



## Exploring the Predictive Relationship between Mental Toughness and Subjective Well-Being: A Quantitative Analysis

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### ABSTRACT

This study aimed to examine the extent to which mental toughness can predict subjective well-being, thereby contributing to the understanding of psychological factors influencing mental health and quality of life. Utilizing a cross-sectional design, 200 participants were assessed using the Mental Toughness Questionnaire (MTQ48) and the Satisfaction with Life Scale (SWLS). Data were analyzed through descriptive statistics and linear regression using SPSS Version 27 to explore the predictive power of mental toughness on subjective well-being. Results indicated that mental toughness significantly predicts subjective well-being, accounting for 23% of the variance. The regression model ( $F = 5.88, p < 0.01$ ) and standardized coefficients ( $B = 0.99, \beta = 0.23, p < 0.05$ ) underscored the positive relationship between mental toughness and well-being. The study confirms that mental toughness serves as a significant predictor of subjective well-being. Enhancing mental toughness could, therefore, be a viable strategy for improving individuals' mental health and overall life satisfaction.

**Keywords:** *Mental Toughness, Subjective Well-Being, Life Satisfaction, Psychological Resilience, Predictive Analysis*

### 1. Introduction

Subjective well-being is a fundamental component of mental health and overall quality of life. It

encompasses an individual's cognitive and affective evaluations of their life, including aspects such as life satisfaction, positive emotions, and a sense of purpose (Keyes, 2006). Research indicates that subjective well-being

is influenced by various factors, including mental toughness, social support, mindfulness, and psychological resilience (Ajilchi et al., 2021; Battulga et al., 2021; Eryilmaz et al., 2023; Lin et al., 2017).

Mental toughness, characterized by attributes such as challenge, commitment, control, and confidence, plays a significant role in predicting favorable performance outcomes and promoting psychological well-being (Dagnall et al., 2021; Özcan, 2022). Studies have shown that individuals with higher levels of mental toughness are more likely to approach challenging situations with resilience and effectiveness, leading to better mental health outcomes (Golshani et al., 2021; McGeown et al., 2016; Miçooğullari & Ekmekçi, 2017). Furthermore, mental toughness has been associated with improved coping mechanisms, particularly in the face of stress and adversity (Dagnall et al., 2021; Turkington, 2023).

In addition to mental toughness, social support has been identified as a key factor influencing subjective well-being (Bano & Sitwat, 2021). The presence of a supportive social network has been linked to higher levels of happiness and overall well-being, highlighting the importance of interpersonal relationships in mental health outcomes (Bano & Sitwat, 2021). Moreover, mindfulness practices have been shown to enhance mental toughness and psychological well-being, emphasizing the interconnectedness of various psychological constructs in promoting subjective well-being (Ajilchi et al., 2021; Eryilmaz et al., 2023).

Furthermore, subjective well-being is not only influenced by individual factors but also by external circumstances and experiences. For instance, studies have explored the impact of life events, such as pregnancy, sleep disturbances, and participation in leisure activities, on subjective well-being (Al-Rawashdeh et al., 2016; Kekäläinen et al., 2019). These findings underscore the complex interplay between personal attributes, social dynamics, and environmental factors in shaping individuals' subjective well-being.

Thus, understanding the predictors of subjective well-being, such as mental toughness, social support, and mindfulness, is essential for promoting mental health and overall quality of life. By recognizing the multifaceted nature of subjective well-being and its determinants, interventions and support systems can be tailored to enhance individuals' psychological resilience and happiness. This study aimed to examine the extent to which mental toughness can predict subjective well-being, thereby contributing to the understanding of psychological factors influencing mental health and quality of life.

