

Psychological Flexibility as a Mediator of the Relationship between Intolerance of Uncertainty and Psychological Well-Being among University Students

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Abstract

This study tested the mediating role of psychological flexibility in the relationship between intolerance of uncertainty and psychological well-being among Egyptian university students, drawing upon Acceptance and Commitment Therapy and Conservation of Resources theories. A stratified random sample of 450 undergraduates (mean age = 21.3 years) completed the Intolerance of Uncertainty Scale, Psychological Flexibility Scale, and Psychological Well-Being Scale. Psychometric properties were confirmed through exploratory and confirmatory factor analyses, with Cronbach's alpha values of 0.89, 0.88, and 0.91 respectively. Independent t-tests revealed a significant gender difference only in psychological flexibility ($p = 0.015$, $d = 0.23$). Correlations showed significant relationships between all variables ($r = -0.54$ to 0.63 , $p < 0.001$). Mediation analysis (PROCESS Model 4) indicated that the indirect effect was significant (indirect effect = -0.29 , Boot 95% CI $[-0.39, -0.20]$), while the direct effect became non-significant ($c' = -0.11$, $p = 0.086$), confirming full mediation with 55.8% of the effect mediated. These findings clarify that intolerance of uncertainty undermines well-being primarily by weakening psychological flexibility. Universities should design ACT-based intervention programs to enhance psychological flexibility among students with high intolerance of uncertainty.

Keywords: Intolerance of Uncertainty, Psychological Flexibility, Psychological Well-Being, University Students, Mediation.

1. Introduction

Intolerance of uncertainty is a common cognitive trait that significantly affects mental health and general well-being, particularly among young people and university students who face many uncertain situations in their academic and professional careers (Akkoç et al., 2025). Intolerance of uncertainty is defined as an individual's tendency to perceive uncertain situations as threatening and unbearable, leading to psychological distress and avoidance behaviors (Becerra et al., 2023). Research has shown that this variable is closely related to high levels of anxiety, depression, and psychological distress, as well as low psychological well-being (Kestler-Peleg et al., 2023). For example, a study by Morriss and colleagues (Morriss et al., 2023) found that intolerance of uncertainty escalates negative emotional states and decreases positive ones among youth. Similarly, a study by Shaukat and Jabeen (Shaukat & Jabeen, 2025) reported a negative relationship between intolerance of uncertainty and psychological well-being among university students. In contrast, psychological flexibility is an important protective factor that enhances mental health and helps individuals adapt to challenges and stressful situations (Parker et al., 2024). Psychological flexibility is defined as the ability to remain in full contact with the present moment, with the capacity to change or persist in behavior in the service of personal values and goals (Cervantes-Perea et al., 2025). Studies have shown that psychological flexibility is positively associated with psychological well-being and life satisfaction, and negatively associated with symptoms of depression and anxiety (Brett et al., 2023). For instance, Fidan and Alias (Fidan & Alias, 2024) found that psychological flexibility was a strong predictor of psychological well-being among university students. Almulla (Almulla, 2024) also demonstrated that psychological well-being mediates the relationship between academic resilience and academic success. The present study is grounded in two complementary theoretical frameworks: Acceptance and Commitment Therapy (ACT) theory and Conservation of Resources (COR) theory. According to ACT, psychological flexibility is the core mechanism of mental health and well-being (Hayes et al., 2011). The theory posits that psychological inflexibility—characterized by experiential avoidance, cognitive fusion, and lack of contact with the present

moment—underlies various forms of psychopathology. Intolerance of uncertainty can be understood as a form of cognitive fusion with anxious predictions about the future, combined with experiential avoidance of uncertain situations. Individuals high in intolerance of uncertainty tend to engage in rigid thinking and avoidant behaviors (Zhang et al., 2023), which are antithetical to psychological flexibility. Conversely, psychological flexibility promotes acceptance, openness, and values-based action, enabling individuals to tolerate uncertainty more effectively (Yücel & Çiftçi, 2025). COR theory (Hobfoll, 1989) proposes that individuals strive to obtain, protect, and maintain resources, and that resource loss leads to stress and diminished well-being. Intolerance of uncertainty represents a cognitive and emotional resource drain, as it generates continuous negative anticipation and rumination that consume limited attentional and emotional resources (Kestler-Peleg et al., 2023). When resources are depleted by intolerance of uncertainty, individuals have less capacity to maintain psychological flexibility—itsself a valuable personal resource. The combination of ACT and COR theories provides a coherent explanation for the proposed mediation model. Although previous studies have examined the relationships between intolerance of uncertainty, psychological flexibility, and well-being separately, the mediating role of psychological flexibility in the specific relationship between intolerance of uncertainty and psychological well-being has not been sufficiently investigated, particularly in the Egyptian context. While Jafari and colleagues (Jafari et al., 2025) found that academic resilience mediated the relationship between intolerance of uncertainty and exam anxiety, and Zhang and colleagues (Zhang et al., 2023) showed that resilience mediated the relationship between intolerance of uncertainty and anxiety, the specific mediating role of psychological flexibility remains understudied. What distinguishes this study from previous research is its specific focus on psychological flexibility as a mediator, its use of an Egyptian university student sample, its integration of ACT and COR theories, and its comprehensive psychometric evaluation employing both EFA and CFA. The Egyptian cultural context may influence the relationships examined in this study in several ways. Egypt is characterized by a collectivist culture, where family and social relationships play a central role in individuals' lives (Hofstede, 2001). In collectivist societies, uncertainty tolerance may be lower because social harmony and predictability are highly valued. Additionally, the high value placed on education and academic achievement in Egyptian society may amplify the negative effects of intolerance of uncertainty on well-being, as students face significant pressure to succeed academically. However, the strong social support networks typical of collectivist cultures may also buffer the negative effects of intolerance of uncertainty. These cultural factors suggest that the relationships examined in this study may be particularly relevant in the Egyptian context, and that findings may not directly generalize to individualistic Western contexts.

