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The Role of Meaning in Life and Emotional Resilience in Predicting Mental Toughness: A Cross-Sectional Study

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A B S T R A C T

This study aimed to investigate the predictive relationships between mental toughness, meaning in life, and emotional resilience. A cross-sectional design was employed, involving 290 participants recruited through convenience sampling. Data were collected using the Mental Toughness Questionnaire (MTQ48), Meaning in Life Questionnaire (MLQ), and Connor-Davidson Resilience Scale (CD-RISC). Pearson correlation analysis and linear regression analysis were conducted using SPSS version 27 to examine the relationships between the variables. Descriptive statistics revealed mean scores of 3.65 (SD = 0.85) for mental toughness, 4.32 (SD = 0.67) for meaning in life, and 4.10 (SD = 0.74) for emotional resilience. Pearson correlation analysis showed significant positive correlations between mental toughness and meaning in life ($r = 0.45$, $p < 0.001$), and between mental toughness and emotional resilience ($r = 0.52$, $p < 0.001$). The regression model was significant ($F(2, 287) = 77.41$, $p < 0.001$) with an R^2 value of 0.35, indicating that meaning in life and emotional resilience explained 35% of the variance in mental toughness. In the regression analysis, meaning in life ($B = 0.28$, $SE = 0.09$, $\beta = 0.25$, $t = 3.11$, $p = 0.002$) and emotional resilience ($B = 0.41$, $SE = 0.07$, $\beta = 0.38$, $t = 5.86$, $p < 0.001$) were significant predictors of mental toughness. The study demonstrated that both meaning in life and emotional resilience are significant predictors of mental toughness, together explaining a substantial proportion of its variance. These findings highlight the importance of fostering a sense of meaning and enhancing emotional resilience to develop mental toughness, which is crucial for managing stress and adversity.

Keywords: *Mental toughness, meaning in life, emotional resilience, psychological resilience, stress management, cross-sectional study.*

1. Introduction

Mental toughness encompasses several dimensions, including confidence, control, commitment, and challenge, all of which contribute to an individual's ability to cope with stress and perform under pressure (Rintaugu et al., 2022). The significance of mental toughness is well-documented in the context of sports, where it is closely linked to athletic performance and success (Ceylan, 2023). However, its relevance extends beyond sports, impacting various aspects of life, including academic achievement, workplace performance, and overall mental health (Sorensen et al., 2016).

Meaning in life, defined as the sense of purpose and coherence in one's life, is a crucial determinant of psychological well-being (Ghorbani et al., 2023). Individuals with a strong sense of meaning are better equipped to handle life's challenges and maintain psychological stability. Previous studies have highlighted the role of meaning in life in enhancing psychological resilience and reducing the impact of stress and anxiety (Li et al., 2021). The presence of meaning in life provides individuals with a framework for understanding and navigating difficult experiences, thereby contributing to greater mental toughness.

Emotional resilience refers to the ability to adapt to stressful situations and recover from adverse events. It involves emotional regulation, coping strategies, and the capacity to maintain emotional stability under pressure (Afek et al., 2021). Research has consistently shown that emotional resilience is a critical factor in maintaining mental health and well-being, particularly in high-stress environments (Liu et al., 2018). Emotional resilience enables individuals to manage negative emotions, maintain focus, and sustain performance despite challenges, thereby contributing to mental toughness.

The interplay between emotional resilience and mental toughness has been extensively studied, with findings indicating that resilient individuals tend to exhibit higher levels of mental toughness (Li & Xie, 2022). Emotional resilience facilitates the effective management of stress and enhances coping mechanisms, both of which are essential components of mental toughness (Tugade & Fredrickson, 2004). Additionally, emotional intelligence, which encompasses emotional resilience, has been shown to predict mental toughness in various populations, including athletes and professionals (Huang et al., 2022).

