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Developing a model of the effectiveness of psychological capital components training on improving mental toughness and grit

Abstract

Occupational burnout is a serious issue that threatens the medical profession with potentially negative consequences for both the physician and the patient. This study's main goal was to ascertain whether psychological capital component training can effectively promote grit and mental toughness as a mediating variable in medical students experiencing burnout. The literature technique used was quasi-experimental, with a posttest-pretest control group design. The statistical population contains all female general medicine students enrolled in the Ahvaz Jondishapur University of Medical Sciences' Faculty of Medicine and Dentistry during the 2019–2020 academic year. The study used availability sampling, in which forty qualified volunteer students were randomly assigned to the psychological capital training group and control group based on the study's eligibility requirements. Ten two-hour training sessions were given to the experimental group, whereas no training was given to the control group. The Grit Scale by Duckworth et al. (2007) and the Mental Toughness Questionnaire by McGee (2016) were used as research instruments. The findings demonstrated that 77% and 75%, respectively, of the variance in grit and mental toughness could be explained by the conceptual model developed for the study. In fact, psychological capital was shown to have a major impact on and foster grit and mental toughness in burnout medical students.

Keywords: *Psychological capital, Mental toughness, Grit, Medical students, Burnout*

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Introduction

Students who are tired of continuing their education for a variety of reasons, such as repeated pressures from their schools or a lack of enthusiasm in learning, exhibit burnout, which is a negative attitude and conduct (Yu et al., 2023). The negative effects of burnout are mainly reflected in mental and physical health (such as weakness and insomnia), emotional adaptation (such as depression and anxiety), and behavior (such as dropping out and aggression) (Arbabisarjou et al., 2015; Oloidi et al., 2022; Li, Ma, Liu & Jing, 2018). Due to lengthy training courses, heavy study load, and difficult course content, medical students are more inclined to academic burnout as healthcare professionals (Thun-Hohenstein et al., 2021). According to a meta-analysis research, 2.44 percent of medical students have been diagnosed with academic burnout(Frajerman et al., 2019).

Concepts that are directly related to academic burnout include grit (Kristinsson, Gudjonsson & Kristjansdottir, 2023) and mental toughness (Gerber et al., 2018). Grit is a positive non-cognitive trait based on one's perseverance and passion for achieving long-term goals (strong motivation to achieve a goal). In fact, grit can be defined as: Perseverance and eagerness to achieve specific long-term goals in which one overcomes existing obstacles and challenges according to their abilities and eventually achieves their intended goals (Duckworth, 2006). Grit is an important predictor of an individual's long-term goals (Dam et al., 2018) It has a strong correlation with qualities like self-control, orderliness, conscientiousness, willpower, and even greater IQ (Duckworth, 2016). Moreover, grit is an important predictor of individual performance (Calo et al., 2019). On the other hand, mental toughness is a positive characteristics set that help people cope effectively with difficult situations (Cowden, 2017). In fact, mental toughness is an indicator of self-confidence and individual resilience that may predict academic achievement, athletic achievement, or career success. Individuals with this trait perform well in difficult situations without losing their self-confidence and can cope with difficult conditions (Connaughton et al., 2002). According to Gucciardi et al. (2015), mental toughness is a one-dimensional personal attribute that denotes the ability to perform well under different conditions on a regular basis. According to Gucciardi et al. (2015), mental toughness serves as an organizational framework that is essential for managing pressures both internal and external. According to these authors, having mental toughness is essential for success, moving toward goals, and surviving under pressure.

