Structural Relationship of Teachers' Interaction Styles Based on Social Adaptability, Psychological Hardiness, and Academic Achievement Motivation with Mental Health Mediation in Eighth Grade Female Students

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A r t i c l e   I n f o

A B S T R A C T

Purpose: The interaction styles of teachers play a significant role in improving both academic and non-academic outcomes for students. Thus, this study aimed to determine the structural relationship of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth grade female students.

Methodology: This study was applied in its objective and cross-sectional in its execution, utilizing a correlational type. The population of this study comprised all eighth-grade female students in the city of Kangavar in the academic year 1401-1402, totaling 2417 students. Based on the Krejcie and Morgan table, 379 of them were selected as the sample through multi-stage cluster random sampling. Data collection tools included questionnaires on teachers' interaction styles, social adaptability, psychological hardiness, academic achievement motivation, and mental health, which were analyzed using the Structural Equation Modeling (SEM) method in Amos software.

Findings: The findings of this study indicated that the variables of social adaptability, psychological hardiness, and academic achievement motivation had a direct and significant effect on mental health, and the variables of social adaptability, psychological hardiness, academic achievement motivation, and mental health had a direct and significant effect on teachers' interaction styles. Moreover, the variables of social adaptability, psychological hardiness, and academic achievement motivation had an indirect and significant effect on teachers' interaction styles through the mediation of mental health ($P<0.05$).

Conclusion: Based on the results of this study, to improve interaction styles, it is possible to create conditions for improving the variables of social adaptability, psychological hardiness, academic achievement motivation, and the mental health of students.

Keywords: Teachers' interaction styles, Social adaptability, Psychological hardiness, Academic achievement motivation, Mental health, Students.

1. Introduction

In high school environments, teachers interact with students at a specific and sensitive time. Students enter puberty, peer subcultures become stronger, and there is an increasing need for autonomy. At this age, students grow older and physically mature, and teachers may perceive adolescent students as a threat to their authority, responding with more control and discipline. Stereotypical perceptions of adolescents as rebellious and uncontrollable reinforce the use of controlling strategies in the classroom and may also lead to teachers' increased use of external motivational styles (Braun et al., 2019). Ultimately, daily interactions with 120 to 150 students require significant cognitive and emotional energy from teachers and may prevent the formation of close social bonds with each student. These factors make the school a stressful context for teaching and affect teacher-student interactions in the classroom (Eccles & Roeser, 2010).

The need for interaction is one of the fundamental psychological needs and the most important aspect of the classroom environment that refers to stable interpersonal relationships, a sense of belonging to people, and being accepted by others, all of which contribute to increasing students' motivation in academic activities and improving their emotional and social performances (Zhou et al., 2020). Therefore, the classroom is a complex organization of activities that require effective information exchange between teacher and student, and these communications must take place in an environment with appropriate physical and psychological conditions (Elhay & Hershkovitz, 2019). The classroom is a complex social system, and the relationship and interaction between student and teacher also have their complexities (Pianta et al., 2012). Considering new social realities, the new structure of contemporary knowledge, and the new educational philosophy, the current role of teachers, which was previously summarized in their power and competence and in their amount of knowledge, has changed and has become a complex process in interpersonal relationships and even counseling. Therefore, identifying and examining teachers' behaviors in classrooms and students' perceptions of teachers' behaviors is one of the necessities of educational systems (Negovan et al., 2010). The first goal of a teacher should be to establish a friendly and supportive relationship with the student, which is achieved through interaction between the teacher and the student; constructive interaction that prevents the occurrence of many disorders and problems in the class and supports

deep and maximum learning (Scherzinger & Wettstein, 2019). Interaction between a teacher and a student means human relations in an educational organization that is formed with the aim of meeting each individual's social and psychological needs, mutual benefit, facilitating learning, and creating conditions for growth and facilitating the achievement of the organization's educational goals (Ashrafian & Salehi, 2022). This interpersonal interaction in the school environment is very effective in the progress and developments of students and is considered one of the key principles of education in the school curriculum, requiring considerable attention (Martin & Collie, 2019).