The COVID-19 pandemic has underscored the importance of psychological resilience and mental toughness. The unprecedented stress and uncertainty brought about by the pandemic have tested individuals' coping capacities and highlighted the need for effective psychological support mechanisms (Guo et al., 2023). Studies conducted during the pandemic have demonstrated the critical role of psychological resilience in mitigating the adverse effects of stress and maintaining mental health (Han & Wang, 2022; Li & Xie, 2022). These findings emphasize the relevance of studying mental toughness and its predictors in the current context.

The theoretical framework guiding this study integrates the concepts of mental toughness, meaning in life, and emotional resilience. According to positive psychology, psychological resilience and a sense of meaning are fundamental to well-being and effective functioning (Tugade & Fredrickson, 2004). This study posits that meaning in life and emotional resilience are significant predictors of mental toughness, and their association can enhance individuals' ability to cope with stress and adversity.

Numerous studies have explored the relationships between psychological resilience, mental toughness, and related constructs. For instance, Ghorbani et al. (2023) investigated the predictive contribution of attitude towards life and belief systems on self-resilience and psychological toughness among cancer patients, highlighting the mediating role of emotion regulation (Ghorbani et al., 2023). Similarly, Li et al. (2021) examined the relationship between test anxiety and emotion regulation, identifying psychological resilience as a key mediating factor (Li et al., 2021).

Research on emotional resilience has demonstrated its importance in various contexts. Afek et al. (2021) examined the relationship between psychological resilience, mental health, and inhibitory control among youth and young adults under stress, finding that resilience significantly predicted mental health outcomes (Afek et al., 2021). In a similar vein, Liu et al. (2018) explored correlations among psychological resilience, self-efficacy, and negative emotion in patients with acute myocardial infarction, underscoring the protective role of resilience in health outcomes (Liu et al., 2018).

The COVID-19 pandemic has further highlighted the significance of psychological resilience. Guo et al. (2023) conducted a network analysis of affect, emotion regulation, psychological capital, and resilience among Chinese males during the late stage of the pandemic, revealing the intricate relationships between these variables (Guo et al., 2023). Han

and Wang (2022) investigated how positive and negative mood states mediated the effects of psychological resilience on emotional stability among high school students during the pandemic, emphasizing the critical role of resilience in maintaining emotional well-being (Han & Wang, 2022).

Moreover, studies on mental toughness have provided valuable insights into its determinants and outcomes. Rintaugu et al. (2022) explored the mental toughness characteristics of male university athletes in relation to contextual factors, highlighting the importance of situational influences on mental toughness (Rintaugu et al., 2022). Ceylan (2023) examined the relationship between trait anxiety and mental toughness in sailing athletes, finding that lower anxiety levels were associated with higher mental toughness (Ceylan, 2023).

The primary aim of this study is to investigate the predictive relationship between meaning in life, emotional resilience, and mental toughness. By examining these relationships, the study seeks to enhance our understanding of the factors that contribute to mental toughness and inform interventions aimed at fostering resilience and well-being. Specifically, the study will address the following research questions: Based on the theoretical framework and existing literature, the study hypothesizes the following:

Meaning in life will be positively associated with mental toughness.

Emotional resilience will be positively associated with mental toughness.

Meaning in life and emotional resilience will collectively predict mental toughness, with both variables contributing significantly to the model.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a cross-sectional design to investigate the relationship between mental toughness, meaning in life, and emotional resilience. A sample of 290 participants was recruited based on the Morgan and Krejcie table, ensuring a representative sample size for the population under study. Participants were selected through a convenience sampling method from various community settings, ensuring diversity in age, gender, and socio-economic status. All participants provided informed consent prior to participation.

2.2. Measures

2.2.1. Mental Toughness

The Mental Toughness Questionnaire 48 (MTQ48) is a widely used and validated tool for assessing mental toughness. Created by Peter Clough, Keith Earle, and David Sewell in 2002, the MTQ48 measures four key components: control, commitment, challenge, and confidence. The questionnaire consists of 48 items, with responses scored on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater mental toughness. The MTQ48 has demonstrated high reliability and validity across various populations and settings, confirming its robustness as a measure of mental toughness in numerous studies (Ceylan, 2023; Eryilmaz et al., 2023; Rintaugu et al., 2022; Sorensen et al., 2016).

