

Moderating Effect of Physical Exercise between the relation of Psychological Resilience and Negative Emotions of University Students in Iraq

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Abstract

Negative emotions reduce the academic achievement of college students. Students in Iraq experience bad emotions due to the country's social conditions. The purpose of this project is to improve the mental health of Iraqi students through physical activity. This study aims to examine the moderating link between psychological resilience and negative emotions among university students in Iraq. This study collects quantitative data using a Likert scale questionnaire and a random sample technique; the participants were students from several Najaf universities. The findings of this study indicate that physical health plays a substantial moderating influence between psychological resilience and unpleasant emotions. According to the study, students' negative feelings can be lessened with health education and mental health literacy. These findings are unusual since this study's theoretical framework offers a substantial relationship to the existing research. Similar to the theoretical implications, this study has significant practical consequences that are crucial to consider while attempting to reduce the negative emotions component among Iraqi university students. The next directions of this research are important for addressing the literature gap in negative emotions.

Keywords. Psychological resilience, negative emotions, physical exercise, mental health literacy, health education

1. Introduction

Stress is a fundamental issue that negatively affects the performance of persons in all fields (DeFreese et al., 2022). Indeed, the level of stress varies from person to person, but it has detrimental effects on the population as a whole (Oftadeh-Moghadam & Gorczynski, 2022). According to this research, students who are eager to learn and perform well in colleges are confronted with negative feelings because they lack emotional intelligence (Tortella et al., 2021). Indeed, emotional intelligence enables individuals to be aware of their actions and function well under adverse conditions (Fang et al., 2022). However, every person cannot identify emotional intelligence because it is an innate capacity (Barreiro & Treglown, 2020). Several strategies are employed to avoid bad emotions, as motivation is required for emotionally wounded individuals (Miao, Humphrey, & Qian, 2018). In this regard, it is generally known that coaching classes for improved learning opportunities bring respite to individuals (De Clercq et al., 2013).

Mental health literacy is essential for eliminating negative thoughts since it enables individuals to comprehend their circumstances and act accordingly (Elias, Noordin, & Mahyuddin, 2010; van Deventer, de Klerk, & Bevan-Dye, 2014). The prominence of this literature has grown as it is also accessible via online channels (Kwenda & Sihlongonyane, 2021). Similarly, health education is vital because American institutions provide health education to students to ensure they are studying effectively (Hawkins et al., 2016). The importance of health education in the present era, which should be offered to students so that they can comprehend and constructively address their health concerns, cannot be overstated. Moreover, psychological resilience is regarded as a useful approach for calming the nerves in Japan due to the belief that it enables individuals to gain a better understanding of their health and perform effectively under stressful conditions (Britt et al., 2017; Pan et al., 2021). In Canada, the need for physical activity is emphasized to ensure that people are physically fit and have strong emotions and decision-making abilities (McGettigan & McKendree, 2015).

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Massar, Kopplin, and Schelleman-Offermans (2021) discussed the significance of health literacy in enhancing people's health. Britt et al. (2017) stated that persons with better health received health education because they viewed it as a valuable learning opportunity. Lee (2021) revealed that students' physical health is essential for their mental nourishment, which enables them to avoid negative ideas. Richtering et al. (2017) noted that mental health education should be made available to all students to improve their performance and productivity in their respective fields. Pandori-Chuckal (2020) reported that women in good mental health have access to health education that facilitates their learning. Oftadeh-Moghadam and Gorczyński (2021) determined that physiological resilience is essential for avoiding public hostility. Demian, Shapiro, and Thornton (2016) concluded that the students with the best performance engage in regular physical activity that stabilizes their mental and physical health. According to prior research, physiological resilience, mental health literacy, and health education are studied in distinct contexts (Hoppe-Herfurth et al., 2021).

However, previous research failed to examine the moderating effect of physical exercise on the connection between psychological resilience and negative emotions (Ransdell & Gaillard-Kenney, 2009). Based on this research gap, a theoretical framework has been developed to examine the moderating link between psychological resilience and negative emotions among university students in Iraq. Indeed, this study must address this gap. It is innovative in that it will enhance the cognitive ability of university students by removing negative attitudes that impede learning and optimal performance. On the other hand, this study is equally notable since it has major theoretical and practical implications for enhancing students' future performance in Iraq. In addition, this study proposes prospective variables for testing within the framework of future research.

