Iran. The parents of these students were contacted to explain the purpose and significance of the research. The participants were requested to complete the online research questionnaires upon obtaining informed consent. Participants were reassured that their data would be kept confidential. Following data collection, incomplete questionnaires were excluded from the analysis.

2.2. Instruments

2.2.1. Academic Well-Being Questionnaire (AWQ): The AWQ, developed by Farrokhi and colleagues (26), comprises 41 items. Participants rate their agreement on a 5-point Likert-type scale ranging from 1 to 5. It should be noted that items 8, 11, 27, 33, 34, 36, and 39 are scored inversely. The total score on the AWQ ranges from 48 to 205. A score between 48 and 113 indicates a shallow level of academic well-being, while scores ranging from 113 to 144, 144 to 180, 180 to 195, and 195 to 205 represent a low level, average level, outstanding level, and excellent level of academic well-being,

respectively. Farrokhi and colleagues (26) reported the reliability of this questionnaire as 0.84. The authors (26) confirmed the validity of the AWQ (CVI=0.99, CVR=0.97).

2.2.2.Sense of School Belonging Questionnaire: The tool, developed by Brew and co-workers (27), is used to assess students' sense of school belonging. It consists of positive statements rated on a Likert-type scale ranging from "completely agree" to "completely disagree." The questionnaire encompasses six subscales: students' sense of belonging with peers, teacher support, fairness, safety, academic engagement, and engagement in the broader community. For this study, the overall score of the questionnaire was used. Makian and Kalantar (28) confirmed the validity of the Sense of School Belonging Questionnaire (CVI=0.97, CVR=0.97). Moreover, they reported the reliability of this questionnaire as 0.88 (28).

2.2.3. Self-Compassion Questionnaire-Long Form (SCS-LF): The SCS-LF, developed by Neff (29), comprises 26 items. Participants rate each item on a 5-point Likert-type scale ranging from 1, "never," to 4, "almost always." The total score on the SCS-LF ranges from 26 to 130, with higher scores indicating greater self-compassion. For this study, the overall score of the questionnaire was used. Momeni and colleagues (30) reported the reliability of this questionnaire as 0.89. The authors (30) confirmed the validity of the SCS-LF (CVI=0.98, CVR=0.95).

2.2.4. Students' Academic Self-Efficacy Questionnaire (SASEQ): The SASEQ, developed by Mazaheri and Sadeghi (31), is a 26-item fivepoint Likert-type scale that measures students' academic self-efficacy beliefs. It consists of three which assess students' subscales, academic capabilities in different situations. The subscales include academic self-efficacy (four items) to measure the justification of academic expectations, academic self-efficacy (11 items) to measure beliefs in the ability to do assignments, learn, and achieve mastery of courses, and academic self-efficacy in study skills (11 items) to measure beliefs in the power of concentration, planning, and adopting effective learning styles. For this study, the overall score of the questionnaire was used. Mazaheri and Sadeghi (31) reported an alpha Cronbach coefficient of 0.93 for the SASEQ. The authors (30) confirmed the validity of the SASEQ (CVI=1.00, CVR=1.00).

2.3. Statistical Analyses

Skewness and kurtosis values were considered to assess the normality of the data. Additionally, Pearson's correlation coefficient was utilized to examine the correlation between the variables under study. The proposed model underwent evaluation through structural equation modeling in SPSS and AMOS.

3. Results

Among the participants, there were 162 females and 120 males. Of these, 155 were first-secondary level students, and 127 were second-secondary level students. Table 1 presents descriptive data, including the mean, standard deviation, correlation matrix, and normality of data in terms of skewness or kurtosis. The absolute values of skewness and kurtosis in all research variables confirm the normality of the data. The initial model proposed to explain academic well-being based on school belonging, academic self-compassion, and academic self-efficacy in students with physicalmotor disabilities (Figure 2).

We modified the initial model as the RMSEA value was 0.485 (Table 2). After removing the path from school belonging to academic well-being, the RMSEA improved to 0.060 in the final model, indicating a good fit with the data. The final model is presented in Figure 3.