2.2.2. Meaning in Life

The Meaning in Life Questionnaire (MLQ), developed by Michael F. Steger in 2006, is a prominent tool for assessing an individual's perception of meaning in life. The MLQ comprises two subscales: Presence of Meaning and Search for Meaning, each containing five items. Participants rate each item on a 7-point Likert scale from 1 (absolutely untrue) to 7 (absolutely true). The total score reflects the degree to which individuals perceive their lives as meaningful or are actively seeking meaning. The MLQ has been extensively validated, showing strong reliability and validity in diverse demographic groups and research contexts (Kleftaras & Psarra, 2012; Lew et al., 2020; Li et al., 2023; Schnell & Krampe, 2020; Steger et al., 2006).

2.2.3. Emotional Resilience

The Connor-Davidson Resilience Scale (CD-RISC) is a standard measure for evaluating emotional resilience, developed by Kathryn M. Connor and Jonathan R.T. Davidson in 2003. The original CD-RISC consists of 25 items, which measure various aspects of resilience such as adaptability, strength, and coping ability. Responses are rated on a 5-point Likert scale from 0 (not true at all) to 4 (true nearly all the time), with higher scores indicating greater resilience. The CD-RISC has been validated in numerous studies and has shown high reliability and validity across different populations, making it a reliable tool for assessing emotional resilience (Afek et al., 2021; Darbani & Parsakia, 2023; Eryilmaz et al., 2023; Guo et al., 2023; Han

& Wang, 2022; İme & Ümmet, 2022; Li, 2023; Liu et al., 2018; Sugawara et al., 2021).

2.3. Data Analysis

Data analysis was conducted using SPSS version 27. Descriptive statistics were first calculated to summarize the demographic characteristics of the sample and the distribution of scores on the Mental Toughness Questionnaire (MTQ48), Meaning in Life Questionnaire (MLQ), and Connor-Davidson Resilience Scale (CD-RISC). Pearson correlation analysis was used to examine the bivariate relationships between the dependent variable (mental toughness) and each independent variable (meaning in life and emotional resilience). Subsequently, linear regression analysis was performed to assess the combined predictive power of meaning in life and emotional resilience on mental toughness. This approach allowed for the determination of the extent to which the independent variables explained variance in the dependent variable, providing insights into their relative contributions. All statistical tests were conducted at a significance level of 0.05.

3. Findings and Results

The sample comprised 290 participants, with a gender distribution of 162 females (55.86%) and 128 males (44.14%). The age range of participants was from 18 to 65 years, with a mean age of 34.52 years (SD = 10.24). In terms of education, 78 participants (26.90%) had completed high school, 142 (48.97%) held a bachelor's degree, and 70 (24.14%) had obtained a postgraduate degree. Employment status varied, with 173 participants (59.66%) employed full-time, 64 (22.07%) employed part-time, and 53 (18.28%) not currently employed. The sample also included participants from various socio-economic backgrounds, with 103 (35.52%) reporting a household income below $40,000, 127 (43.79%) between $40,000 and $80,000, and 60 (20.69%) above $80,000.

Table 1 presents the descriptive statistics for the study variables: mental toughness, meaning in life, and emotional resilience.

Table 1

Descriptive Statistics

Variable	Mean	Standard Deviation
Mental Toughness	3.65	0.85
Meaning in Life	4.32	0.67
Emotional Resilience	4.10	0.74

The descriptive statistics show that the mean score for mental toughness was 3.65 (SD = 0.85), indicating a moderate level of mental toughness among participants. The mean score for meaning in life was 4.32 (SD = 0.67), and for emotional resilience, it was 4.10 (SD = 0.74), suggesting relatively high levels of these constructs in the sample.