2. Literature Review

Mental health literacy is essential for the public because it enables people to make life decisions (Massar et al., 2021). It is recognized that mental health education enables individuals to eliminate negative ideas and optimize their learning (Lee, 2021). Indeed, modern organizations are working to enhance the lives of students. Thus literature about mental health is freely available for consultation on many social media platforms (Lo, Gupta, & Keating, 2018). On the other hand, the mental health of American students is considered because it is the mission of American public

health institutions to serve the public in the most effective manner possible (Pandori-Chuckal, 2020).

Similarly, the Japanese health department assists individuals in improving their mental health for enhanced social learning and performance (Oftadeh-Moghadam & Gorczyński, 2021). Indeed, mental health issues are crucial to examine, but the Indonesian government has failed to promote students' mental health stability, resulting in bad emotional development (Galanti et al., 2021). Furthermore, with the aid of mental health literacy, the physical health of pupils improves, as there is a direct correlation between the two variables (Kjellstrom et al., 2007). Without a doubt, kids with better mental health learning strategies are the best learners, and they also assist other students. People should be given mental health improvement literature for optimal learning and performance, which will assist their growth and development (Wachs, Wright, & Vazsonyi, 2019). Chen et al. (2020) noted that mental health literacy substantially impacts students' well-being.

H1. Mental health literacy has an impact on psychological resilience.

Health education is essential for the public and students since it gives the rules for leading a basic healthy lifestyle (Zimmerman, Woolf, & Haley, 2015). The students in health education classes are more motivated than others to acquire health education because they plan to improve their health (Hoppe-Herfurth et al., 2021). American schools provide health education to pupils to improve their learning, as it is believed that better health education at an earlier age will help students learn more effectively (López-Meneses et al., 2020). Moreover, the department of health education in Argentina is partnering with the department of school education to make health education easier and more understandable for students to offer them the finest guidelines for their quality of life (Butler et al., 2021). On the other hand, school departments in Japan use digital technology to give health education to pupils in a manner that maximizes kids' learning comprehension (Kosiba et al., 2019). The government is responsible for ensuring that kids receive enough health education to learn more about their health (Lo et al., 2018). According to Tims, Bakker, and Derks (2013), health education has a major impact on physical activity, as students who are inspired by health education are more likely to enroll in physical exercise classes. McGettigan and McKendree (2015) stated that health education is essential for kids because it inspires them to learn the most effective method to enhance their academic performance. Tims et al. (2013) argued that pupils should receive health education at a young age to build a better awareness of their health conditions.

H2. Health education has an impact on psychological resilience.

According to Heath, Sommerfield, and von Ungern-Sternberg (2020), psychological resilience is defined as an individual's capacity to comprehend their health difficulties and adopt appropriate coping methods (Heath et al., 2020). When people receive knowledge to learn innovatively, they feel a sense of relaxation due to their enhanced comprehension of learning (Bacchi & Licinio, 2017). Psychological resilience is best for people's mental health since it enables them to exclude negativity from their comprehension and perception (Al-Issawi & Al-Zubaidi, 2021). People with better mental health are learning effectively, but they must be given a chance to improve their standard of living (van der Meulen et al., 2018). The students with better health awareness are more optimistic in their opinions because they realize that their mental health is essential for the stability of their thoughts. The emergence of mental health disorders in society is detrimental to kids (Hou et al., 2020). European health organizations aim to promote psychological resilience in students for improved learning and happiness. The optimal technique for learning can help people achieve their best goals, which is essential for people's welfare. Significant changes in the pupils' healthy attitudes offer them a path to improved learning and living (Zhang & Lixiu, 2021). According to Hamid and Assad (2021), psychological resilience is essential for student achievement. Heath et al. (2020) concluded that students with psychological resilience are stronger than their peers. Bacchi and Licinio (2017) noted that people's health difficulties are basic and that these issues should be

diagnosed and treated with psychological fortitude.

H3. Psychological resilience has an impact on negative emotions.