Students' social adaptability appears to influence the increase in teachers' interaction. The American Psychiatric Association defines social adaptability as adjusting behavior to meet environmental needs, often requiring the modification of impulses, emotions, or attitudes. Social adaptability, as one of the most important dimensions of adaptability, refers to the ability to change behavior in response to changes in the social environment. This means that an individual can balance what they want and what the new social conditions require (Berk et al., 2014). Effective interaction of an individual with the environment and having skills and social acceptance at an optimal level means having social adaptability. So that the person can coordinate his desires and needs with the interests and desires of society and by experiencing positive feelings about himself and others and affecting them and participating in social activities, enjoys interacting with others and feels calm in unfamiliar situations (Wang et al., 2016). Adaptability in school affects all aspects of students' lives and leads to the improvement of general performance, academic success, and physical and mental health (Schmidt & Welsh, 2010). Accordingly, Mohammadi Baghmolaee and Yousefi (2019) also concluded that teacher-student interaction has a direct effect on students' adaptability (Mohammadi Baghmolaee & Yousefi 2019). Harrison, Clarke, and Ungerer (2007) believe that interaction between teacher and student leads to improved and increased academic adaptability (Harrison et al., 2007).

Students' psychological hardiness can also be related to teachers' interaction styles. Hardiness represents a stable psychological trait that promotes positive life experiences and protects against the damaging effects of stressors (Bartone, 2007). Kobasa, Maddi, and Kahn (1982) believe psychological hardiness is a personality trait that enables an individual to efficiently solve interpersonal challenges and stresses, using it as a source of resistance and a protective

shield in the face of events (Kobasa et al., 1982). Psychological hardiness consists of three components: control (the ability to control various life situations, the perception that the individual has control over their experiences rather than experiences occurring due to chance or external factors), commitment (the inclination to engage rather than withdraw from doing something, feeling committed to many things in life and life experiences), and challenge (the ability to understand that changes in life are a natural issue, viewing events as an opportunity and challenge for further progress rather than an obstacle to success) (Eschleman et al., 2019). Research shows that a tough personality can increase flexibility and protect some individuals from the adverse effects of stress on health and performance (Bartone et al., 2023). Hardiness as an inherent factor can enhance performance and the level of mental health despite experiencing stressful situations (Ramazani & Hejazi, 2020). Tough individuals evaluate stressful events positively and controllably, which reduces physiological arousal resulting from negative event evaluations and the occurrence of stress syndromes in tough individuals, thus improving their quality of life. Hardiness acts to enrich and enhance life by providing conditions for growth and excellence and increases performance and the level of mental health despite experiencing stressful situations (Sheikhesmaeili et al., 2020). Regarding the protective role that personality hardiness plays in protecting the individual against the risk of illness, numerous studies have been conducted showing that the hardiness trait prevents the individual's tendency to deal effectively and logically with stressful situations (Alsukah et al., 2020).

Education today is no longer passive and aimless but is a dynamic and purposeful activity aimed at improving learning (Ersanlı, 2015). To achieve educational goals, motivation, positive attitudes, and beliefs must be created in learners. According to new educational theories, to achieve these goals, learners must be motivated to be active. Achievement motivation is the inclination to strive towards success and the positive effects associated with it and avoid failure and its negative effects, regardless of task difficulty (Talebi Khansari, 2020). Students' achievement motivation for learning course materials is related to factors such as self-confidence, concentration, diligence, and perseverance in performing difficult tasks, the desire to continue studying after class hours, and choosing tasks requiring more effort (Martos & Sallay, 2017). Research evidence shows that teachers who support learners' learning in the classroom treat them with equality, help learners complete academic tasks

fully, and ultimately, through designing bonding and cohesive movements in the classroom, increase learners' achievement motivation (den Brok et al., 2005). Learners' perceptions of interpersonal teacher behavior show a close relationship with their motivation and progress. In contrast, perceiving conflictual relationships with their teachers can reduce motivation and lead to poorer performance (García Bacete et al., 2021). Passini, Molinari, and Speltini (2015) showed that teachers' interaction styles affect students' achievement motivation (Passini et al., 2015). Naway, Haris, and Nue (2019) concluded that teachers' leadership and classroom climate affect students' achievement motivation (Naway et al., 2019).