Implementing training programs to improve grit and mental toughness—two characteristics that are crucial in predicting success and performance—is crucial because they help reduce burnout. In this sense, Luthans et al. (2006) have developed an educational model for psychological capital whose efficacy has been verified for numerous variables (Dello Russo & Stoykova, 2015), and it appears that it can foster mental toughness and grit. Psychological capital, a positive psychological state that people exhibit during growth and development, is made up of four main components: self-efficacy (the conviction that one can succeed in challenging tasks), optimism (the expectation of positive outcomes in the present and the future), hope (the drive to pursue goals through

various avenues), and resilience (the capacity to bounce back and grow positively from setbacks and adversity). (Luthans et al., 2007). Individual psychological well-being is significantly defended by psychological capital, which promotes resistance against stressful events like burnout (Zhang et al., 2022).

In summary, and given the above, the primary goal of the current research was to examine the impact of psychological capital component exercise on grit in burnout-affected medical students, with a focus on the mediating function of mental toughness. The conceptual model of the research is displayed in Figure 1. This model assumes that psychological capital component training can directly and indirectly (through mental toughness) promote grit in medical students suffering from burnout. Additionally, it is assumed that psychological capital component training can enhance students' mental toughness.

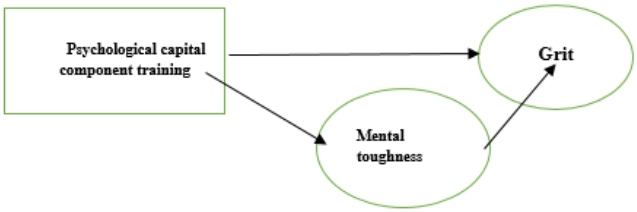

Figure 1. Model of psychological capital training on grit and mental toughness

The theoretical framework of the current research is according the demand-resources model (Bakker & Demerouti, 2007). In this model, each profession or job has its own particular risk factors that are classified as demands. In response to these risk factors, each individual has psychological, environmental, biological, and other resources that are classified as resources in this model. Studying medicine has demands that affect the psychological, physical, social, and organizational aspects of the student and make them prone to burnout. Therefore, to alleviate these demands, certain psychological and physiological costs must be incurred (Huang, Wang & You, 2016). Psychological capital training is one of those models that enhances students' resources in dealing with academic challenges. Considerable research has confirmed this (Snyder, Irving & Anderson, 1991). For example, in a meta-analysis encompassing 51 independent samples and 12,567 participants, psychological capital training led to more positive attitudes, better performance, greater psychological well-being, and higher satisfaction and commitment (Avey et al., 2011).

In application, this study seeks to promote two concepts from the field of positive psychology called grit (directly and indirectly) and mental toughness (directly) using the psychological capital training program. Promoting grit is important in that this concept is one of the non-cognitive traits that predicts success in various life domains (Duckworth et al., 2007). Duckworth (2016) states that grit is a combination of passion and perseverance which distinguishes successful individuals. In this regard, the grit theory states that intelligence and innate abilities are less important compared to perseverance and passion in achieving long-term success (Duckworth, 2016). In the educational domain, grit is related with academic engagement and creativity (Hodge, Wright & Bennett, 2017), academic achievement (Pate, Payakachat, Harrell, Pate, Caldwell & Franks, 2017), academic motivation (Eskreis-Winkleret al., 2014), hours spent studying (Cross, 2014), perseverance on challenging tasks (Lucas et al., 2015), learning techniques (Weisskirch, 2016), goal orientation and task values (Muenks, 2017) and continuation of education (Palisoc, Matsumoto, Perry, Tang & Ip, 2017). Promoting this construct through various training programs has been considered a necessity among researchers, policymakers, parents and teachers (Duckworth et al., 2007). Additionally, regarding mental toughness, individuals with high mental toughness are less disrupted by irrelevant information in memory-related tasks. This indicates that mental toughness keeps people focused on present goals (Dewhurst, Anderson, Cotter, Crust & Clough et al., 2009). Hardy, Imose, and Day (2014) showed in their research that mental toughness is associated with better learning of complex tasks. Such findings suggest that better cognitive performance and greater academic achievement may be partially mediated through mental toughness.