Physical activity is vital for students because it enables them to avoid minor illnesses and maintain a healthy lifestyle to improve learning and achieve future objectives (Galanti et al., 2021). Physical exercise is crucial for improved student learning and comprehension in the present era (Kjellstrom et al., 2007). The pupils who engage in daily physical activity are intellectually refreshed and outperform their peers (Michaelis et al., 2022). Indeed, mental health is crucial to human beings, but they should also engage in physical activity to improve their mental health. In Scandinavian nations, there is a greater emphasis on pupils' physical activity for optimal learning (Wachs et al., 2019). Chen et al. (2020) reported that physical activity promotes mental health and that students should be encouraged to engage in it. Waller et al. (2015) noted that mental health learning facilitates students' improved learning through regular physical activity. Galanti et al. (2021) argued that Indonesian students should be encouraged to enhance their mental health and performance. Wachs et al. (2019) noted that kids' physical activity is essential for their improved learning since it promotes mental stability. Chen et al. (2020) noted that physical activity helps pupils who receive enough health education to improve their quality of life. Michaelis et al. (2022) stated that students' physical activity should be seen as important for their learning and avoiding negative thinking.

H4. Physical exercise moderates the relationship between psychological resilience and negative emotions.

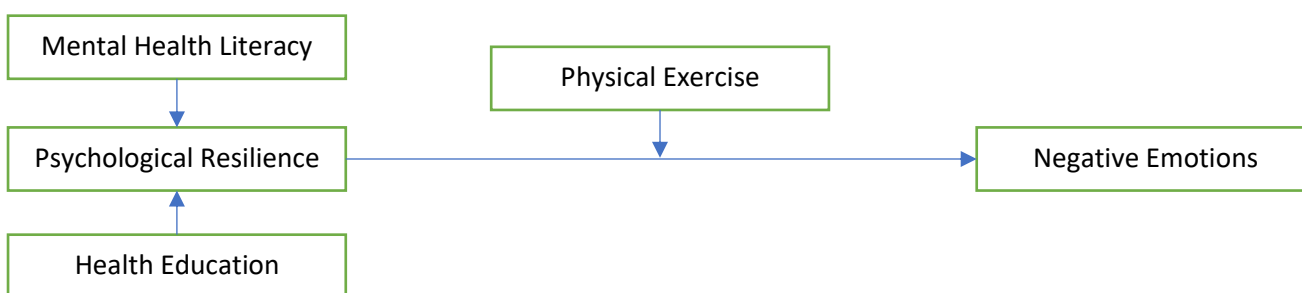


Figure 1. Conceptual Framework

3. Methodology

This quantitative study collected data from respondents using a five-point Likert scale questionnaire. This study's questionnaire was created by altering scale items from past studies. Items from Dias et al. (2018) were used to test the link between mental health literacy, and psychological resilience since item factor loadings were larger than 0.07

and Cronbach's alpha was greater than 0.70. This study carefully investigated these factors to determine the association between mental health literacy. In addition, items from Gartland et al. (2011) were used to assess the link between psychological resilience and negative emotions because their factor loadings were larger than 0.072, and Cronbach's alpha was greater than 0.90. This study carefully investigated these factors to determine the

association between psychological resilience. The items were used by [Abolfotouh et al. \(2019\)](#) to test the connection between health education and psychological resilience because their factor loadings were larger than 0.087, and Cronbach's alpha was greater than 0.90. This study carefully analyzed these factors to determine the link between health and education. To test the association between negative emotions in this framework, items from [Davari et al. \(2020\)](#) were utilized since their factor loadings were larger than 0.092 and their Cronbach's alpha was greater than 0.90. This study carefully analyzed these items to determine the association between unpleasant feelings. The items were picked from [Murcia, Gimeno, and Camacho \(2007\)](#) because the factor loadings of the items were larger than 0.090, and Cronbach's alpha was greater than 0.90. In this study, these variables were carefully addressed to assess the moderating effect of physical activity. Research specialists validated these scale items to ensure the reliability of the study.