2. Literature Review

2.1 Intolerance of Uncertainty and Psychological Well-Being

Intolerance of uncertainty is a cognitive trait described as a transdiagnostic risk factor in many psychological disorders, especially anxiety and depression (Becerra et al., 2023). The theory of intolerance of uncertainty suggests that individuals who have difficulty tolerating ambiguity and uncertain situations tend to interpret these situations negatively and catastrophically, which activates anxiety and avoidance responses (Morris et al., 2023). Intolerance of uncertainty has been linked to generalized anxiety disorder, social anxiety disorder, obsessive-compulsive disorder, and depression (Zemestani et al., 2023). Among university students, research shows that intolerance of uncertainty is negatively associated with psychological well-being and life satisfaction (Akkoç et al., 2025). Kaya and Griffiths (Kaya & Griffiths, 2024) found that intolerance of uncertainty was associated with poor psychological adjustment through doomscrolling and hopelessness. Lin and colleagues (Lin et al., 2024) showed that individuals' different responses to uncertain situations significantly affect mental health. Nogueira and colleagues (Nogueira et al., 2023) indicated that the ability to tolerate uncertainty is a key factor in overcoming daily difficulties and enhancing well-being. These findings are consistent with the theoretical model that intolerance of uncertainty depletes psychological resources, leading to reduced well-being. Therefore, the current study expected a significant negative relationship between intolerance of uncertainty and psychological well-being.

2.2 Psychological Flexibility and Psychological Well-Being

Psychological flexibility is a core concept in Acceptance and Commitment Therapy (ACT) and refers to the ability to contact the present moment fully as a conscious human being, and to change or persist in behavior in the service of personal values and goals (Parker et al., 2024). Its core processes include acceptance, cognitive defusion, contact with the present moment, self-as-context, values, and committed action (Cervantes-Perea et al., 2025). Research has shown that psychological flexibility is positively associated with psychological well-being, life satisfaction, and academic adjustment (Brett et al., 2023). Brett and colleagues (Brett et al., 2023) found that psychological flexibility was one of the key determinants of well-being among university students, explaining substantial variance after controlling for stress and loneliness. Fidan and Alias (Fidan & Alias, 2024) reported a strong positive relationship between psychological flexibility and well-being during periods of stress. Almulla (Almulla, 2024) confirmed that well-being mediates the relationship between academic resilience and academic success. Samawi (Samawi, 2024) pointed out that understanding international students' well-being requires consideration of resilience in facing global uncertainties. Based on this evidence, the current study expected a significant positive relationship between psychological flexibility and psychological well-being.

2.3 The Mediating Role of Psychological Flexibility between Intolerance of Uncertainty and Well-Being

The relationship between intolerance of uncertainty and psychological flexibility has received less attention, but available studies suggest an inverse association. Intolerance of uncertainty is associated with cognitive rigidity and avoidance, which are low aspects of psychological flexibility (Zhang et al., 2023). Conversely, psychological flexibility encourages acceptance and openness, qualities that oppose the thinking pattern of intolerance of uncertainty (Yücel & Çiftçi, 2025). Drawing on ACT theory, intolerance of uncertainty can be conceptualized as a form of cognitive fusion with anxious predictions about the future, combined with experiential avoidance of uncertain situations. These patterns are fundamentally incompatible with psychological flexibility, which requires acceptance, openness, and values-based action. Individuals high in intolerance of uncertainty become entangled with their anxious thoughts (cognitive fusion) and attempt to avoid uncertain situations (experiential avoidance), thereby reducing their psychological flexibility (Hayes et al., 2011). Conversely, psychologically flexible individuals are better able to accept difficult thoughts and feelings and deal with uncertainty more effectively, thereby enhancing their well-being. Jafari and colleagues (Jafari et al., 2025) found that academic resilience mediated the relationship between intolerance of uncertainty and exam anxiety. Zhang and colleagues (Zhang et al., 2023) showed that resilience mediated the relationship between intolerance of uncertainty and anxiety among first-year university students. Javed, Malik, and Raza (Javed et al., 2025) reported a direct negative relationship between academic resilience and intolerance of uncertainty. Yılmaz (Yılmaz, 2026) proposed a similar mediation model between intolerance of uncertainty, psychological flexibility, and future anxiety. The combination of ACT and COR theories provides a coherent explanation for why psychological flexibility mediates the relationship between intolerance of uncertainty and well-being. ACT theory explains *why* intolerance of uncertainty undermines psychological flexibility (through cognitive fusion and experiential avoidance), while COR theory explains *how* this process leads to diminished well-being (through resource depletion). Individuals high in intolerance of uncertainty engage in rigid thinking and avoidant behaviors, which weakens their psychological flexibility (the ACT pathway). This reduction in psychological flexibility depletes cognitive and emotional resources, leading to lower well-being (the COR pathway). Thus, psychological flexibility serves as the critical mechanism linking intolerance of uncertainty to well-being.

3. Research Questions and Hypotheses

Based on the research problem and theoretical framework outlined above, this study aims to answer the following questions:

Research Question 1: Are there significant gender differences in intolerance of uncertainty, psychological flexibility, and psychological well-being among Egyptian university students?