Given the difficulties inherent in this field, and considering that these students must face various challenges, some specialists and researchers believe that in addition to academic tests, grit and mental toughness of students should be evaluated. These researchers believe that the presence of grit and mental toughness in medical students can ensure the continuation and completion of this major with passion and enthusiasm (Shih & Maroongroge, 2017), indicating the importance of promoting grit and mental toughness in these students.

Method

Using a pretest-posttest control group design, the research approach was quasi-experimental, looking at a model of numerous indications, various causes through an experimental investigation. All female general medicine students enrolled in the 2019–2020 academic year at Ahvaz Jondishapur University of Medical Sciences' Faculty of Medicine and Dentistry were included in the statistical population. Sampling was availability sampling, whereby initially in the screening stage, the burnout questionnaire was administered to volunteer students for participating in the training sessions, and the results were evaluated. Subsequently, forty students who scored the highest on the burnout questionnaire were chosen, and in the last phase, these students were randomized into two

groups: an experimental group and a control group (20 individuals each subgroup). The experimental group underwent psychological capital training, and the impact on the variables of mental toughness and grit was investigated. Being a student at the time of the research, being willing to participate in this research, filling out the informed consent form, not having any acute psychological disorders, and not receiving individual counseling services outside of training sessions were the requirements for enrollment in the study. A history of hospitalization in psychiatric facilities, the use of any form of sedative, alcohol, or narcotics, participation in other training programs during the previous six months, skipping more than two sessions, and the use of psychoactive and psychiatric drugs were also exclusion factors. An overview of the material covered in the training sessions is provided in Table 1.

Table 1. Summary of the psychological capital intervention program (adapted from Luthans et al. (2010))

Session	Subscale	Contents
first	Hope	Hopelessness and hope definitions and characteristics of hopeful people
	Optimism	Definitions of concepts including pessimism, optimism, realistic optimism, unrealistic optimism, and distinguishing between them
	Self-efficacy	Definitions of the self-efficacy concept and discussion of the specification of self-efficacious people
	Resilience	Definitions of resilience and toughness and discussion of the resilient characteristics and tough people
Second	Hope	Studing participants' level of life satisfaction and hope and motivating them
	Optimism	Introducing the learned helplessness concept and its role in pessimism and optimism
	Self-efficacy	Studing the learned helplessness role in deceasing self-efficacy
	Resilience	Introducing definitions of hardiness and its components (challenge, control, and commitment)
third	Hope	Making participants aware of the goals role in increasing and creating hope
	Optimism	Familiarizing members with the locus concept and attribution of control
	Self-efficacy	Examining the relationship between motivation, self-confidence, and willpower with self-efficacy and applying feedback techniques
	Resilience	Focusing on the commitment factor and using techniques to enhance it
forth	Hope	Familiarizing samples with how to achieve clear and achievable goals
	Optimism	Familiarizing samples with specific, general, external, internal, unstable, and stable attributions and the role of each item in optimism
	Self-efficacy	Studying how to enhance self-efficacy and self-confidence and using positive feedback techniques
	Resilience	Focusing on the challenge component and how to turn problems into challenges and increase willingness to face them
fifth	Hope	Teaching how to break down a big goal into smaller ones to enhance the achieving them likelihood
	Optimism	Familiarizing samples with the attributions role in optimism
	Self-efficacy	Using mental imagery to make positive experiences and strengthen them to increase self-efficacy
	Resilience	Focusing on the control component and studying how to increase feelings of control over life

