Development of a Structural Model of School Belonging Based on Academic Identity: The Mediating Role of Academic Engagement

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Article Info

ABSTRACT

Objective: The sense of school belonging is a type of psychological need that has been confirmed to have positive psychological outcomes and supports the positive functioning of students in learning environments. Therefore, identifying individual and motivational factors that affect this sense is important. This study aimed to develop a structural model of school belonging based on academic identity, with the mediating role of students' academic engagement.

Methods and Materials: This correlational study utilized structural equation modeling. The statistical population included all female high school students in Khorramabad during the 2023-2024 academic year. Among them, 800 students were selected through multistage cluster sampling. They were then evaluated using the School Belonging Questionnaire (Barry et al., 2004), Academic Identity Scales (Vaz & Isakson, 2008), and Academic Engagement Scale (Reeve, 2013). Structural equation modeling was used for data analysis.

Findings: A positive and direct relationship was found between successful academic identity and academic engagement with school belonging, while a confused academic identity had a direct and negative relationship with school belonging (P<0.001). Successful and follower academic identities had a positive and direct relationship with academic engagement; confused and delayed academic identities had a direct and negative relationship with academic engagement (P<0.001). Academic engagement mediated the relationship between academic identity and school belonging. The overall model fit indices also indicated that the proposed model had a good fit.

Conclusion: Based on the study's findings, it can be concluded that students' academic identity and academic engagement contribute to their sense of school belonging.

Keywords: School Belonging, Female Students, Academic Engagement, Academic Identity.

1. Introduction

The period of schooling is a challenging phase for students and is regarded as a significant turning point in everyone's life (Bulfone et al., 2020). It is a crucial stage where students must focus their efforts on academic achievement to shape their personal and professional futures (Vizoso et al., 2019). Students are the greatest human capital of any society because they can drive progress and development by combining youthful energy, knowledge, and learned skills. Focusing on education and the significant factors affecting academic progress is a key goal of any education system. Each year, substantial amounts are spent to address the losses from academic decline and failures. The issue of improving the quality of education is a concern for all modern societies. Issues related to schooling, such as academic decline and decreased motivation for academic achievement, are the subjects of many scientific studies each year. It is evident that understanding the factors related to academic motivation and providing scientific solutions can significantly enhance the quality of education. Increasing awareness of the physical, mental, and organizational factors that may affect students' success and reducing the potential negative impacts of these factors are crucial (Özhan, 2021).

One of the factors influencing students' academic life, which can also affect various aspects of their personal lives, is the sense of belonging to school (Mapfumo & Muchena, 2013). School, after home, is the most important place where students spend their time, playing a crucial role in shaping their values, norms, and social opportunities. There is a general consensus that schools are large social environments where learning occurs both inside and outside the classroom. Schools are a significant source for fostering students' attachment; having a sense of belonging to school creates a healthy environment for students to develop independent personalities and socialization, leading to positive academic outcomes and numerous benefits for psychosocial growth and academic issues, such as students' academic motivation (El Zaatari & Maalouf, 2022; Longaretti, 2020). Conversely, the lack of a sense of belonging can result in behavioral, emotional, and academic problems, potentially leading to negative consequences such as poor mental health, stress, physical illness, and suicide (Ginn, 2021)k.

According to education experts, various factors, including individual and social characteristics in students' academic lives, which are one of the criteria for the efficiency of the educational system, play a major role. One individual characteristic that can influence students' sense of belonging is academic identity. This comprehensive and multidimensional term encompasses the competencies and characteristics of learners in the process of consciously responding to their academic situations (Erdem, 2023), such as whether to study or not, which path to take, and thus seeking their academic identity. With such an identity, a sense of movement and success in various academic aspects emerges (Tran et al., 2017). With this feeling, obstacles to success are removed one by one. Academic identity has a cognitive-social nature; according to Vaz and Isakson, it includes four identity statuses: confused identity (lack of exploration and commitment in pursuing academic goals), delayed identity (procrastination in executing decisions related to academic values), follower identity (commitments to academic values and aspirations taken from significant others), and successful identity (commitment to a set of academic values formed after a period of exploration) (Sekoto & Hlayisi, 2023). The formation of academic identity depends on personal beliefs and thoughts about how to study and use effective strategies to achieve success in this path, which, when realized, leads to the creation of capabilities and a positive belief in one's abilities (Rafei Fard et al., 2023).