A random sample strategy was utilized to acquire the data for the investigation. Random sampling is used to acquire data from everyone to evaluate the link between study variables. In contrast, this study collected cross-sectional data since it is a helpful method when individuals contact one another only once. Therefore, questionnaires were

distributed to students from the top five universes in Najaf, Iran, for data collecting. With a Likert-scale-based questionnaire, the objective of the survey approach is to collect data straightforwardly. Because 1200 questionnaires were issued and the response rate was greater than fifty percent, this technique proved effective. 613 questionnaires were gathered from the participants, who were compensated for their participation and time.

4. Findings

4.1 Measurement Model

Smart PLS 3 – Structural Equation Model is used to analyze the study's results (SEM). Cronbach's alpha and factor loadings are employed to evaluate the study's reliability and validity. According to [Table 1](#), Cronbach's alpha for each latent construct met the Fornell and Larcker-recommended cutoff of 0.70. (1981). Second, the factor loadings for this study's measurement scale met Hair, Money, Samouel, and Page's recommended level of 0.70. (2007). Thirdly, average variance extracted (AVE) values were greater than 0.50, and composite reliability (CR) values were greater than 0.60, Hair et al. benchmark. 's (2007). Consequently, the study's measurements are reliable and valid (see [Figure 2](#)).

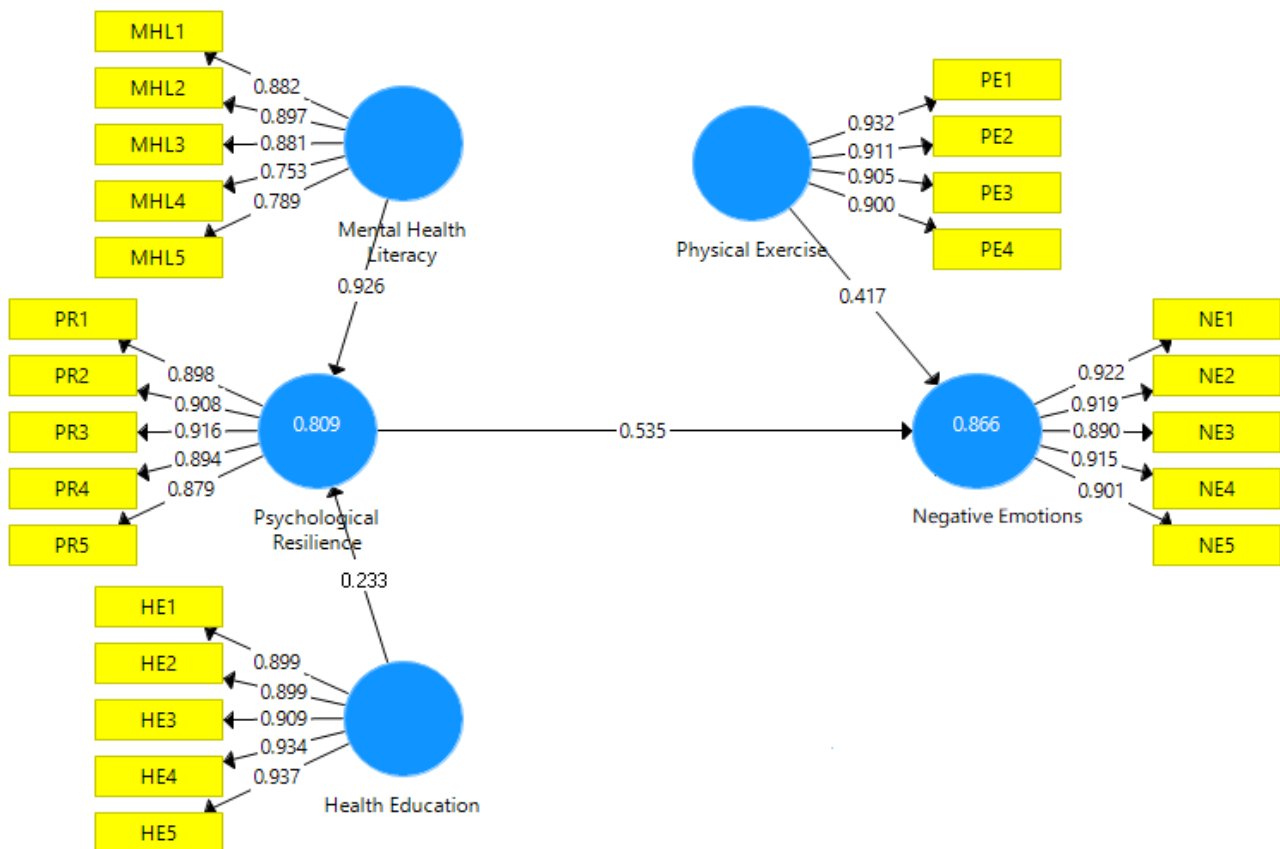


Figure 2. Measurement Model

Table 1*Measurements Reliability*

Constructs	α	Items	Description	Loadings	CR	AVE
Health Education	0.952	HE1	People with mental health problems are largely to blame for their condition.	0.899	0.963	0.839
		HE2	One can always tell a mentally ill person by his or her physical appearance.	0.899		
		HE3	Mentally ill persons are not capable of true friendships.	0.909		
		HE4	Mentally ill persons can work.	0.934		
		HE5	Anyone can have a mental illness.	0.937		
Mental Health Literacy	0.897	MHL1	If someone close to me had a mental disorder, I would offer them help.	0.882	0.924	0.709
		MHL2	Physical exercise contributes to good mental health.	0.897		
		MHL3	A person with depression feels very miserable.	0.881		
		MHL4	I would seek my relatives' help if I had a mental disorder.	0.753		
		MHL5	If someone close to me had a mental disorder, I would encourage her/him to look for a psychologist.	0.789		