sixth	Hope	Making participants aware of how to formulate clear and objective goals
	Optimism	Teaching how to expand and create internal positive attributions
	Self-efficacy	Using vicarious reinforcement by providing regional and global examples of self-efficacious individuals to increase self-efficacy
	Resilience	Familiarizing peoples with strategies of problem-focused and emotion-focused and their role in increasing resilience
seventh	Hope	Familiarizing members with the setting daily goals role in gaining major goals and how to do it
	Optimism	Using the method of analyzing more unsightly events to increase optimism
	Self-efficacy	Familiarizing participants with scientific problem solving methods and their practical role in increasing self-efficacy
	Resilience	Greater familiarity with direct or problem-focused methods and challenging members to use them more
eighth	Hope	Familiarizing members with how to apply multiple pathways to achieve a goal
	Optimism	Using the analyzing unpleasant events technique and calculating the positive consequences to increase optimism
	Self-efficacy	Inviting a successful and self-efficacious person to provide objective models for increasing self-efficacy
	Resilience	Greater familiarity with emotion-focused or indirect strategies and applying them when necessary and in high stress
ninth	Hope	Familiarizing samples with how to turn barriers into challenges to gain goals
	Optimism	Focusing on environmental and individual talents and abilities to increase optimism
	Self-efficacy	Using direct reinforcement and vicarious reinforcement by studying past successes to increase self-efficacy
	Resilience	Studying the locus role of control in resilience and applying positive self-talk techniques to increase resilience
tenth	Hope	Reviewing previous session learnings and practical exercises to increase hope
	Optimism	Reviewing previous session learnings and practical exercises to increase optimism
	Self-efficacy	Studying previous session learnings and practical exercises to increase self-efficacy
	Resilience	Studying previous session learnings and practical exercises to increase resilience

Research Tools

Grit Scale: This 12-item scale was developed by Duckworth et al. in 2007. This scale has two subscales of consistency of interest and persistence of effort. Items 11, 8, 7, 5, 3, and 2 belong to the consistency of interest subscale, and items 12, 10, 9, 6, 4, and 1 belong to the perseverance of effort subscale. Responses are rated on a 5-point Likert scale from 5 (very much like me) to 1 (not like me at all). The total score range of this questionnaire is from 12-60. Higher scores indicate greater grit. The reliability of this tool is 0.85. Duckworth et al. also reported acceptable construct validity (RMSEA = 0.11; CFI = 0.83). In Iranian samples, the Cronbach's alpha of this tool has been reported as 0.85 (Mohagheghi & Ghasemi, 2016). Sharifi et al. (2011) also examined the reliability and validity of this tool by Cronbach's alpha and factor analysis. Before performing data analysis, they stated the KMO index as 0.79

and the Bartlett test as 1.04, and after factor rotation they reached two components that explained 52 percent of the variance. According to Sharifi (2011), the internal consistency of the entire scale was reported as 0.77, while the coefficients for the effort and interest components were 0.80 and 0.67, respectively. At the pretest and posttest phases of the current investigation, the Cronbach's alpha (internal consistency) of this instrument was 0.64 and 0.85, respectively.

Mental Toughness Scale: Mcgeown, St. Clair-Thompson, and Putwain (2016) developed the Mental Toughness Scale in 2016. Unlike previous tools, this one was specific to educational environments. Their scale contains 18 items that measure the 6 components of challenge, commitment, and confidence in abilities, control over life, interpersonal confidence, and control over emotions. Each section contains three items, and some of the items are reverse scored. Answers are rated on a 4-point Likert scale from 4 (strongly agree) to 1 (strongly disagree). This questionnaire has a total score range of 18 to 72. Increased mental toughness is indicated by higher scores on this test. Using exploratory and confirmatory factor analysis, McGee et al. determined that this scale construct validity was satisfactory and stated a reliability coefficient of 0.70. Tama (2018) used factor analysis to investigate the reliability and validity of this construct in Iran. Tama (2018) found that their research validated the tool construct validity and yielded an internal consistency coefficient of 0.77. At the pretest and posttest phases of the current investigation, the Cronbach's alpha (internal consistency) of this instrument was 0.79 and 0.88, respectively.

Findings

There were 40 participants in this study, all female and single, with a mean age of 22.4 years. Seventeen students (42.5%) were studying dentistry and twenty-three students (57.5%) were studying medicine. Table 2 displays the two measurement stages of the pretest and posttest, as well as the standard deviation and mean of the mental toughness and grit of burnout students by control and experimental groups.