One of the significant motivational factors in students' academic life is psychological investment and direct effort to learn, understand, and master the knowledge, skills, or activities that academic endeavors aim to enhance, known as academic engagement (Lawson et al., 2019). It seems that academic engagement also plays a role in school belonging. Multiple definitions of academic engagement share common themes: engagement is an important mediator for learning and a multidimensional construct. According to McKellar and Wang (2023), students show decreased engagement in learning activities when transitioning from one educational level to another (McKellar & Wang, 2023).

Given that one of the most serious challenges facing education professionals today is determining the factors that provide for the success, growth, and flourishing of students' individual, social, and academic lives, and identifying the skills and competencies they should learn at school and home to succeed in education and life, planners, administrators, teachers, and parents are always striving to create conditions that enhance students' social and academic performance (Grant et al., 2022). Education experts believe that, in addition to the structure and content of the classroom, various factors, including individual and social characteristics, play a major role in students' success, which is one of the criteria for the efficiency of the educational

system and should be identified. Therefore, the fundamental question of this research is whether the proposed model has a good fit.

2. Methods and Materials

2.1. Study Design and Participants

This correlational study was conducted using structural equation modeling. The statistical population included all female high school students in public schools in Khorramabad (Lorestan province) who were studying during the 2023-2024 academic year. To determine the sample size, Barclay et al.'s (1995) rule of thumb of ten times the number of indicators in the measurement model with the most indicators among the study's primary models was used. This amounted to 600 samples, but to increase internal and external validity, 800 participants were finally included in the study. Participants were selected through multistage cluster random sampling. Khorramabad was divided into four geographic clusters: north, south, east, and west. Five schools were randomly selected from each cluster, and one grade level was randomly chosen from each school. The electronic questionnaire links were then sent to students via social media by school officials.

Inclusion criteria were having normal intelligence, and exclusion criteria were incomplete and inaccurate completion of the questionnaires.

2.2. Measures

2.2.1. School Belongingness

Developed by Barry et al. (2004) with 27 questions and six components (teacher support, community participation, sense of justice and respect in school, positive feelings toward school, personal belonging to school, and academic participation). Responses were on a four-point Likert scale (strongly agree = 4 to strongly disagree = 1). Barry et al. (2004) reported Cronbach's alpha reliability for the entire questionnaire as 0.75 and for the components: belonging to peers (0.73), teacher support (0.89), sense of respect and justice in school (0.75), community participation (0.84), positive feelings toward school (0.69), and academic participation (0.78). Makián and Kalantari Kousheh (2015) reported a Cronbach's alpha reliability of 0.88 for the entire questionnaire (Omidi Karkani & Assareh, 2018). In this study, Cronbach's alpha reliability for the subcomponents was 0.73 for school belonging, 0.94 for teacher support, 0.86 for sense of respect and justice in school, 0.87 for

community participation, 0.48 for positive feelings toward school, and 0.84 for academic participation.

2.2.2. Academic Identity

Developed by Vaz and Isakson (2008) with 40 items and four subscales. Responses were on a five-point Likert scale (strongly disagree = 1 to strongly agree = 5). Vaz and Isakson (2008) reported internal consistency using Cronbach's alpha for the subscales as follows: delayed (0.85), follower (0.77), confused (0.76), and successful (0.76) (Vaz et al., 2009). Jafari and Abdizarrin (2021) reported Cronbach's alpha for the subscales as follows: follower (0.61), delayed (0.79), confused (0.73), and successful (0.82) (Rafei Fard et al., 2023). In this study, Cronbach's alpha for the subscales was 0.90 for confused identity, 0.94 for delayed identity, 0.91 for follower identity, and 0.94 for successful identity.