Negative Emotions	0.948	NE1	I am motivated to go to the exercise class because it is exciting.	0.922	0.960	0.828
		NE2	I enjoy being in the exercise class.	0.919		
		NE3	I get excited about going to the exercise class.	0.890		
		NE4	I am glad that it paid off to go to the exercise class.	0.915		
		NE5	I am confident because I can understand the exercise materials.	0.901		
Physical Exercise	0.933	PE1	I do physical exercise because I think exercise is fun.	0.932	0.952	0.832
		PE2	I do physical exercise because I enjoy my exercise sessions.	0.911		
		PE3	I do physical exercise because I find exercise a pleasurable activity.	0.905		
		PE4	I do physical exercise because I get pleasure and satisfaction from participating.	0.900		
		PR1	I feel confident that I can handle whatever comes my way.	0.898		
		PR2	I think things through carefully before making decisions.	0.908		
Psychological Resilience	0.941	PR3	I tend to think the worst is going to happen.	0.916	0.955	0.809
		PR4	I can express my opinions when I am in a group.	0.894		
		PR5	I am patient with people who can't do things as well as I can.	0.879		

In addition, during the measurement model test, the study's discriminant validity was evaluated. According to [Gold, Malhotra, and Segars \(2001\)](#), the value for discriminant validity should be less than 0.90 according to this study's use of the

Heteritrait-Monotrait (HTMT) technique to examine discriminant validity. According to [Table 2](#), the HTMT results did not exceed 0.90. These results indicate that the study's measurement items have adequate discriminant validity.

Table 2*Discriminant Validity*

	Health Education	Mental Health Literacy	Negative Emotions	Physical Exercise
Health Education				
Mental Health Literacy	0.785			
Negative Emotions	0.662	0.876		
Physical Exercise	0.707	0.744	0.686	
Psychological Resilience	0.742	0.716	0.721	0.699

4.2 Structural Model

PLS structural model is used in this study for the hypotheses' findings of *t*-value and *p*-value. The recommended threshold for the *t*-value was 1.96, and the *p*-value was 0.05 (Hair Jr et al., 2017). These values were

identified to test the relationship between variables. The structural model results revealed that all study hypotheses are significant because the recommended *t* and *p*-value were achieved for each hypothesis. Table 3 contains the results of the path coefficient.

