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# Journal of Modern Psychology

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# Journal of Modern Psychology

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**Research Paper: A Causal Model of Relationship between Basic Psychological Needs and Academic Resilience: The Mediating Role of Ambiguity Tolerance in Online Education**



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**Abstract**

The present research was conducted to investigate the causal model of relationship between basic psychological needs and academic resilience in online education with the mediating role of ambiguity tolerance. The current research was applied in terms of purpose and correlational in terms of method. The population of the current research was Rahman Institute of Higher Education's student studying in the academic year 2021-2022. Two hundred and seven students out of the population were selected through convenience sampling method. The data collection tool in the present research included The Basic Needs Satisfaction in General Scale (BNSG-S), Academic Resilience Inventory (ARI), and ambiguity tolerance (AT). Then the data were analyzed through structural equation method using SPSS 22 and Smart PLS 3 software. The research results showed that basic psychological needs positively and directly affect academic resilience ( $P < 0.05$ ). Moreover, the results revealed that ambiguity tolerance had a direct and positive effect on academic resilience ( $P < 0.05$ ). On the other hand, the indirect effect of basic psychological needs on academic resilience was confirmed through ambiguity tolerance ( $p < 0.05$ ); Therefore, it can be concluded that students whose basic psychological needs were satisfied more, had more tolerance for ambiguity; they were also more academically resilient; in the meantime, providing basic needs was especially important; Therefore, higher education administrators of the country should strive to develop these abilities in students.

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## 1. Introduction

One of the goals of educational institutions and organizations is to reduce the gap between students of schools or universities at risk of academic failure and successful learners. Academic resilience is one of the things that play a very important role in creating or reducing this gap. An educational context defines resilience as a high probability of success in school and other life situations despite hardships and difficulties (Paudel et al., 2021). Academic resilience is a process based on behavioral and cognitive-emotional reactions that express challenges, hardships, as well as difficulties in the educational field; it can also be responded to by students adaptively or non-adaptively (Cassidy, 2016).

Martin and Marsh (2006) state that academic resilience is influenced by theory of need for progress, motivation theory, intrinsic motivation, self-efficacy theory, motivational orientation theory, and self-determination theory. Based on these theories, it can be understood that to what extent students trust their ability to do work; their level of ability to face challenges, overcome obstacles, solve problems and develop resistance in dealing with challenges, difficulties, determine their academic resilience in different situations. They introduce the process of fostering resilience in learners; according to them, the first component in this field is creating or increasing self-confidence and self-belief in learners. Creating learning opportunities and experiences for students increase their self-confidence and prepare them for planning more regarding success and learning experiences. They conclude that the way to progress is the efforts and strategies that are under the control at the discretion of the learners themselves.

Learners themselves can control their academic status. More efforts and perseverance lead to commitment and adherence to the task given, and they are less affected by the fear of failure; Thus resilience includes self-confidence, self-belief, and perseverance (Martin & Marsh, 2006). In research on academic resilience Cassidy (2016), finds that resilient students are stronger in terms of efficiency, perseverance, planning, and performance; additionally, they have less anxiety and uncertain control. Resilience depends on several factors; Some are environmental factors and some are individual ones. In this research, individual factors of resilience are investigated. Among the individual factors that affect academic resilience is the provision of basic psychological needs, i.e., perceived competence, autonomous academic motivation of learners, and the need for communication.

Competence is a psychological need that provides energy and motivation to pursue and master optimal challenges (Deci & Ryan, 1985). Competence is the need to be effective in interacting with the environment and communicating with others as well as dealing with challenges; therefore, a person can master the activity by using his or her talents and skills. On the one hand, skill acquisition reinforces the need for competence in learners, and learners who successfully tackle challenges achieve perceived competence; on the other hand, learners going to university due to personal choice or having enjoyable and satisfying experiences resulting from educational activities (intrinsic motivation) are always viewed as intrinsically and autonomously motivated individuals (Deci & Ryan, 1985). However, learners who are involved in university activities due to



external pressures (external regulation) with lack of motivation are people who do not have independent academic motivation. Hence, according to each component of the basic psychological needs mentioned above, it is possible to predict the effects of these needs on academic resilience. Moreover, another variable that can affect people's academic resilience is ambiguity tolerance.

Ambiguity tolerance is a personality trait based on which a person tends to understand, manage and control ambiguous stimuli. A person with low ambiguity relieves discomfort after facing a complex and difficult situation (Zenansi et al., 2008). Since people with a high level of ambiguity, find problems annoying, they try to find a suitable solution to get rid of these situations as quickly as possible; however, people who have a low level of ambiguity are unable to find a solution due to a defect in their cognitive cycle (Macdonald, 1970). People have a certain degree of ambiguity in their understanding; Consequently, ambiguity is necessary for personal and academic progress and human development (Bakalis & Jooiner, 2004). Tolerance of ambiguity is the acceptance of uncertainty as a part of life and the ability to survive with incomplete knowledge and the willingness to embark on a direct activity without knowing whether it will succeed (Antoncic, 2009). Ambiguity tolerance means how threatening and difficult it is to adjust to the work environment. When changes occur rapidly and unexpectedly, or when information is insufficient and ambiguous and people react differently, a person with a high degree of ambiguity usually has a complex understanding of events and has a high level of perception in his interpretation of what the outcome of

that particular event is. It can lead to a low tolerance for ambiguity. This leads to difficulties in dealing with stressful sources; Therefore, psychologists such as Budner (1962), aims to improve the tolerance of existing problems and stresses that people should be more adaptable. Studies show that people with a low tolerance for ambiguity perceive ambiguity as threatening from which they suffer; nevertheless, people who have a higher tolerance for ambiguity consider ambiguity to be an advantage and seek more questions (Brown, 2000). A person with low ambiguity tolerates discomfort after facing a complex or difficult situation; Zenansi et al. (2008) believe that tolerance of ambiguity supports creative behavior enabling people to deal with complex issues. People with low ambiguity are tolerant of avoiding ambiguous issues. In the following, the research background related to the subject is reviewed.

Shaterian Mohammadi et al. (2014) show that tolerance of ambiguity plays a role in metacognitive beliefs and academic engagement of students and tolerating ambiguity increases students' academic engagement. Radmehr and Karami's (2019) study reveals that there is a relationship between tolerance of ambiguity and academic conflict in students. In Yu et al.'s (2021) research, ambiguity tolerance is related to learners' participation in learning English. Doménech Betoret and Gómez Artiga (2011) investigate the relationship between students' psychological needs, their approach to learning, and academic achievement. They study 157 students, and the results indicate that satisfying the basic needs of an individual encourages him or her to use deep approaches in learning and

reduces the avoidance strategy. On the contrary, when essential needs are not met, it uses a superficial approach to learning; Therefore, it can be concluded that learning approaches (both superficial and deep) play an intermediary role in students' psychological needs and their progress. Chung (2022), conclude that the fulfillment of basic needs for intrinsic motivation and intrinsic motivation leads to satisfaction with education. These results indicate that when basic needs for competence and self-reliance are supported, learners are engaged in academic challenges, tasks, and projects.

With the start of the COVID-19 pandemic in 2019, online education found a special place in academic setting; therefore, studying the role of factors such as meeting basic psychological needs and tolerance of ambiguity on the academic resilience of learners in these special

conditions seems to be necessary and there is a research gap in this field. In some recent studies, factors affecting academic resilience have been discussed; However, in no domestic or foreign research, the effect of providing basic psychological needs and tolerance of ambiguity on students' academic resilience in online education conditions and the form of a causal model has not been investigated and the need for research in this field has been felt; thus it is of particular importance; Therefore, the purpose of this research is to determine the structural relationships of basic psychological needs, academic resilience and ambiguity tolerance; it also aims at determining the fit of the proposed research model.

Figure 1-1 shows the conceptual model of the present research.

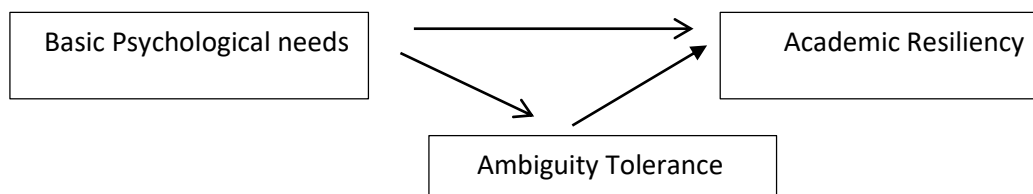


Figure 1 - Conceptual model of research

## 2. Method

### 2.1. Design

As far as the purpose and methodology of the present research were concerned, it was applied and correlational employing structural equation model. The population of the current study included all students of Rahman Institute of Higher Education who were studying online in 2021-2022 academic year. The minimum sample size in research with structural equation models and factor analysis was determined based

on the number of main constructs or hidden variables. Although there has been no general agreement about the sample size required for factor analysis and structural models, according to many researchers, the minimum required sample size calculated to be 200. In confirmatory factor analysis and structural model, the minimum sample size is determined based on latent variables, not observable variables. In the present study, 20 samples were required for each factor (latent variable). In general, at least

200 samples were recommended (Habibi & Adanvar, 2016). Hidden variables were the factors or dimensions of the model, and observable variables were the questions of the questionnaire; Thus, in the present research, 200 people were selected using the convenience sampling method.

## 2.2. Tools

**The Basic Needs Satisfaction in General Scale (BNSG-S):** The Basic Needs Satisfaction in General Scale was developed by LaGuardia et al. (2000 as cited in Ghorbani et al., 2008) to measure basic psychological needs. This questionnaire has 21 questions measuring these needs based on the Likert scale (7 points for absolutely correct and 1 point for not correct at all); however, the marking method for questions 3, 4, 7, 11, 15, 16, 18, 19, 20 was reversed. This questionnaire has three subscales of autonomy, competence, and relatedness. The reliability coefficients obtained from its implementation on the subjects' mother, father, romantic partner, and friends were 92%, 92%, 92%, and 92%, respectively. In Iran, this scale has been implemented in the samples of Iranian managers and students with good validity and reliability; therefore, Cronbach's alpha fluctuates between 74% and 79% (Salehi et al. 2013).

**Academic Resilience Inventory (ARI):** The academic resilience inventory was created by Samuels (2004) to measure academic resilience. This questionnaire has 29 questions and three subscales of communication skills, future orientation and positivity; based on a five-point Likert scale (strongly agree 5 points, agree 4 points, neither agree nor disagree 3 points, disagree 2 points and strongly disagree 1 point) academic resilience was measured in

students. Cronbach's alpha coefficient calculated by Soltaninejad et al. (2014) for this questionnaire was estimated to be 0.77; also, the content validity and criteria of this questionnaire was evaluated.

**Tolerance for Ambiguity Scale:** Tolerance for ambiguity scale (Badner, 1962) was developed to measure the level of ambiguity tolerance of people. It includes 16 questions and three subscales of novelty, insolubility, and complexity. In Iran, this questionnaire was translated into Farsi for the first time by Broomandnasab and Shokrkoon (2009). The reliability coefficient of this questionnaire in the research of Broomandnasab and Shokrkoon (2009) was obtained by Cronbach's alpha method as 0.67 and using Guttman's method as 0.36. In the research of Ahmadi and Sayyahi (2017), the correlation between the questions was 67%.

Pearson's correlation coefficient and structural equation method were used to analyze the data. Data were analyzed using SPSS22 and Smart PLS3 software.

## 3. Results

Based on the descriptive statistics, 73.91% of the sample were women and 26.09% were men. The age of most of the respondents (47.82%) was between 20 and 30 years old and the lowest frequency was related to the age group below 20 years (0.97%).

Table 1 shows the descriptive statistics related to the research variables and their subscales.

Table 1

*Descriptive statistics of research variables and their subscales*

variabels	Mean	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
Communication	34.79	5.293	0.553	0.887	21	55
Future orientation	35.00	3.875	0.073	0.080	23	45
Problem-oriented and positivity	21.59	3.210	-0.288	0.241	10	29
academic resilience	91.31	6.784	0.190	1.072	70	118
Novelty and innovation	14.10	2.145	-0.246	0.072	7	20
Intricacy	29.65	4.311	-0.046	3.028	9	44
Unsolvable problems	10.47	1.987	0.161	-0.154	5	15
ambiguity tolerance	54.22	6.385	-0.248	3.467	22	76
Autonomy	29.26	4.614	0.279	0.231	19	44
Competence	26.08	4.136	0.300	-0.240	17	36
Relation	37.15	5.120	-0.092	0.073	23	51
Basic psychological needs	92.42	10.844	0.110	0.373	65	124

The normality of the research data was checked by the Kolmogorov-Smirnov test. Additionally, the Z-statistic for ambiguity tolerance and resilience variables was obtained as 0.066 and 0.077, respectively and the significance level for both variables was less than 0.05 ( $P < 0.05$ ); As a result, the indices of ambiguity tolerance and resilience had a non-normal distribution; On the other hand, the Z statistic for the basic psychological needs variable was 0.56 and its significance level was greater than 0.05; As a result, the basic psychological needs index had a normal distribution. After analyzing the data, the graphical output of the research model was obtained as follows.

To check the fit of the proposed research model, four criteria were R<sup>2</sup>, Q<sup>2</sup>, GOF, and SRMR (Standardized root mean square residual) index, the values of which presented below. The criterion R<sup>2</sup> was related to the hidden endogenous (dependent) variables of the model. R<sup>2</sup> was

a measure that illustrated the effect of an exogenous variable on an endogenous variable. The value of R<sup>2</sup> in the present research for the variables of ambiguity tolerance and academic resilience was 0.261 and 0.278, respectively, which confirmed the appropriateness of the fit of the structural model. The Q<sup>2</sup> criterion determined the predictive power of the model, which was obtained through the present research for the variables of uncertainty tolerance and academic resilience, 0.276 and 0.324, respectively. It showed the appropriate predictive power of the model regarding the endogenous structures of the research and confirmed the good fit of the structural model. Another indicator was the goodness of fit (GOF). The standard value of GOF was equal to 0.389 obtained, which was greater than the standard value of 0.3 and it highlighted the appropriate power of the model in predicting the endogenous current variable of the model. Currently, the most reliable index used to evaluate model fit in the PLS

method has been the SRMR (Standardized root mean square residual) index, which is used for overall model fit. Its value should be below 0.08; in this research, its value was found to be equal to (0.071). Therefore, the proposed research model had favorable conditions and has been a perfect fit.

Then, the structural model of the research was examined and the coefficients of the standard path of the conceptual model of the research are given in figure (2).

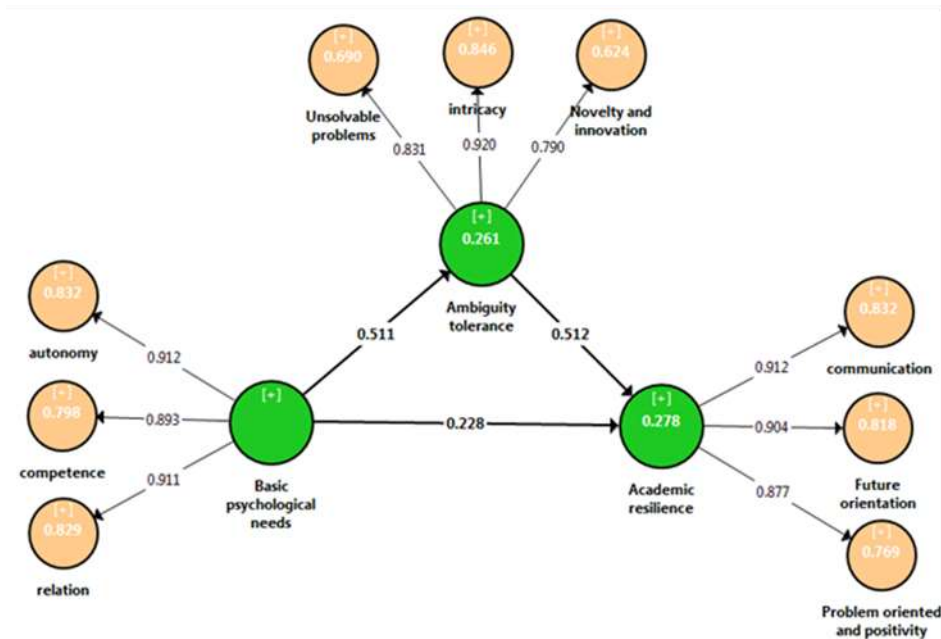


Figure 2- Standard path coefficients of the research conceptual model

The numbers written on the paths (Figure 2) represented the coefficients of the path.