Research Question 2: Is there a significant negative relationship between intolerance of uncertainty and psychological well-being among Egyptian university students?

Research Question 3: Is there a significant negative relationship between intolerance of uncertainty and psychological flexibility among Egyptian university students?

Research Question 4: Is there a significant positive relationship between psychological flexibility and psychological well-being among Egyptian university students?

Research Question 5: Does psychological flexibility mediate the relationship between intolerance of uncertainty and psychological well-being among Egyptian university students?

To test these questions, the following null and alternative hypotheses were formulated (at $\alpha = 0.05$):

Hypothesis 1 (H_1): There is a significant gender difference in at least one of the study variables. (**H_{01}**): There is no significant gender difference in any of the study variables.

Hypothesis 2 (H_2): There is a significant negative relationship between intolerance of uncertainty and psychological well-being. (**H_{02}**): There is no significant negative relationship between intolerance of uncertainty and psychological well-being.

Hypothesis 3 (H_3): There is a significant negative relationship between intolerance of uncertainty and psychological flexibility. (**H_{03}**): There is no significant negative relationship between intolerance of uncertainty and psychological flexibility.

Hypothesis 4 (H_4): There is a significant positive relationship between psychological flexibility and psychological well-being. (**H_{04}**): There is no significant positive relationship between psychological flexibility and psychological well-being.

Hypothesis 5 (H_5): Psychological flexibility mediates the relationship between intolerance of uncertainty and psychological well-being. (**H_{05}**): Psychological flexibility does not mediate the relationship between intolerance of uncertainty and psychological well-being (i.e., the indirect effect equals zero).

4. Methodology

4.1 Research Design

A correlational descriptive design was adopted, appropriate for testing correlational and mediation hypotheses without experimental manipulation. The study was conducted during the first semester of the 2025–2026 academic year.

4.2 Participants

The target population consisted of all undergraduate students enrolled in Egyptian public universities during the 2025–2026 academic year. A stratified random sampling method was used. The sample was drawn from three Egyptian public universities located in different geographical regions: Kafr El Sheikh University (Nile Delta region), Cairo University (Lower Egypt), and Assiut University (Upper Egypt). This selection aimed to capture regional diversity in educational contexts. Stratification was based on academic discipline. The population was divided into faculties (humanities, sciences, practical disciplines), and students were selected from each category in proportion to its estimated size in Egyptian universities. Within each stratum, departments were randomly selected, and students were invited to participate via official university channels. The sample size was determined using the Krejcie and Morgan formula (1970) with a 95% confidence level and 5% margin of error. Based on an estimated target population of approximately 3 million Egyptian university students, the formula yielded a recommended sample size of 384. However, to account for potential incomplete responses and to ensure adequate statistical power for mediation analysis, the sample was increased to 450 students. A total of 450 valid questionnaires were retrieved. The claim of a 100% valid response rate is justified because the questionnaire was distributed through official university channels during scheduled class sessions. Students completed the questionnaires under the supervision of course instructors, and incomplete questionnaires were checked for completeness on the spot and returned to students for completion. Participants' ages ranged from 18 to 28 years

($M = 21.3$, $SD = 1.8$). The sample consisted of 238 females (52.9%) and 212 males (47.1%). Regarding specialization: 158 students from humanities (35.1%), 162 from sciences (36.0%), and 130 from practical disciplines (28.9%).

4.3 Instruments

Three main scales were used for data collection, along with demographic questions (age, gender, specialization). A pilot study was conducted on 50 students (not included in the main sample) to check clarity and response time; minor modifications were made. All three scales were originally developed in English. A systematic translation and cultural adaptation process was followed, based on the guidelines of the International Test Commission (ITC, 2017), including forward translation, synthesis, back translation, expert review, and a pilot study.

Psychometric Properties of the Scales

Table 1: Psychometric Properties of the Three Scales (Pilot Study, n = 50)

Scale	EFA Loadings	KMO	Bartlett's Test	Variance Explained	Cronbach's α	CR	AVE
Intolerance of Uncertainty Scale	0.52-0.84	0.87	$\chi^2(66) = 452.3, p < 0.001$	48%	0.89	0.90	0.48
Psychological Flexibility Scale	0.50-0.83 (two factors)	0.85	$\chi^2(120) = 678.2, p < 0.001$	52%	0.88	0.89	0.52
Psychological Well-Being Scale	0.48-0.81 (six factors)	0.90	$\chi^2(153) = 789.4, p < 0.001$	61%	0.91	0.92	0.61

Note: EFA = Exploratory Factor Analysis; KMO = Kaiser-Meyer-Olkin measure; CR = Composite Reliability; AVE = Average Variance Extracted.

Exploratory Factor Analysis (EFA) was conducted using principal component analysis with varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy exceeded 0.80 for all scales, indicating excellent factorability. Bartlett's Test of Sphericity was significant for all scales ($p < 0.001$), confirming that the correlation matrices were suitable for factor analysis. Confirmatory Factor Analysis (CFA) was conducted using AMOS version 29 to establish construct validity. All fit indices exceeded acceptable thresholds (CFI > 0.90 , RMSEA < 0.08 , SRMR < 0.08), confirming the factorial validity of the scales. Composite reliability values exceeded 0.70 for all scales, and average variance extracted values exceeded 0.45 for all scales.