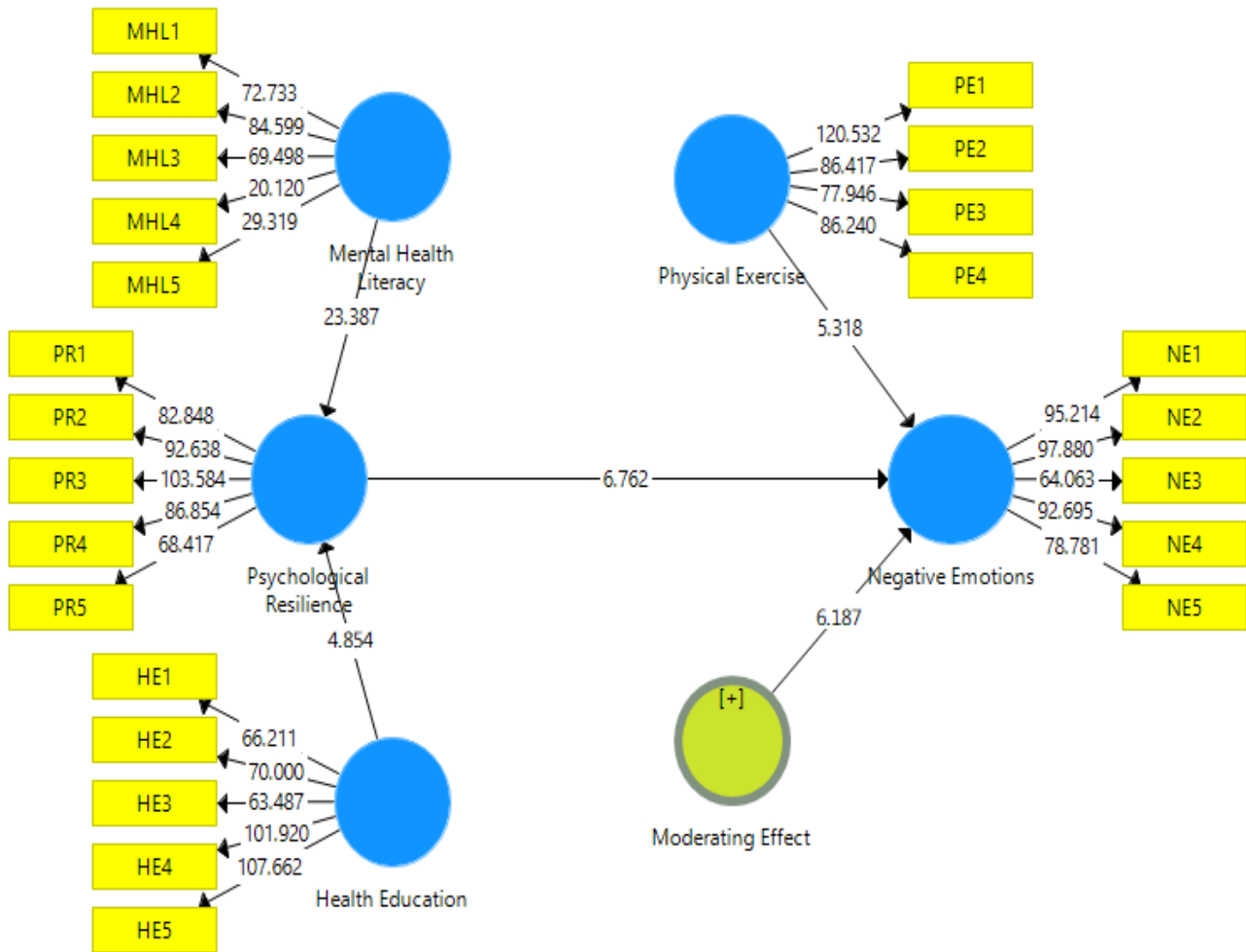


Figure 3. Structural Model

Table 3

Path Coefficient

No	Hypothesis	<i>t</i>	<i>p</i>	Results
1	Mental health literacy has an impact on psychological resilience.	23.387	0	Significant
2	Health education has an impact on psychological resilience.	4.854	0	Significant
3	Psychological resilience has an impact on negative emotions.	6.762	0	Significant
4	Physical exercise moderates the relationship between psychological resilience and negative emotions.	6.187	0	Significant

4.3 Moderating Effect

This study examined the moderating effect of physical activity on psychological resilience and negative emotions. According to the findings, physical activity is a key modulator of the association between psychological resilience and negative

emotions. In addition, physical activity reinforces the good association between psychological resilience and negative emotions (see Figure 4). Therefore, a greater emphasis on physical activity would aid in developing psychological resilience in adolescents by minimizing negative feelings.