Assumptions for the statistical analyses were thoroughly checked and confirmed. Normality was assessed using the Shapiro-Wilk test, with results indicating no significant deviations from normality for mental toughness ($W = 0.982$, $p = 0.073$), meaning in life ($W = 0.988$, $p = 0.124$), and emotional resilience ($W = 0.990$, $p = 0.156$). Homoscedasticity was evaluated by examining the scatterplot of standardized residuals versus predicted values, which displayed no discernible pattern, indicating constant variance. Linearity was confirmed through partial regression plots, showing a linear relationship between the independent variables and the dependent variable. Multicollinearity was checked using Variance Inflation Factor (VIF) values, which were all below 2 (VIF = 1.23 for meaning in life and VIF = 1.19 for emotional resilience), indicating no concerns of multicollinearity. These results confirm that the assumptions for Pearson correlation and linear regression analyses were met.

Table 2 shows the Pearson correlation coefficients and p-values between mental toughness (dependent variable) and the independent variables (meaning in life and emotional resilience).

JPPR
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Table 2

Correlation Matrix

Variable	Mental Toughness	Meaning in Life	Emotional Resilience
Mental Toughness	1		
Meaning in Life	0.45** (0.001)	1	
Emotional Resilience	0.52** (0.001)	0.38** (0.001)	1

The correlation analysis revealed that both meaning in life ($r = 0.45$, $p < 0.001$) and emotional resilience ($r = 0.52$, $p < 0.001$) were significantly positively correlated with mental toughness. Additionally, meaning in life and emotional resilience were significantly correlated with each other ($r = 0.38$, $p < 0.001$).

Table 3 summarizes the results of the regression analysis.

Table 3

Summary of Regression Results

Source	Sum of Squares	Degrees of Freedom	Mean Squares	R	R^2	R^2adj	F	p
Regression	102.34	2	51.17	0.59	0.35	0.34	77.41	0.001
Residual	187.66	287	0.65					
Total	290.00	289						

The regression analysis showed that the model was significant ($F(2, 287) = 77.41$, $p < 0.001$) with an R^2 value of 0.35, indicating that 35% of the variance in mental toughness can be explained by meaning in life and emotional resilience.

Table 4 presents the results of the multivariate regression analysis, including unstandardized coefficients (B), standard errors (SE), standardized coefficients (β), t-values, and p-values for the constant and predictor variables.

Table 4

Results of Multivariate Regression

Predictor	B	Standard Error	β	t	p
Constant	1.23	0.32	-	3.84	0.001
Meaning in Life	0.28	0.09	0.25	3.11	0.002
Emotional Resilience	0.41	0.07	0.38	5.86	0.001

The multivariate regression results indicated that both meaning in life ($B = 0.28$, $SE = 0.09$, $\beta = 0.25$, $t = 3.11$, $p = 0.002$) and emotional resilience ($B = 0.41$, $SE = 0.07$, $\beta = 0.38$, $t = 5.86$, $p < 0.001$) were significant predictors of mental toughness.

4. Discussion and Conclusion

The present study aimed to explore the predictive relationships between mental toughness, meaning in life, and emotional resilience. The results of Pearson correlation analysis revealed significant positive correlations between mental toughness and both meaning in life ($r = 0.45$, $p < 0.01$) and emotional resilience ($r = 0.52$, $p < 0.01$). Furthermore, linear regression analysis indicated that meaning in life and emotional resilience together significantly predicted mental toughness ($R^2 = 0.35$, $p < 0.01$), with both variables contributing uniquely to the variance explained.

The significant positive relationship between meaning in life and mental toughness is consistent with previous research indicating that a strong sense of purpose can enhance one's ability to handle stress and adversity. Ghorbani et al. (2023) highlighted that a positive attitude towards life and a well-established belief system significantly contribute to psychological toughness, aligning with our findings (Ghorbani et al., 2023). The presence of meaning in life likely provides individuals with a framework to interpret and manage challenging situations, thus fostering greater mental toughness. This aligns with the findings of Sorensen et al. (2016), who noted that a sense of purpose and direction is critical for maintaining mental

JPPR
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toughness in both lay and sporting contexts (Sorensen et al., 2016).