Table 2. Standard deviation and Mean of mental toughness and grit by control and experimental groups and the two measurement stages

Variable	stage	group	mean	standard deviation	Variable	stage	group	mean	standard deviation
Grit	pretest	control	29.42	4.56	mental toughness	pretest	control	31.72	5.20
		experimental	32.90	7.69			experimental	33.49	9.28
	Posttest	control	27.82	5.39		Posttest	control	32.93	5.80
		experimental	44.25	6.25			experimental	47.90	7.43

Table 2's results demonstrate that whereas the control group's mean scores on both the mental toughness and grit variables showed only slight changes at the posttest stage, the experimental group's mean scores improved on both measures. Figure 2 indicate how the mean scores changed for the variables at the pretest and posttest stages.

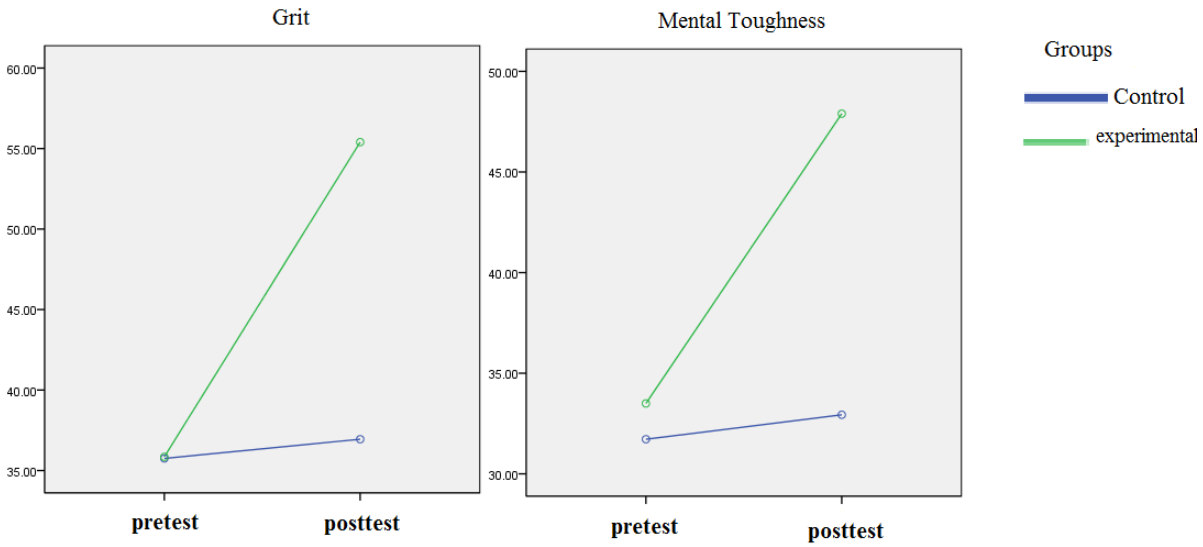

Figure 2. Alters in mean scores of mental toughness and grit by control and experimental groups and the two measurement stages.

In the current research, the mental toughness and grit variables were measured by tools that assess these variables at the interval level. Therefore, the assumption of interval or relative variable measurement is confirmed. Also, identical participants were in the two groups, who were measured under different conditions. This indicates that the second assumption is met. In addition, the data obtained from the participants are independent, and all data were examined for outliers, the results of which indicated no outliers. These two examples show that additional presumptions hold true. Additionally, the Levene's test and the Kolmogorov-Smirnov test were employed to specify the normality of the score distribution and the homogeneity of group variances (control and two experimental groups). Table 3 displays the test results..