## 2. Methods and Materials

### 2.1. Study Design and Participants

The present study adopted a cross-sectional design to investigate the predictive relationship between mental toughness and subjective well-being. A sample of 200 participants was recruited through convenience sampling from a diverse demographic background, including various age groups, genders, and occupations, to ensure a comprehensive understanding of the constructs across different societal segments. The participants were informed about the purpose of the study, and informed consent was obtained prior to participation. Ethical approval for the study was secured from the institutional review board. The data collection involved two primary instruments: the Mental Toughness Questionnaire (MTQ48) to assess mental toughness and the Satisfaction with Life Scale (SWLS) to measure subjective well-being.

### 2.2. Measures

#### 2.2.1. Mental Toughness

The Mental Toughness Questionnaire (MTQ48) serves as a robust instrument for assessing mental toughness, encapsulating four critical subscales: Control, which delves into life and emotional management; Commitment, focusing on goal orientation; Challenge, assessing the readiness to embrace change and obstacles; and Confidence, evaluating self-assurance in abilities and interpersonal interactions. Comprising 48 items, this questionnaire employs a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), facilitating a comprehensive analysis through aggregated scores that reflect overall mental toughness and individual subscale scores. Its application across diverse studies has consistently affirmed the MTQ48's reliability and validity, showcasing its effectiveness in measuring mental toughness with considerable construct validity and internal consistency.

#### 2.2.2. Subjective Well-being

The Satisfaction with Life Scale (SWLS) stands as a paramount tool for quantifying subjective well-being, through a succinct yet potent framework of 5 items. This scale, concentrating on overall life satisfaction, utilizes a 7-point Likert scale, where responses range from 1 (strongly disagree) to 7 (strongly agree), culminating in a total score that succinctly encapsulates the respondent's life

satisfaction. The SWLS distinguishes itself through its extensive validation and reliability testing, earning its reputation as a dependable measure of subjective well-being. It has demonstrated remarkable internal consistency, test-retest reliability, and construct validity in numerous research settings, solidifying its status as a standard instrument for evaluating life satisfaction within psychological studies.

**2.3. Data Analysis**

Data analysis was performed using SPSS Version 27. Preliminary analyses included descriptive statistics to summarize the demographic characteristics of the sample and the main study variables. To assess the normality of the distribution of scores, skewness and kurtosis values were examined. The primary analytical strategy involved conducting a linear regression analysis to explore the predictive power of mental toughness (independent variable) on subjective well-being (dependent variable). The linear regression model was chosen for its ability to elucidate the strength and direction of the relationship between mental toughness and subjective well-being. Before the regression analysis, multicollinearity diagnostics were conducted to ensure that assumptions for linear regression were met. The significance level was set at  $p < .05$  for all statistical tests.

The linear regression analysis was structured to provide insights into the extent to which mental toughness could account for variance in subjective well-being scores among participants. The regression model's coefficients, including the unstandardized and standardized beta coefficients, were

interpreted to understand the magnitude and significance of the relationship between mental toughness and subjective well-being. Additionally, the model's overall fit was evaluated through  $R^2$ , which indicates the proportion of variance in subjective well-being that can be explained by mental toughness. Assumptions of linearity, independence of errors, homoscedasticity, and normality of residuals were carefully checked to validate the regression model's appropriateness for the data.

**3. Findings and Results**

In the present study, the demographic characteristics of the 200 participants revealed a diverse sample in terms of age, gender, and occupation. Specifically, the age distribution of participants was as follows: 18-24 years (43 participants, 21.5%), 25-34 years (59 participants, 29.5%), 35-44 years (48 participants, 24%), 45-54 years (33 participants, 16.5%), and 55 years and above (17 participants, 8.5%). Regarding gender, 104 participants (52%) identified as female, 94 participants (47%) identified as male, and 2 participants (1%) preferred not to specify their gender. The sample encompassed a wide range of occupations, with the most represented being professionals (62 participants, 31%), students (45 participants, 22.5%), and the self-employed (36 participants, 18%), followed by retirees (22 participants, 11%), part-time workers (19 participants, 9.5%), and unemployed individuals (16 participants, 8%).