The most important indicator of scientific yield and the most prominent indicator of work that every educational system should consider is the mental health of learners (Brooks et al., 2020). Mental health is the knowledge and art that helps individuals to adapt to their environment psychologically and emotionally correctly and choose better ways to solve their problems (Zarimoghadam et al., 2021). Individuals with mental health feel comfortable psychologically and mentally and have a good feeling about themselves and others and in dealing with issues and problems, have a greater sense of responsibility and have realistic thoughts (Lechner et al., 2006). Mental health increases the power of adaptability and positive and efficient behavior, and the individual can have appropriate relationships with society and those around them. Based on this, it can be said that individuals with mental health have high social adaptability (Zoghi et al., 2021).

Numerous studies have been conducted on teachers' interaction styles, but none of these studies have simultaneously examined the relationship between social adaptability, psychological hardiness, achievement motivation, and mental health with teachers' interaction styles. Therefore, considering the importance stated regarding teachers' interaction styles and the role that social adaptability, psychological hardiness, achievement motivation, and mental health can play in teachers' interaction styles, and also the lack of a model regarding teachers' interaction styles and the lack of research that has directly addressed the impact of social adaptability, psychological hardiness, achievement motivation, and mental health on teachers' interaction styles, this research seeks to answer the question of whether the model of teachers' interaction styles based on social adaptability, psychological hardiness, and achievement motivation with

mental health mediation is fit for eighth-grade female students (middle school level)?

2.   Methods and Materials

2.1.   Study Design and Participants

The research method is descriptive-correlational in nature. Regarding the research objectives, it is classified as applied research, potentially serving as a comprehensive model for teachers and students. The study population consists of all eighth-grade female students in the first cycle of middle school in the city of Kangavar, totaling 2,417 students for the academic year 1401-1402. Based on the Krejcie and Morgan table (1970), a sample size of 379 was selected. These samples were chosen using a multi-stage cluster random sampling method from 10 middle schools, with 35 to 40 students randomly selected from each school.

2.2.   Data Collection

The data collection tools included questionnaires on teachers' interaction styles, social adaptability, psychological hardiness, academic achievement motivation, and mental health.

2.2.1.   Teacher Interaction

Developed by Wubbels (1993), this questionnaire assesses the nature and quality of interactions between teachers and students. It evaluates teachers' interaction styles in three different forms. This study used the student version, where students assess their teacher. The questionnaire assesses eight components of teacher and student behavior in two general dimensions: dominance and cooperation. It comes in two forms: a main form with 77 items rated on a five-point scale (strongly disagree to strongly agree) and a shortened 48-item version. The current study uses the 48-item version, measuring components such as leadership, helpful/friendly behavior, understanding, responsibility/freedom, uncertainty, dissatisfaction, admonishment, and strictness (each with 6 items). The questionnaire score ranges from 48 to 240, with higher scores indicating greater interaction (Wubbels, 1993). The reliability and validity of this tool were confirmed by Fisher, Den Brok, Waldrip, and Dorman (2011), and Rickards, Brok, and Fisher (2005) through test-retest, Cronbach's alpha, internal consistency, and factor analysis methods (Fisher et al., 2011). Azad Abdollahpour and Shokri (2019) reported suitable content, face, and criterion validity for this

questionnaire, deeming it a valid, accurate, and reliable tool for measuring various dimensions of teacher-student interaction quality among Iranian teachers. Confirmatory factor analysis was used to determine factorial validity, indicating statistically significant regression weights in the measurement model. Cronbach's alpha coefficients calculated in their research for the questionnaire's components demonstrated satisfactory reliability (Azad & Shokri 2019).

2.2.2.   Student Adaptability

The Sinha and Singh (1993) adaptability questionnaire, consisting of 60 items scored on a zero and one scale, was used to measure social adaptability, with higher scores indicating inadaptability and lower scores indicating adaptability. This questionnaire is designed to determine social, emotional, and academic adaptability of students across different educational levels. Its total reliability was reported as 0.92, and the subscales' reliability as 0.92, 0.96, and 0.94, respectively, by Sinha and Singh (1993). Content and face validity were also confirmed. Ershadi Chahardeh (2020) reported a Cronbach's alpha reliability of 0.79 for this questionnaire (Ershadi Chahardeh, 2020).