The findings regarding the estimation of path coefficients for examining direct correlations are presented in Table 3. The results showed a significant correlation between all direct paths except school belonging to academic wellbeing (P=0.436). Furthermore, the bootstrap method was used to measure the significance of the mediating associations (Table 3). The results indicated the significance of the indirect connection between school belonging and academic well-being, mediated by academic self-efficacy. Additionally, the indirect correlation between self-compassion and academic wellbeing, mediated by academic self-efficacy, was significant (P=0.001).

Table 1: Descriptive statistics	and Pearson correlation	coefficient betweer	n variables			
Variables	Mean±SD	1	2	3	Skewness	Kurtosis
1- Academic well-being	120.79±23.62	1			-0.24	-0.81
2- School belonging	66.48±19.46	0.26**	1		-0.05	-0.56
3- Self-compassion	75.45±20.33	0.22**	0.69**	1	-0.13	-0.99
4- Academic self-efficacy	98.46±42.53	0.46**	0.68**	0.64**	0.55	-1.41

**P<0.001

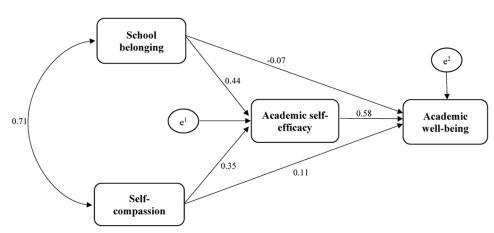


Figure 2: The figure shows the initial model of the research.

Table 2: Initial and	final model fit in	dices						
Fit indicators	χ^2	df	(χ^2/df)	TLI	CFI	RFI	NFI	RMSEA
Initial model	147.75	73	2.02	0.95	0.98	0.94	0.95	0.085
Final model	148.35	74	2.00	0.98	0.98	0.96	0.97	0.060

TLI: Tucker–Lewis index; CFI: Comparative Fit Index; RFI: Relative Fit Index; NFI: Normed Fit Index; RMSEA: Root Mean Square Error of Approximation

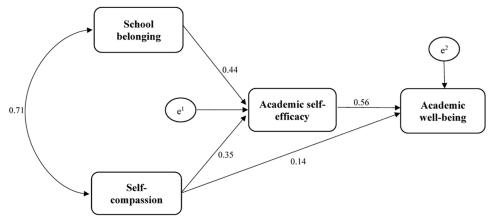


Figure 3: The figure shows the final model of the research.

Path	In	itial model	F	Final model	
	β	Р	β	Р	
School belonging to academic well-being	-0.07	0.436	-	-	
School belonging to academic self-efficacy	0.44	0.001	0.44	0.001	
Self-compassion to academic well-being	-0.11	0.170	-0.16	0.046	
Self-compassion to academic self-efficacy	0.35	0.001	0.35	0.001	
Academic self-efficacy to academic well-being	0.58	0.001	0.56	0.001	
School belonging to academic well-being through the mediating role of academic self-efficacy	2.65	0.001	2.54	0.001	
Self-compassion to academic well-being through the mediating role of academic self-efficacy	1.35	0.001	1.30	0.001	

4. Discussion

This research investigated the mediating role of academic self-efficacy in the correlation between school belonging and self-compassion in students with physical-motor disabilities. The study did not indicate a significant correlation between school belonging and academic well-being. Contrary to the present study, Yaghoobi and colleagues (11) reported that the sense of belonging to the school was correlated with the academic well-being of high school students. However, previous literature using regression analyses showed a significant correlation between school belonging and academic well-being. The present study employed structural equation modeling to examine these hypotheses. The Pearson test conducted in this study revealed a significant correlation between school belonging and academic well-being in with physical-motor disabilities. adolescents However, the presence of a mediating variable suggested that the effect of school belonging on academic well-being in these students is explained through indirect associations. In general, students with a higher sense of school belonging exhibited confidence in their ability to handle assignments,

interest in their schoolwork, and understanding of the importance and applicability of their studies in the future. These students were likelier to adopt a mastery orientation and strive to master the subject matter. They approached their assignments with enthusiasm and a desire to achieve mastery and a deeper understanding of the material. Consequently, a positive and supportive school environment can reduce absenteeism, increase interest in learning, promote academic progress, and enhance academic well-being (11).