To test the significance of the coefficients of the path using the Bootstrapping method, the values of the t-test were calculated; they are shown in Figure (3).

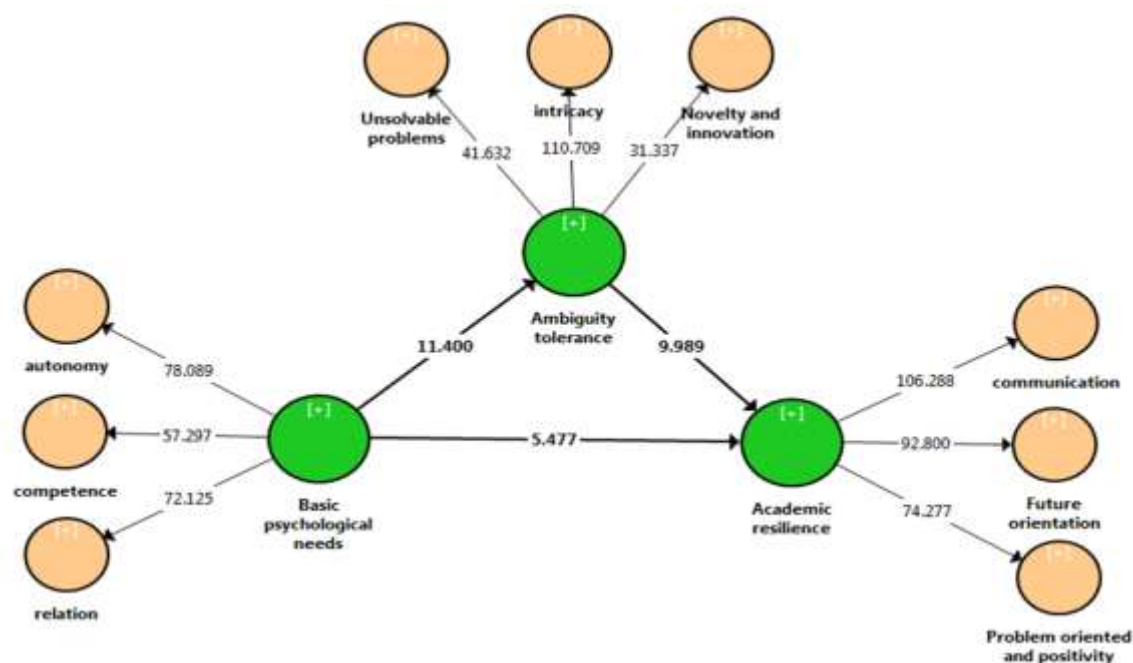


Figure 3-Results of t-Student's test to check the significance of path coefficients

If the value of the t-Student test was greater than 1.96, the path coefficient was significant at the 0.05 level. In the current research, all the significant path

coefficients of income, path coefficients, and the results related to their significance are given in Table (2).

Table 2

*The results of the structural model evaluation for checking direct routes*

Patch	Original Sample (O)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	sig
Ambiguity tolerance ---> Academic resilience	0.512	0.051	9.989	0.000
Basic psychological needs ---> Academic resilience	0.228	0.058	5.477	0.000
Basic psychological needs ---> Ambiguity tolerance	0.511	0.045	11.400	0.000

As can be seen in Table (2), the significant statistic between the variable of basic psychological needs and academic resilience was equal to (5.477), which was greater than (1.96); it indicated that the relationship between basic psychological needs and academic resilience was significant at the confidence level (95%). Correspondingly, the path coefficient

between these two variables was equal to (0.228) which showed the positive effect of basic psychological needs on academic resilience; In other words, one unit of change in basic psychological needs would increase 0.228 units in academic resilience. This means that the provision of basic psychological needs had a positive and direct effect on academic resilience.



Moreover, Table (2) illustrated that the significant statistic between the ambiguity tolerance variable and academic resilience was equal to (9.989), which was greater than (1.96) and it indicated that the relationship between ambiguity tolerance and academic resilience was significant at the confidence level (95%); additionally, the path coefficient between these two variables was equal to (0.512) which showed the positive effect of ambiguity tolerance on academic resilience; In other words, one unit of change in ambiguity tolerance would increase 0.512 units in academic resilience. This means that ambiguity tolerance had a positive and direct effect on academic resilience.

The bootstrapping method was used to investigate the indirect effect of basic psychological needs on academic resilience through ambiguity tolerance. In this method, if the value of the lower limit and the upper limit of the bootstrapping were both positive or both negative, with no zero placed between these two limits, then the indirect path would be meaningful. In addition, if the significance level was smaller than 0.05 ( $P < 0.05$ ), the indirect effect was accepted.

Based on this index, the significance or non-significance of the indirect path is presented in Table No. 3:

Table 3

*The results of the bootstrapping method to check the significance of the indirect effect*

Patch	Indirect effect	Confidence Intervals		T Statistics	Standard Deviation	P Values
		2.5%	97.5%			
Basic psychological needs ->						
Ambiguity tolerance -> Academic resilience	0.262	0.182	0.345	6.624	0.04	0.001

As Table (3) indicated, the significance level was equal to 0.001, smaller than 0.05 ( $P < 0.05$ ), and the confidence interval did not include zero; Therefore, basic psychological needs had an indirect effect on academic resilience through ambiguity tolerance.

#### 4. Discussion

The present research was conducted to investigate the causal relationship between self-determination and academic resilience in online education with the mediating role of ambiguity tolerance in students.

In this regard, the results demonstrated that the provision of basic psychological needs had a direct effect on academic resilience, which is in line with the results of Mirzaei et al.'s research (2016). According to the three components of psychological needs, i.e., the need for competence, the need for communication, and the need for autonomy, this result could be explained. To provide the need for competence, the student revealed better academic performance and perceived more competence. On the other hand, the need for communication was provided through interaction with other students and professors, and this received support would



be related to greater academic resilience. Moreover, by satisfying the need of autonomy, the student would do the assigned tasks with more stability, and as a result, he or she would gain more resilience. Providing basic psychological needs in virtual education has been also very important because in online education, communication does not take place in the real world. Therefore, students who could meet the need for communication in other ways, such as interacting with classmates and professors in virtual networks as well as online systems provide sense of competence and autonomy by displaying their successes in the virtual space, experiencing higher educational resilience.

In addition, the results of the present research showed that the tolerance of ambiguity had a direct effect on academic resilience, which is in a way consistent with the findings of [Yu et al. \(2021\)](#), [Shaterian Mohammadi et al. \(2014\)](#), as well as [Radmehr and Karami \(2019\)](#). Each of the factors of ambiguity tolerance, i.e., novelty and innovation as well as complexity and unsolvable problems, had a direct effect on the components of academic resilience, i.e., communication skills, future orientation, problem-oriented, and positivity. The reason that could be given in support of this hypothesis is that, for example, if a student succeeds in solving intractable problems and actually has a high level of ambiguity tolerance and performs better in difficult situations and being challenged, it will directly affect his resilience in education. Since this student is problem-oriented and positive, when facing a new subject that includes innovation and novelty he or she shows good performance; this behavior is because of the sense of self-esteem and inner self-confidence that student who

succeeded in previous stages or semesters, resulting in more academic resilience in this student experienced. For example, in facing new and unfamiliar topics such as language learning, and especially in the case of postgraduate students who studied another field in the previous stage, tolerance of ambiguity is very important. When facing new and sometimes ambiguous and questionable concepts and definitions, people who have a higher tolerance for ambiguity display more interest; they consider this situation as a challenge and are interested in solving novel and complex issues; consequently, they will have more academic resilience. This issue becomes more important in virtual education because students experience learning in a virtual system with which they are not familiar. Thus, this type of education seems to be a new, complex challenge as well as a problem, and a student who tolerates more ambiguity will display more academic resilience in virtual education.

Additionally, the results of the present research indicated that basic psychological needs had an indirect effect on academic resilience through ambiguity tolerance. Part of this result is consistent with the findings of [Mirzaei et al. \(2016\)](#), [Radmehr and Karami \(2019\)](#), and [Yu et al. \(2021\)](#). For explaining this hypothesis, it can be said that the components of communication skills are common in both variables of ambiguity tolerance and basic psychological needs and, the component of insoluble problems in tolerance of ambiguity is related to being problem-oriented and having positivity in students with academic resilience. Hence, it can be concluded that an autonomous student, for example, with a high level of ambiguity tolerance can solve intractable problems

well, which will strengthen the problem-oriented dimension and positivity in his or her academic resilience, explaining the indirect effect of self-determination through the mediating role of ambiguity tolerance on academic resilience in students; this issue will be especially important in virtual education.

One of the limitations of this research was due to the spread of COVID-19 at the time of data collection; therefore, the distribution of the questionnaire was done online employing the convenience the sampling method. Moreover, the research design was of the correlation type and it was not possible to draw definite conclusions about the cause-and-effect relationship between the variables. Therefore, the present results are limited to the students of Rahman Institute of Higher Education and the generalization of the results should be done with caution.

## 5. Conclusion

Therefore, it can be concluded that if the basic psychological needs of students, i.e., the need for competence, autonomy, and communication, are provided, they will show the ability to tolerate more ambiguity and as a result, they will experience more academic resilience. The results of the present study will be useful for higher education planners to devise some strategy to overcome the related problems.

## Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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## Resources

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**Research Paper: The Effects of Model's Skill Level on Learning a Basketball Skill in Children with Autism**



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**Abstract**

One of the disabilities that has rarely been studied in the field of observational learning is autism. the purpose of this study was to investigate the effects of watching a model video with different skill levels on learning a basketball skill in adolescents with autism. The current study was descriptive and causal-comparative. The participants of this study consisted of 60 adolescents with autism with an age range of 13 to 18 years; they were randomly and equally divided into three groups: The skilled model, the novice model, and the control. The motor task involved a basketball throwing, in which the scores of accurate shoots were measured as the dependent variable. The participants performed the pre-test (including ten throws), the acquisition stage (including 5, 10-throws training sets), and the retention test (including ten throws). Participants in the observation groups watched their respective models for five times before each training set. ANOVA was used to analyze the throwing accuracy scores. The results showed that in the acquisition phase and retention test the group watching novice model video had significantly better throwing scores than the group watching skilled model video and the control group. In addition, in the acquisition phase and retention test the group watching skilled model had significantly better throwing scores than the control group. The results of this study indicated that people with autism could benefit from watching a model video to learn a basketball throwing skill. This result revealed that these people might have the necessary mechanisms to learn new skills through video observation.

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## 1. Introduction

From the beginning to the end of life, human beings are involved in different types of learning which is continuously associated with humans. In fact, learning forms the basis of human life as well as being involved in an activity; this means acquiring skills or retraining them can be done by practicing. There are various kinds of learning including academic learning, environmental learning, motor learning, etc. Motor learning, the focus of this study, is the basis and origin of subsequent learning (Magill, 2007). Motor skills are an important part of human life, and researchers have always been looking for factors that influence learning and performing motor skills. During the training of skills, trainers are looking for better motor learning and performance, and their awareness of the processes that affect learning is considered to be superior. During the past decades, the motor learning's scientists examined the effects of various techniques and strategies for facilitating the process of motor learning in different age groups. Some of them are included observing a model (Ghorbani & Bund, 2014; Ghorbani et al., 2020; Farsi et al., 2016), motor imagery (Afsanepurak et al., 2012), self-talk (Eskandari Nejad et al., 2015), enhanced expectancies (Ghorbani, & Bund, 2020), and adopting an external focus of attention (Ghorbani et al., 2020).

A famous technique in the literature that has been proven to be effective in learning new motor skills is observing a model or skill demonstration which is also called modeling or observational learning; this is one of the most powerful means of transmitting information about how to perform a motor skill. In fact, it is a process in which a person assimilates the information needed to acquire a skill from watching the actions of others. Observational learning is defined as a process in which a person acquires from watching a person performing a motor skill,

watching a person on video, or watching his or her own performance on video. There are two different perspectives regarding the effectiveness of demonstration and modeling in skill learning. Main perspective is based on Bandura's (1977) opinion about modeling and social learning. According to which, when a person observes a model, he or she translates the observed movement information into symbolic memory codes. Then, the image from the memory is used as a guide to perform the skill as well as a criterion for detecting and correcting errors. The second view is based on the perspective of direct visual perception, which was proposed by Scully and Newell (1985). In general, observing movement is effective in creating movement representation by providing clear stimuli related to task performance, and using movement observation for learning difficult skills helps athletes in producing a realistic image of that movement. Although numerous studies have been done on the effects of observational learning in healthy people (Hayes et al., 2013; Larssen et al., 2012; Ste-Marie et al., 2012; Hayes, et al. 2010; Blandin & Proteau, 2000), observational learning in people with different mental and motor disabilities has been less investigated (Dana et al., 2019). For example, one of the disabilities that has rarely been studied in the field of observational learning is autism. Autism spectrum disorder is a broad term used to describe a group of neurodevelopmental disorders (Birchwood & Daley, 2012; Goulardins et al. 2017). These disorders are characterized by communication and social interaction problems. People with autism often exhibit restricted, repetitive, and stereotyped symptoms or behavior patterns (Aqdassi et al. 2021; Gkotzia et al. 2017; Ketcheson et al. 2018; Lourenco et al. 2020; Mohd Nordin et al. 2021). Autism is the third cause of developmental disorders in children after mental retardation and cerebral palsy. It has been shown that

people with autism often have motor disabilities (Aqdassi et al., 2021; Gkotzia et al., 2017; Ketcheson et al., 2018; Lourenco et al., 2020; Mohd Nordin et al., 2021). Therefore, it can be expected that the execution and learning of motor skills in people with autism will be associated with challenges. In the field of observational learning in people with autism, little research has been done so far, and it is not clear whether these people have the necessary mechanisms for motor learning through model observation. Therefore, the purpose of this study is to investigate the effects of watching a model video with different skill levels on learning a basketball skill in adolescents with autism. In this study, it is assumed that observing a model in general would lead to better motor performance and learning than no observation. In addition, observing a novice model would result in better motor performance and learning than watching a skilled model.

## 2. Method

The present study was descriptive as well as causal-comparative. The participants of this study consisted of 60 adolescents with autism with an age range of 13 to 18 years, and they were randomly and equally divided into three groups: The skilled model group, the novice model group, and the control group.

### 2.1. Motor task

The motor task in the present study included a basketball shooting skill. In order to perform this motor task, a standard basketball ball and a standard basketball backboard were used. In this task, the participants were asked to stand behind the basketball free-throw line and throw the ball towards the basketball hoop. The scoring of this skill was as follows: 2 points were given if the ball landed in the basket, 1 point was given if the ball hit the basket or backboard, and no points were considered otherwise.

### 2.2. Model videos

A skilled basketball player participated in the present study as the skilled model. This player had more than ten years of experience in official basketball tournaments. To prepare the model training video, the skilled model demonstrated the basketball shooting skill. Then, the demonstration of the skilled model was filmed using a digital camera. Three of his shoots were videotaped and then an individual was asked to choose one of them as his best shoot to be used as the skilled model video in this study. In the novice model, a child with autism with no experience with Basketball demonstrated shoots. He was asked to throw the ball into the hoop for three times. All throws were videotaped. Afterwards we chose one of them as novice model video.