Table 3. Results of Kolmogorov-Smirnov and Levene's tests

Variable	stage	Z score	significance	F score	significance
mental toughness	pretest	1.11	0.16	4.81	0.03
	pretest	0.75	0.61	3.97	0.05
Grit	pretest	0.66	0.76	5.03	0.03
	pretest	0.67	0.75	0.27	0.60

Table 3 demonstrated the homogeneity of variances during the pretest and posttest phases as well as the normal distribution of the data. due to the fact that the Levene's and Kolmogorov-Smirnov test results are not significant at the 0.01 alpha level. Additionally, the Box's M test was applied to look at the homogeneity of covariances. At the 0.001 alpha level, the test's results (M=24.55, F=1.72) indicated that it is not significant. Thus, it can be said that the covariances' homogeneity has been proven.

In the present study, The Multiple Indicators Multiple Causes (MIMIC) model within the Partial Least Squares (PLS) method was used to address the primary study question of whether there is a difference in mental toughness and grit variables of medical students suffering from burnout due to psychological capital component training. Due to the fact that the PLS approach is not sample size-sensitive and the MIMIC model permits the application of structural models in experimental designs (Wong, 2010). There are two models assessed in the model of MIMIC. The first is the measurement model, which looks at how indicators and the latent variable relate to one another. The link between latent and observed variables is assessed in the structural model. The MIMIC model can be used in an experimental design because of its characteristic that permits observable variables to affect latent variables (Schumacker & Lomax, 2016). Because participants in this study are either in the control group or the experimental group, and there is no mistake in this, psychological capital training is regarded an observable variable, whereas mental toughness and grit are considered latent variables. Examining the reliability and validity of the latent variable indicators is a necessary step in testing the measurement model. This evaluation follows the logic of the structural model, which states that there is no need to employ the items in subsequent analysis if there is insufficient confidence in them. According to Henseler, Hubona, and Ray (2016), factor loadings of 0.60 and higher for latent variable indicators point to the PLS method's dependability in this regard. Additionally, AVE (Average Variance Extracted) larger than 0.50 and composite reliability better than 0.70, according to Hair, Hult, Ringle, and Sarstedt (2017), imply excellent reliability for latent variables. Each variable's subscales are regarded as markers of that construct in the current study. The factor loadings, composite reliability, and extracted average variance for the research latent variables are displayed in Table 4.

Table 4. Average variance, Composite reliability, and factor loadings extracted

Latent variable	Indicators	Factor loading	Composite reliability	AVE	Cronbach's alpha
mental toughness	Ability to maintain commitment	0.90	0.90	0.65	0.86
	Challenge	0.80			
	Interpersonal trust	0.83			
	Confidence in abilities to control life	0.77			
	Emotional control	0.70			
Grit	Grit Consistency of interest	0.92	0.92	0.85	0.83
	Consistency of effort	0.92			

Table 4 displays the acceptable and desirable ranges for factor loadings of indicators, average variance extracted, composite reliability, and Cronbach's alpha. This suggests that the latent variable has been accurately measured by the indicators.

The construct validity was assessed using both discriminant and convergent validity. Convergent validity is the property of a construct that has a greater association with its own indicators than with other constructs measuring different ideas. To determine this index, Afari (2018) stated that if the square root of a construct's extracted variance is compared with its

correlation with other constructs, convergent validity is achieved if the square root of extracted variance is greater. Table 5 shows the square root of extracted variance and the correlation of each construct with other constructs (The numbers on the correlation matrix diagonal are the square root of average variance extracted).

Table 5. Correlation of constructs with each other and square root of extracted variance

constructs	(1)	(2)
mental toughness (1)	0.80	
Grit (2)	0.79	0.92

The findings of Table 5 presented that convergent validity has been achieved. To examine convergent validity, the criterion of Vinzi et al. (2010) was used. They believe that if the range of factor loadings of indicators is within a limited range, it indicates convergent validity. Given that the range of factor loadings of mental toughness and grit are equal, this indicates convergent validity between the variables.