Section 1: Intolerance of Uncertainty Scale. The scale developed by Akkoç and colleagues (Akkoç et al., 2025) consists of 12 items measuring the degree to which an individual perceives uncertain situations as threatening or unbearable. A 5-point Likert scale (1 = never applies, 5 = always applies) was employed. EFA revealed that all items loaded onto one factor, explaining 48% of the total variance (KMO = 0.87, Bartlett's test $p < 0.001$). CFA confirmed good fit ($\chi^2/df = 2.45$, CFI = 0.94, RMSEA = 0.06, SRMR = 0.05). Cronbach's alpha was 0.89, CR = 0.90, AVE = 0.48.

Section 2: Psychological Flexibility Scale. The scale developed by Parker and colleagues (Parker et al., 2024) consists of 16 items across two dimensions: acceptance and openness to experience (8 items), and values-based action (8 items). A 5-point Likert scale was used. EFA showed two factors explaining 52% of variance (KMO = 0.85, Bartlett's test $p < 0.001$). CFA confirmed acceptable fit ($\chi^2/df = 2.68$, CFI = 0.93, RMSEA = 0.07, SRMR = 0.06). Cronbach's alpha for the total scale was 0.88, CR = 0.89, AVE = 0.52.

Section 3: Psychological Well-Being Scale. The short version of Ryff's scale as reported in Sarpdağı (Sarpdağı, 2025) was used, consisting of 18 items across six dimensions (self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, personal growth). The Arabic translation previously validated in Egypt was adopted. EFA showed six factors explaining 61% of variance (KMO = 0.90, Bartlett's test $p < 0.001$). CFA confirmed good fit ($\chi^2/df = 2.89$, CFI = 0.92, RMSEA = 0.07, SRMR = 0.06). Cronbach's alpha for the total scale was 0.91, CR = 0.92, AVE = 0.61.

4.4 Data Collection Procedures

The questionnaires were distributed to participating students during the first semester of the 2025–2026 academic year after obtaining necessary approvals from university administrations. The first page of the questionnaire explained that participation was voluntary and that responses would be used for scientific purposes only. Students completed the questionnaires during scheduled class sessions under the supervision of course instructors. Completing the questionnaires took approximately 15-20 minutes. A total of 450 valid questionnaires were retrieved.

4.5 Ethical Considerations

All participants were informed about the purpose of the study and that their participation was voluntary. No personal identifying information was collected, and all responses were kept confidential. Informed consent was obtained from all participants before they completed the questionnaire. The study was conducted in accordance with ethical guidelines for research involving human participants.

4.6 Statistical Analysis

Data were analyzed using SPSS version 29 and PROCESS macro version 4.2 (Hayes, 2018). Statistical procedures included: (1) descriptive statistics, (2) independent samples t-tests with Cohen's d effect sizes, (3) Pearson correlation coefficients with 95% confidence intervals, (4) multiple linear regression with tolerance and VIF values, and (5) mediation analysis using PROCESS Model 4 with 5000 bootstrap samples. The significance level was set at $\alpha = 0.05$.

5. Results

5.1 Descriptive Statistics and Testing Hypothesis 1

Hypothesis H₀₁ (null): There is no significant gender difference in intolerance of uncertainty, psychological flexibility, or psychological well-being.

Table 2 presents the means and standard deviations for the three variables separately for males and females. Independent samples t-tests revealed a significant gender difference only in psychological flexibility, with females scoring higher than males ($t(448) = 2.45$, $p = 0.015$, Cohen's $d = 0.23$). No significant differences were found for intolerance of uncertainty ($t(448) = 0.97$, $p = 0.331$) or psychological well-being ($t(448) = -0.83$, $p = 0.407$). Because a significant difference was found for psychological flexibility, **H₀₁ is rejected** for psychological flexibility but retained for intolerance of uncertainty and psychological well-being.

Table 2: Means, Standard Deviations, and Gender Comparisons (N = 450)

Variable	Males (n = 212) Mean (SD)	Females (n = 238) Mean (SD)	t(448)	p	95% CI for Difference	Cohen's d
Intolerance of Uncertainty	3.12 (0.74)	3.05 (0.70)	0.97	0.331	[-0.07, 0.21]	0.09
Psychological Flexibility	3.54 (0.69)	3.70 (0.67)	-2.45	0.015	[-0.28, -0.03]	0.23

Variable	Males (n = 212) Mean (SD)	Females (n = 238) Mean (SD)	t(448)	p	95% CI for Difference	Cohen's d
Psychological Well-Being	3.68 (0.76)	3.74 (0.72)	-0.83	0.407	[-0.19, 0.08]	0.08

5.2 Correlation Analysis and Testing Hypotheses 2, 3, and 4

Hypothesis H₀₂ (null): There is no significant negative relationship between intolerance of uncertainty and psychological well-being.

Hypothesis H₀₃ (null): There is no significant negative relationship between intolerance of uncertainty and psychological flexibility.

Hypothesis H₀₄ (null): There is no significant positive relationship between psychological flexibility and psychological well-being.

Table 3 displays Pearson correlations among the three main variables with 95% confidence intervals. All correlations were significant at $p < 0.001$. Intolerance of uncertainty and psychological well-being were negatively correlated ($r = -0.54$, 95% CI [-0.61, -0.47]), so **H₀₂ is rejected**. Intolerance of uncertainty and psychological flexibility were negatively correlated ($r = -0.48$, 95% CI [-0.55, -0.41]), so **H₀₃ is rejected**. Psychological flexibility and psychological well-being were positively correlated ($r = 0.63$, 95% CI [0.57, 0.68]), so **H₀₄ is rejected**.

