Determinants of students' learning motivation in Islamic boarding schools: A structural equation modeling approach

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ABSTRACT

Motivation plays a key role in the learning process, as it serves as a driving force or positive influence for students. This study aims to explore factors affecting students' learning motivation by examining teacher professionalism, family environment, school environment, and academic stress using the Structural Equation Modeling (SEM) method. Data was collected through questionnaires distributed to students at Baitur Rohmah Muhammadiyah Islamic Boarding School, with responses from 201 students. The findings show that teacher professionalism (β: 0.345, P-value: 0.044), family environment (β: 0.088, P-value: 0.010), and academic stress (β: 0.415, P-value: 0.042) positively influence learning motivation. However, the school environment does not significantly affect learning motivation (β: 0.156, P-value: 0.224). Additionally, teacher professionalism does not have a significant impact on students' academic stress levels (β: 0.156, P-value: 0.224).

1. Introduction

Education is the most important thing in building a nation (Brayboy et al., 2014). This is because the task of education is to develop human potential in terms of intellect, skill, and other aspects (Garcia, 2016). Motivation to learn is something that must exist in students (Filgona et al., 2020). Motivation functions as an incentive for students to continue to be enthusiastic during the learning process (Puspitarini and Hanif, 2019). There will be factors that influence building high learning motivation (Muntaner-Mas et al., 2017). Habibi et al. (2019) explained in their research that the level of teacher professionalism can influence students' learning motivation. The reason is that teachers will have direct contact with students in the learning process. A teacher can be said to be professional if he has the following competencies: (a) Mastery of teaching materials, (b) Ability to organize learning in the classroom, (c) Understanding the characteristics of students, (d) Proficiency in using media/learning resources and technology, (e) Ability to assess students (f) discipline.

Islamic boarding schools are the oldest educational institutions in Indonesia. There are various forms of Islamic boarding school models, including a model that combines the school education system with boarding school education. Islamic boarding schools are the same as schools in general, so whether the school environment is good or bad will affect students' learning motivation. Sianipar et al. (2023) stated that the school environment has a significant influence on learning motivation. This is because the components in the school environment interact actively with students, such as learning facilities, classmates, and communication with teachers (Patrick et al., 2016).

Family is the first educational environment for every human being. Families will prepare their children to grow and develop optimally (Olasunkanmi and Khalid, 2021). Benner et al. (2016) revealed that the family environment significantly influences students' learning motivation. The components that make up the family environment include the family economy, parental attention to children's learning, and encouragement from parents (Hart and Risley, 1992).

Students, as educational subjects, will encounter problems in the process (Ogilvie, 2009). Problems that accumulate and cannot be resolved will cause students to experience stress (Madzhie, 2015). There is a significant negative influence between the level

of stress experienced by students and their learning motivation (Sharma, 2018; Abouserie, 1994). This is caused by pressure from parents, piling up school assignments, lots of school agendas, and poor communication with friends (Michie, 2002; van Praag, 2004; Abouserie, 1994). Therefore, this research aims to find out the factors that can influence learning motivation in Islamic boarding schools

2. Literature review

2.1. Teacher professionalism

The term professional comes from the adjective which means livelihood, and as a noun, is defined as a person who has expertise (Freidson, 1999). In another sense, professionalism is a special job that can only be done by people who are trained to do that job or have special skills (Devine et al., 2000). It can be concluded that the term professional is the condition of someone who has the qualities to do something special. Teachers are people who have rights and responsibilities for the teaching and learning process of students individually or in groups, in the classroom or outside the classroom (Forster, 1997). In a small scope, the meaning of a teacher is a person who teaches students science (Kubat, 2018).

Teacher professionalism is interpreted as the special skills required by teachers to carry out their duties. Teacher professionalism is the ability or expertise in the realm of teaching so that teachers are able to carry out their duties and functions as teachers to the maximum. Based on the definition above, professional teachers are teachers who have superior competence in all aspects, especially those related to the learning process (Kunter et al., 2013). Law Number 14 of 2005 defines a professional teacher as one with extensive and comprehensive knowledge. A teacher is considered professional if they possess the following competencies: (a) Mastery of the subject matter they teach, (b) Ability to effectively manage and conduct classroom learning, (c) Understanding of student characteristics, (d) Proficiency in using educational media, resources, and technology, and (e) Skill in evaluating and assessing student performance (Sengottuvel and Aktharsha, 2015; Evers and van der Heijden, 2017).