Testing the structural model and providing a solution to the research question is made feasible following the assessment and validation of the measurement model, which looks at the reliability and validity of latent variables. The structural model in the current study was tested using the partial least squares approach and the many indicators multiple causes model. This method emphasizes the path coefficients' relevance and the quantity of determined variation. Figure 3 shows the direct path coefficients of the within-subjects factor (passage of time), between-subjects (training), their significance, and the amount of explained variance.

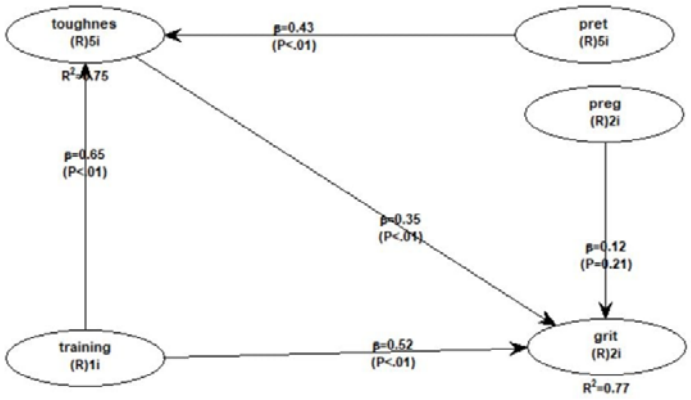

Figure 3. Direct path coefficients of within-subjects and between-subjects factors, their significance, and the amount of explained variance

As Figure 3 shows, the theoretical model of the research could elaborate 77% of the variance in grit and 75% of the variance in mental toughness. In fact, in this model, psychological capital training has been able to considerably affect and promote mental toughness and grit. Also, the effect of the within-subject factor for the floating variable is significant, and for grit it is not significant. Furthermore, there was a substantial ($p < 0.05$) psychological capital training indirect effect on grit ($\beta = 0.22$). The effect magnitude, standard errors, indirect and direct path coefficients, and their significance are displayed in Table 6.

Table 6. Indirect and direct path coefficients along with significance and effect size

Predicting variable	Criterion variable	Type of effect	Path coefficient	Significance (P)	Standard error	Effect size
Psychological capital training	Mental toughness	Direct	0.65	0.001	0.11	0.49
Psychological capital training	Grit	Direct	0.52	0.001	0.12	0.42
Psychological capital training	Grit	indirect	0.22	0.016	0.10	0.18
Mental toughness	Grit	Direct	0.35	0.008	0.13	0.27

As Table 6 shows, three path coefficients are significant at 0.01 level and one path coefficient is significant at 0.05 level, and the effect size indicates that psychological capital training had the greatest impact on mental toughness and can indirectly and directly affect grit.

Discussion and Conclusion

Burnout is seen as symptoms arising from chronic work stress that has not been properly managed. The main characteristics of burnout include emotional exhaustion, cynicism, and reduced professional performance levels. In this regard, it is said that people in professions that require close interaction with other humans are more prone to burnout. Therefore, health-related personnel are more at risk for burnout (Dyrbye, West, Satele, Boone, Tan, & Sloan. 2014). Various studies show that medical specialists around the world experience burnout more frequently, and specialists suffering from burnout usually have more medical errors and are more likely to leave their jobs (Tawfik, Profit, Morgenthaler, Satele, Sinsky & Dyrbye et al., 2018). In severe conditions, burnout can be accompanied by depression, which severely affects physicians' performance and health. In this case, in addition to

the physician themselves, patients are also harmed (Panagioti et al., 2018).