2.2.3. Academic Engagement

Developed by Reeve (2013) with 17 items and four subscales (behavioral engagement, cognitive engagement, emotional engagement, and agentic engagement). Responses were on a seven-point Likert scale (strongly disagree = 1 to strongly agree = 7). Reeve reported internal consistency using Cronbach's alpha as follows: behavioral engagement (0.94), cognitive engagement (0.88), emotional engagement (0.78), and agentic engagement (0.82) (Reeve, 2013). In Iran, Ramazani and Khamsan (2017) reported Cronbach's alpha for the entire questionnaire as 0.92 and for the subcomponents: agentic engagement (0.85), behavioral engagement (0.79), emotional engagement (0.87), and cognitive engagement (0.79) (Ebrahimi & Khalatbari, 2020). In this study, Cronbach's alpha for the subscales was 0.93 for behavioral engagement, 0.94 for agentic engagement, 0.93 for cognitive engagement, and 0.92 for emotional engagement.

2.3. Data analysis

Structural equation modeling was used for data analysis via AMOS-21 and SPSS-24.

3. Findings and Results

In this study, the sample size was 800 female high school students with a mean age and standard deviation of 17.1 ± 0.7 years. Among them, 165 students (20.6%) were in the 10th grade, 322 students (40.3%) were in the 11th grade, and 313

students (39.1%) were in the 12th grade. The correlation matrix and descriptive statistics of the study variables are presented in Table 1.

Table 1

Correlation Matrix and Descriptive Statistics of the Study Variables

Variable	1	2	3	4	5	6	Mean	SD	Skewness	Kurtosis
1. Confused Academic Identity	1						25.54	8.81	0.54	0.11
2. Delayed Academic Identity	0.82	1					27.77	9.56	0.32	0.63
3. Follower Academic Identity	-0.24	-0.16	1				35.80	7.81	-0.58	-0.12
4. Successful Academic Identity	-0.52	-0.41	0.71	1			37.40	8.79	-1.13	-1.15
5. Academic Engagement	-0.58	-0.51	0.58	0.78	1		86.96	23.33	-1.07	0.72
6. School Belonging	-0.64	-0.53	0.49	0.72	0.76	1	78.28	16.68	-1.02	1.17

For all correlations: $p < .01$

As shown in Table 1, there are significant correlations between the model variables ($p < .01$). The relationship between delayed academic identity and school belonging is negative, while the correlation between academic engagement and school belonging is significantly positive at the 0.01 level. Additionally, the mean and standard deviation indices to assess the normality assumption of the variables indicate appropriate data dispersion, and the skewness and kurtosis indices indicate normal data distribution.

The first criterion for examining the fit of the inner model is assessing multicollinearity among variables. The tolerance index and the variance inflation factor (VIF) are used for this purpose. A tolerance level below 0.20 (VIF higher than 5) indicates multicollinearity between variables. Based on the

obtained findings for the academic identity variable, the tolerance index (and VIF) for confused academic identity was 0.28 (VIF = 3.50), delayed identity was 0.31 (VIF = 3.19), follower identity was 0.47 (VIF = 2.15), successful identity was 0.28 (VIF = 3.56), and academic engagement was 0.21 (VIF = 4.70), indicating that multicollinearity did not occur in the study variables.

To investigate the mediating role of academic engagement in the relationship between school belonging and students' academic identity, structural equation modeling using the partial least squares (PLS) method was employed. Figure 1 shows the model with standardized coefficients

Figure 1
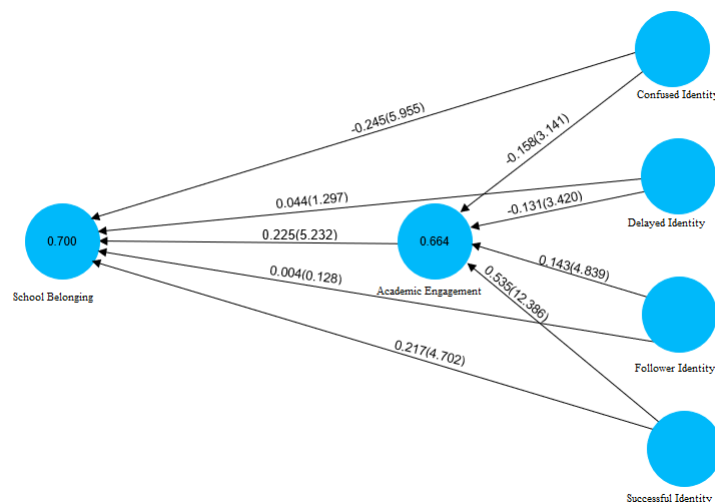
Model with Standard Coefficients