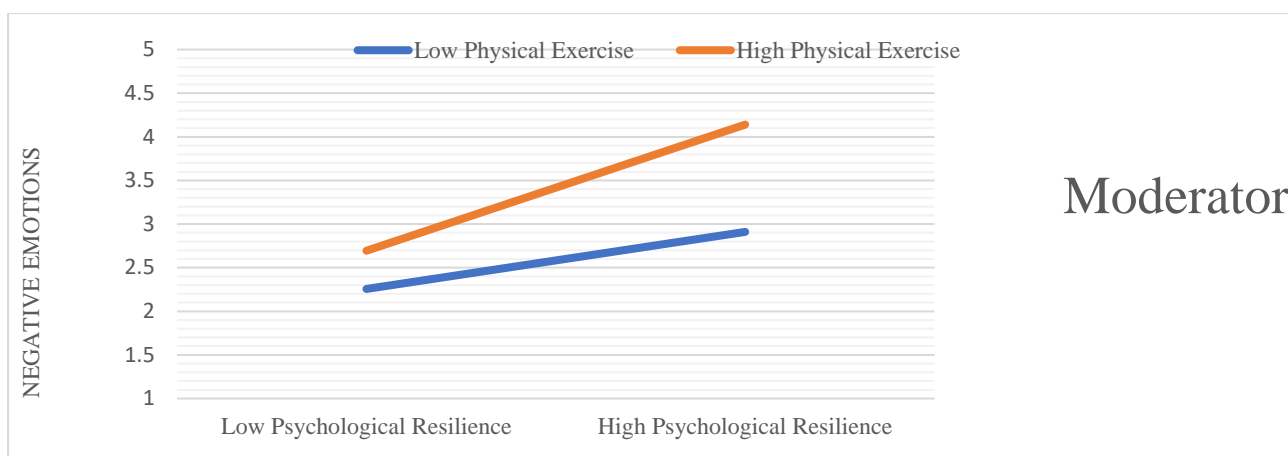


Figure 4. Physical Exercise Moderation

5. Discussion and Conclusions

This study evaluates the moderating link between psychological resilience and negative emotions among Iraqi university students. The structural equation model results revealed the study variables' importance. H1 indicated that mental health literacy has a significant impact on psychological resilience. Without a doubt, past studies also examined the relationship between psychological resilience and the improvement of public health (Heath et al., 2020). However, the important findings of this investigation are consistent with those of other earlier studies. Bacchi and Licinio (2017) examined the relationship between psychological resilience. van der Meulen et al. (2018) concluded that psychological resilience is essential for students because it aids their performance. Al-Issawi and Al-Zubaidi (2021) have addressed the substantial influence of psychological resilience on emotional regulation. Hou et al. (2020) further highlighted the significance of psychological resilience for human health. The substantial results of this hypothesis are comparable to those of past investigations. H2 demonstrated that health education has a considerable impact on psychological resilience. However, past research has also discussed the relationship between psychological resilience and students' health (Zhang & Lixiu, 2021). However, the significant findings of the present investigation are consistent with findings from past studies. (Hamid & Assad, 2021) discussed the relationship between psychological resilience and resilience. Heath et al. (2020) concluded that psychological resilience is essential for the general public since it facilitates healthy performance. Bacchi and Licinio (2017) also emphasized the significance of psychological resilience on pupils' emotions. Similarly, Al-Issawi and Al-Zubaidi (2021) deviated from the status of psychological resilience for teenage well-being. Thus, the significant results of this hypothesis are comparable to those of past investigations. H3 indicated that

psychological resilience has a considerable impact on unpleasant emotions. Again, past studies discussed the association between psychological resilience and emotional improvement (Hamid & Assad, 2021). Even though the important findings of the current research are comparable to those of several past studies on psychological resilience, the significance of these findings cannot be denied (Galanti et al., 2021). In addition, Kjellstrom et al. (2007) stated that psychological resilience is essential for students since it helps them regulate their emotions. Michaelis et al. (2022) also discussed the significant impact of psychological resilience on improved student learning.