### 2.3. Procedure

First, by referring to the person's file in the school, a demographic information sheet was completed for each child. The participants were tested individually in the gym. After entering the room, the participant sat on a chair in front of a monitor. In order to familiarize the participants with model video, a video of walking skills was shown to the participant in the form of a video film and the participant was given explanations about the nature of the video. Next, the examiner provided them the basic explanations related to the current study. They were informed that they were to learn basketball throwing skills. To familiarize the participants with the implementation environment of the protocol and the movement task, they were asked to perform the basketball throwing skill twice. In the pre-test, the participants performed the basketball shooting skill ten times without previewing the model video. Then, they participated in the acquisition phase in five training sets, each consisting of ten throws. Participants were given a three-minute



break between each training set. Before each training set, children in the observational training groups watched the video related to their group five times consecutively on a 17-inch screen. The participant was informed that they should look carefully at the displayed movement in order to be able to imitate this movement. The participants in the control group also performed the same protocol, but they did not watch the video. One day after the acquisition test, the participants took the retention test, which consisted of ten basketball throws. Before and during the retention test, no model video was observed. All throwing scores were recorded for further analysis.

## 2.4. Data analysis

In this study, the dependent variable included throwing accuracy in the pre-test, acquisition phase and retention test. One-way ANOVA was run to analyze the throwing accuracy in the pre-test and the retention test. In addition, throwing scores in the acquisition phase were analyzed using ANOVA in 3 (groups)  $\times$  5 (sets) with repeated measured on the last factor. Tukey's post hoc test was run as a post hoc test. The level of statistical significance was at  $P < 0.05$ .

## 3. Results

Demographic characteristics including age, height, weight, and BMI are given in [Table 1](#).

Table 1  
*Demographic characteristics of research participants*

Groups	Age	Height	Weight	BMI
Skilled model	15.08 $\pm$ 2.81	167.96 $\pm$ 9.51	61.28 $\pm$ 7.17	20.55 $\pm$ 1.86
Novice model	15.82 $\pm$ 2.14	169.44 $\pm$ 7.16	60.11 $\pm$ 8.61	21.02 $\pm$ 1.66
Control	15.08 $\pm$ 2.81	168.58 $\pm$ 8.33	59.16 $\pm$ 7.70	20.20 $\pm$ 1.51

The mean and standard deviation of accuracy scores in the pre-test, acquisition

phase, and retention test are presented in [Table 2](#) and [Figure 1](#).

Table 2  
*Mean and SD of basketball throw scores in pre-test, acquisition phase, and retention test*

Groups	Pretest	Acquisition phase	Retention test
Skilled model	0.18 $\pm$ 0.28	0.71 $\pm$ 0.50	0.67 $\pm$ 0.44
Novice model	0.21 $\pm$ 0.32	1.02 $\pm$ 0.64	0.99 $\pm$ 0.60
Control	0.20 $\pm$ 0.39	0.42 $\pm$ 0.45	0.24 $\pm$ 0.35

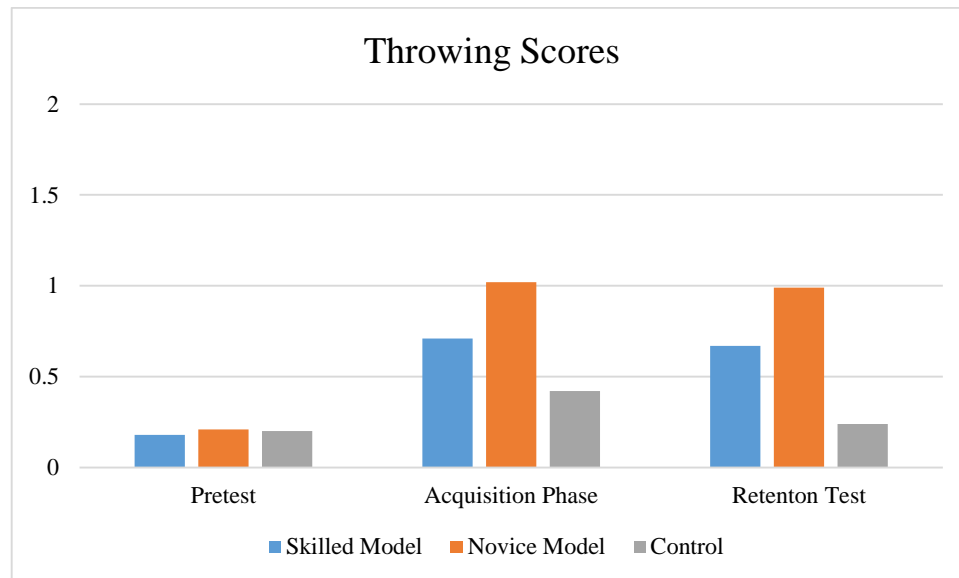


Figure 1. Means of throwing scores across groups and tests

Results of one-way ANOVA showed that all groups had similar throwing scores in the pretest,  $F = 0.74$ ,  $p = 0.73$ . However, in the acquisition phase, the results of ANOVA revealed that main effect for Group ( $F = 5.69$ ,  $p = 0.000$ ) was significant. Results of Tukey test demonstrated that novice video group had significantly better throwing scores than skilled model video and control groups (both  $P = 0.000$ ). In addition, skilled group had significantly better throwing scores than control group ( $P = 0.000$ ). Moreover, the results indicated that main effect for Block ( $F = 3.51$ ,  $p = 0.000$ ) was also significant, while we observed no significant interaction between Group  $\times$  Block, indicating that all groups improved their throwing scores during the acquisition phase. Finally, results of one-way ANOVA showed significant differences between groups in the retention test,  $F = 6.94$ ,  $p = 0.000$ . In this regard, results of Tukey test illustrated that novice model video group had significantly better throwing scores than skilled model video and control groups (both  $P = 0.000$ ). In addition, skilled group had significantly better throwing scores than control group ( $P = 0.000$ ).

#### 4. Discussion

Autism is one of the disabilities that has rarely been studied in the field of observational learning. the purpose of this study was to investigate the effects of watching a model video with different skill levels on learning a basketball skill in adolescents with autism. In this study, it was assumed that observing a model in general would lead to a better motor performance and learning than no observation. In addition, observing a novice model would result in better motor performance and leaning than watching a skilled model.

The results of this study showed that adolescents with autism who had observational training performed significantly better in basketball throwing skill scores in the acquisition phase and retention test than those who did not have observational training. These results indicated that adolescents with autism were able to use the information on movement shown in the model videos and improve their performance in the acquisition phase and retention test. The results of this study confirm our first hypothesis and are indirectly in line with the results of previous studies that investigated the effects of observational learning on

mentally retarded children (Dana et al., 2019). The results of this study added new findings to the literature and showed that people with autism would be able to understand model videos and obtain the required information from them to learn the observed skill. In addition, these results indicated that there could be cognitive mechanisms required for observational learning of advanced skills such as basketball throwing in people with autism.

Furthermore, the results of the present study revealed that in the acquisition phase and retention test, watching the novice model was superior to watching the skilled model. The results of this study are consistent with the results of previous studies about the superiority of watching the novice model over the expert model in learning motor skills (Hayes et al., 2013; Larssen et al., 2012; Ste-Marie et al., 2012; Hayes et al., 2010; Blandin & Proteau, 2000; Ghorbani & Bund, 2014; Ghorbani et al., 2020; Farsi et al., 2016). Since a beginner is more prone to make big and frequent mistakes than an expert, an observer has a better chance to recognize these mistakes and learn from them. This means that the observer engages in problem solving with more active methods; therefore, by participating in a number of cognitive activities, the observer is able to discover an error and correct it, which is very important in the learning process (Ghorbani et al., 2020). That is, the novice model is not a good model for what a person should do; however, when a person observes a novice model, he or she probably learns the task by improving error detection and error correction mechanisms. Studies have shown that the learning model increases the cognitive effort during the modeling process (Marie et al. 2012). As a result, the usefulness of the observer's cognitive efforts leads to reproduction and better learning of the observed task. Hence, as a practical implication, it can be suggested that coaches and instructors

employ model videos and especially novice model videos as an effective procedure for teaching new motor skills to novices with autism.

## 5. Conclusion

In summary, the results of this study highlighted that people with autism benefit from watching a model video to learn a basketball throwing skill. This result may indicate that these people have the necessary mechanisms to learn new skills through video observation. Moreover, watching a novice model video would benefit adolescents with autism more than watching an expert model video.

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## Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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## Research Paper: Effects of Physical Activity Participation on Fine and Gross Motor Skills in Pre-School Children with ADHD



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### Abstract

The purpose of this study was to investigate the association between physical activity with fine and gross motor skills in pre-school children with ADHD. The present study is a descriptive-correlational study. The participants were 58 children (20 girls) aged 4 to 6 years who were selected using a convenience sampling method. We utilized Physical Activity Questionnaire for Children (PAQ-C) to measure physical activity. The short form of the Bruininks-Oseretsky Test of Motor Proficiency Ed. 2 (BOT-2) was used to measure the fine and gross motor. Independent *t* test and regression analysis were used to analyze the data. Children in this study had low levels of physical activity and motor proficiency. Boys had significantly higher physical activity and motor proficiency than girls ( $P < 0.001$ ). In addition, physical activity was directly and significantly associated with fine and gross motor skills (both  $P < 0.001$ ). These findings indicate that there is a need to increase the level of physical activity in pre-school children with ADHD, especially girls. Moreover, it is recommended that physical education teachers and sports coaches use programs in physical education lessons to facilitate motor skills in children.

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## 1. Introduction

In the first five years of their life, children develop in four main areas: motor (physical), communication and language, cognitive, and social-emotional (Brian et al. 2020; Seyedi Asl et al., 2016; Saeedpour-Parizi et al., 2020, 2021; Mohammadi et al., 2022; Hazrati et al., 2022; Hashemi Motlagh et al., 2022s). Motor development means physical growth and strengthening of bones, muscles and the child's ability to move and touch the surrounding environment (De Meester et al., 2018; Taghva et al., 2016). Motor skills are skills that enable movements and tasks that every human being performs from birth to old age. These skills are the movements that enable us to perform daily tasks, from the ability to eat to moving from one place to another (Gallotta et al., 2018). Normally, children learn certain motor skills at certain ages, however some children may be slow in acquiring motor skills due to various reasons including developmental delay (Baniasadi et al., 2022c; Chaharbaghi et al., 2022; Hernandez & Caçola, 2015; Khosravi et al., 2023). In general, motor skills are divided into two categories: fine motor skills and gross motor skills. Fine motor skills are skills that require high control and precision in the small muscles of the hand (such as using a fork). In gross motor skills, children use the large muscles of the body to build balance, coordination, reaction time, and body strength to perform larger movements such as walking and jumping (Baniasadi et al., 2022b; Chaharbaghi et al., 2022; Logan et al., 2011; Morley et al., 2015). The development of gross motor skills can be important for improving self-esteem and fine motor skills

for many daily tasks such as dressing, combing and writing (Mukherjee et al., 2017). During childhood, these skills provide a good opportunity to communicate with others and cooperate with them, and it has been proven that there is a direct relationship between positive social acceptability and movement capabilities, especially in boys (Baniasadi et al., 2022a; Guadagnoli et al., 2002; Seyedi Asl et al., 2021; Slotte et al., 2015). Children and adolescents with mobility problems face problems in performing gross motor skills, which results in their non-participation in sports, loss of physical fitness, withdrawal from society, and reduced self-esteem (Khosravi et al., 2023; Seyedi Asl et al., 2021; Venetsanou & Kambas, 2016, 2017; Wrotniak et al., 2016).

Attention Deficit/Hyperactivity Disorder (ADHD) is a group of biological-neurological disorders that disrupt the regulation of the level of activity, inhibition of behavior (impulsivity) and the range of a person's attention (Birchwood & Daley, 2012). This disorder is one of the first or second most common disorders of childhood and adolescence, with different variations and a prevalence of 3 to 10 percent in school-age children, and the severity of the disorder decreases in the ages above 10 years (Farhangnia et al., 2020). This disorder is three to nine times more common in boys than girls. One of the areas of attention in ADHD children is the physical and movement aspects that are studied by physical education specialists, doctors and rehabilitation centers (Goulardins et al., 2017; Li et al., 2021). Daily activities require sustained attention and impulse inhibition, so



children with ADHD may have difficulty in these actions. Several studies that have investigated the movement performance and movement processes of ADHD children have pointed out the weakness of balance and coordination, weakness of gross motor skills, weakness of fine motor skills and weakness of physical fitness indicators among these children (Mastoras et al., 2018; Sabzi et al., 2021).

One of the possible factors that can affect the development of children's motor skills is participation in physical activity. Basically, physical activity refers to any movement of the body that is caused by the contraction and expansion of the skeletal muscles and requires energy (Abdi et al., 2020; Basterfield et al., 2021; Gritten Campos et al., 2019). It has been extensively shown that physical activity is a key to reducing the risk of serious diseases, such as heart disease, stroke, diabetes and cancer in children (Dishman et al., 2009; Gallego-Méndez et al., 2020; Ghorbani et al., 2020; Haidar et al., 2019). Research shows that regular physical activity can increase a child's self-esteem, mood and sleep quality and make him less prone to stress, depression and dementia (Lahart et al., 2019; Schwartz et al., 2019; Sheikh et al., 2021, 2022; Wafa et al., 2016; Zhang et al., 2021). However, the impact of physical activity on fine and gross skills in preschool children with ADHD has received less attention. Therefore, the aim of this study was to investigate the effects of physical activity on fine and gross skills in preschool children with ADHD.

## 2. Methods

The method of current study was descriptive-correlation, which investigated the relationships between physical activity with fine and gross skills in preschool children with ADHD. The parents of children gave written consents for the participation of their children in this study. The protocol of this study was in accordance with the Declaration of Helsinki.

### 2.1. Participants

The statistical population of the study consisted of all preschool children with ADHD who attended in a special preschool for exceptional children with behavioral disorders in Tehran. Of them, 58 children with ADHD (20 girls) aged 4-6 years old were selected using a convenience sampling method as the statistical population of this study.

### 2.2. Measures

Physical activity was measured using Physical Activity Questionnaire for Children (PAQ-C). This questionnaire was designed by Kowalski et al. (1997). This questionnaire contains 8 questions that the participants answered on a 5-point Likert scale. The validity of the questionnaire structure was confirmed through the confirmatory factor analysis and the high loading rate was over 0.4. Also, the reliability of the questionnaire was obtained through the Cronbach's alpha coefficient of 0.86 (Kowalski et al., 1997).

The short form of the Bruininks-Oseretsky Test of Motor Proficiency Ed. 2 (BOT-2) was used to measure the motor proficiency of children. BOT-2 is a set of standard-reference tests that is used to measure the motor performance of children aged 4.5 to 14.5 years old. Bruininks (2005) designed this test

by modifying Oseretsky's motor proficiency test. It takes 15-20 minutes to complete the short form. The short form of this test has eight subtests and 14 items, which are part of the 46 items, which include abilities such as 1) running speed and agility (one item), 2) static and dynamic balance (two items), 3) coordination bilateral (two items), 4) leg muscle strength (one item), 5) upper limb coordination (two items), 6) reaction speed (one item), 7) visual-motor control (three items), and 8) upper limb agility and speed (measures two substances). Items 1 to 4 of the test are indicators of gross motor skills, items 6 to 8 are indicators of fine motor skills, and item 5 is a combination of both motor skills. The retest reliability coefficient of this test is 0.86 in the short form. This test has been standardized in Iran as well (Mohammadi Orangi et al. 2018). Each child receives a raw score, which is converted into points according to the guide table. The range of gross and fine motor skill scores is 0-53 and 0-51. A higher score means a better motor skill

### 2.3. Data analysis

Data was analyzed using SPSS software version 26. Mean and standard deviation were used for descriptive statistics. Independent t test was used for considering gender differences. Regression analysis was used to obtain the effect of the physical activity on fine and gross motor skills. P-value was set at  $p < 0.05$ .