According to Law No. 14 of 2005, it is stated that professional teachers must have the following competencies: 1) have strong interests, talents, and ideals, (2) be committed to developing and improving students, (3) have an appropriate educational background and pass the qualifications, (4) have high competence (5) be responsible in carrying out their obligations (Kholis and Murwanti, 2019). Setyorini and Khuriyah (2023) stated in their research that the teacher professionalism variable has a significant impact on students' learning motivation. In other research, Sunarti and Rumyani (2018) concluded that teacher professionalism has a

significant influence on students' learning motivation. This is caused by teachers who are in direct contact with students during the learning process (choosing methods, strategies, and learning media). Apart from that, the teacher's skills in teaching (how to deliver) will have a positive influence on students' learning motivation, the school environment (Zaleha et al., 2022), and have a negative influence on the level of stress in students (Muntaner-Mas et al., 2017). Based on previous literature, the following research hypotheses are offered:

H1: Teacher professionalism is positively related to learning motivation.
H2: Teacher professionalism is positively related to the school environment.
H3: Teacher professionalism is negatively related to academic stress.

2.2. School environment

The environment is something that is around us (Ittelson et al., 1976). The environment can be divided into several parts, including the physical environment (natural conditions), cultural environment (language, arts, economy, religion, school), and social environment (family, organization, society) (Greider and Garkovich, 1994). Schools are an educational environment, and this is because the school environment provides formal education (Tudor, 2013). The school environment is a place where students take part in learning activities to gain knowledge, change morals, and improve skills both in the classroom and outside the classroom (Hungerford and Volk, 2013). The school environment is formed from several instruments, including school facilities, interactions with teachers, and school location (Ihekoronye, 2020). The school environment is formed from learning communication with teachers (Patrick et al., 2016). There is a positive and significant relationship between the learning environment and students' learning motivation, which means that if the school environment is good, children's learning motivation will increase (Sianipar et al., 2023). Therefore, the hypothesis offered is as follows:

H4: The school environment is positively related to learning motivation.

2.3. Family environment

Family is a factor that influences students' learning motivation. The family is the main and first educational environment (Oktaviani, 2017). The family environment is two or more individuals who are related by blood or marriage, and they interact with each other and have their own roles. There is a significant positive influence between the family environment and students' learning motivation (Whitaker et al., 2012; Ginsburg and Bronstein, 1993). This is caused by several factors in the family

environment that can influence students' learning motivation, including parents' attention to their children's education, home atmosphere, and parents' economic conditions. According to Habib and Nadira (2024), the family plays a role in forming a person's personality pattern, both in Emotional Intelligence (EQ) and Spiritual Intelligence (SQ) in students.

Therefore, the following hypotheses are offered:

H5: The family environment has a positive effect on learning motivation.
H6: The family environment has a positive influence on the school environment.

2.4. Academic stress

Stress is a state in which an individual feels physically, mentally, or otherwise threatened (Chrousos, 2009). In the school context, student stress is referred to as academic stress (Cleveland and Fisher, 2014). Academic stress describes students facing demands and burdens from various challenges (Madzhie, 2015). It can also be defined as feelings of anxiety, pressure, and worry experienced by students, both physically and mentally.

Academic stress can occur to all students; this is caused by several factors, including pressure from parents, piling up school assignments, lots of school agendas, and poor communication (Michie, 2002; van Praag, 2004; Abouserie, 1994). According to Wang and Yeh (2005), the causes of students experiencing stress are consecutive exams, the aspirations of teachers, parents and students, and

piling up assignments. Research by Sharma (2018) and Abouserie (1994) indicated that academic stress negatively affects students' learning motivation. In other words, higher levels of stress among students lead to lower motivation to learn, while lower levels of stress result in increased motivation. Therefore, the proposed hypothesis is as follows:

H7: Academic stress has a negative effect on learning motivation.