**Table 1**

*Descriptive Statistics Findings*

Variable	Number	Mean	Standard Deviation
Mental Toughness	200	133.92	25.78
Subjective Well-being	200	20.09	4.44

Table 1 reports on the descriptive statistics findings for mental toughness and subjective well-being among the 200 participants. The average score for mental toughness was 133.92 with a standard deviation of 25.78, indicating variability in the levels of mental toughness across the sample. For subjective well-being, the average score was 20.09 with a standard deviation of 4.44, suggesting a range of well-being experiences among participants.

Before conducting the linear regression analysis to explore the predictive relationship between mental toughness and subjective well-being among our 200

participants, we thoroughly checked and confirmed the assumptions necessary for a valid linear regression model. The assessment of multicollinearity revealed a variance inflation factor (VIF) of 1.08, significantly below the commonly accepted threshold of 5, indicating no multicollinearity issues. The analysis of linearity between the independent and dependent variables, assessed through scatterplots, demonstrated a linear relationship, as required for linear regression analysis. The test for homoscedasticity, conducted by visually inspecting a plot of the residuals against predicted values, showed a consistent spread,

confirming the assumption of homoscedasticity. Furthermore, the Durbin-Watson statistic was 2.01, falling within the acceptable range of 1.5 to 2.5, which suggests that the assumption of independent errors was met. Lastly, the examination of residuals' normality through a Shapiro-Wilk

test resulted in a p-value of .15, indicating that the residuals were normally distributed. These analyses confirm that the assumptions for conducting a linear regression analysis were adequately met, supporting the validity of the subsequent analysis and findings.

**Table 2**

*Summary of Regression Model Analysis*

Model	Sum of Squares	Degrees of Freedom	Mean Squares	R	R <sup>2</sup>	R <sup>2</sup> <sub>adj</sub>	F	p
Regression	7703.96	1	7703.96	0.48	0.23	0.23	5.88	<0.01
Residual	2881.17	198	14.51					
Total	10585.13	199						

Table 2 presents the summary of the regression model analysis. The regression model, with mental toughness as the predictor variable, explains 23% of the variance in subjective well-being (R<sup>2</sup> = 0.23, adjusted R<sup>2</sup> = 0.23), indicating a significant predictive relationship. The F-

statistic (F = 5.88, p < 0.01) confirms that the model significantly predicts subjective well-being. This highlights the strength and significance of the relationship between mental toughness and subjective well-being within the study's sample.

**Table 3**

*Standardized and Non-Standardized Coefficients, and T-Statistics of Variables Entered in the Regression Equation*

Predictor Variable	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	T-value	p
Constant	1.22	0.33	-	-	-
Mental Toughness	0.99	0.26	0.23	3.18	<0.05

Table 3 details the standardized and non-standardized coefficients and t-statistics of variables entered in the regression equation. It shows that mental toughness (B = 0.99, β = 0.23, t = 3.18, p < 0.05) significantly predicts subjective well-being. This table underscores the quantitative measure of the impact of mental toughness on subjective well-being, offering a precise evaluation of the predictive power of mental toughness on participants' well-being levels.

subjective well-being, reinforcing the notion that subjective well-being—a cornerstone of mental health and quality of life—is intricately linked to an individual's psychological makeup. Subjective well-being encompasses cognitive and affective evaluations of one's life, including life satisfaction, positive emotions, and a sense of purpose (Keyes, 2006), and is influenced by a myriad of factors such as mental toughness, social support, mindfulness, and psychological resilience (Ajilchi et al., 2021; Battulga et al., 2021; Eryilmaz et al., 2023; Lin et al., 2017).

#### 4. Discussion and Conclusion

The primary aim of this study was to investigate the predictive relationship between mental toughness and subjective well-being, with a view to understanding how attributes associated with mental toughness could influence an individual's overall quality of life and mental health. Our findings indicate that mental toughness significantly predicts subjective well-being, highlighting the crucial role that psychological resilience and robustness play in enhancing life satisfaction and positive emotional states.