Table 2

Estimates of Direct and Indirect Effects

Path	Path Coefficient	t-Value	p-Value
Direct Effects			
Successful Identity → Academic Engagement	0.53	12.39	0.001
Successful Identity → School Belonging	0.22	4.70	0.001
Confused Identity → Academic Engagement	-0.16	-3.14	0.002
Confused Identity → School Belonging	-0.24	-5.95	0.001
Follower Identity → Academic Engagement	0.14	4.84	0.001
Follower Identity → School Belonging	0.01	0.13	0.898
Delayed Identity → Academic Engagement	-0.13	-3.42	0.001
Delayed Identity → School Belonging	0.04	1.30	0.195
Academic Engagement → School Belonging	0.22	5.23	0.001
Indirect Effects			
Successful Identity → Academic Engagement → School Belonging	0.120	5.004	0.001
Confused Identity → Academic Engagement → School Belonging	-0.035	-2.564	0.010
Follower Identity → Academic Engagement → School Belonging	0.032	3.408	0.001
Delayed Identity → Academic Engagement → School Belonging	-0.029	-2.815	0.005

According to the findings in Table 2, the direct effect of successful identity ($\beta = 0.22$, $p < 0.001$) and confused identity ($\beta = -0.24$, $p < 0.001$) on school belonging and the t-value for the Sobel test of successful academic identity (t = 4.70, $p < 0.001$) and confused identity (t = -5.95, $p < 0.01$) are significant. Additionally, the indirect effect of academic identity styles (successful, confused, follower, and delayed) with the mediating role of academic engagement on school belonging is significant.

To evaluate the model's quality, goodness-of-fit indices were used; the results are presented in Table 3.

Table 3

Model Fit Indices

Index	SRMR	d_ULS
Saturated Model	0.053	14.677
Estimated Model	0.070	25.725

The findings in Table 3 show that the fit indices for the research model are appropriate; therefore, the proposed model has a desirable fit.

4. Discussion and Conclusion

The aim of this study was to develop a structural model of school belonging based on academic identity with the mediating role of students' academic engagement.

The first finding showed a direct relationship between academic identity (successful, confused) and school belonging. In other words, the direct and positive effect of successful identity on school belonging indicates that the more students possess a successful academic identity, the greater their school belonging. Additionally, the negative relationship between confused academic identity and school belonging indicates that the higher the students' confused academic identity, the lower their school belonging. This finding aligns with the results of Zhang and Quinn (2023), Yang (2023), Leggett et al. (2021), Marati et al. (2021), Omidi Kirkani and Assareh (2017). In explaining this finding, it can be said that the characteristic of academic identity is how to act in academic fields. Students with a successful academic identity, through an autonomous and integrated choice, are committed to a set of values, roles, and academic goals and possess a self-constructed identity, less influenced by others, with high self-monitoring. They choose clear academic goals, are committed to education, have high motivation to complete challenging academic tasks, have high responsibility, order, and willpower, are accountable for learning topics, feel satisfaction, and strive to address and solve issues when facing challenges or poor performance in tests, with school being one of the most important priorities in their lives, thus likely showing a high level of school belonging (Jafari & Abdizarrin, 2021). However, individuals with a confused academic identity

avoid academic issues due to a lack of exploration and commitment to educational goals and values, using inappropriate strategies such as excuses and justification in decision-making, possessing low self-concept and self-regulation (Sekoto & Hlayisi, 2023), which sets the stage for low school belonging.

Another finding showed a direct relationship between academic engagement and school belonging. This finding aligns with the results of prior studies (Ebrahimi & Khalatbari, 2020; Gillen-O'Neel, 2021; Hosseinmardi et al., 2022; McKellar & Wang, 2023; Mirzaei Gharehlar & Hatami, 2019; Sadat, 2015; Skaalvik & Skaalvik, 2019). Academic engagement is a means to improve academic dissatisfaction, prevent academic decline, increase motivation and participation in school-related activities, and enhance students' success (Mirzaei Gharehlar & Hatami, 2019). Engaged learners study more, have higher academic satisfaction, and are more likely to graduate. Thus, the concept of academic engagement is highly valuable and significant not only because of its inherent value as an educational goal but also because of its logical connection to educational outcomes (Eslami et al., 2016) and can impact school belonging. Academic engagement, as a sense of belonging and individual inclination to participate in classroom activities and school outcomes alongside academic success, can include participation in extracurricular activities such as sports, music, theater, and group work organized by the school. Students' engagement refers to meaningful interaction throughout the learning environment, perceived as the relationship between the student and the school, teachers, peers, education, and curriculum.