2.2.3.   Psychological Hardiness

To measure students' psychological hardiness, the Ahwaz Psychological Hardiness Questionnaire, developed by Kiamarsi (1997) on a 532-student sample and validated for its accuracy, was used. This 27-item tool requires respondents to rate their agreement on a four-point Likert scale, with six negatively worded items requiring reverse scoring. Higher scores indicate higher psychological hardiness. Kiamarsi (1997) employed test-retest and internal consistency methods for reliability assessment, reporting satisfactory correlations. Cronbach's alpha for the total sample and by gender demonstrated good reliability. Concurrent criterion validity was established by correlating the Psychological Hardiness Questionnaire with four criterion questionnaires, showing significant negative correlations with anxiety and depression, indicating good construct validity (Ramazani & Hejazi, 2020).

2.2.4.   Academic Achievement Motivation

Based on empirical methods and existing theories about achievement motivation, Hermans (1970) developed a questionnaire initially containing 92 questions, later reduced

to 29 based on distinguishing characteristics of high versus low motivation individuals. The questionnaire comprises 29 incomplete sentences with four options each. Scoring is based on nine traits underlying the questions, with positive and negative items. Scores range from 29 to 116, with higher scores indicating higher achievement motivation. Hermans (1970) used content validity based on prior research and calculated item correlations with achievement-oriented behaviors, showing a satisfactory range of coefficients. Cronbach's alpha was used to assess reliability, achieving a coefficient of 0.84. Test-retest reliability after three weeks also confirmed the questionnaire's stability (Ashoori et al., 2014). Ashoori et al. (2014) reported a Cronbach's alpha of 0.85, indicating reliable measurement (Ashoori et al., 2014).

2.2.5. *General Health*

The 28-item version created by Goldberg and Hillier in 1979 includes scales for somatic symptoms, anxiety, social dysfunction, and depression. It uses a four-point Likert scale for scoring, and its validity and reliability have been well-

documented in previous research. Goldberg and Hillier (1979) reported a correlation of 0.78 with the Clinical Symptom Checklist (SCL-90-R) (Goldberg & Hillier, 1979). Hasanpour, Jabbari, and Esmaeilnia Shirvani (2020) calculated a Cronbach's alpha of 0.92, indicating high reliability (Hasanpour et al., 2020).

2.3. *Data Analysis*

The data obtained from the administration of these questionnaires were analyzed using Structural Equation Modeling (SEM) in Amos software.

3.   **Findings and Results**

In this study, to determine the structural relationship of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth-grade female students, 379 students participated. The model fit indices for the mentioned model are visible in Table 1.

Table 1

The Results of Fix Indices

Type	Name	Value
Comparative	CFI	0.96
	TLI	0.91
Parsimonious	PRATIO	0.71
	RMSEA	0.07
Absolute	X^2	8823.80
	P-Value	0.001

According to the results of Table 1, the model of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth-grade female students had an appropriate fit. The results of the Structural Equation

Modeling (SEM) of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth-grade female students can be seen in Figure 1.

Figure 1

Final Model with Standard Coefficients
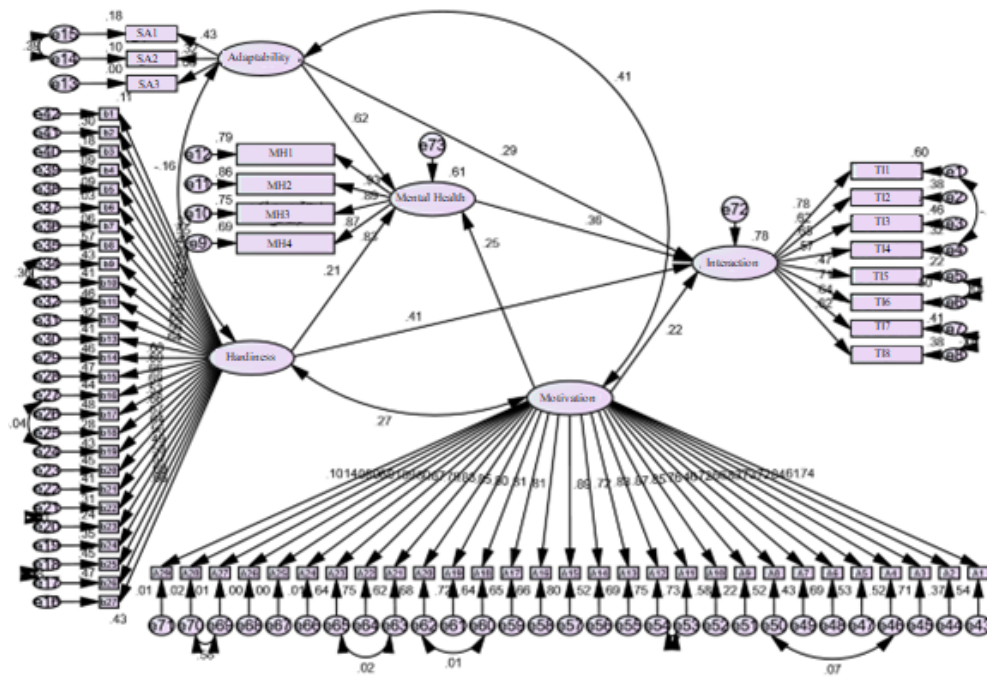
According to the results of the Figure 1, the variables of social adaptability, psychological hardiness, and academic achievement motivation had a direct and significant effect on mental health, and the variables of social adaptability, psychological hardiness, academic achievement motivation, and mental health had a direct and significant effect on