Learning motivation serves to guide, stimulate, and sustain a person's behavior toward achieving goals. According to Haq (2020), motivation involves a change in energy within an individual, characterized by enthusiasm. Learning motivation arises due to internal and external stimulation, driving a person to act (Yaftian and Barghamadi, 2022). The emergence of motivation to learn is influenced by two main factors: intrinsic and extrinsic. Intrinsic factors come from within the individual, such as desires, aspirations, goals, and hopes. Extrinsic factors originate from outside influences, such as a supportive learning environment and engaging learning activities (Amabile et al., 1994). Additionally, learning motivation can be broken down into five key indicators: the desire to succeed, the drive to learn, goal-setting, appreciation, and engaging learning experiences. Fig. 1 illustrates the proposed research model and hypotheses.
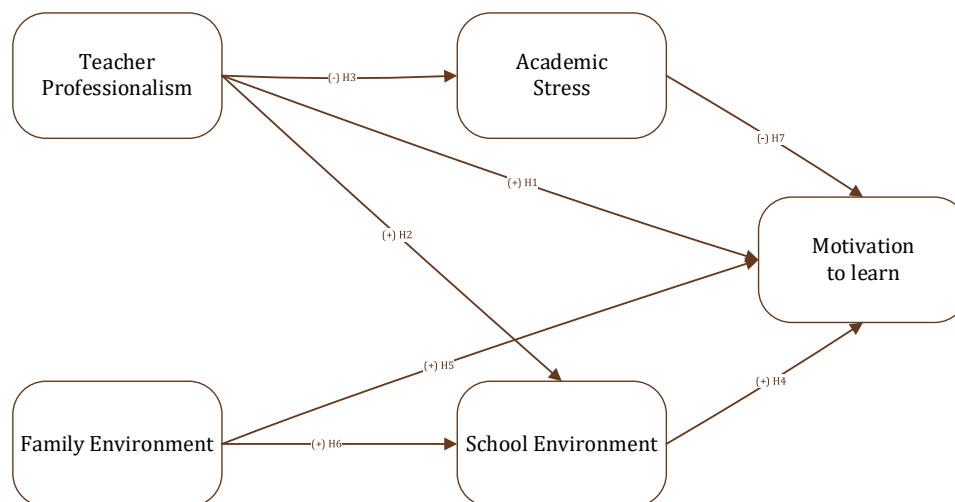

Fig. 1: Research model

3. Methods

This study falls under the category of quantitative research and utilizes the Structural Equation Modeling (SEM) method, supported by the SPSS and Amos software applications. SEM is a multivariate analysis technique that can evaluate complex relationships between variables. According to Ginting (2009), SEM allows for testing latent variables, thereby addressing the limitations of regression analysis and enabling the examination of

relationships among dependent variables in groups. SEM analysis is specifically designed to analyze interactions between latent and manifest variables (Febriandika et al., 2023a). Data for this research was collected through fieldwork using a structured questionnaire survey. The structured questionnaire consists of close-ended questions, where participants select from pre-determined response options. This method involves collecting data by presenting respondents with written questions and statements to answer. The sample size typically

ranges from 100 to 200 respondents, depending on the complexity of the model and sampling requirements (Febriandika et al., 2023b).

Personal data collection was carried out by the author, and convenience sampling was used to select respondents. Researchers used Google Forms to distribute questionnaires to 201 respondents, students of the Baitur Rohmah Muhammadiyah Islamic Boarding School, after which the data was tested for validity and reliability, which aimed to test the certainty of the data from the questionnaire so that it could be trusted (Febriandika et al., 2023c). The results for each variable are classified as good to very good. Data was obtained from participant responses to questionnaires distributed and processed statistically. SPSS and AMOS software were also used to develop models based on validity and reliability tests. On the other hand, statistical analysis is used to investigate the profile of respondents and an overview of the data.

This study employs quantitative methods using the SEM approach. An Exploratory Factor Analysis (EFA) was conducted, resulting in the removal of six items due to potential issues of invalidity or low relevance. Following this, a Confirmatory Factor Analysis (CFA) was performed to assess model fit, convergent validity, and discriminant validity (Anderson and Gerbing, 1988). The CFA analysis confirmed acceptable model fit indices, with values such as GFI = 0.911 (acceptable threshold = 0.80), CFI = 0.920 (acceptable threshold = 0.90), TLI = 0.903 (acceptable threshold = 0.90), and RMSEA = 0.052 (acceptable range < 0.08) (Hu and Bentler, 1999). Table 1 summarizes the questionnaire. Hooper et al. (2008) proposed using these indices to measure model fit. Four key indices were empirically extracted to confirm the measured absolute values. These include the chi-square/degree of freedom ratio ($\chi2/df$), which should be less than 3.0, and the Root Mean Square Error of Approximation (RMSEA), with a standard limit of 0.08. Acceptable values for GFI, CFI, and TLI range from 0.80 to 0.90 or higher (Hu and Bentler, 1999). Table 1 outlines the research constructs and the sources used for the questionnaire.