Burnout in medical students has a higher prevalence compared to other majors in different countries (Shanafelt, Boone, Tan, Dyrbye, Sotile, Satele, 2002). Medical students who experience burnout have problems with communication (Brazeau, Schroeder, Rovi, & Boyd, 2010), are more likely to drop out (Pagnin, Dequeiroz, Oliveira, Gonzalez, Salgado, & Oliveira, 2013), and are more likely to have suicidal thoughts (Dyrbye, Thomas, Massie, Power, Eacker, & Harper, 2006). These are worrying because medical students are usually optimistic about this field at the beginning of their education and want to be actively involved (Brazeau et al., 2014). The reasons for student burnout have been cited as high cognitive loads, intense competition among classmates, and long-term exposure to different patients and their potential deaths (Santen, Holt, Kemp, & Hemphill, 2010). Variables that appear to be effective in reducing burnout include constructs called mental toughness and grit. Given that the psychological capital training program emphasizes optimism, self-efficacy, hope and resilience, The study's primary goal was to find out how psychological capital component training affected medical students who were experiencing burnout in terms of mental fortitude and grit.

The findings of this reseaerch presented that psychological capital training can enhance mental toughness ($\beta = 0.35$). This finding was consistent with parts of Pham's (2017) research. In this regard, according to Covey's (2020) view, it can be said that the educational environment is a difficult environment, and it can even be considered more difficult than a work environment. In an educational setting, you are constantly asked to learn new things, and it rarely happens that attention is paid to things you already knew. As a result, you always have to plan to graduate successfully. Students with mental toughness perform very well in educational settings. They usually overcome adverse emotions and commit themselves to the learning process, and thus they usually get the best results (Covey, 2020). Given that in the psychological capital training program, participants gain confidence to make the necessary efforts for success in challenging tasks, have a positive outlook on the future, pursue goals, and show resilience in this path (Yan, Mansor, Choo & Abdullah, 2021); therefore, it can be concluded that as the research findings showed, this training program can affect mental toughness.

An additional discovery from this study was that grit was fostered by psychological capital training ($\beta = 0.52$). This result is in line with some of the study conducted in 2010 by Luthans et al. In light of this discovery, psychological capital, as defined by Luthans et al. (2004), is a positive psychological resource that consists of optimism, hope, resilience, and self-efficacy. This psychological capital training program is one of the high-level training programs that positively brings attitudinal, behavioral and performance outcomes (Luthans & Youssef-Morgan, 2017). In addition, the psychological capital program can enhance students' active engagement (Luthans, Luthans, & Palmer, 2016) and their greater adaptation (Hazan Liran & Miller, 2017). Obviously, these features can enhance grit, as grit requires maintaining effort and interest in tasks that take a long time to complete, and these features are incorporated in the psychological capital training program in some way.

Another finding of the present study was the indirect effect of psychological capital training on grit through the mediating mental toughness variable ($\beta = 0.22$). Regarding this result, it can be said that psychological capital is one of the characteristics of positive psychology that emphasizes traits such as one's belief in their abilities, effort, positive attributions, and enduring problems (Luthans et al., 2004). Having psychological capital causes one to experience less stress in stressful situations and have more power in dealing with problems and be less affected by unpleasant events. In this regard, Seligman believes that psychological capital encompasses one's self-perception and having a goal to achieve success and benefit in the face of problems. In other words, psychological capital is a combined construct that brings together the four perceptual cognitive elements of hope, self-efficacy, optimism, and resilience. These elements give meaning to one's life in an interactive and evaluative process and continue the effort to change situations (Bahadori Khosrowshahi, Hashemi Nosrat-Abad & Babapour Kheiroddin, 2012). Given that these issues are emphasized in the psychological capital training program, therefore, consistent with the research findings, it can be said that this program can first promote the mental toughness construct and then grit.

One of the study's shortcomings is that, despite its experimental research methodology, information was gathered through questionnaires, which occasionally introduce participant bias. Also, the present study was conducted over a period of time and only on medical students in Ahvaz, which should be considered in generalizing the results to other students and other time periods. The results of current study have implications for educational administrators as well as students. The findings showed that by participating in psychological capital training courses, students can improve their mental toughness and grit and provide the ground for achieving positive outcomes associated with these two constructs. Educational administrators can also provide the ground for holding various training courses at universities by examining the findings of the present study.

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