teachers' interaction styles (P<0.05). The results of the direct effects of the model of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth-grade female students are visible in Table 2.

Table 2

Results of Direct Effects of the Model of Teachers' Interaction Styles Based on Social Adaptability, Psychological Hardiness, and Academic Achievement Motivation with Mental Health Mediation in Eighth-Grade Female Students

Direct Effects	Path Coefficient	Significance
Effect of Social Adaptability on Mental Health	0.62	<0.05
Effect of Psychological Hardiness on Mental Health	0.21	<0.05
Effect of Academic Achievement Motivation on Mental Health	0.25	<0.05
Effect of Social Adaptability on Teachers' Interaction Styles	0.29	<0.05
Effect of Psychological Hardiness on Teachers' Interaction Styles	0.41	<0.05
Effect of Academic Achievement Motivation on Teachers' Interaction Styles	0.22	<0.05
Effect of Mental Health on Teachers' Interaction Styles	0.36	<0.05

According to the results of Table 2, the variables of social adaptability, psychological hardiness, and academic achievement motivation had a direct and significant effect on mental health, and the variables of social adaptability, psychological hardiness, academic achievement motivation, and mental health had a direct and significant effect on

teachers' interaction styles (P<0.05). The results of the indirect effects of the model of teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with mental health mediation in eighth-grade female students are visible in the table below.

Table 3

Results of Indirect Effects of the Model of Teachers' Interaction Styles Based on Social Adaptability, Psychological Hardiness, and Academic Achievement Motivation with Mental Health Mediation in Eighth-Grade Female Students

Indirect Effects	Path Coefficient	Significance
Effect of Social Adaptability with Mental Health Mediation on Teachers' Interaction Styles	0.22	<0.05
Effect of Psychological Hardiness with Mental Health Mediation on Teachers' Interaction Styles	0.08	<0.05
Effect of Academic Achievement Motivation with Mental Health Mediation on Teachers' Interaction Styles	0.09	<0.05

According to the results of Table 3, the variables of social adaptability, psychological hardiness, and academic achievement motivation had an indirect and significant effect on teachers' interaction styles through the mediation of mental health (P<0.05).

4. Discussion and Conclusion

This study aimed to determine the structural relationship between teachers' interaction styles based on social adaptability, psychological hardiness, and academic achievement motivation with the mediation of mental health among eighth-grade female students.

According to the findings of the study, students' social adaptability affects teachers' interaction styles. This finding aligns with the previous research findings (Azizi Nejad B et al., 2015; Petrík & Vašašová, 2022; Saeedzade & rahmani, 2022). Schools, as places where students spend a significant amount of their time during their educational years, should provide new opportunities and conditions for students to feel positively towards one another, take responsibility for their learning, empathize with others, and reduce their intergroup tensions and antisocial behaviors. Schools should enable students to adapt to new conditions and situations. Such adaptability, while gaining approval from teachers, classmates, and group members, leads to personal satisfaction from learning. In fact, such a connection can pave the way for successful educational activities (Sadraei & sepehrianazar, 2020). Positive interaction between teachers and students creates a conducive classroom environment for teaching and learning, preventing many negative issues that hinder student adaptability. Moreover, when the teacher-student relationship is positive and constructive, it satisfies the adolescents' need for competence. This social competence helps them use interactions to solve problems, thereby adopting adaptive behaviors in school and the educational environment. Therefore, closer teacher-student relationships more likely indicate the adaptability of individual students.