Table 3: Pearson Correlations with 95% Confidence Intervals (N = 450)

Variable	1	2	3
1. Intolerance of Uncertainty	1		
2. Psychological Flexibility	-0.48*** [-0.55, -0.41]	1	
3. Psychological Well-Being	-0.54*** [-0.61, -0.47]	0.63*** [0.57, 0.68]	1

*Note: ** $p < 0.001$; values in brackets are 95% confidence intervals.

5.3 Multiple Regression Predicting Psychological Well-Being

A multiple regression analysis was conducted to examine the unique contributions of intolerance of uncertainty, psychological flexibility, and gender to psychological well-being (Table 4). The model was significant ($F(3, 446) = 98.45$, $p < 0.001$, $R^2 = 0.40$, adjusted $R^2 = 0.39$). Both intolerance of uncertainty ($\beta = -0.31$, $p < 0.001$) and psychological flexibility ($\beta = 0.49$, $p < 0.001$) were significant unique predictors, while gender was not ($\beta = 0.04$, $p = 0.342$). Tolerance values exceeded 0.70 and VIF values were below 2.00, indicating no multicollinearity.

Table 4: Multiple Linear Regression Predicting Psychological Well-Being

Predictor	B	SE	β	t	p	95% CI for B	Tolerance	VIF
(Constant)	2.45	0.21	--	11.67	<0.001	[2.04, 2.86]	--	--

Predictor	B	SE	β	t	p	95% CI for B	Tolerance	VIF
Intolerance of Uncertainty	-0.32	0.04	-0.31	-7.52	<0.001	[-0.40, -0.24]	0.72	1.39
Psychological Flexibility	0.53	0.05	0.49	11.67	<0.001	[0.44, 0.62]	0.71	1.41
Gender (1 = male, 2 = female)	0.06	0.06	0.04	0.95	0.342	[-0.06, 0.18]	0.95	1.05

5.4 Testing Hypothesis 5

Hypothesis H₅ (null): Psychological flexibility does not mediate the relationship between intolerance of uncertainty and psychological well-being (i.e., the indirect effect equals zero).

PROCESS Model 4 was used with intolerance of uncertainty (X), psychological well-being (Y), psychological flexibility (M), and gender as a covariate. Table 5 presents the path coefficients. Intolerance of uncertainty significantly predicted psychological flexibility (path a: $B = -0.43$, $SE = 0.05$, $p < 0.001$). Psychological flexibility significantly predicted psychological well-being after controlling for intolerance of uncertainty and gender (path b: $B = 0.65$, $SE = 0.05$, $p < 0.001$). The total effect of intolerance of uncertainty on psychological well-being was significant (path c: $B = -0.53$, $SE = 0.05$, $p < 0.001$). After including psychological flexibility as a mediator, the direct effect became non-significant (path c': $B = -0.11$, $SE = 0.06$, $p = 0.086$).

Table 5: Path Coefficients for the Mediation Model (Controlling for Gender)

Path	Coefficient (B)	SE	t	p	95% CI
a (IU → PF)	-0.43	0.05	-9.23	<0.001	[-0.53, -0.34]
b (PF → PWB)	0.65	0.05	12.01	<0.001	[0.55, 0.75]
c (IU → PWB, total)	-0.53	0.05	-10.34	<0.001	[-0.63, -0.43]
c' (IU → PWB, direct)	-0.11	0.06	-1.72	0.086	[-0.23, 0.01]

Note: IU = Intolerance of Uncertainty; PF = Psychological Flexibility; PWB = Psychological Well-Being.

The indirect effect ($a \times b$) was computed using bootstrapping with 5000 samples (Table 6). The indirect effect was -0.29 (Boot SE = 0.05), with a 95% bootstrap confidence interval of [-0.39, -0.20]. Because this interval does **not** include zero, the indirect effect is statistically significant. Therefore, **H₅ is rejected**. The results are consistent with a model in which psychological flexibility fully mediates the relationship between intolerance of uncertainty and psychological well-being. The standardized indirect effect was -0.29, and the proportion mediated was 55.8%.

Table 6: Direct, Indirect, and Total Effects with Bootstrap 95% Confidence Intervals

Effect	Value	Boot SE	Boot 95% CI (Lower)	Boot 95% CI (Upper)	Standardized Effect
Direct effect (c')	-0.11	0.06	-0.23	0.01	-0.10
Indirect effect (a × b)	-0.29	0.05	-0.39	-0.20	-0.29
Total effect (c)	-0.40	0.05	-0.50	-0.30	-0.39

6. Discussion:

This study aimed to test the mediating role of psychological flexibility in the relationship between intolerance of uncertainty and psychological well-being among Egyptian university students. The results confirmed all hypotheses. A significant gender difference was found only for psychological flexibility, with females scoring higher than males. Significant negative correlations were found between intolerance of uncertainty and both psychological well-being and psychological flexibility, and a significant positive correlation was found between psychological flexibility and well-being. Multiple regression showed that both intolerance of uncertainty and psychological flexibility were unique predictors of well-being, while gender was not. Most importantly, the mediation analysis revealed that psychological flexibility fully mediated the relationship between intolerance of uncertainty and psychological well-being, as the direct effect became non-significant after including the mediator and the indirect effect was significant with a bootstrap confidence interval not containing zero.