## 3. Results

### 3.1. Descriptive data and gender differences

In Table 1, the descriptive characteristics of the participants, physical activity, fine motor skill, and gross motor skill of the boys and girls are shown. As appeared, boys and girls have almost identical age, height, and weight (all  $P > 0.05$ ). However, boys had significantly higher levels of physical activity ( $P < 0.001$ ), fine motor skill ( $P < 0.001$ ), and gross motor skill ( $P < 0.001$ ) than girls. Means of physical activity, fine motor skill ( $P < 0.001$ ), and gross motor skill across genders are shown in Figure 1, 2, and 3.

Table 1  
*Descriptive data of the study*

	Boys	Girls	Gender differences
Age (years)	5.25 ± 0.70	5.16 ± 0.81	t=0.269 P>0.05
Height (m)	1.09 ± 0.15	1.04 ± 0.10	t=0.193 P>0.05
Weight (kg)	20.33 ± 7.28	19.70 ± 6.38	t=0.634 P>0.05
Physical activity	2.25 ± 0.70	1.16 ± 0.81	t=-7.161* P<0.001
Fine motor skill	24.54 ± 4.28	20.16 ± 3.62	t=6.337* P<0.001
Gross motor skills	28.39 ± 5.28	24.16 ± 4.10	t=-5.727* P<0.001

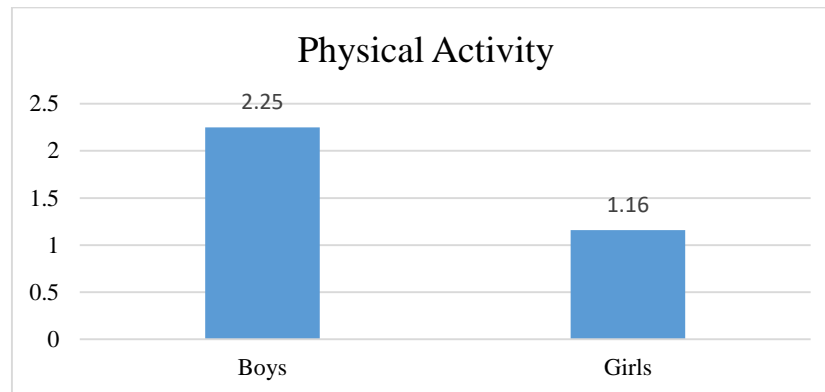


Figure 1. Mean of physical activity across genders

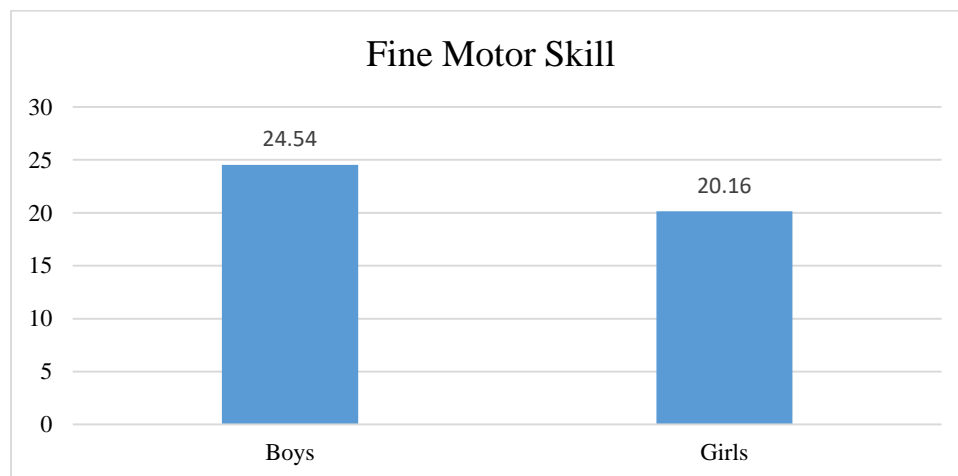


Figure 2. Mean of fine motor skill across genders

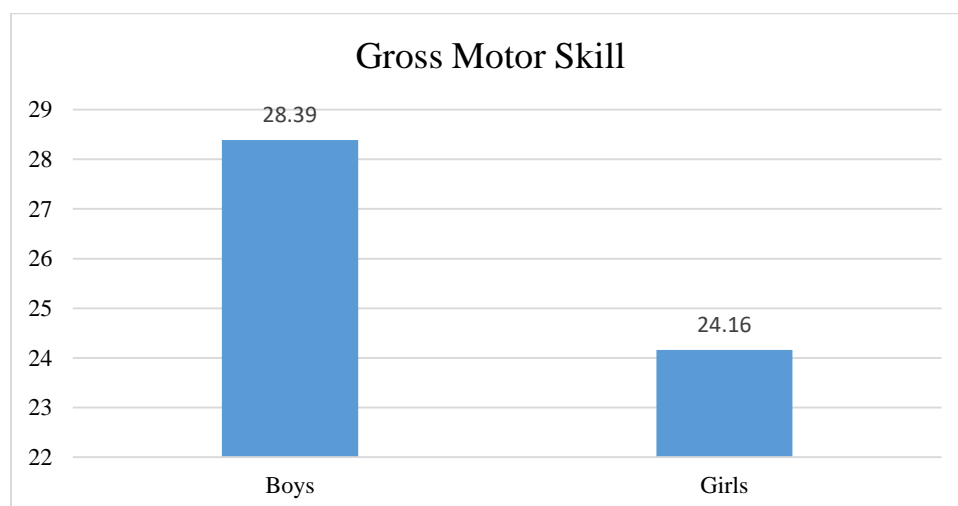


Figure 3. Mean of gross motor skill across genders

### 3.2. Regression analysis

Regarding the regression analysis with forward selection, the results (Table 2) showed that physical activity has a direct and

significantly link with fine motor skill ( $P < 0.001$ ). In addition, physical activity has a direct and significantly link with gross motor skill ( $P < 0.001$ ).

Table 2

*Results of regression analysis to discover the link between physical activity with fine and gross motor skills*

		Coefficient	SE	Standardized Coefficient	P-values
Physical activity	Fine motor skill	-0.640	8.16	-0.621	<0.001
	Gross motor skill	0.552	6.02	0.522	<0.001

### 4. Discussion

The purpose of this research was to investigate the relationship between physical activity and fine and gross motor skills in preschool children with ADHD. First, it should be stated that the level of physical activity in the children in this research was very low. These results are consistent with the results of previous studies regarding the participation of children with ADHD (Farhangnia et al., 2020; Goulardins et al., 2017; Li et al., 2021; Mastoras et al., 2018; Sabzi et al., 2021) and indicate that these children have low health-oriented physical activity. Therefore, considering the positive effects and consequences of participation in physical activity on the physical and mental health of children, the need for interventions and strategies to increase the level of physical activity of these children is felt. Therefore, it is essential that child sports professionals take the necessary measures to improve the level of physical activity of children with ADHD.

In addition, the results of the present research showed that the level of

implementation of gross and fine motor skills in preschool children with ADHD is in the average level. It is consistent with the results of previous studies (Gallotta et al., 2018; Hernandez & Caçola, 2015; Logan et al., 2011; Morley et al., 2015; Mukherjee et al., 2017; Venetsanou & Kambas, 2016, 2017; Wrotniak et al., 2016) and indicates that these children have a low level of fine and gross motor skills. Therefore, considering the important effects of motor skills implementation on children's daily and social activities, the need for interventions and strategies to increase the level of motor skills implementation in these children is felt. Therefore, it is necessary that child sports specialists take the necessary measures to improve the level of execution of movement skills of children with ADHD.

In particular, gender differences, the results of the present research showed that girls have a lower level of physical activity than boys. Also, girls have a lower level of fine and gross motor skills than boys. These results show that regarding children with ADHD, special attention should be paid to

girls because their motor skills are lower than boys. Therefore, interventions and strategies to improve physical activity and movement skills in children with ADHD should focus and pay special attention to girls.

Regarding the effect of physical activity on the implementation of fine and gross motor skills in children with ADHD, the results of the present study showed that the greater the participation of children in physical activity, the higher their ability to perform fine and gross motor skills. These results are consistent with the results of previous research on the effect of physical activity and sports on the performance of motor skills in children (Dishman et al., 2009; Gallego-Méndez et al., 2020; Ghorbani et al., 2020; Haidar et al., 2019; Lahart et al., 2019; Schwartz et al., 2019; Sheikh et al., 2021, 2022; Wafa et al., 2016; Zhang et al., 2021) and indicate the positive effect of regular participation in physical and sports activities on the performance of motor skills in children, including children with ADHD.

In general, teachers and physical education planners need to understand and recognize patterns and health factors affecting physical activity (such as motor competence, perceived competence and physical fitness related to health), because it affects the levels of physical activity and motor performance of children. Educational leaders should provide environments in which the effects of motor skills (especially gross skills) on children's physical activity are considered, and physical education teachers should implement these programs according to the age of children. Schools should have valid and relevant tools for

measuring children's motor skills. provide teachers with tools to measure progress in children's movement skills. Considering the role of perceived competence in children's tendency to physical activity, teachers should provide environments and provide suitable movement tasks, and encourage and give positive feedback from experiences (above) increasing the perceived competence of children. In the end, it should be said that it is necessary to pay more attention to these factors in physical education programs and exercises in order to improve the physical activity of male children.

## 5. Conclusion

The purpose of this research was to investigate the effect of physical activity on the implementation of fine and gross motor skills in preschool children with ADHD. In summary, the results of the present research showed that preschool children with ADHD have low physical activity and moderate motor ability. Also, girls have a lower level of physical activity and motor ability than boys. These results show that the need for interventions to increase the level of physical activity and motor ability in preschool children with ADHD should be specially focused on girls. Finally, the results of this research showed that physical activity can positively affect the performance of fine and gross motor skills in preschool children with ADHD. Therefore, child professionals can use physical activity as one of the ways to improve the motor ability level of preschool children with ADHD.

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### Conflict of interests

The Author declares that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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**Research Paper: Prediction of Self- Destructiveness based on Perceived Stress, Brain-behavioral Systems and Defense Styles**



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**Abstract**

The aim of the present study was to predict self- destructiveness based on perceived stress, brain-behavioral systems and defense styles. The population was the students of the Faculty of Pharmacy of Shahid Beheshti University of Medical Sciences in the academic year 2017-2018; through convenience sampling method, 150 completed questionnaires were analyzed. The design was correlational. chronic self- destructiveness scales (CSDS), perceived stress scale (PSS), behavioral inhibition-activation systems scale (BIS/BAS) and defense styles (DSQ) were used to collect data. The data were analyzed using Pearson's correlation coefficient as well as stepwise regression. The results showed that there was a relationship between self-destructiveness and perceived stress ( $p \leq .01$ ), punishment sensitivity ( $p \leq .001$ ), reward responsiveness ( $p \leq .05$ ), drive ( $p \leq .01$ ), and fun seeking ( $p \leq .01$ ). Immature defense style ( $p \leq .01$ ) and neurotic defense style ( $p \leq .01$ ) have a relationship. Moreover, the regression analysis revealed that fun seeking ( $R^2 = .33$ ), reward sensitivity ( $R^2 = .26$ ), driving ( $R^2 = .23$ ), neurotic defense styles ( $R^2 = .17$ ), immature defense styles ( $R^2 = .11$ ) and punishment sensitivity ( $R^2 = .11$ ) could predict self- destructiveness. In conclusion, it can be said that perceived stress is in dynamic relationship with brain-behavioral systems and defense styles can predict self- destructiveness. Punishment sensitivity among brain-behavioral systems, and immature defense styles among the defense styles, were most strongly associated with self-destructiveness.

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## 1. Introduction

It is believed that the internal drive of self-preservation is deposited in all animals, but some people behave in a way that is incompatible with this principle of organization and in some cases, it is completely opposite (Nock, 2010). Self-mutilation and self-sabotage are the terms used in various texts for these opposing tendencies with the principle of self-preservation (Sharp & Schill, 1995). Self-destructiveness shows the limitation of the human model as a rational decision-maker (Baumeister & Scher, 1988) and as it is assumed, it is not a completely specific phenomenon, but its manifestations can be considered on a continuum and in connection to other human behaviors; In such a way that on one side of the continuum is adequate self-care and on the other side are highly self-destructive tendencies and at the end of it is suicide (Turp, 2002). Self-destructive tendencies are attempts to modify emotional, cognitive, or social experiences, and are related to various forms of mental disorders such as depression, anxiety, and externalizing disorders (Nock, 2010).

In models that have investigated self-destructiveness, stress is usually considered to be the starting point of self-destructiveness. Conceptualization of tension varies widely. Some researchers have initially defined stress as a stimulus in which an aspect of the physical or psychological environment causes individuals or society harm (Fink, 2016); for others, stress is as a physiological and psychological response to stimulation which is considered to be in such a hostile environment, and others have adopted a more dynamic perspective whereby the

assessment of specific environmental pressures, coping resources, and available options all lead to determining the nature and extent of the stressful experience (Fink, 2011). Perceived stress can be defined as a degree to which a situation in a person's life is perceived as stressful (Cohen et al., 1983). In other words, perceived stress is a state that reflects the overall assessment of the importance and difficulty of environmental and personal challenges (Spada et al., 2008). Regarding stress and self-destructiveness, Najavits (2002) demonstrates that perceived stress leads to an increase in self-destructiveness in people with PTSD. Additionally, the research of Delker and Freyd (2014) show that an increase in stress leads to an increase in self-destructiveness, including drug and alcohol abuse. On the other hand, personality traits and dimensions are the most important intervening factors in psychological disorders. In order to explain the relationship between personality traits and people's susceptibility to psychological disorders, various theoretical models such as Eysenck's theory (1963) and Gray's (1994) have been used. In his neuropsychological theory, which is known as reinforcement sensitivity theory (RST) (Corr & Perkins, 2006), Gray (1994) presented a biological model of personality that includes three brain-behavioral systems. According to his belief, these brain-behavioral systems form the basis of individual differences and the activity of each of them leads to different emotional reactions such as fear and anxiety. The first system is the behavioral activating system (BAS), which responds to conditioned stimuli of reward and absence of punishment. The activity and increased sensitivity of this system cause positive

emotions, approach and active avoidance to be evoked (Gray & McNaughton, 2000). The sensitivity of this system indicates a person's impulsivity, and the two behavioral components of this system are approach (actively seeking rewards) and active avoidance (providing specific behavior to avoid punishment) (Wilson et al., 1990). The second system is the behavioral inhibition system (BIS), which responds to conditioned punishment and non-reward stimuli, as well as to novelty and innately fearful stimuli (Gray & McNaughton, 2000). The activity of this system leads the emotional state of anxiety as well as behavioral inhibition, passive avoidance, silence, increased attention and arousal. The two behavioral components of this system are: passive avoidance (avoidance of punishment through inactivity or submission) and extinction (discontinuation of unrewarded behaviors) (Wilson et al., 1990). The third system is the fight/flight system (FFS), which is structurally related to the amygdala and hypothalamus and is sensitive to disturbing stimuli.

The two behavioral components of this system, high activity of which is related to psychopathy, are resistance (defensive aggression) and escape (quick escape from the source of punishment) (Corr, 2002). Based on the theory of brain-behavioral systems, Gray (1994) puts forward the assumption that psychiatric disorders are caused by dysfunction (hyperactivity or hypoactivity) of one of the systems or their interactions. As a result, it is assumed that the behavioral activation system (BAS) and the behavioral inhibition system (BIS) can explain a wide range of disorders. In this context, the research of Komasi et al.

(2016) show that people whose behavioral brain system is highly sensitive to punishment demonstrate more neurotic behaviors and tend to self-harm in different ways. Alemikhah et al.'s research (2016) also illustrates that people whose brain-behavioral system has high sensitivity to punishment and innovativeness are more likely to self-destruct, including addiction, compared to people who have low sensitivity to innovativeness.