Another significant study finding was the positive correlation between self-compassion and academic well-being. Consistent with our research, Khodapanah and Tamnaei Far (19) reported that self-compassion positively correlated with academic well-being in students. This finding can be explained by the self-worth theory, which pertains to an individual's judgment of their selfworth as a human being. Students with physicalmotor disabilities often have lower self-concept levels and negative beliefs about their abilities and value. They may experience feelings of loneliness and have a diminished sense of self-respect (19). These students' academic challenges contribute to a detrimental cycle of academic failure, as their learning difficulties impede their progress in acquiring academic skills and knowledge. Consequently, individuals with physical-motor disabilities may have lower self-perception and self-concept, including negative attitudes toward themselves and others (15).

Another finding showed a positive correlation between academic self-efficacy and well-being in adolescents with physical-motor disabilities. Consistent with the results of the present study, Mudzkiyyah and co-workers (23) reported that academic self-efficacy significantly influences the well-being of students in schools. It can be explained by shaping adjusted attributional patterns. Stronger academic self-efficacy beliefs can inhibit demotivation and negative emotional experiences when learners face low motivational experiences under progression circumstances. In other words, experimental evidence showed that learners with high self-efficacy beliefs are not interested in using some behavioral patterns, such as negative self-evaluation and self-talk (23). Since the use of malfunction causal attributions is prevalent among learners who suffer from the lack of academic self-confidence, their abundant negative emotional experiences cause them to adopt uncompromised behavioral patterns, such as negative self-talk, negative self-assessments of competence, and negative attitudes towards educational environments, when facing challenging situations (24).

The study's results revealed the mediating role of academic self-efficacy in the correlation between school belonging and self-compassion with academic well-being. Although the direct correlation between school belonging and academic well-being was insignificant, the indirect path through the sense of belonging influenced adolescents' academic well-being by affecting their academic self-efficacy. On the other hand, a direct positive correlation was found between selfcompassion and academic well-being. Moreover, there was an indirect correlation between selfcompassion and academic well-being, mediated by academic self-efficacy. Academic self-efficacy was identified as the most influential factor in academic well-being, acting as a perfect mediator. If school belonging weakens while self-compassion improves, it can negatively impact the academic self-efficacy of adolescents with physical-motor disabilities, leading to behavioral issues and lower academic well-being.

4.1. Limitations

There are a few limitations to consider in this study. Firstly, the sample consisted of teenagers with physical-motor disabilities in Ahvaz, which may limit the generalizability of the findings to other teenagers. Additionally, influential variables such as economic status and employment status of the parents of adolescents with physical-motor disabilities were not controlled for in the present study, which could have influenced the outcomes. Also, the data were obtained based on self-report questionnaires, which may affect the bias of the results.

5. Conclusion

The research findings suggested that the model used in the study has a good fit and can help identify influential factors for a cademic well-being in students with physical-motor disabilities. It is recommended that educational consultants and therapists prioritize these students by organizing workshops for education and life skills training. The results also emphasized the need for special attention and the establishment of psychological and social support systems. Holding educational workshops to enhance school belonging and self-compassion in these students can improve their academic self-efficacy and overall wellbeing. These insights can guide the development of targeted interventions to promote academic well-being in students with physical-motor disabilities.

Ethical Approval

The Ethics Review Board of the university approved the present study with the code of IR.IAU. AHVAZ.REC.1402.031. Also, written informed consent was obtained from the participants.

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Authors' Contribution

M.A.N: Substantial contributions to the conception of the work, data curation, drafting and critical revision of the manuscript. S.S: Substantial contributions to the conception of the work, drafting and critical revision of the manuscript. M.T.S: Data analysis and interpretation, critical revision of the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such that the questions related to the accuracy or integrity of any part of the work.

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