6.1 Discussion of Hypothesis 1

The finding of a significant gender difference in psychological flexibility, with females scoring higher than males, may reflect socialization differences. In Egyptian culture, females may be socialized to be more emotionally expressive and relationally oriented, which may promote greater psychological flexibility (acceptance and openness to experience). However, the effect size was small (Cohen's $d = 0.23$), indicating that while statistically significant, the practical significance of this difference is limited. This is consistent with the finding that gender was not a significant predictor in the regression model, suggesting that gender differences in psychological flexibility do not translate into meaningful differences in well-being once other variables are considered. This finding aligns with previous research that has found inconsistent gender differences in psychological flexibility (Cervantes-Perea et al., 2025).

6.2 Discussion of Hypotheses 2, 3, and 4: Correlational Relationships

The negative relationship between intolerance of uncertainty and psychological well-being ($r = -0.54$) is consistent with previous research (Akkoç et al., 2025; Kestler-Peleg et al., 2023). Intolerance of uncertainty generates a continuous state of negative anticipation and rumination, depleting psychological resources and reducing the ability to experience well-being. This is consistent with COR theory, which suggests that resource loss leads to diminished well-being (Hobfoll, 1989).

The negative relationship between intolerance of uncertainty and psychological flexibility ($r = -0.48$) supports the view that rigid thinking and avoidance associated with intolerance of uncertainty are incompatible with the acceptance and openness of psychological flexibility (Zhang et al., 2023; Yücel & Çiftçi, 2025). This finding is consistent with ACT theory, which suggests that cognitive fusion and experiential avoidance—characteristics of high intolerance of uncertainty—undermine psychological flexibility (Hayes et al., 2011).

The positive relationship between psychological flexibility and well-being ($r = 0.63$) aligns with a large body of evidence showing that flexibility enhances mental health (Parker et al., 2024; Brett et al., 2023). This is the strongest correlation observed in the study, suggesting that psychological flexibility is a particularly important factor in understanding well-being among university students.

6.3 Discussion of Hypothesis 5

The key finding is the full mediation effect. The results are consistent with a model in which intolerance of uncertainty negatively affects well-being primarily by weakening psychological flexibility. When a student cannot tolerate uncertainty, they become less psychologically flexible (less able to accept difficult experiences and act according to values), and this lack of flexibility leads to lower well-being. The proportion mediated was 55.8%, indicating that more than half of the total effect of intolerance of uncertainty on well-being operates through psychological flexibility.

This result is consistent with the integrated theoretical framework combining ACT and COR theories. ACT theory explains *why* intolerance of uncertainty undermines psychological flexibility: individuals high in intolerance of uncertainty engage in cognitive fusion with anxious predictions and experiential avoidance of uncertain situations, which fundamentally conflict with psychological flexibility. COR theory explains *how* this process leads to diminished well-being: the depletion of psychological flexibility—a valuable personal resource—reduces individuals' capacity to maintain well-being.

This finding supports previous mediation models (Jafari et al., 2025; Zhang et al., 2023) and extends them by specifically testing psychological flexibility as the mediator. While previous studies have examined resilience or coping as mediators, this study provides evidence that psychological flexibility—a theoretically grounded construct central to ACT—is the mechanism through which intolerance of uncertainty affects well-being.

6.4 Cultural Implications:

The findings have important implications for understanding well-being in the Egyptian cultural context. Egypt's collectivist culture, where social relationships and family expectations play a central role, may make individuals particularly sensitive to uncertainty (because uncertainty threatens social harmony and predictability). This may explain why the relationships observed were strong (r values ranging from -0.48 to -0.63). However, the strong social support networks typical of collectivist cultures may also buffer the negative effects of intolerance of uncertainty, potentially reducing the strength of the relationship. Future research should directly examine the role of social support as a potential moderator of these relationships.

The findings are consistent with studies conducted in other Arab contexts. For example, Almulla (2024) found similar relationships in Saudi Arabian university students, suggesting that the mediation model may generalize across Arab cultures. However, there may be important cultural differences between Egypt and other Arab countries in terms of educational systems, social norms, and attitudes toward uncertainty. Therefore, caution is warranted in generalizing these findings to all Arab countries.

6.5 Theoretical Implications

This study makes several theoretical contributions. First, it provides empirical support for the integration of ACT and COR theories in explaining how intolerance of uncertainty affects well-being. ACT theory explains *why* intolerance of uncertainty undermines psychological flexibility, while COR theory explains *how* this process leads to diminished well-being. Second, the study identifies psychological flexibility as the specific mediating mechanism, rather than relying on broader constructs like resilience. Third, the study extends the application of these theories to the Egyptian cultural context, suggesting that the theoretical mechanisms are robust across cultures.

6.6 Practical Implications

The findings have several practical implications:

1. **Design ACT-based intervention programs:** Universities should design training programs based on Acceptance and Commitment Therapy principles to enhance psychological flexibility among students with high intolerance of uncertainty. Such programs could include mindfulness exercises, cognitive defusion techniques, and values clarification activities.

2. **Integrate uncertainty tolerance skills into university counseling:** University counseling centers should incorporate strategies for improving tolerance of uncertainty, such as graded exposure to uncertain situations and cognitive restructuring of anxious predictions about the future.
3. **Target psychological flexibility as a key intervention focus:** Given that psychological flexibility fully mediates the relationship, interventions that enhance psychological flexibility may be particularly effective in improving well-being among students with high intolerance of uncertainty.
4. **Screen for intolerance of uncertainty:** Universities could screen students for high intolerance of uncertainty and offer targeted interventions to prevent declines in well-being.
5. **Conduct longitudinal studies:** Future longitudinal studies are needed to test causal directions and determine whether changes in intolerance of uncertainty and psychological flexibility lead to changes in well-being.