In addition to personality traits, defensive styles have received clinical and research attention in recent years due to their especial importance in the conceptualization of mental disorders and their treatment from a psychoanalytical perspective (Cramer, 2000, 2003; Bowins, 2010; Brody et al., 2010; Costa & Brody, 2010; Brody & Carson, 2012). Defense styles are first proposed by Freud (1923 as cited in Shahidi Shadkam et al., 2010). According to Freud (1923), a person uses defensive styles to get rid of desires, impulses and unpleasant thoughts, as a way to modify and distort reality. These styles can be compromising, harmful or non-compromising (Shahidi Shadkam et al., 2010). Andrews et al. (1993) have distinguished 20 defense styles in terms of three categories of mature, immature and neurotic. Defense styles that are responsible for protecting "I" in the face of anxiety, depending on the type of action, may be normal or abnormal and efficient or ineffective. Freud (1923) considers the personal defense style, i.e., the frequency of using different defense mechanisms compared to each other, as the main variable for recognizing personality, pathology, and the degree of compromise. The mature defensive style is considered to



be adaptive, normal and efficient coping methods. Neurotic and immature defense mechanisms are maladaptive and ineffective coping methods. Psychotic defense mechanisms are more consistent than immature defense mechanisms and are less related to psychological problems (Besharat et al., 2001). According to Andrews et al.'s (1993) study, sublimation, humor, suppression, and anticipation are part of the mature style, undoing, idealization, and reaction formation are part of the psychotic style, and denial, devaluation, somatization, reasoning, passive aggression, and projection are considered part of the immature style.

In the context of the relationship between defense styles and mental disorders, Anna Freud (1992) believes that suffering from mental disorders is caused by the use of inflexible defense mechanisms. In addition, the research of Bragazzi et al. (2014) show that people who use immature defense styles tend to self-destruct when they are in trouble. Furthermore, Corruble et al.'s (2003) research reveal that those who use psychotic defense mechanisms such as projection, fragmentation, acting out, and somatization tend to self-destruct, including suicide. Obviously, some other researchers also believe that there is not always a meaningful relationship between defensive styles and anxiety (Mohamadpouryazdi, 2009; Afzali et al., 2008).

It is worth mentioning that as far as the investigation is carried out, previous researches that investigated self-destructive behaviors used researcher-made scales, or considered delinquent and self-injurious behaviors as examples of self-destructive

behavior. In this research, a valid scale (Mousavi et al., 2015) is used to measure self-destructiveness. Additionally, as far as the investigation is carried out, the combination of predictive variables considered in this study for predicting self-destructiveness has not been investigated in previous researches. According to the above, this research seeks to answer the question of whether it is possible to predict self-destructiveness based on perceived stress, brain-behavioral systems, and defense styles.

## 2. Method

### 2.1. Research design

Regression was used as the statistical analysis method of this correlational research.

### 2.2. Population and sample

The population of the present research consisted of 249 students of the Faculty of Pharmacy of Shahid Beheshti University of Medical Sciences in the second semester of the academic year 2018-2019. Authorization was obtained to complete the questionnaires after obtaining the necessary permits from the Islamic Azad University and referring to the Faculty of Pharmacy of Shahid Beheshti University. Estimating the sample size based on the research method for correlational projects, the researcher found that a minimum number of 50 people is required (VanVoorhis & Morgan, 2007). Non-probability (non-random) sampling method (convenience sampling) was used in the selection of samples. The questionnaires used in the research, including the Chronic Self-Destructiveness Scale, the Perceived Stress Scale, Behavioral Inhibition-activation Systems Scale, and the Defense Styles

Questionnaire were prepared electronically and the link was sent to the students through social networks. It should be noted that on top of the questionnaire form, the participants were assured that their answers will only be used in the scientific study and which is solely for research purposes and that the questionnaires will not be analyzed individually. The questionnaires were completed anonymously and the participants in the research had consciously consented to participating in this research. The sample size estimated was 150 people and the number of errors and non-completion in this type of questionnaire was zero; therefore, 150 questionnaires, that is 150 participants were in the analysis. The inclusion criterion for entering the research was being a student of the Faculty of Pharmacy of Shahid Beheshti University of Medical Sciences and consenting to participate in the research.

### 2.3.Tools

The following questionnaires were used to collect data:

#### **Chronic Self-Destructive Scale (CSDS):**

This scale was developed by Kelley et al. (1985) and is used to evaluate self-destructive patterns and tendencies. It has 73 items answered on a Likert scale from 5 (extremely applies to me) to 0 (not at all applicable to me). The higher the individual score, the more self-destructive he or she is. Some items are specific to women and some to men, and some items are common between the two sexes.

The internal consistency of the original version has been reported to be 0.97 to 0.73 using Cronbach's alpha coefficient and one-month test-retest reliability coefficient of

0.98 to 0.90 (Kelley et al., 1985). Mousavi et al. (2015) prepared the Persian version of this scale: factor analysis of men's items (23 items), four factors of negligence and inconsideration (items 68, 54, 69, 14, 26), neglect (items 18, 66, 65, 62, 2, 29, 67, 25), risk-taking (items 12, 34, 3, 21, 32, 30, 17), stupefaction (items 70, 71, 27 ) and factor analysis of women's items (19 items), three factors of neglect and risk taking (56, 62, 25, 67, 32, 12, 8, 47, 23), irregularity (18, 33, 66, 37, 39, 40) and lack of preservation and planning (15, 11, 43, 29). Four factors of men's scale explained 50.5% and three factors of women's scale explained 45.4% of the variance of the total score. Cronbach's alpha coefficient for men and women were 0.849 and 0.845, respectively, and Cronbach's alpha coefficient for male factors were 0.698-0.865 and 0.685-0.800 for female factors. The internal homogeneity of the scale was confirmed by calculating the Pearson correlation coefficient of the scores of each factor with each other and with the total score and Spearman's correlation coefficient between the items of each factor. Convergent validity was confirmed by calculating the Pearson correlation coefficient between the total score and the score of the CSDS factors with depression, shame, guilt, internal self-criticism and comparative self-criticism variables. Correlation of total score of CSDS in women with the above variables were 0.42, 0.51, 0.49, 0.36 and 0.27 respectively and in men with the same variables were reported to be 0.38, 0.38, 0.43, 0.60. and 0.35 respectively (Mousavi et al., 2015).

**Perceived Stress Scale (PSS):** This scale was designed by Cohen et al. (1983) and has 10 and 14-question formats. In this

study, the 14-question format was used. Items are scored on a Likert scale from 0 (none) to 4 (very much). The range of scores varies from 0 to 56 and the higher score of the subjects in this scale indicates a high level of perceived stress (Cohen et al., 1983). Cronbach's alpha method was reported to be 0.84 to 0.86. The alpha obtained for the Persian version in a study on 250 undergraduate students was 0.81 (Ghorbani et al., 2002). Factor analysis using the principal components method on the Persian version led to the extraction of two factors: ability to cope with stress and negative feeling from stress, which together explained 48.2% of the total variance (Mousavi et al., 2014).

**Behavioral Inhibition-Activation Systems Scale (BIS/BAS):** This scale was created by Carver and White (1994) in order to evaluate individual differences in the sensitivity of behavioral inhibition and activation systems. This scale has 20 questions that measure the activity of the behavioral inhibition system by means of the punishment sensitivity subscale (1, 2, 3, 4, 5, 6, 7) and the activity of the behavioral activation system are evaluated by means of three subscales of reward responsiveness (8, 9, 10, 11, 12), drive (13, 14, 15, 16) and fun seeking (17, 18, 19, 20). Participants answer these questions on a 4-point Likert scale from not true (1) to completely true (4). Behavioral inhibition refers to the expected sensitivity to anxiety when a person is exposed to punishment cues (e.g., I feel anxious when I think that I have done something incomplete). Reward responsiveness refers to the extent to which rewards influence positive energy and emotions (e.g., I feel energized when I get what I need). Drive refers to the degree to

which a person is actively oriented toward attractive goals (e.g., when I feel I need something, I try hard to get it). Fun seeking refers to the tendency to seek out new stimuli and engage in rewarding activities (e.g., I seek out new and exciting situations). The higher the individual score, the stronger it is in that scale (Mohammadi, 2008). Cronbach's alpha of the subscale of punishment sensitivity, reward responsiveness, drive and fun seeking were reported to be 0.74, 0.73, 0.76 and 0.66, respectively. Correlation of BIS subscale with Manifest Anxiety Scale was 0.58 and correlation of drive, reward responsiveness and fun seeking with extraversion subscale of Eysenck's scale were 0.41, 0.39 and 0.59 respectively; moreover, correlation of hypomania subscale from MMPI scale with drive and fun seeking were reported to be 0.33 and 0.37 respectively (Carver & White, 1994). Cronbach's alpha of the Persian version for the above subscales were reported to be 0.69, 0.74, 0.87 and 0.65 respectively, and the retest reliability coefficient were 0.68, 0.73, 0.71 and 0.62 respectively. In addition, the correlation coefficient of inhibition subscale with depression and anxiety was obtained as 0.22 and 0.31 respectively, which indicates the convergent validity of the scale (Mohammadi, 2008).

**The Defense Styles Questionnaire (DSQ):** This questionnaire was compiled by Andrews et al. (1993) and has 40 items. Responses are made on a 9-point Likert scale from strongly agree (9) to strongly disagree (1) and rank the 20 defense styles (based on the hierarchical pattern of defenses) in terms of 3 mature defense style (2, 3, 5, 7, 21, 24, 29, 35), immature (1, 6, 11, 17, 28, 33, 34, 40) and neurotic (4, 8, 9,

10, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 25, 26, 27, 30, 31, 32, 36, 37, 38, 39). In general, the average score of the individual in each style is determined and compared with the average score of the individual in other styles; A person's dominant style is the style in which he or she gets the highest score. Cronbach's alpha coefficient of each defense style was reported to be 0.32 to 0.80 by Andrews et al. (1993). This scale was able to distinguish anxiety patients from healthy ones and child abuser parents; Compared to healthy people, anxiety patients were less likely to use mature defense style, such as humor, suppression, and exaltation, and more likely to use neurotic defense style, such as reaction formation, and immature defense style, such as displacement, projection, and somatization. Abusive parents employ more neurotic defense styles, such as reaction formation, and maladaptive defense styles, such as denial, projection, and splitting (Andrews et al., 1993). In the case of the Persian version, the alpha coefficient of the three mature, immature, and irritable styles were reported as 0.94, 0.92, and 0.91, respectively, and the test-retest reliability for these three styles were reported as 0.87, 0.84, and 0.78, respectively. The correlation coefficient of these three styles with psychological well-being were 0.50, -0.49, and -0.38 respectively, and with psychological helplessness, they were -0.42, 0.46, and 0.36, respectively (Besharat et al. 2001).

#### 2.4. Data analysis method

In order to describe the data, descriptive statistics indices (mean and variance) and

inferential statistics indices (Pearson correlation coefficient and stepwise regression) were used. The data was analyzed using SPSS 22 software.

### 3. Results

It is worth mentioning that 26 (174.3%) of the participants were men and 124 (82.7%) were women. The age range of the participants was from 18 to 42 years. The frequency (and percentage) of participants in the age groups of 18-26, 27-35 and 36-42 years old were 44 (29.3%), 58 (38.6%) and 48 (32.1%) respectively.

The results of Smirnov's Kolmogorov-Smirnov test (: sensitivity to punishment ( $Z=1.70$ ,  $P=.061$ ), reward responsiveness ( $Z=2.11$ ,  $P=.058$ ), drive ( $Z=2.31$ ,  $P=.056$ ), fun seeking ( $Z=2.49$ ,  $P=.060$ ), mature defense style ( $Z=1.75$ ,  $P=.059$ ), immature defense styles ( $Z=2.06$ ,  $P=.078$ ), neurotic defense styles ( $Z=1.68$ ,  $P=.072$ ), self-destructiveness ( $Z=2.60$ ,  $P=.083$ ), perceived stress ( $Z=1.61$ ,  $P=.070$ )) showed that the data had a normal curve, and therefore for the inferential analysis of the data from parametric tests (Pearson's correlation coefficient and regression) were run.

The use of Pearson's correlation revealed that all predictor variables had a significant relationship with self-destructiveness. Among the predictor variables, the correlation of reward sensitivity, drive, fun seeking and mature defense style with self-destructiveness was negative (Table 1).

Table 1

*Correlation of research variables with self- destructiveness*

Variables	N	Pearson	Sig
Perceived Stress	150	0.20	0.01
Sensitivity to punishment	150	0.36	0.001
Reward responsiveness	150	-0.20	0.05
Drive	150	-0.20	0.01
Fun seeking	150	-0.25	0.01
Mature defense style	150	-0.09	0.2
Immature defense style	150	0.33	0.01
Neurotic defense style	150	0.39	0.01

The subscales of brain-behavioral systems (punishment sensitivity, reward responsiveness, drive and fun seeking), subscales of defense styles (mature,

immature, irritable) and perceived stress as a predictor variable and self-destructiveness as a criterion variable were analyzed.

Table 2

Summary of regression analysis for predicting self- destructiveness based on perceived stress brain-behavioral systems and defense styles

Resource	SS	df	MS	F	Sig
regression	11543.42	6	19238.40	16.28	<0.001
residual	168971.84	143	1181.62		

The results of the regression test showed that these variables can predict self-destructiveness (Table 2).

Further examination of the data demonstrated that among the subscales of punishment sensitivity reward

responsiveness, fun seeking, and drive were related to behavioral brain systems and the subscale of sensitivity to punishment ( $t=6.08$ ,  $BETA=0.57$ ) had more predictive power than the other three subscales.

Table 3

*Regression coefficients for predicting self- destructiveness based on perceived stress, brain behavioral systems and defense styles*

Scale	Subscales	B	Std	BETA	T	P	R <sup>2</sup>
Behavioral brain systems	Sensitivity to punishment	12.61	2.07	0.573	6.08	<0.001	0.11
	drive	-6.52	1.72	-0.281	-3.77	<0.001	0.23
	Reward responsiveness	-7.43	1.93	-0.326	-3.83	<0.001	0.26
	Fun seeking	-8.55	3.34	-0.269	-2.55	0.001	0.33
Defense styles	Mature style	0.03	0.03	0.08	-1.17	0.24	
	Immature	-0.71	0.13	0.58	5.44	<0.001	0.11
	Neurotic	-0.81	0.56	-0.34	-3.22	0.002	0.17
Perceived Stress		0.28	0.10	0.20	2.73	0.007	



It is worth noting that the highest predictive power regarding the three subscales of defense styles was related to the immature subscale ( $t=5.44$ ,  $BETA=0.58$ ) (Table 3).

#### 4. Discussion

The aim of the current research was to predict self-destructiveness based on perceived stress, brain-behavioral systems and defense styles. According to the results, perceived stress ( $r=.20$ ,  $P=.01$ ), sensitivity to punishment ( $r=.36$ ,  $P=.001$ ,  $r^2=.11$ ), drive ( $r=-.20$ ,  $P=.01$ ,  $r^2=.23$ ), reward responsiveness ( $r=-.22$ ,  $P=.05$ ,  $r^2=.26$ ), fun seeking ( $r=-.25$ ,  $P=.01$ ,  $r^2=.33$ ), immature defense style ( $r=.33$ ,  $P=.01$ ,  $r^2=.11$ ) and neurotic defense style ( $r=.39$ ,  $P=.01$ ,  $r^2=.17$ ) exerted a significant effect on the prediction value of self-destructiveness. Similar to the results of the present study, the results of previous studies also revealed that perceived stress leads to an increase in self-destructiveness (Najavits, 2002; Delker & Freyd, 2014). The predictive power of immature and neurotic defense styles on self-destructiveness is also consistent with previous research (Bragazzi et al., 2014; Corruble et al., 2003). Moreover, in line with the present study, which showed that the predictive power of sensitivity to punishment was higher than other brain systems, the research of Komasi et al. (2016) and Alemikhah et al. (2016) illustrated that high sensitivity to punishment is associated with self-harm.