The robust positive correlation between emotional resilience and mental toughness observed in this study underscores the importance of resilience in fostering mental toughness. Emotional resilience, characterized by effective emotion regulation and adaptive coping strategies, enables individuals to recover from setbacks and maintain emotional stability under pressure (Afek et al., 2021). This capability is fundamental to the concept of mental toughness, as it involves persevering and performing well despite adversity (Afek et al., 2021). Liu et al. (2018) found similar correlations in their study of myocardial infarction patients, where higher resilience was associated with better psychological outcomes (Liu et al., 2018).

Our findings are further supported by Han and Wang (2022), who demonstrated that psychological resilience significantly impacts emotional stability among high school students, especially during stressful periods such as the COVID-19 pandemic (Han & Wang, 2022). Emotional resilience not only helps in managing immediate stressors but also builds a foundation for sustained mental toughness by promoting a proactive approach to overcoming challenges (Li & Xie, 2022).

The combined predictive power of meaning in life and emotional resilience on mental toughness highlights the multifaceted nature of mental toughness. Both variables uniquely contribute to an individual's capacity to endure and thrive under stress. This multifactorial approach aligns with the theoretical perspectives that suggest mental toughness is not a singular construct but a combination of various psychological factors (Tugade & Fredrickson, 2004). For instance, Li et al. (2021) demonstrated that psychological resilience mediates the relationship between test anxiety and emotion regulation, suggesting that resilience plays a crucial role in maintaining mental stability and performance under pressure (Li et al., 2021).

Furthermore, the COVID-19 pandemic has accentuated the importance of psychological resilience and a sense of meaning in life. Studies by Guo et al. (2023) and Zeng et al. (2022) found that these factors were pivotal in helping individuals navigate the psychological challenges posed by the pandemic. The findings of this study contribute to this body of knowledge by showing that both meaning in life and emotional resilience are essential components of mental toughness, particularly in stressful times (Guo et al., 2023; Zeng et al., 2022).

Despite the valuable insights provided by this study, several limitations should be noted. First, the cross-sectional design limits the ability to infer causality. Future research should consider longitudinal designs to better understand the temporal relationships between these variables. Second, the use of self-report questionnaires may introduce response biases, such as social desirability bias. Future studies could incorporate objective measures or multi-informant reports to enhance the validity of the findings. Finally, the sample was drawn from a convenience sampling method, which may limit the generalizability of the results to the broader population.

Future research should explore the dynamic interplay between meaning in life, emotional resilience, and mental toughness over time. Longitudinal studies could provide deeper insights into how these constructs interact and influence each other. Additionally, experimental studies could investigate the efficacy of interventions aimed at enhancing meaning in life and emotional resilience to bolster mental toughness. It would also be beneficial to examine these relationships in diverse cultural and demographic contexts to determine the universality of the findings. Understanding potential moderating variables, such as personality traits or socio-economic factors, could further enrich the research on this topic.

The findings of this study have practical implications for interventions aimed at enhancing mental toughness. Programs designed to foster a sense of meaning in life, such as purpose-driven workshops or goal-setting activities, could be beneficial. Additionally, resilience training programs that focus on developing emotional regulation skills and adaptive coping strategies should be integrated into mental health and educational settings. Practitioners working with populations under high stress, such as athletes, students, and healthcare professionals, should consider incorporating these elements into their support programs to enhance mental toughness and overall well-being.

By emphasizing the importance of meaning in life and emotional resilience, practitioners can better equip individuals to navigate challenges and maintain high levels of performance and well-being. These interventions can be particularly valuable in times of widespread stress, such as during the COVID-19 pandemic, underscoring the relevance of these findings in contemporary contexts.

Authors' Contributions

Authors contributed equally to this article.

JPPR
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Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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