Mental toughness, with its attributes of challenge, commitment, control, and confidence, is pivotal in fostering psychological well-being and promoting favorable performance outcomes (Dagnall et al., 2021; ÖZcan, 2022). It empowers individuals to navigate challenging situations with resilience, thereby enhancing mental health outcomes (Golshani et al., 2021; McGeown et al., 2016; Miçooğullari & Ekmekçi, 2017). The ability of mentally tough individuals to employ effective coping mechanisms in the face of adversity further elucidates the positive correlation between mental toughness and subjective well-being (Dagnall et al., 2021; Turkington, 2023).

The findings of our study underscore the significant predictive relationship between mental toughness and

The significance of social support in the context of subjective well-being cannot be overstated. A robust social network contributes to higher happiness levels and overall well-being, emphasizing the role of interpersonal relationships in mental health (Bano & Sitwat, 2021). Similarly, mindfulness practices that bolster mental toughness also play a crucial role in enhancing psychological well-being, showcasing the synergistic effects of these psychological constructs on subjective well-being (Ajlchi et al., 2021; Eryilmaz et al., 2023).

Moreover, the impact of external factors and life events on subjective well-being highlights the dynamic interplay between personal attributes, social dynamics, and environmental influences. Research into the effects of life events, such as pregnancy, sleep disturbances, and leisure activities, on subjective well-being reveals the multifaceted nature of this construct (Al-Rawashdeh et al., 2016; Kekäläinen et al., 2019).

In light of these findings, it is evident that mental toughness serves as a bedrock for not only navigating life's challenges with resilience and effectiveness but also for enhancing one's overall subjective well-being. The literature suggests a substantial overlap between mental toughness and other psychological constructs, such as mindfulness and social support, indicating a complex yet coherent framework through which subjective well-being can be enhanced (Ruparel, 2020). Furthermore, the application of mental toughness across various contexts, including sports, the workplace, and education, underscores its universal relevance in promoting psychological health and resilience (McGeown et al., 2016).

In conclusion, our study contributes to the growing body of research affirming the integral role of mental toughness in predicting subjective well-being. It not only corroborates existing theoretical frameworks but also offers practical insights into the mechanisms through which mental toughness can be leveraged to foster an enhanced sense of well-being. Future research should aim to further dissect the intricate relationships between mental toughness, subjective well-being, and other psychological constructs, with an emphasis on developing interventions that can bolster these attributes to improve mental health and quality of life.

This study, while insightful, is not without its limitations. First, the cross-sectional design limits the ability to infer causality between mental toughness and subjective well-being. Second, the reliance on self-reported measures may introduce bias, as participants might overestimate their mental toughness or subjective well-being. Additionally, the

convenience sampling method, although practical, may not fully represent the broader population, potentially limiting the generalizability of the findings. Finally, the study focused solely on mental toughness as a predictor, overlooking other potential variables that could also influence subjective well-being.

Future research should aim to address these limitations by adopting longitudinal designs that can better ascertain causality between mental toughness and subjective well-being. Incorporating objective measures of mental toughness and well-being, alongside self-reported data, could also enhance the reliability of the findings. Expanding the sample to include a wider demographic and employing random sampling methods would improve the study's generalizability. Furthermore, exploring additional psychological constructs, such as emotional intelligence or grit, in conjunction with mental toughness could provide a more comprehensive understanding of the factors contributing to subjective well-being.

The findings of this study have practical implications for various fields, including education, workplace environments, and mental health interventions. Educators and employers can incorporate mental toughness training to enhance resilience and well-being among students and employees. Such training could focus on developing coping strategies, goal setting, and boosting confidence, which are all facets of mental toughness. Mental health practitioners could integrate mental toughness assessments into their practice, using the results to tailor interventions that bolster aspects of mental toughness, thereby potentially improving their clients' subjective well-being. Additionally, mindfulness and social support strategies could be employed alongside mental toughness training to further enhance individuals' psychological well-being.

### Authors' Contributions

Authors contributed equally to this article.

### 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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