The high level of physiological arousal, the history of abuse in childhood and growing up in hostile and criticizing families cause interpersonal and communication vulnerabilities, so that they

experience more intense negative emotions and cognitions; furthermore, the ability to solve problems in social situations and communication with others are impeded in them. These defects make them unable to show adaptive reactions to the situation in stressful situations (Brody, 2012). This issue confirms the connection between brain mechanisms, defense mechanisms and self-destructiveness. Additionally, in confirming and supporting the role of personal and relational vulnerabilities in creating and perpetuating self-injury, Nock and Mendes (2008) reported that people with self-injury in a stressful situation left the situation sooner and their ability to use adaptive solutions for solving social problems was weaker than normal teenagers, and also their level of confidence in the solutions they give for a hypothetical situation was lower than normal teenagers; In other words, people with a high level of self-destructiveness use immature and neurotic defense styles. The current study showed that among defense styles, immature defense style has more predictive power for self-destructiveness. These results confirm issues proposed theoretically and through research; Although both neurotic and immature defense styles are maladaptive and ineffective coping strategies, neurotic defense styles are more adaptive than immature defense styles and are less related to psychological problems (Besharat et al., 2001). On the other hand, Brody and Carson's (2012) research has shown that the factors that cause self-injury were: high emotional reactivity due to high impulsivity and experience-seeking, experiencing concentrated emotions such as shame and



guilt, low distress tolerance and defects in Regulating emotional arousal states, which can be related to immature and neurotic defense styles.

The present study demonstrated that among the behavioral brain systems, sensitivity to punishment was able to predict self-destructiveness more than other subscales. This finding is in line with brain-behavioral systems theory; This brain-behavioral system is sensitive to anxiety-inducing conditions, punishment and non-reward and is activated in fear-inducing conditions. The activity of this system causes the emotional state of anxiety and behavioral inhibition, passive avoidance and silence. The two behavioral components of this system are: passive avoidance (avoidance of punishment through inactivity or submission) and extinction (stopping behaviors that do not result in reward) (Gray & McNaughton, 2000). Therefore, when this system is active in people, being in a stressful situation can lead to the occurrence of behaviors that are in accordance with the definitions of self-destructiveness. Passive avoidance and silence, which is one of the behavioral components of this system, is considered to be a manifestation of self-destructiveness, since it reduces the probability of future success. For further explanation, it is appropriate to refer to one of the patterns of self-destructiveness; The balancing model of self-destructiveness requires the choice of behaviors that the price of the specific benefits of which is self-harm, in other words, harm or danger is accepted as a necessary companion to achieving other goals. This pattern refers to a situational structure that requires two competing, but unrelated goals. Usually, in

this pattern, a person faces a situation where there is a mismatch between two desirable goals, in such a way that pursuing one of them reduces the person's chance to achieve the other. Many balancing act situations require an immediate goal and a long-term goal, and thus it is possible for a person to make a bad choice by focusing on immediate and short-term outcomes. Urgency creates a lot of perspective and so the short-term benefits are quite obvious to people; however, the long-term goals seem distant. Therefore, factors that increase short-term focus increase the frequency of self-destructive responses in this model. Emotional states are by nature transient and short-lived, and therefore it is likely that they make a decision placing too much importance on short-term and immediate outcomes. In particular, negative emotional states and the tendency to end them quickly should be considered (Leith & Baumeister, 1996). As stated, the brain-behavioral system of sensitivity to punishment is sensitive to anxiety-provoking, punishing and non-reward conditions activated in fearful conditions, and therefore, according to the balance model, there is a tendency to suppress negative emotions in people in whom this brain-behavioral system is active this can lead to self-destructive choices.

The present study was conducted only on pharmacy students of Shahid Beheshti University of Medical Sciences, so caution should be observed in generalizing the findings to other societies. It is suggested to carry out the present study on other demographic groups as well, and with a sufficient number of samples of each sex, it is possible to compare women and men.

## 5. Conclusion

Perceived stress is in dynamic relationship with brain-behavioral systems and defense styles can predict self-destructiveness. Among the brain-behavioral systems, punishment sensitivity and among the defense styles, immature defense styles had a stronger relationship with self-destructiveness.

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## Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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## Research Paper: The Effectiveness of Acceptance and Commitment Therapy on Marital Conflict and Quality of Life in Veterans of the Iran-Iraq War



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### Abstract

The aim of this study was to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on marital conflict and quality of life in veterans of the Iran-Iraq war. The research was a quasi-experimental design using pre-test and post-test with a control group. The statistical population of this study included all veterans who referred to the counseling center of the Foundation of Martyrs in Mashhad in 2022. Using purposive sampling based on the initial questionnaire scores, 30 individuals were selected and randomly assigned to two groups of 15 participants, experimental and control. Kansas Marital Conflict Scale (KMCS) and the World Health Organization Quality of Life (WHO-QOL-BREF) questionnaire were used to measure marital conflict and quality of life, respectively. One-way and multivariate analysis of covariance tests were used for data analysis. The results showed that ACT was effective in reducing marital conflict ( $P=0.001$ ,  $F=15.993$ ) and improving quality of life ( $P=0.001$ ,  $F=67.934$ ) in the research sample. These findings suggest that Acceptance and Commitment Therapy can be used to reduce marital conflicts and improve the quality of life of veterans in clinical settings.

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## 1. Introduction

One of the devastating and harsh consequences of the war for its survivors is the physical and psychological damages that will stay with them for the rest of their lives. These damages not only affect these individuals but also create problems for their families as it will impact their interactions and lead to arguments and conflicts that will reduce their quality of life (Sadeghi et al., 2014). Therefore, it can be expected that veterans of the Iran-Iraq war will also have their quality of life affected due to the aforementioned damages.

Quality of life is a feature that is widely used in the evaluation of clinical and social interventions, treatment effects, and diseases, and its use is increasing day by day (Shah et al., 2011). Lin et al. (2017) define the quality of life as the determining factors of health, happiness, education of social achievements and intelligence, freedom of action, justice, and absence of oppression. In fact, the quality of life is defined as an informed cognitive judgment about an individual's satisfaction with life, which is why when a person experiences physical problems, physical symptoms, treatment prediction, treatment regimen, and related issues can have a significant impact on their overall perception of life satisfaction (Azimi & Bajalan, 2014).

Evidence shows that approximately half of modern marriages end in divorce. After divorce, approximately 65% of women and 70% of men are likely to remarry, and about 50% of people who have remarried will divorce again (Young & Long, 2014). On the other hand, currently, forty percent of

referrals to mental health centers are due to marital conflicts (Bodneman, 2014).

Marital conflict is any kind of conflict over power bases and resources that arises to eliminate the other party's credits and increase their own credits (Dattilio, 2012/2019). Montgomery (2002; as cited in Hosseini Nasab et al., 2010) defines marital conflict as an interactive process in which one or both spouses feel uncomfortable about aspects of their relationship and strive to resolve it in some way. According to various definitions, it can be said that "conflict is an open struggle between at least two interdependent parties who make goals incompatible, resources scarce, and the other party's intervention in achieving their goals unwarranted" (Wilson et al., 2017). Conflict is an inevitable part of family relationships. The closer the relationships, the greater the likelihood of interpersonal conflict. To have dynamic relationships and a calmer home atmosphere, conflicts must be resolved in an appropriate manner (Sommers-Flanagan & Sommers-Flanagan, 2018).

Afzalur Rahim et al. (1999) identify five styles in his conflict resolution theory, including dominating style, integrative style, obliging style, avoiding style, and compromising style. The competitive style tends to be aggressive and uncooperative. In the collaborative style, the individual acts very decisively to achieve goals, but also has a high level of concern for others. The compromising style, which lies midway between aggressiveness and collaboration, is more explicit than the avoiding style, but does not lead to problem resolution as much

as the collaborative style. Passive and non-explicit behaviors are characteristic of the "avoiding style" in conflict resolution. In this style, the individual is not concerned with their own or others' concerns. Non-explicit and collaborative behavior is indicative of the "flexible style" (Mahmoudpour et al., 2020). In this style, the individual sets aside personal concerns to satisfy the desires and needs of others (Wagner et al., 2019).

Studies have shown that cohabitation, adaptation, and intimacy with each other have a significant impact on the health of couples (Kyeong et al., 2019). Married women may experience problems and conflicts in their marriage due to various reasons, such as emotional abuse, lack of physical intimacy, or when work problems lead to spending less time with their spouse, resulting in a decrease in marital intimacy and dissatisfaction (Feeney & Karantzas, 2017). As research has shown, marital conflict and its resolution style have a significant relationship with marital intimacy and romantic relationships in couples (Weisskirch & Delevi, 2013).

Various approaches have been proposed to reduce marital conflict and improve the quality of life, and one of the effective approaches in the field of mental health and well-being is Acceptance and Commitment Therapy (ACT), which was developed in 1986 by Hayes. This approach is a third-wave behavioral therapy that explicitly accepts changing thoughts and feelings rather than changing their content or frequency (Harris, 2012/2018). This therapy has six central processes that lead to psychological flexibility. These six processes include

acceptance, defusion, self as context, present moment awareness, values, and committed action (Zhang et al., 2018).

ACT therapy is one of the recent expanded models whose key therapeutic processes differ from traditional cognitive-behavioral therapy. Its foundational principles include: 1. Acceptance, or willingness to experience pain or other distressing events without attempting to control them, and 2. Value-based action or commitment to action as meaningful personal goals rather than eliminating unwanted experiences in interactions with others and nonverbal attachment in a way that leads to healthy functioning. This approach includes experiences and exercises based on confrontation, linguistic metaphors, and methods such as mindfulness (Hayes et al., 1999).

This therapy allows clients to increase their psychological flexibility by accepting internal experiences, adhering to their values, and reducing experiential avoidance, leading to a reduction in depressive symptoms (Levin et al., 2017). Various studies have shown the impact of Acceptance and Commitment Therapy on psychological well-being (Wersebe et al., 2018), quality of life (Mohammadi et al., 2018), and marital conflicts (Shokraneh Arzanaghi et al., 2019). Alongside the studies conducted in different groups, given the importance of the role of the quality of marital relationships in the individual and interpersonal health of veterans and their quality of life, the necessity of intervention to reduce their conflicts and improve their quality of life has emerged as a question in this study: Is Acceptance and

Commitment Therapy effective in reducing marital conflicts and improving the quality of life of veterans of the Iran-Iraq war?

## 2. Method

This study was conducted as a quasi-experimental pretest-posttest design with a control group. The statistical population of this study included all veterans who referred to the counseling center of the Martyrs and Veterans Foundation in Mashhad city during the second quarter of 2022. Using purposive sampling and based on the relevant questionnaire scores, 30 individuals were selected as the statistical sample. Then, they were randomly assigned to two groups of 15, experimental and control. Inclusion criteria were the ability to read and write, being a veteran, willingness to participate in therapy sessions, and having marital conflicts. Exclusion criteria were simultaneous participation in other therapeutic programs and lack of willingness or informed consent to participate in the study. To analyze the data, one-way ANCOVA and MANCOVA tests were used with the help of SPSS-22 software.

### 2. 1. Instruments

#### **Kansas Marital Conflict Scale (KMCS):**

This questionnaire was developed by Eggeman et al. (1985) and consists of 27 items that measure marital conflict between couples. The questionnaire is scored on a 4-point Likert scale, with options ranging from "Never," "Rarely," "Sometimes," to "Almost Always," corresponding to scores of 1, 2, 3, and 4, respectively. The questionnaire was standardized on 385 young couples in

Manhattan, Kansas, USA. The reliability of the questionnaire was determined using Cronbach's alpha coefficient, yielding a value of 0.98. In Iran, the reliability evaluation of the questionnaire was conducted on 300 married individuals referred to pre-divorce counseling centers in Rafsanjan city, using the Cronbach's alpha coefficient. The results indicated that the Cronbach's alpha of the questionnaire exceeded the minimum acceptable threshold of 0.70 (Amrollahi et al., 2013; cited in Javdan et al., 2018). In the present study, the reliability was obtained using Cronbach's alpha coefficient, yielding a value of 0.86.

#### **World Health Organization Quality of Life (WHO-QOL-BREF):**

This questionnaire was designed by the World Health Organization (2004) to assess quality of life. The short form of this questionnaire consists of 26 items and evaluates four domains of physical health, mental health, social relationships, and environmental health through 24 questions (with 7, 6, 3, and 8 questions, respectively). The Cronbach's alpha coefficients for the four domains of physical health, mental health, social relationships, and environmental health were 0.77, 0.74, 0.81, and 0.78, respectively, and the overall quality of life score was 0.80. In Iran, Nejat et al. (2006) adapted this scale for a sample of 1167 individuals. They obtained reliability coefficients using Cronbach's alpha for the healthy population in the domains of physical health (0.70), mental health (0.73), social relationships (0.55), and environmental relationships (0.84). They also reported a test-retest reliability coefficient of 0.70 after a 2-week interval and reported its

structural validity. In the present study, the reliability coefficient for the overall quality of life scale was obtained using Cronbach's alpha, yielding a value of 0.83.

**Table 1** provides a description of the acceptance and commitment therapy sessions based on the Acceptance and Commitment Therapy treatment protocol (Hayes et al., 2019).

Table 1

*Description of Sessions of Acceptance and Commitment Therapy protocol (Hayes et al., 2019).*

Session Number	Session Objective
Session 1	Introduction and establishing rapport among group members, providing preliminary information, conceptualizing the problem, and preparing the participants. Providing information about the role of veterans' traumas in marital conflicts and quality of life.
Session 2	Introducing concepts of Acceptance and Commitment Therapy (psychological flexibility, psychological acceptance, mindfulness, cognitive defusion, self-as-context, personal story, values clarification, and committed action), discussing participants' experiences, and evaluating them.
Session 3	Mindfulness training (emotional awareness and mindful observation), teaching participants descriptive skills and how to use them, their functions, non-judgment, and staying focused. Also, utilizing the relaxation technique by members when increasing responsibility and commitment, addressing control as a measurement problem.
Session 4	First, focusing on increasing psychological awareness, and then, instructing individuals on how to appropriately respond and confront their cognitive experiences and create social life goals and practical commitment. Reviewing members' positive and negative aspects and weakening self-concept and expressing the true self without any judgment or emotional reaction, and behavioral commitment.
Session 5	Teaching tolerance of uncertainty and reducing marital conflicts, increasing tolerance and responsibility (skills in crisis management, redirecting attention, self-soothing using the six senses, and practicing mindfulness). Reviewing previous sessions and providing feedback among members.
Session 6	Emotion management training (the goals of this training, understanding the importance of emotions, recognizing emotions, increasing positive emotions (changing emotions through opposite action to recent emotion, practical exercises of learned skills, providing feedback through the group and therapist).
Session 7	Increasing individual and interpersonal effectiveness, teaching interpersonal skills (description and expression, asserting oneself and having courage, overt confidence, negotiation, and self-esteem). Assessing performance, introducing the concept of values, and highlighting the risks of outcome-oriented focus.
Session 8	Understanding the nature of willingness and commitment, recognizing and determining appropriate patterns of action aligned with our values ,concluding remarks..

### 3. Results

In this study, first, a descriptive analysis of the findings (mean and standard deviation) was conducted, followed by an inferential analysis (multivariate analysis of covariance,

MANCOVA) assuming homogeneity of within-group variances using the Levene's test, and normality of data distribution using the Shapiro-Wilk test.

Table 2

Descriptive Indices of Research Variables in the Experimental and Control Groups Before and After the Intervention

Variables	Group	Pre-test Mean	Pre-test Standard Deviation	Post-test Mean	Post-test Standard Deviation
Marital conflict	Experimental	97.50	2.72	46.65	2.69
	Control	83.52	3.16	78.95	3.54
Physical health	Experimental	16.50	1.06	28.90	1.41
	Control	18.75	1.66	21.65	1.83
Mental health	Experimental	11.15	1.56	24.15	1.08
	Control	14.90	6.68	20.50	1.43
Social relationships	Experimental	11.55	0.82	11.55	0.87
	Control	8.60	1.14	8.60	1.19
Environmental health	Experimental	14.00	1.29	30.70	1.80
	Control	20.30	2.29	20.75	1.94
Quality of life	Experimental	54.50	3.42	101.97	3.51
	Control	68.75	8.35	76.05	3.37

Based on the data in Table 2, the comparison of the mean scores of marital conflict and the quality of life and its subscales in the two groups before and after the intervention suggests that the mean scores of the experimental group have changed more compared to the control group in the post-test phase.