Table 1: Summary of the questionnaire and the research constructs and sources for making the questionnaire

Construct	Items	Reference
Family environment	My parents always give me advice about my studies My family members turn down the TV volume when I am studying * My parents provide for my school needs by providing all school supplies	Whitaker et al. (2012)
School environment	Friends at school help each other in studying * The school provides complete facilities Teachers were nice to me at school * My classroom conditions are spacious and comfortable The environment around my school supports me to learn * The community around my school behaves well The environment around my school is calm	Ihekoronye (2020) and Patrick et al. (2016)
Teacher professionalism	The teacher came on time * After the teaching and learning process in class the teacher explains its relevance to students' daily lives The teacher provides examples of lesson topics with examples that are easy to understand * The teacher explains in detail and in detail Teachers use various learning media such as textbooks, PPT, videos, etc. The teacher gives problems/questions in written and oral form Teachers are firm towards students who are not paying attention If there is something that students do not understand, the teacher provides the opportunity to ask questions, and the teacher will provide an explanation * Teachers use interesting strategies in learning *	Sengottuvel and Aktharsha (2015), Evers and van der Heijden (2017), and Kholis and Murwanti (2019)
Academic stress	I feel comfortable with the school atmosphere * Facilities at school are adequate * I find it easy to communicate with school friends * The teacher gives a lot of assignments * I follow many school agendas * I can buy school supplies easily * There is competition between friends to get points * I increase my study hours while at home * The teacher holds a surprise exam My parents advised me when my grades dropped	Michie (2002), van Praag (2004), and Abouserie (1994)
Motivation to learn	I try to be there on time for lessons * I took the time to study again at home to better understand the subject matter I compete with my friends in class grades Achieving better performance every semester is important to me I continue to study hard so that my grades are good I feel excited if the teacher holds games during learning I get prizes when my learning performance is good * I aspire to be the best in the class	Amabile et al. (1994)

*: Removed due to low factor loadings

4. Results

In this study, data was collected from 201 valid respondents, who were students of the Baitur Rohmah Muhammadiyah Islamic boarding school, through an online questionnaire. Demographic results revealed that 45.8% of respondents were male (92) and 54.2% were female (109). Regarding

age distribution, 46.3% (93) were 14 years old, 48.8% (98) were between 15-17 years old, and 5% (10) were aged 18-20. In terms of distance from home to school, 45.8% (92) lived less than 10 km away, 19.9% (40) lived 11-20 km away, 16.9% (34) lived 21-30 km away, and 17.4% (35) lived more than 30 km away. The Kaiser-Meyer-Olkin (KMO) measure for each variable, as shown in Table 2, was found to be 0.91, exceeding the minimum requirement of 0.5, indicating that factor analysis was appropriate for this data. The P-value was 0.00, and the total variance explained was 83.240%. Table 1 provides a detailed description of respondents' assessments of each research variable based on interval calculations.

Table 2: Measurement model exploratory factor analysis

Variables	Component					Cronbach's alpha	Variance extracted explained	KMO
	1	2	3	4	5			
PG3	.669					.708	60.497	.755
PG5	.755							
PG6	.534							
PG7	.609							
M2		.580				.702	46.708	.772
M3		.759						
M4		.732						
M5		.594						
M8		.577						
S4					.690	.407	45.911	.585
S9					.713			
S10					.524			
LK1				.647		.594	71.222	.500
LK3				.849				
LS2		.745				.767	59.238	.735
LS4		.734						
LS6		.503						
LS7		.648						
Total						.810	58.164	.838

PG: Teacher professionalism; M: Motivation to learn; S: School environment; LK: Family environment; LS: Academic stress; KMO: Kaiser-Meyer-Olkin

Based on the tested variables in Table 2, the overall KMO index for this model is 0.876, which exceeds the threshold value of 0.5, indicating that the results of the factor analysis model are reliable and the sample size is sufficient. The data was factored with a p-value of 0.00, resulting in a total variance explained of 70.062%.