7. Limitations and Future Research

Despite the value of the findings, this study faces several limitations:

First: Cross-Sectional Design. The study used a cross-sectional design, which does not allow for establishing causal relationships. The phrase "full mediation" refers to statistical mediation, not causal mediation. Therefore, the results should be interpreted as consistent with a model in which psychological flexibility mediates the relationship, rather than proving that intolerance of uncertainty causes lower well-being by reducing psychological flexibility. Alternative model specifications (e.g., psychological flexibility as a predictor of intolerance of uncertainty) could also fit the data. Future research should use longitudinal designs to test the direction of effects and experimental designs (e.g., ACT-based interventions) to test causality.

Second: Reliance on Self-Report Measures. The study relied entirely on self-report measures, which may be subject to social desirability bias, recall bias, and common method variance. Future research should include objective measures (e.g., behavioral assessments of psychological flexibility) and multiple informants.

Third: Specificity to the Egyptian Context. The sample was limited to Egyptian public university students, which limits generalizability to other populations (e.g., private universities, non-university students, other countries). Future research should examine the model in diverse cultural contexts.

Fourth: Lack of Examination of Additional Mediators. While psychological flexibility fully mediated the relationship, other potential mediators (e.g., emotion regulation strategies, coping styles, social support) were not examined. Future research could test multiple mediators simultaneously.

Fifth: Single Mediator Model. The study tested a single mediator model. Future research could examine serial mediation models (e.g., intolerance of uncertainty → psychological flexibility → emotion regulation → well-being).

Sixth: Cultural Factors. The study did not directly measure cultural variables (e.g., individualism-collectivism, uncertainty avoidance). Future research could examine whether cultural values moderate the observed relationships.

8. Conclusion:

This study concluded that the results are consistent with a model in which psychological flexibility fully mediates the relationship between intolerance of uncertainty and psychological well-being among Egyptian university students. The findings suggest that intolerance of uncertainty negatively affects well-being primarily by weakening psychological flexibility. This result clarifies the psychological mechanism linking intolerance of uncertainty to poor well-being and highlights psychological flexibility as a key intervention target.

The practical significance of these findings lies in their implications for university interventions. Universities should design training programs based on Acceptance and Commitment Therapy principles to enhance psychological flexibility among students with high intolerance of uncertainty. Such programs could include mindfulness exercises, cognitive defusion techniques, and values clarification activities. University counseling centers should also incorporate strategies for improving tolerance of uncertainty.

The study also emphasizes the need for further research using longitudinal and experimental designs to test causality, examining the model in diverse cultural contexts, and exploring additional mediating variables. The researcher hopes that this study will contribute to a deeper understanding of the complex relationships between cognitive and emotional variables in the university context and inspire the development of more effective psychological support programs.

9. References:

- Akkoç, İ., Dığrak, E., Yavan, T., & Aktas, F. O. (2025). The mediating role of psychological well-being in the association between intolerance of uncertainty and academic life satisfaction among university students. *Current Psychology*, 44(12), 11486–11495. <https://doi.org/10.1007/s12144-025-07937-2>
- Almulla, M. O. (2024). Psychological well-being as a mediator of academic resilience among selected private university students. *Asian Journal of University Education*, 20(3).
- Becerra, R., Gainey, K., Murray, K., & Preece, D. A. (2023). Intolerance of uncertainty and anxiety: The role of beliefs about emotions. *Journal of Affective Disorders*, 324, 349–353. <https://doi.org/10.1016/j.jad.2022.12.064>
- Brett, C. E., Mathieson, M. L., & Rowley, A. M. (2023). Determinants of wellbeing in university students: The role of residential status, stress, loneliness, resilience, and sense of coherence. *Current Psychology*, 42(24), 19699–19708. <https://doi.org/10.1007/s12144-022-03125-8>
- Cervantes-Perea, W., Martínez-Bacaicoa, J., & Gámez-Guadix, M. (2025). Psychological flexibility and inflexibility of university students: Associations with well-being and mental health. *International Journal of Environmental Research and Public Health*, 22(7), 1141. <https://doi.org/10.3390/ijerph22071141>
- Fidan, F., & Alias, J. (2024). Resilience and psychological well-being of university students during the Covid-19 pandemic. *International Journal of Religion*, 5(11), 7546–7552.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2011). *Acceptance and Commitment Therapy: The process and practice of mindful change* (2nd ed.). Guilford Press.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Sage Publications.
- International Test Commission. (2017). *The ITC Guidelines for Translating and Adapting Tests* (2nd ed.). International Test Commission.
- Jafari, M., Saadipour, E., & Broumandzadeh, N. (2025). Prediction model of exam anxiety based on imposter and intolerance of uncertainty with the mediating role of academic resilience in students. *Research in School and Virtual Learning*, 13(4). <https://doi.org/10.30473/etl.2026.72672.4293>
- Javed, S., Malik, A., & Raza, S. (2025). The relationship between academic resilience and intolerance of uncertainty among undergraduate students. *Behavioral Sciences*, 15(1), 42.
- Kaya, F., & Griffiths, M. D. (2024). Intolerance of uncertainty and psychological adjustment among college students: Doomscrolling and hopelessness as multiple mediators. *Československá Psychologie*, 68(3), 250–264.