The Shapiro-Wilk test was used to examine the normality of the scores, and the results showed a significant level higher than 0.05 for all variables. Therefore, the assumption of normality of the scores is valid. The Levene's test was also used to examine the homogeneity of variances, and the results showed a significant level higher than 0.05, confirming the assumption of homogeneity of variances.

Table 3

*Results of multivariate analysis of covariance in the two research groups*

Test Name	Value	F	Hypothesis df	Error df	Significance Level	Eta Squared
Pillai's trace	0.611	<sup>a</sup> 15.462	3	23	0.0001	0.551
Lambda Wilks	0.434	<sup>a</sup> 15.462	3	23	0.0001	0.551
Hotelling's Trace	1.321	<sup>a</sup> 15.462	3	23	0.0001	0.551
Largest Root Error	1.439	<sup>a</sup> 15.462	3	23	0.0001	0.551

The results in [Table 3](#) indicate that the significant levels of all tests suggest that the use of the multivariate analysis of covariance (MANCOVA) is permissible. These results demonstrate that there is a significant difference in at least one of the dependent variables between the research groups. Eta

squared indicates that the difference between the two groups, based on the dependent variables as a whole, is significant, and the magnitude of this difference is 0.50, which means that 50% of the variance related to the difference between the two groups is due to the interaction of the dependent variables.

Table 4

Summary of the results of multivariate analysis of covariance on the effect of acceptance and commitment therapy on marital conflict and quality of life in veterans.

sources of variations	SS	df	MS	F	Sig
Marital Conflict	1475.379	1	1475.379	158.993	0.001
Quality of Life	595.391	1	595.391	67.934	0.001
Marital conflict	334.041	26	8.980		
Quality of Life	323.753	26	9.735		
Marital conflict	200278	30			
Quality of Life	329730	30			

As can be seen in [Table 4](#), since the F-value for the variable of marital conflict ( $P = 0.001$ ,  $F = 993.158$ ) and quality of life ( $P = 0.001$ ,  $F = 934.67$ ) is significant at the level of  $\alpha = 0.01$ , it can be concluded that

acceptance and commitment therapy is effective in improving marital intimacy, reducing marital conflict, and improving the quality of life in veterans.



Table 5

*Results of One-Way ANCOVA analysis of the effect of Acceptance and Commitment Therapy on marital conflict*

Source of Variation	SS	df	MS	F	Sig	Effect Size
Pre-test	0.060	1	0.060	0.003	0.879	0
Independent variable	3214.172	1	3214.172	319.524	0.001	0.909
Error	375.430	27	2159.429			
Total	221287	30				

Based on the results in Table 5, since the value of F for the variable of marital conflict ( $0.001/0 = P$   $524/319 = F$ ) is significant at the level of  $0.001/0 =$

$\alpha$ , it can be concluded that acceptance and commitment therapy has an effect on marital conflict in veterans.

Table 6

Summary of results from the multivariate analysis of covariance for the effect of acceptance and commitment therapy on quality of life in veterans.

Index of Source of variation		SS	Df	MS	F	Sig
Group effect	Physical health	77.310	1	77.310	34.372	0.002
	Mental health	22.003	1	22.003	10.091	0.001
	Social relationships	17.450	1	17.450	-10.991	0.002
	Environmental health	166.172	1	166.172	36.976	0.001
Error	Physical health	66.468	24	1.969		
	Mental health	43.460	24	1.826		
	Social relationships	12.321	24	0.976		
	Environmental health	63.762	24	2.323		
Total	Physical health	22792	30			
	Mental health	27614	30			
	Social relationships	4230	30			
	Environmental health	28592	30			

Based on the results in Table 6, because the value of F for the physical health variable ( $0.002/34.372 = F$ ), mental health ( $0.001/10.091 = F$ ), social relationships ( $0.002/10.991 = F$ ), and environmental health ( $0.001/36.976 = F$ ) are all significant at the level of  $\alpha = 0.05$ , it can be concluded that acceptance and commitment therapy has an

effect on the quality of life and its subscales in veterans.

#### 4. Discussion

The present study examined the effect of acceptance and commitment therapy on marital conflict and quality of life in veterans

of the Iran-Iraq war. The results showed a significant impact of this therapy on reducing marital conflict and improving the quality of life of veterans.

The first part of the conclusion relates to the effect of ACT on marital conflict. The findings of this study showed that this therapy leads to a reduction in marital conflicts in the sample group. In this regard, [Shokraneh Arzanaghi et al. \(2019\)](#) found in their study that acceptance and commitment therapy is effective in coping strategies of couples, emotional awareness, and dimensions of marital conflict. This therapy has reduced marital conflicts. [Maazinezhad et al. \(2021\)](#) also showed in their study on the concurrent effectiveness of couples' education based on acceptance and commitment therapy (ACT) and imagery therapy on managing marital conflict that educating couples based on ACT and imagery therapy is effective in managing marital conflicts. Moreover, the results indicated that educating couples based on ACT is more effective in the dimensions of family and kinship relationships, while educating couples based on imagery therapy is more effective in the emotional dimension. No significant difference was observed between these two methods in other dimensions of conflict management. [Brown et al. \(2018\)](#) also found in their study on the effectiveness of acceptance and commitment therapy in improving psychological distress, psychological flexibility, self-confidence in behavior management, and conflicts in couples with children with acquired brain injury that this therapy is effective in reducing marital conflicts, which is

consistent with the results of the present study. In explaining this result, it can be said that, due to the heavy trauma experienced by veterans as a result of the war and repeated attacks, it is natural for them to have less emotional stability, which can affect their marital relationship at any moment and cause unrest and arguments with family members, creating conflicts. On the other hand, since acceptance and commitment therapy focuses on reducing conflicts and creating agreements and teaching compatible ways of married life instead of managing conflicts, it emphasizes discovering values and how to create a meaningful life for oneself and one's spouse by creating personal values. In this way, couples pay attention to all their life experiences to find more effective ways of living. Acceptance and commitment therapy encourages individuals to accept cognitive processes as a necessary and real function for psychological adaptability and, consequently, reduces negative cognitive patterns in individuals. This therapy enables individuals to manage difficult and crisis situations more effectively ([Lamar et al., 2014](#)).

In the second part of the conclusion, the effectiveness of acceptance and commitment therapy (ACT) on the quality of life of veterans was discussed. The results of this study showed that ACT-based therapy is effective in improving the quality of life and its subscales in veterans. This finding is consistent with the study by [Ghare baglo and Ahangar \(2022\)](#) and inconsistent with the study by [Narges et al. \(2016\)](#). It can be explained that veterans face numerous challenges after the war, including the loss of

friends and comrades, injuries resulting from chemical attacks, and the potential stress resulting from their experiences during the war, all of which can reduce their quality of life. Mindfulness, which is a key component of ACT, is a predictor of self-regulatory behavior and positive emotional states (Gaudiano et al, 2010). ACT, which is a combination of mindfulness and acceptance, teaches individuals to represent the objects of life that are beyond human control through breathing and thinking, so they can see these challenges without judgment and avoid them. By seeing these challenges and difficulties without judgment, the resulting pain will be lessened, leading to improved psychological and social well-being and individual adaptability, which ultimately improves the quality of life. ACT helps veterans to accept their life conditions, express their negative thoughts and emotions clearly, and thus have higher flexibility in different life situations, improving their quality of life from different angles. It is recommended to hold ACT-based educational courses during recreational tours for veterans who have experienced difficult conditions to help them resolve their marital conflicts and improve their quality of life, given the limitations such as the difficulty of coordinating and conducting sessions with this group of individuals.

## 5. Conclusion

In conclusion, the results showed that acceptance and commitment therapy reduces marital conflicts in veterans, which leads to improved marital relationships and quality of life. Based on the results, it can be concluded

that acceptance and commitment therapy is an effective and useful treatment for this group of individuals in clinical settings.

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## Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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## Research Paper: Prediction of Psychological Well-being based on the Perceived Authentic Leadership Style and Work Engagement in the Employees of Factory



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### Abstract

One of the important ways to increase organizational virtue is leadership, which can increasingly be considered as a role in creating differences. Therefore, among the theories that have been proposed for inspiring and implementing organizational virtue, authentic leadership theory is the most recent and comprehensive leadership approach that has been discussed in recent years. The present study aimed to predict psychological well-being based on perceived authentic leadership style and job engagement in employees. This research was descriptive and correlational in nature. The study population consisted of factory employees. The sample size was determined using Cochran's formula, and 77 individuals were randomly selected as the sample. Three questionnaires were used to measure the research variables: Ryff's psychological well-being scale (RPWBS), the authentic leadership questionnaire (ALQ) and Utrecht Work Engagement Scale (UWES). The data were analyzed using multiple regression analysis. The results of the study showed that 29.0% of the variations in psychological well-being could be predicted by the perceived authentic leadership style variable ( $\beta=0.539$ ,  $\alpha<0.01$ ) and 25.7% of the variations in psychological well-being could be predicted by the job engagement variable ( $\beta=0.507$ ,  $\alpha < 0.01$ ). Therefore, to improve the well-being of employees, attention should be paid to authentic leadership style and Job engagement.

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## 1. Introduction

Today's world is rapidly moving towards industrialization, with competitive markets and commercialization, which obliges organizations to focus on aspects such as productivity, flexibility, and responsiveness. The turbulent conditions of the 21st-century global economy have led organizations to face increasing challenges and pressures in meeting stakeholders' demands (Hameed & Sharma, 2020). Since attention to factors such as the level of trust and acceptance of employees towards managers and organizations, creativity, and effectiveness enhances organizational excellence, employees strive to maximize their potential in achieving management and organizational goals (Feldner & Berg, 2014).

Psychological well-being can be defined as happiness, joy, and having positive emotions in life, where individuals strive to develop their potential abilities. Psychological well-being can be defined as happiness, joy, and having positive emotions in life, where individuals strive to develop their potential abilities (Adil & Kamal, 2017). The concept of psychological well-being has deep roots in the field of psychology. Key studies on well-being have been conducted by Ryff (1989). Psychological well-being is a multidimensional concept that encompasses physical and mental health, educational status, economic situation, material security, attainment of independence and freedom, and the ability to participate in urban life (Rodriguez-Bravo et al., 2020).

Therefore, psychological well-being is understood as a multidimensional construct

that encompasses individual and social aspects, influencing how we perceive, interpret, and engage with the world, as well as how we cope with life events and challenges. This means that psychological well-being relies on the deployment of emotions and strategies that are conducive to optimal physical and social performance (Rodriguez-Bravo et al., 2020). On a personal level, individuals with higher levels of psychological well-being tend to have larger social networks, more energy, and better immune systems. At the organizational level, creativity, collaboration, job quality, individual performance, and organizational productivity increase (Adil & Kamal, 2017). The PERMA model is one of the most prominent models in the field of psychological well-being. The current model considers psychological well-being as a comprehensive growth process that spans throughout the lifespan. Ryff and Singer (1998) primarily attempted to determine and categorize the criteria for a desirable life or, in other words, a good life based on philosophical foundations (such as Aristotle and Russell).

Authentic leaders enhance the psychological well-being of employees and help them revive when faced with challenges, deficiencies, and failures (Beddoes-Jones & Swailes, 2015). Therefore, authentic leadership is considered one of the most important components in predicting psychological well-being. Authentic leaders are individuals who have self-awareness and are conscious of their thoughts and behaviors. They know who they are, what they think, and how they behave, and they are aware of

the values/ethics of their own and others' knowledge and abilities. They are also aware of the context in which they need to operate. An organization is considered authentic when it accepts limitations and uncertainties in leadership, understands its capacity for responsibility and choice, acknowledges its mistakes, utilizes its creative management skills for flexible planning, growth, and policy development, and actively participates in a broad community (Cameron et al., 2016).

Authentic leadership is characterized as a specific leadership behavior that possesses both positive psychological qualities and prevents an unethical climate within an organization. The values created by authentic leadership enhance effective relationships among employees and organizations (Grošelj et al., 2020). Authentic leadership can have a positive impact on organizations, as it is associated with various outcomes such as individual creativity, individual performance (Duarte et al., 2021), customer orientation, and employee retention and commitment (Ribeiro et al., 2020).

Job engagement is a positive psychological concept and is recognized as an indicator of well-being and psychological health in the workplace. Job engagement encompasses the levels of energy, dedication to work, and effectiveness in one's profession (Karimianpour & Moradi, 2018). Additionally, there is a relationship between psychological well-being in the workplace and job engagement (Umans et al., 2016; Probergpp et al., 2020; Ponomareva et al., 2020). Therefore, job engagement is one of the most influential factors in predicting psychological well-being. Khan (1990) was

the first to introduce the concept of job engagement in work environments, defining it as the use of one's entire self in fulfilling work roles. Job engagement consists of three components: vigor, dedication, and absorption, which refers to the intense psychological involvement of employees in their work (Salehi et al., 2021).

Job engagement refers to the level of energy, job involvement, and effectiveness. It is described as having enthusiasm for work, high levels of energy, mental flexibility while working, enthusiasm for investing, and resilience in facing challenges. Work attraction involves a deep focus on work, difficulty in separating from work, the rapid passage of time, and forgetting everything around while working. It also includes a sense of meaningfulness in work, a sense of enthusiasm and pride in work, and a sense of the work being challenging (Karimianpour & Moradi, 2018). Employees who are interested, motivated, and enthusiastic have higher productivity, a greater tendency to stay in the organization, fewer absences, and higher work motivation. They are also more likely to support and accompany organizational changes (Falaki Koluri et al., 2020). Therefore, organizations should strive for leadership styles that can create motivated, committed, and retention-oriented human resources, leading to improved individual and organizational performance (Aluwihare-Samaranayake et al., 2018).

Multiple studies have been conducted on the topics of psychological well-being, authentic leadership, and job engagement. Koon and Ho (2020) demonstrated in their study "Perceived Authentic Leadership and

Job Engagement: The Mediating Role of Employee Psychological Well-being" that psychological well-being in the workplace has a mediating effect between perceived authentic leadership and job engagement. Studies indicate that psychological well-being plays an important role in various aspects of personal, family, social life, and job performance (Gun, 2020). Falaki Koluri et al. (2020) found in their research that job engagement has an impact on organizational commitment. The results of the study by Ghorbanpour et al. (2022) indicate the importance of psychological well-being in predicting job engagement among teachers of slow learners. Tomasz (2020) has shown that authentic leadership can lead subordinates to engage in unethical organizational behaviors. This does not mean that one should abandon authentic leadership, but rather pay more attention to learning what is morally acceptable and unacceptable in an organization. Ethics should be integrated with the core values of the organization. However, when evaluating leaders, their ethics should be taken into consideration. The findings of Maarefi and Sharifi (2021) indicate a significant positive impact of mental well-being on job engagement and perceived organizational support. Karami and Amanian (2021) demonstrated in their research titled "The Impact of Spiritual Leadership on Psychological Well-being of Employees" that the components of spiritual leadership, including performance feedback, organizational commitment, vision, friendship, and membership, had the greatest impact on employees' psychological well-being in the police force.