During EFA, six items with factor loadings below 0.50 were excluded. Items with loadings below 0.50 are typically considered weak indicators of the underlying factor, as this threshold is used to ensure items make strong contributions to the factor structure. Retaining items with low loadings can lead to poorly defined or unreliable factors and negatively affect overall model fit. By removing these items, the model becomes more parsimonious with improved fit indices, ensuring that factors maximize variance explanation with fewer items. This exclusion also maintains factor independence and ensures that each factor captures unique variance, resulting in a more accurate reflection of the intended constructs.

CFA was then used to validate the reliability and validity of the remaining items and constructs. As shown in Table 3, the CFA model results demonstrated good fit and reliability, with indices such as $\chi 2/df$ = 1.75, GFI = 0.863, CFI = 0.940, TLI = 0.931, and RMSEA = 0.053. Additionally, the Cronbach's Alpha values for each construct were greater than 0.6, indicating a sufficient level of reliability. Results for all directly related hypotheses are presented in Table 4.

Table 3: CFA

GoF index	Acceptable value	CFA model	Result
x^2 (Chi-square)		170,176	Good fit
Df (Degree of freedom)		111	
x^2/Df	< 3	1.53	Good fit
GFI	> 0.8	0.911	Good fit
CFI	> 0.9	0.920	Good fit
TLI	> 0.9	0.903	Good fit
RMSEA	< 0.06	0.052	Good fit

CFA: Confirmatory factor analysis; GoF: Goodness of fit; GFI: Goodness of fit index; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation

Table 4: SEM results for testing the hypothesis

Hypothesis	Path	β	Standard error	P-value	Result
H1	PG → M	0.345	0.160	0.044	Supported
H2	PG → S	0.156	0.076	0.224	No supported
H3	PG → LS	0.693	0.123	***	Supported
H4	LS → M	0.088	0.188	0.596	No supported
H5	LK → M	0.354	0.177	0.010	Supported
H6	LK → LS	0.334	0.127	0.003	Supported
H7	S → M	0.415	0.322	0.042	Supported

*: $p<0.05$; **: $p<0.01$; ***: $p<0.001$; PG: Teacher professionalism; M: Motivation to learn; S: School environment; LK: Family environment; LS: Academic stress; β: Standardized regression coefficient in SEM

All hypotheses were supported except for H2 and H4. First, the findings reveal that the teacher's professional level significantly influences Learning Motivation and the School Environment (H1) and (H3). However, teacher professionalism has no effect on students' academic stress levels (H2). Second, the results of this research show that the school environment has no impact on learning motivation (H4). Third, the family environment can influence the level of students' learning motivation (H5) and influence the school environment (H6). Fourth, students' academic stress levels have a positive impact on students' learning motivation.

5. Discussion

5.1. Teacher professionalism and learning motivation

The results of this research show that there is a positive and significant influence between teacher professionalism and student learning motivation. This is shown by a standardized coefficient (β) value of 0.345 and a p-value of 0.044. The higher the level of teacher professionalism, the higher the students' learning motivation. Teacher professionalism is demonstrated by the teacher's expertise in the teaching and learning process, including the level of mastery of teaching materials, ability to organize learning in the classroom, understanding the characteristics of students, adept at using learning media/resources and technology, ability to assess students (Sengottuvel and Aktharsha, 2015; Evers and van der Heijden, 2017). These results are in accordance with previous research, which states that there is a positive and significant influence between teacher professionalism and students' learning motivation (Setyorini and Khuriyah, 2023; Sunarti and Rumyani, 2018).

Schools should focus on ongoing professional development for teachers, especially training that helps them boost students' motivation to learn. Teacher evaluations should also be updated to include how well they inspire and engage students. Schools can organize regular workshops and training sessions to help teachers improve their skills. A mentoring system, where experienced teachers support newer ones, can be put in place. Additionally, regular meetings or discussion forums can be held to encourage teachers to share experiences and best practices with each other.

5.2. Teacher professionalism and academic stress

The results of this research show that teacher professionalism has no influence on students' academic stress, as indicated by a standardized coefficient (β) value of 0.156 and a p-value of 0.224. This is different from previous research, which stated that teacher professionalism can influence students' academic stress (Muntaner-Mas et al.,

2017). This can be caused by students having a good management system, which reduces stress levels. From the results of observations, students often confide in close friends to reduce stress levels (Bariyyah, 2015). Schools can create a special stress management program for students. This program can include instructions on coping, relaxation, and time management. In addition, a peer mentoring system can be created to formalize and enhance social support among students. This method can help schools create a more supportive environment for students to cope with academic stress.