Similarly, Chen et al. (2020) reported the significance of psychological resilience to athletic performance. Consequently, the significant results of this theory are comparable to those of past research. Last but not least, Hypothesis 4 highlighted the strong moderating effect of physical activity on the association between psychological resilience and negative emotions. Indeed, past studies also examined the association between physical health and health improvement (Waller et al., 2015). On the other hand, the key findings of the current investigation are consistent with the results of previous studies. In addition, Heath et al. (2020) challenged the significance of the physical activity. In addition, Bacchi and Licinio (2017) stated that physical activity is essential for kids since it improves their mental health. Hamid and Assad (2021) also emphasized the need for physical exercise to achieve happy emotions for optimal performance. Similarly, Zhang and Lixiu (2021) emphasized the importance of physical exercise for mental health. The substantial results of this hypothesis are comparable to those of past investigations. In a word, the study's findings are exceptional and could enhance the academic performance of pupils by reducing negative emotional development and promoting mental wellness.

6. Implications

6.1 Theoretical Implications

This work has contributed to the literature by presenting novel relationships between several variables. Prior research has emphasized physical activity's importance for enhancing children's athletic success and academic achievement. In addition, research has been published demonstrating the link between productive work and physical activity. However, this study suggests that students must engage in physical activity to improve their health and avoid bad feelings. Physical activity moderates the association between psychological resilience and negative emotions. The objective of this study has been met because the hypothesis is substantial, and new views on the literature have been examined. In addition, this study added a new relationship to the framework by demonstrating the need for mental health literacy for physical resilience, a relationship not previously proven. In contrast, this study demonstrates the importance of health education in fostering psychological resilience. Certainly, this link was absent from earlier literature. Consequently, these theoretical ramifications of this study are crucial for future research because the tested link has a substantial impact and must be considered when constructing a theoretical framework. The addition of new variables to the model of psychological resilience and negative emotions makes the conceptual framework of this study a noteworthy contribution to the body of knowledge.

6.2 Practical Implications

Similar to the theoretical implications, this study has significant practical consequences that are crucial to consider while attempting to reduce the negative emotions component among Iraqi university students. This study proved that psychological resilience is essential for students since it enables them to comprehend their mental state and perform accordingly. Second, this study proved that psychological resilience might be created with the aid of mental health literacy because it is for the benefit of the people. Third, this study indicated that university students in Iraq should be supplied with health education to increase their performance since, with greater health education, they can comprehend their conditions and perform well in them.

Moreover, this study demonstrated that physical exercise is essential for establishing psychological resilience and eliminating negative emotions; hence, university students in Iraq must be trained in physical exercise.

Moreover, to minimize bad feelings among Iraqi students, the government must give mental health education on digital platforms to raise people's knowledge of their proper performance. Similarly, students should be cognizant of their mental health and improve their performance; they must work diligently to enhance their comprehension and learning. On the other side, it is the obligation of the Iraqi government to foster collaboration between the university administration and the public health department to improve students' mental health. In this way, the collaborative effort would give the pupils mental relief.

7. Limitations and Future Directions

This study is primarily designed to examine the moderating link between psychological resilience and negative emotions among university students in Iraq. In this regard, the outcomes of this study indicate that physical health substantially mediates psychological resilience and unpleasant emotions. In addition, the study noted that negative emotions might be minimized in pupils through health education and mental health literacy. In addition, these findings are unusual because this study's theoretical framework offers a substantial contribution to the existing research. However, this study has several drawbacks. As this study collected cross-sectional data, there is a methodological constraint; however, future research may focus on longitudinal data to determine the results. The significance of physical health as a moderator in the association between psychological resilience and unpleasant emotions has also been highlighted. Thus, the future study may investigate the impact of external motivation as a moderator between psychological resilience and unpleasant emotions. This study has significantly contributed by determining the effect of health education and mental health literacy on psychological resilience. Future researchers may investigate the function of innovation adoption as a mediator between digital health information and psychological resilience.

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