Another finding of the study indicated a direct and positive relationship between successful and follower academic identities and academic engagement and a direct and negative relationship between confused and delayed academic identities and academic engagement. This finding aligns with the prior results (Jafari & Abdizarin, 2021; Lotfi & Ashouri, 2023; Tran et al., 2017), who found no relationship between academic identity and academic engagement. In explaining this finding, it can be said that individuals with confused and delayed identities are unable to choose appropriate goals, constantly changing directions personally and socially. They may choose a goal to please a teacher, compete with peers, or satisfy parents but get tired and switch to another goal. Successful identity formation requires exploration and acquisition of information using effective cognitive and metacognitive strategies. As

individuals with a successful academic identity strive for deep mastery of academic subjects with a goal-oriented approach to development through acquiring new skills, mastering new situations, and improving their competence, they use strategies that enable them to gain these skills. According to Deci and Ryan (1932), supporting autonomy and competence increases cognitive engagement, leading to a successful identity. Individuals with a successful identity judge based on their internal criteria and are less dependent on others' opinions for their decisions (Ryan & Deci, 2017). This independence from social comparisons and exploratory nature directs them towards a mastery goal orientation and successful identity. Follower academic identity also represents the student's commitment to academic values and aspirations derived from significant others (such as parents and reference groups). For example, achieving high grades is important to the individual because they want their parents to be proud of them, or family expectations significantly motivate their academic engagement (Torkzadeh Arani et al., 2023).

Finally, to examine the mediating role of academic engagement, all existing relationships between variables were examined, and the results showed that academic engagement mediates the relationship between academic identity (successful, confused, follower, and delayed) and school belonging. No studies were found to directly align with these results. This finding can be interpreted to mean that academic engagement is a psychological investment that strengthens the effort to learn and relatively involves students in academic activities (Ghodsi et al., 2019). Academic engagement is a crucial structure to prevent the process that gradually leads to dropout among students, referring to the quality of effort students invest in purposeful educational activities to directly achieve desirable outcomes. Thus, students with optimal academic engagement are active, constructive, and goal-oriented in the learning process rather than passively receiving constructive lesson information, playing an active role in education and learning, and valuing peer interactions in the classroom (Gutiérrez et al., 2016). Additionally, it can be said that when a student has more participation in school and higher academic engagement than other students, they exhibit more interest, value, and emotion indicators, which themselves guarantee the student's belonging to the school and educational environment (Ebrahimi & Khalatbari, 2020).

5. Limitations & Suggestions

The limitations of this study include the single-gender sample and the limitation of the population to high school students in Khorramabad city, so caution should be exercised in generalizing the results. Therefore, conducting research on male students, students from other levels, and at provincial and national levels to achieve more definitive results is recommended. Given the significant impact of academic identity on academic engagement and school belonging and the fact that the foundation and origin of identity formation in children lie in the family, holding educational and informational sessions for parents (especially during their children's childhood and adolescence) to guide children towards achieving academic identity statuses and consequently increasing academic engagement and students' sense of belonging seems necessary. Since after the family, school and educational environments are the main places for developing appropriate identity in children, establishing general policies in the Ministry of Education and holding educational and informational sessions for teachers, principals, and school counselors to guide students towards achieving a successful academic identity is essential. It is recommended that education specialists, officials, and planners of educational systems, such as the Ministry of Education, the Research and Educational Planning Organization, and others, consider ways to achieve a successful identity in the content of textbooks.

Acknowledgments

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

Authors' Contributions

This article is derived from the first author's doctoral dissertation at the Science and Research Branch, Islamic Azad University, Tehran, Iran. The dissertation topic was approved by the Educational and Graduate Studies Council of the Faculty of Humanities, Science and Research Branch, Tehran, on January 24, 2023, with the registry code 162692509. All authors equally contributed to this article.

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