5.3. Teacher professionalism and school environment

The results of this research show that teacher professionalism has a positive and significant effect on the school environment, with a standardized coefficient (β) value of 0.693 and p-value <0.001. Teachers are an important element in the teaching and learning process because they are responsible for creating a good and optimal learning environment (Forster, 1997). A good school environment is an environment that provides a good learning process, and this is because of the teacher (Macsuga-Gage et al., 2012). This is consistent with previous research, which states that teachers have a role in shaping the school environment (Zaleha et al., 2022). Schools can develop specialized workshops and training programs to improve teachers' skills in classroom management and conflict resolution and create an inclusive learning climate. The teacher performance evaluation system can be revised to include metrics related to their contribution to the school environment.

5.4. School environment and learning motivation

This research shows that the school environment has no effect on students' learning motivation, with a standardized coefficient (β) value of 0.088 and a p-value of 0.596. The school environment consists of aspects of school facilities, interaction with teachers, and the location of the school (Ihekoronye, 2020; Patrick et al., 2016). Observation results show that the facilities at the Baitur Rohmah Muhammadiyah Islamic Boarding School cannot be said to be adequate, as indicated by the absence of an adequate laboratory and library. Apart from that, the school's regulations, which are considered strict, make students unmotivated to learn. Schools can strive to create an environment more conducive to learning motivation despite limited physical facilities by utilizing existing space to create exciting and inspiring learning areas, such as outdoor learning spaces.

5.5. Family environment and learning motivation

The results of this research show that teacher professionalism has a positive and significant effect

on the school environment, with a standardized coefficient (β) value of 0.693 and p-value <0.001. Teachers are an important element in the teaching and learning process because they are responsible for creating a good and optimal learning environment (Forster, 1997). A good school environment is an environment that provides a good learning process, and this is because of the teacher (Macsuga-Gage et al., 2012). This is consistent with previous research, which states that teachers have a role in shaping the school environment (Zaleha et al., 2022). Schools can develop specialized workshops and training programs to improve teachers' skills in classroom management and conflict resolution and create an inclusive learning climate. The teacher performance evaluation system can be revised to include metrics related to their contribution to the school environment.

5.6. Family environment and school environment

The results of this research indicate that the family environment has a positive and significant influence on the school environment. This suggests that an improved family environment leads to improvements in the school environment. The standardized coefficient (β) value is 0.334, with a p-value of 0.003. One of the key roles of the family is its educational function, which aims to shape and develop the character of children (Oktaviani, 2017). According to Lee et al. (2007), the family plays a role in children's development, so that children will be able to adapt to their school environment. Thus, the family's role in children's education is not limited to the home but also significantly impacts children's experiences at school. The educational function of the family, which aims to mould and develop children's character, has a positive knock-on effect on children's adaptation to the school environment. This may be because children who grow up in a supportive family environment develop better social, emotional and cognitive skills, which in turn help them adapt and contribute positively to the school environment.

5.7. Academic stress and learning motivation

The results of this research show that the level of academic stress has a positive and significant influence on learning motivation. This means that the higher the stress (many demands, busy agenda, exams, etc.), the more motivation to learn will increase. This is in accordance with Travis et al. (2020), who explain that managing stress can increase learning motivation.

6. Conclusion

This research aims to analyze the factors that influence student learning motivation at the Baitur Rohmah Muhammadiyah Islamic Boarding School. Personal data collection was carried out by the author, and convenience sampling was used to select respondents. Researchers used Google Forms to distribute questionnaires to 201 respondents, students of the Baitur Rohmah Muhammadiyah Islamic Boarding School, after which the data was tested for validity and reliability. Results for all directly related hypotheses are shown in Table 4. All hypotheses were supported except for H2 and H4. First, the findings reveal that the teacher's professional level significantly influences Learning Motivation and the School Environment (H1) and (H3). However, teacher professionalism has no effect on students' academic stress levels (H2). Second, the results of this research show that the school environment has no impact on learning motivation (H4). Third, the family environment can influence the level of students' learning motivation (H5) and influence the school environment (H6). Fourth, students' academic stress levels have a positive impact on students' learning motivation.

Compliance with ethical standards

Ethical considerations

Informed consent was obtained from all participants, ensuring their anonymity and voluntary participation. The study adhered to ethical guidelines to protect participant welfare and data privacy.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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