Regarding the findings, students' hardiness affects teachers' interaction styles. Students who demonstrate hardiness tend to be more successful academically. Individuals with strong hardiness feel committed to their activities and dedicate themselves to their tasks. They believe in the importance and value of their activities and can find meaning in what they do. This characteristic causes students to commit to their studies, consider it their duty, and dedicate themselves to studying, leading to academic success since diligence is a crucial factor in learning. This also facilitates good interaction and relationships with their teachers. Effective teacher-student relationships engage students in the educational process, generating and maintaining interest in students and improving their academic life.

According to the research findings, students' academic achievement motivation affects teachers' interaction styles. This finding is consistent with the results previous studies (Akhtar et al., 2019; Kausar et al., 2020; Lin et al., 2020; Misbah et al., 2015; Passini et al., 2015; Talebi Khansari, 2020). Students who feel supported by their teachers at school have higher self-esteem and are eager to please their teachers, exhibiting greater learning motivation. Warm and trusting relationships between teachers and students are essential in classroom environments where students feel comfortable engaging in creative and intellectual discussions. As long as teachers strive to guide students from one learning activity to the next and continuously monitor students' work during class activities, this motivates students to engage more willingly in their academic tasks. Academic achievement motivation is essential for learning, providing intensity and direction to behavior, aiding in its maintenance and continuity. With this motivation, individuals seek the necessary momentum to successfully complete a task, achieve a goal, or attain a certain level of competence in their work, ultimately achieving learning and academic progress success. Teachers can identify, create, or develop

achievement motivation in students through interaction styles.

Regarding the findings, students' mental health affects teachers' interaction styles. In high school environments, teachers interact with students at a specific and sensitive time. Students enter puberty, peer subcultures strengthen, and there is an increasing need for autonomy. At this age, students grow older and physically mature, and teachers may perceive adolescent students as a threat to their authority, responding with more control and discipline (Willower & Lawrence, 1979). Stereotypes of adolescents as rebellious and uncontrollable reinforce the use of controlling strategies in the classroom and may also lead to increased use of external motivational styles by teachers (Midgley et al., 1988). Daily interactions with a large number of students require a significant amount of cognitive and emotional energy from the teacher, which may prevent the formation of close social bonds with each student (Eccles & Roeser, 2010). All these factors make the school a stressful setting for teaching and affect teacher-student interactions in the classroom. Therefore, the better the mental health students have in the school environment, the better the teacher can interact with them (Braun et al., 2019).

Additionally, the results showed that achievement motivation, psychological hardiness, and adaptability have a positive and significant impact on mental health. This is in line with previous studies (Eyni et al., 2021; Hussein, 2021; Zoghi et al., 2021). A student who can adapt to their environment and peers, especially at school, is considered to have normal mental health. Regarding mental health, having sufficient adaptability and feeling well (psychologically) is consistent with accepted standards of human relationships and society. Research indicates that personal resources, like psychological hardiness, are effective in overcoming psychological stress and predicting mental health in real-life stresses (Moosavi et al., 2019). Personality traits such as hardiness can serve as protective factors against mental health outcomes, aiding resistance against stress and adverse conditions. Psychological hardiness, a personality trait with three components: commitment, control, and challenge, enables individuals to adapt to illness. Furthermore, individuals with high psychological hardiness, compared to those with low hardiness, typically have a positive evaluation of events, even stressful ones, use appropriate coping strategies (alone or with others) to face challenging situations, and overcome challenges and problems. As a result, with increased psychological hardiness, the level of mental health in students increases.

Limitations of this research include the fact that the study population consisted of female students, so caution should be exercised in generalizing the results. Future research should also be conducted on male students. Additionally, it is recommended that future studies identify other factors affecting teachers' interaction styles. Based on the results of this study, improving teachers' interaction styles can create conditions for enhancing variables such as social adaptability, psychological hardiness, academic achievement motivation, and students' mental health.

Authors' Contributions

Authors participated collaboratively in this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

Gratitude is expressed to contributors to this study.

Declaration of Interest

No conflict of interest was reported.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

All ethical standards were observed.

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