Leadership plays an important role in challenging and uncertain times (Baran and Woznyj, 2020; Rath et al., 2021) as employees look to leaders for guidance and direction. Authentic leadership leads to employees' job enthusiasm. Job enthusiasm creates qualities in individuals that directly relate to their work performance. They voluntarily go beyond job responsibilities to achieve organizational goals and become physically, emotionally, and cognitively engaged and intertwined with their work (Faryad et al., 2016). If leaders fail to strive towards organizational goals and fail to recognize and provide a conducive environment for the growth and flourishing of employees' capabilities, over time, individuals will lose their motivation to align with organizational strategies or even engage in organizational diagnostics to identify organizational priorities and resources. Leadership encourages employees to actively participate in the work environment through the motivation they create in their followers and encourage active engagement through their behaviors and attitudes, leading to an increase in employee job enthusiasm (Tadbari & Shafizadeh, 2016).

Leadership encourages employees to act according to the values, attitudes, and fair behavior of the organization in any situation by creating beliefs, understanding, assigning responsibilities to individuals, employing participatory management, and creating an appropriate organizational climate to achieve organizational health and promote a culture of honesty and trust (Fateh et al, 2022). Successful organizational change depends on the leaders' ability to recognize the need for

change and plan for its achievement so that management can move, alongside the workforce, with unity and cohesion towards predetermined goals (Cottrill et al., 2014). Additionally, leaders have a great responsibility to create conditions that motivate members to strive towards the organization's defined goals (Purwanto, 2022).

Most factories are managed in a traditional management thinking manner, which was also the case with this factory. This approach has fundamental weaknesses in establishing human relationships and considering the human aspects of work, which has led employees to prioritize their personal goals over organizational goals. Furthermore, the lack of emphasis on empowerment and disregard for initiative and innovation over time has turned employees and managers into mere administrative and executive tools within this organization, rendering discussions and thinking about work along with training and acquiring new knowledge in this area useless and devoid of practical value. If human resources do not see themselves as part of the organization and make efforts towards achieving organizational goals and if the organization does not give due recognition to the talents and worthiness of its employees in its management and fails to create a flexible environment for their growth and flourishing, over time, individuals will lose their motivation to align strategies or even engage in organizational diagnostics to identify organizational priorities and human resources. These issues have prompted a decrease in the psychological well-being

components from the perspective of Oraki and Sami (2016) in the factory, which include autonomy (feeling competent and capable of managing one's environment), personal growth (continuous personal development), self-acceptance (having a positive self-perception), and environmental mastery (the ability to choose and create a suitable environment). These factors have led to a greater sense of the need to increase psychological well-being among employees.

Furthermore, one of the necessities of conducting this research was that authentic leadership and its characteristics were not given much attention in the factory until now. This gap led to the execution of this study in this field. The management perspective of the factory should always aim to increase the psychological well-being of employees in order to enhance their mental well-being and self-actualization and influence organizational justice.

Therefore, the aim of this article was to predict psychological well-being based on perceived authentic leadership style and job enthusiasm in employees.

## 2. Method

The present study adopted a descriptive correlational research design in terms of data collection and research method. The population of the study included the employees of Hebelk's factory, with a total of 96 individuals. The sampling method was random, and the sample size was determined using Cochran's formula, resulting in the selection of 77 participants. With the cooperation of the factory management, a



link to the questionnaire was randomly sent to the employees' mobile numbers, taking into account their access to electronic communications and announcements. To prevent potential reduction in the sample size due to high workload, excessive working hours, and possible internet access issues, a larger number of individuals were selected. Ultimately, after continuous follow-up to ensure internet access and to gain the employees' trust in the confidentiality of their opinions and their willingness to participate, 77 individuals completed the questionnaires on well-being, job satisfaction, and authentic leadership. The inclusion criteria consisted of employees with a minimum of six months of work experience, internet access, and willingness to respond to the questionnaire. The exclusion criteria included employees who had temporarily transferred to other branches and any incomplete questionnaires. The participants were assured that their answers would be completely confidential and would only be analyzed for research and improvement purposes. Ethical considerations were observed in the study. Based on the orientation session and the cooperation of the employees, no compromised questionnaires were observed.

### 2.1. Instruments

**Ryff's Psychological Well-Being Scale (RPWBS):** This scale was developed by Ryff (1989) and was revised in 2002 (Hofer et al., 2005). The original form of this questionnaire consists of 120 items, but shorter forms with 84, 54, and 18 items have also been proposed in subsequent studies. In this research, the short-form 18-item Ryff Psychological Well-

being scale was used to measure the variable of psychological well-being. The scoring of the Ryff Psychological Well-being questionnaire is based on a six-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree). It consists of six subscales and components (self-acceptance, positive relations with others, autonomy, environmental mastery, purposeful life, and personal growth), with three questions considered for each component, and a total score.

The reliability coefficient of the psychobiological well-being scale (referred to as "Reeve") was found to be 0.82 using the test-retest method. The subscales of self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life, and personal growth had reliability coefficients of 0.70, 0.77, 0.78, 0.77, 0.71, and 0.78 respectively, which were statistically significant ( $p < 0.001$ ) (Bayani et al., 2008). Li et al. (2014) reported a correlation of 0.84 between this questionnaire and an 84-item scale. Furthermore, the content and construct validity of the test have been confirmed in various studies. The results of a study by Li et al. (2014) for the 18-item version of the scale showed factor loadings of at least 0.60 and Cronbach's alpha reliability coefficients of 0.92 and 0.60-0.75 for the subscales. Regarding the convergent validity of the psychobiological well-being test, evidence suggests that the six psychological well-being factors have a positive correlation with life satisfaction (Yaryari et al., 2007). In the Iranian version, the reliability coefficients using Cronbach's alpha for the three



components of purpose in life, personal growth, and environmental mastery were found to be 0.92, 0.91, and 0.89 respectively (Saadati & Moltafat, 2017).

**The Authentic Leadership Questionnaire (ALQ):** The Authentic Leadership Questionnaire, developed by Avolio et al (2006; as cited in Walumbw et al., 2008) consists of 15 questions and uses a Likert five-point scale (ranging from 1-5, with options such as "very rarely", "rarely", "moderately", "often", and "very often") to measure authentic leadership. The subscales include self-awareness questions 1-4, balanced processing questions 5-7, ethical-moral questions 8-11, and relational transparency questions 12-15. The questionnaire's reliability has been confirmed by experts and specialists in the field, with a Cronbach's alpha coefficient of 0.80 obtained (Ghadami, 2017). The reliability of the questionnaire for the components of self-awareness, balanced processing, ethical-moral, and relational transparency, using the Cronbach's alpha method in a study by Atari (2017), was found to be 0.84, 0.71, 0.82, and 0.71, respectively, indicating the questionnaire's reliability and necessary validity. In terms of validity and reliability of the research results (Giallonardo et al., 2010), it was shown that the factor loadings of the questionnaire items ranged from 0.66 to 0.87, and the overall reliability of the scale, based on the Cronbach's alpha coefficient, was reported as 0.91, while the reliability of the self-awareness, relational transparency, inner ethical aspects, and balanced processing components was reported as 0.71, 0.69, 0.8, and 0.83, respectively. The results of the

research by Ghanbari et al. (2016) showed that the structural validity and internal consistency of the Authentic Leadership Questionnaire were confirmed, with factor loadings of the four components of self-awareness, relational transparency, inner ethical aspects, and balanced processing reported as 0.74, 0.90, 0.88, and 0.89, respectively.

**Utrecht Work Engagement Scale (UWES):** This Questionnaire was developed by Schaufeli et al. (2006) and consists of 17 Likert-type items on a five-point scale (ranging from strongly disagree to strongly agree). The subscales include professional energy (items 1-6), professional sacrifice (items 7-11), and professional engagement (items 12-17). The validity of the questionnaire was reported to be 0.95 based on Jalali's research (2007; cited in Ziaaldini & Sohi, 2013), and the reliability, assessed using Cronbach's alpha, was reported to be 0.92. Hajloo's findings (2013), resulting from exploratory and confirmatory factor analysis, showed that three interrelated yet distinct factors of energy, commitment, and visible attraction were present. The results regarding reliability indicated that the three-dimensional aspects of energy, commitment, and attraction in the questionnaire exhibited internal consistency based on Cronbach's alpha. In order to ensure the validity of the questionnaire, its convergent and divergent validity as well as construct validity were examined. For evaluating convergent validity, the correlation between the scores and dimensions of the questionnaire with job satisfaction scores was calculated, resulting in values ranging from 0.76 to 0.84. For

evaluating divergent validity, the correlation between the scores and dimensions of the questionnaire with job burnout scores was calculated, resulting in values ranging from 0.35 to 0.44. The study by [Tomas et al. \(2018\)](#) demonstrated that factor loadings obtained through factor analysis allowed us to estimate internal consistency and validity, with values ranging from 0.74 to 0.85. Cronbach's alpha was also estimated for the model, yielding a value of 0.63.

## 2.2. Data Analysis procedure

In this study, two methods were used for data analysis: descriptive statistics and inferential statistics. Descriptive statistics were used to describe the mentioned data using measures of frequency, percentage, and graphs. Additionally, central tendency measures such as the mean and dispersion measures such as standard deviation were used to better describe the data. In terms of inferential statistics, the multiple regression method was used to test hypotheses, using the 2SPSS software.

## 3. Results

Table 1  
*Descriptive statistics of research variables*

Variable	Mean	Standard Deviation	Minimum	Maximum
Psychological well-being	3.37	0.75	2	5
Job engagement	3.72	0.70	2	5
Perceived authentic leadership style	3.25	0.74	1.5	5

The psychological well-being questionnaire was determined by 18 items.

The study sample consisted of 77 employees of the Heblex factory. 6 individuals, equivalent to 7.7%, were under 25 years old. 16 individuals, equivalent to 20.7%, were between 25 and 30 years old. 24 individuals, equivalent to 31.1%, were between 31 and 35 years old. 20 individuals, equivalent to 25.9%, were between 36 and 40 years old. 11 individuals, equivalent to 14.3%, were over 40 years old. Among the respondents, 26 individuals, equivalent to 33.8%, had a high school diploma or lower education. 7 individuals, equivalent to 9.1%, had an associate degree. 31 individuals, equivalent to 40.3%, had a bachelor's degree. 13 individuals, equivalent to 16.9%, had a master's degree or higher. Additionally, among the respondents, 22 individuals, equivalent to 28.4%, had less than 5 years of work experience. 31 individuals, equivalent to 40.3%, had between 5 and 10 years of work experience. 24 individuals, equivalent to 31.1%, had between 11 and 15 years of work experience. The mean, standard deviation, as well as the minimum and maximum scores of the questionnaire variables, are shown in [Table 1](#).

The lowest score for this variable, according to respondents, is equivalent to 2 and the highest score is equivalent to 5. The job

enthusiasm variable in the questionnaire was determined by 17 items. The lowest score for this variable, according to respondents, is equivalent to 2 and the highest score is equivalent to 5. The perceived authentic leadership style variable in the questionnaire was determined by 15 items. The lowest score for this variable, according to respondents, is equivalent to 5.1 and the highest score is equivalent to 5.

Table 2

Regression analysis results predicting psychological well-being based on authentic leadership and job engagement

Hypothesis test	R value (coefficient of correlation)	R <sup>2</sup> (coefficient of determination)	Coefficient of change	Constant value	Beta	sig
Authentic leadership	0.53	0.29	0.57	0.42	0.53	0.000
Job satisfaction	0.50	0.25	0.54	0.19	0.50	0.000

Based on Table 2, it can be observed that  $\beta = 0.539$  was significant at the 0.01 level for the authentic leadership variable. Therefore, the perceived impact of authentic leadership on psychological well-being is 53.9%, which was positive considering the positive sign of the beta coefficient. With respect to the coefficient of determination, it can be stated that 29.0% of the variation in psychological well-being can be predicted by the perceived authentic leadership variable. Similarly, the results of the table regarding the job satisfaction variable show that  $\beta = 0.507$  was significant at the 0.01 level. As a result, the impact of job satisfaction on psychological well-being is 50.7%, which was positive considering the positive sign of the beta coefficient. Additionally, with regard to the

The results related to the regression analysis of predicting the relationship between psychological well-being and authentic leadership, as well as the results of predicting job enthusiasm based on psychological well-being, are presented in Table 2.

coefficient of determination, it can be stated that 25.7% of the variation in psychological well-being can be predicted by the job satisfaction variable.

#### 4. Discussion

The findings demonstrated the impact of authentic leadership style on psychological well-being. These results are consistent with the findings of Karami and Amanian (2021) and Wu and Tsai (2020). Authentic leadership is associated with customer orientation, job preservation, and employee engagement (Rebore et al.). It also increases psychological well-being resources (Boudrias & Savoie, 2015). By examining the items assessing perceived authentic

leadership styles, it can be concluded that among these items, the item "the manager attentively listens to different perspectives" had the lowest average, indicating that employees do not feel comfortable expressing their opinions to managers and believe that managers solely manage the organization based on their own mentality and beliefs, disregarding the importance of employees' opinions, which is the main pillar of an organization. This management style leads to inflexibility, lack of attention to human resources, wasting of time and resources, and conflicts of interest. It also hinders quick adaptation to the environment and causes employee frustration (Shahrokhi, 2023), which in turn leads to employee dissatisfaction and lack of optimism in the work environment. This ultimately results in emotional exhaustion and fatigue for employees in the long run. Pessimism and dissatisfaction in the work environment lead to frustration and ultimately cause emotional exhaustion (Vahdati et al., 2021).

The findings demonstrated the impact of job enthusiasm on employees' psychological well-being. These findings were consistent with the studies conducted by Thomas (2020), Maarefi and Sharifi (2021), and Ghorbanpour et al. (2022). The research conducted by Do and colleagues (2021) showed that authentic leadership enhances employees' enthusiasm. This study contributes to the literature on authentic leadership and provides insight into how individual and contextual factors interact to influence the impact of authentic leadership on job enthusiasm in organizations. Therefore, it is necessary to organize classes

and explanatory sessions to raise awareness among managers and justify the importance of employees' opinions in improving processes, as they are directly involved in operational activities and understand many hidden aspects of the work. To clarify the results, it can be stated that leaders should understand that factors such as self-acceptance (having a positive attitude towards oneself), autonomy (evaluating oneself under pressure), and personal growth (perceiving oneself as a growing entity) increase enthusiasm and perceived authentic leadership, leading to better role performance and increased well-being in the workplace. Job enthusiasm, defined as job involvement, leads to an increase in psychological well-being, which also enhances the presence of positive emotions, absence of negative emotions, and job satisfaction among employees. Therefore, managers should clearly and consistently focus on enhancing these factors. Moreover, it can be stated that authentic leadership, with characteristics such as internalized morality and transparency, fosters the creation of social capital and increases psychological well-being resources. Increasing psychological well-being based on authentic leadership and job enthusiasm strengthens organizational virtue in the workplace. There is a significant positive relationship between organizational virtue, job enthusiasm, and psychological well-being. The first and biggest limitation of this research was the time constraint, which prevented further monitoring of the implementation of authentic leadership style and its impact on psychological well-being. Therefore, it is suggested to employ a dedicated consultant in the organization who

has enough time to assist managers in implementing appropriate programs to change employees' psychological capital, so that they can revive and increase job satisfaction when facing problems or failures, ultimately leading to an increase in psychological well-being. The second limitation concerns how individuals respond, as some employees may not accurately complete the questionnaires due to job demands and long working hours. Therefore, it is recommended to expand the study to other factories with careful execution. Additionally, this study did not include moderating variables such as age and education, which is another limitation in generalizing the results to other participants or different time periods. It is suggested to examine the impact of variables such as education and age in future research. Furthermore, considering the significant role of socio-economic status in employees' perspectives, it is recommended to further investigate this aspect in future studies.

## 5. Conclusion

An authentic leadership with its four dimensions of self-awareness, balanced processing, relational transparency, and ethical aspects has been introduced as an appropriate behavioral model to improve employee engagement and enhance psychological well-being in the organization. Considering the results obtained in this research and the role of mindfulness, the need for understanding and psychological resources in explaining psychological well-being, conducting mindfulness workshops and trainings to align self-perception and job

role will lead to individual and ultimately organizational development. Furthermore, the results of these findings highlight the importance of workplace well-being in promoting job engagement.

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## Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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