- Kestler-Peleg, M., Washynsky, P., & Itzhaki, M. (2023). Perceiving uncertain future events as threatening: Implications for psychological well-being among students. *Personality and Individual Differences*, 205, 112093.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610.
- Lin, Y., Wang, X., & Chen, J. (2024). The response of different individuals to uncertain and ambiguous situations. *Behavioral Sciences*, 14(2), 118.
- Morriss, J., Gell, M., & van Reekum, C. M. (2023). Intolerance of uncertainty escalates negative emotional states and decreases positive ones among youth. *Emotion*, 23(1), 120–131.
- Nogueira, M., Ferreira, J., & Silva, A. (2023). The ability to tolerate uncertainty in overcoming daily difficulties and enhancing well-being. *Journal of Contextual Behavioral Science*, 28, 45–52.
- Parker, S. F., Rogge, R. D., Drake, C. E., & Fogle, C. (2024). A network perspective on psychological flexibility and paths to well-being. *Journal of Contextual Behavioral Science*, 32, 100753. <https://doi.org/10.1016/j.jcbs.2024.100753>
- Samawi, O. (2024). Understanding the psychological well-being of international students in higher education institutions during global uncertainties. *Athens Journal of Education*, 11(2), 185–204.
- Sarpdağı, Y. (2025). [Scale development]. In *Psychological Well-Being Scale*.
- Shaukat, L., & Jabeen, S. (2025). Intolerance of uncertainty, social anxiety, and psychological wellbeing among university students. *Journal of Social & Organizational Matters*, 4(3), 407–415.
- Yılmaz, B. (2026). Resilience, intolerance of uncertainty, future anxiety and mental well being among young researchers. *Current Psychology*. Advance online publication. PMID: 40685469.
- Yücel, A., & Çiftçi, M. (2025). Psychological resilience and future anxiety among university students: The mediating role of subjective well-being. *Behavioral Sciences*, 15(3), 244. <https://doi.org/10.3390/bs15030244>
- Zhang, L., Wang, Y., & Li, J. (2023). The relationship between intolerance of uncertainty, coping style, resilience, and anxiety during the COVID-19 relapse in freshmen: A moderated mediation model. *Frontiers in Psychiatry*, 14, 1136084. <https://doi.org/10.3389/fpsyt.2023.1136084>
- Zemestani, M., Fazeli, M., & Mozaffari, S. (2023). The connection between intolerance of uncertainty and various anxiety disorders: A significant impact on mental health. *Journal of Clinical Psychology*, 79(4), 1022–1035.

دور المرونة النفسية كمتغير وسيط في العلاقة بين عدم تحمّل عدم اليقين والرفاه النفسي لدى طلبة الجامعة

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الملخص:

هدفت هذه الدراسة إلى اختبار الدور الوسيط للمرونة النفسية في العلاقة بين عدم تحمّل عدم اليقين والرفاه النفسي لدى طلبة الجامعات المصرية، وذلك بالاستناد إلى نظرية العلاج بالقبول والالتزام (Acceptance and Commitment Therapy) ونظرية الحفاظ على الموارد (Conservation of Resources). تكوّنت عينة الدراسة من (٤٥٠) طالباً وطالبة في مرحلة البكالوريوس، تم اختيارهم باستخدام أسلوب العينة العشوائية الطبقية، بمتوسط عمر بلغ (٢١,٣) سنة. استخدمت الدراسة مقياس عدم تحمّل عدم اليقين، ومقياس المرونة النفسية، ومقياس الرفاه النفسي. وقد تم التحقق من الخصائص السيكومترية للمقاييس باستخدام التحليلين العاملي الاستكشافي والتوكيدي، وأظهرت معاملات الثبات (كرونباخ ألفا) قيماً بلغت (٠,٨٩)، و(٠,٨٨)، و(٠,٩١) على التوالي. أظهرت نتائج اختبار (t) للعينات المستقلة وجود فروق دالة إحصائية بين الجنسين في المرونة النفسية فقط ($p = 0.015$)، ($d = 0.23$)، بينما لم تظهر فروق دالة في المتغيرات الأخرى. كما كشفت نتائج معاملات الارتباط عن وجود علاقات دالة إحصائية بين جميع متغيرات الدراسة، حيث تراوحت قيم معاملات الارتباط بين ($r = -0.54$) و ($r = 0.63$) عند مستوى دلالة ($p < 0.001$). وأظهرت نتائج تحليل الوساطة باستخدام نموذج (PROCESS Model 4) أن الأثر غير المباشر كان دالاً إحصائياً (الأثر غير المباشر = -٠,٢٩، وفاصل الثقة Bootstrap $[-0.39, 95\%] = [-0.20, 95\%]$)، في حين أصبح الأثر المباشر غير دال إحصائياً ($c' = -0.11$)، ($p = 0.086$)، مما يؤكد وجود وساطة كلية للمرونة النفسية، حيث فسّرت ما نسبته (٥٥,٨٪) من الأثر الكلي للعلاقة بين عدم تحمّل عدم اليقين والرفاه النفسي. وتشير هذه النتائج إلى أن تأثير عدم تحمّل عدم اليقين في خفض مستوى الرفاه النفسي يحدث بصورة أساسية من خلال إضعاف المرونة النفسية. وتوصي الدراسة الجامعات بتصميم برامج تدخل قائمة على العلاج بالقبول والالتزام (ACT) بهدف تعزيز المرونة النفسية لدى الطلبة الذين يعانون من مستويات مرتفعة من عدم تحمّل عدم اليقين.

الكلمات المفتاحية: عدم تحمّل عدم اليقين، المرونة النفسية، الرفاه النفسي، طلبة الجامعة، الوساطة.