

INVESTIGATING THE MEDIATING ROLE OF COGNITIVE FLEXIBILITY AND INTOLERANCE OF UNCERTAINTY IN THE RELATIONSHIP BETWEEN PERFECTIONISM AND RESILIENCE

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Abstract

This research explores whether cognitive flexibility and intolerance of uncertainty function as intermediary mechanisms in the association between perfectionism and resilience. The participant group in this study comprised 424 undergraduate students (302 women, 122 men) pursuing education across various departments within the Faculties of Education, Economics and Administrative Sciences, and Engineering at a public university. The data collected in the study were evaluated through Pearson Correlation and Bootstrap analyses. The study revealed a significant negative relationship between perfectionism and resilience. Additionally, a noteworthy inverse linkage was identified between perfectionism and cognitive flexibility. In addition, a significant positive link was identified between perfectionism and intolerance of uncertainty. In addition, resilience exhibited a meaningful positive correlation with cognitive flexibility, whereas it was inversely associated with intolerance of uncertainty. The analysis further revealed that cognitive flexibility and intolerance of uncertainty were complete mediators in the relationship between perfectionism and resilience.

Keywords: Resilience, perfectionism, cognitive flexibility, intolerance of uncertainty.

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Introduction

The rapidly changing social structure, economic fluctuations, and global uncertainties are testing individuals' psychological resilience more than ever. University life, in particular, is a complex process that challenges the mental health of young adults and requires them to cope with various sources of stress. It is widely recognized as a challenging period where individuals face numerous problems and learn to find solutions to these issues (Aluede et al., 2006; Erdur-Baker & Bıçak, 2006). Studies indicate that, in this phase, university students face an elevated risk of encountering mental health issues (Özel et al., 2020; Hyun et al., 2006). Studies also indicate that university students encounter economic, academic, adaptation, and social difficulties throughout their educational journey (Camadan & Kıraç, 2020; Donat et al., 2019). The intense stress experienced by students can negatively impact their overall quality of life (Yıldız et al., 2024). A study conducted with 5.829 students in Turkey found that university students face emotional, economic, academic, and romantic challenges (Erkan et al., 2012). Similarly, research in the United States revealed that university students often face considerable distress from academic, occupational, and financial concerns (King et al., 2014). These multidimensional challenges adversely affect students' psychological resilience, further complicating their adaptation processes. At this point, the positive psychology approach emphasizes that individuals' internal resources and strengths directly influence their ability to cope with stress and overcome challenging life events. Specifically, positive individual characteristics such as love, courage, perseverance, future orientation, and spiritual development enhance individuals' resilience, making them more resistant to difficulties (Seligman & Csikszentmihalyi, 2000). Within this framework, the initial phase of positive psychology emphasizes studies focused on strengthening psychological resilience and identifying strategies to build coping abilities when confronted with stress and hardship. According to Fredrickson (2001), positive emotions increase individuals' resistance to stressful situations and contribute to greater flexibility and adaptability. These results underscore the need to bolster university students' psychological resilience to safeguard their mental well-being and preserve life quality amid their complex challenges.

Resilience

One of the key adaptive skills of individuals is resilience (Weston & Parkin, 2010). Masten (2014) described resilience as the ability to adjust to difficult circumstances that endanger a person's growth and overall life trajectory. Conversely, Rutter (1985) highlighted resilience as a fluid concept shaped by the interplay between protective and risk factors, which modifies how adverse experiences affect an individual. It can be stated that resilience significantly

influences individuals' adaptability and their ability to endure stressful and adverse experiences (Zautra et al., 2010). Individuals exhibiting elevated resilience tend not to succumb to stress; they recover more swiftly and emerge fortified from challenging life events (Henderson & Milstein, 1996).

Resilience, by its nature, relies on risk and protective factors within its framework (Gu & Day, 2007). Risk factors include disorders, deficiencies, and challenges individuals face (Nicotera & Laser-Maira, 2017). Conversely, these adversities are mitigated by protective factors, which enhance individuals' resilience (Masten et al., 1990). It is observed that while some individuals succumb to challenging events, others successfully cope with them, a difference attributed mainly to their levels of resilience (Watters et al., 2023). This underscores the significance of diverse psychological elements that shape resilience, with perfectionism recognized as a significant contributing factor (Klibert et al., 2014).

Perfectionism

Perfectionism refers to the tendency to impose performance standards on oneself or others that exceed what is reasonably required by the circumstances (Frost et al., 1990). It predominantly stems from the need for approval, love, non-rejection, and acceptance (Tuncer & Voltan-Acar, 2006). Hewitt and Flett (1991) framed perfectionism as a multidimensional construct encompassing self-directed, other-directed, and socially imposed forms. In a related framework, Frost et al. (1990) identified six components of perfectionism: elevated personal benchmarks, sensitivity to errors, perceived parental demands, critical parental feedback, hesitation in decision-making, and emphasis on orderliness. Pacht (1984) argued that striving for perfection does not represent a healthy goal; rather, it is considered an unhealthy behavior. Perfectionist individuals perceive stress more intensely than others throughout their lives and may adopt a more rigid and critical stance toward themselves and others (Rice et al., 2006).

Cognitive Flexibility

Cognitive flexibility (Sheppard & Hicks, 2017) and resilience (Bannazadeh et al., 2022) are among the variables considered to be associated with perfectionism. Cognitive flexibility refers to an individual's ability to modify their thought processes and behaviors in response to evolving situations and changing demands (Martin & Anderson, 1998). It describes a person's ability to navigate difficulties by generating solutions and forming varied viewpoints on particular situations (Richer, 2011). Another definition suggests that as individuals grow and develop, the number of stimuli in their environment increases, requiring them to adjust themselves accordingly to cope with these stimuli (Crone et al., 2004).

Two key aspects commonly characterize cognitive flexibility: a learning-oriented process and an individual's ability to accommodate novel or changing circumstances (Payne et al., 1988). Cognitive flexibility involves shifting mental frameworks in response to changing circumstances. It is conceptualized in three dimensions: (1) viewing difficult situations with a sense of control, (2) identifying alternative explanations for behaviors and events, and (3) generating different solutions for complex problems (Dennis & Vander Wal, 2010).

Moreover, it has been noted that individuals with high cognitive flexibility tend to recognize a range of possible options when faced with decision-making in varying contexts (Martin & Rubin, 1994). Conversely, cognitively inflexible individuals become distracted, struggle to adapt to new situations, approach events with a fixed mindset, and often resist change (Jonassen & Grabowski, 1993).

Intolerance of Uncertainty

Another variable linked to perfectionism is intolerance of uncertainty (Saadi et al., 2019), which is also associated with resilience (Lee, 2019). Intolerance of uncertainty denotes a tendency to react to ambiguous or unpredictable circumstances with maladaptive cognitive, emotional, and behavioral responses (Buhr & Dugas, 2002). Hofstede (2001) characterized intolerance of uncertainty as discomfort or unease experienced in ambiguous or unclear circumstances. Another definition explains intolerance of uncertainty as the discomfort individuals experience when confronted with the possibility of an event unfolding in an undesirable manner (Carleton et al., 2007). According to Budner (1962), individuals experience intolerance of uncertainty, particularly when the uncertain situation is new or unfamiliar, complex or difficult to resolve, caused by contradictory circumstances where the appropriate course of action is unclear, or when individuals perceive the situation as threatening.

When examining the causes of intolerance of uncertainty, it is evident that this condition is closely related to personality traits. Studies suggest that people with anxious or perfectionist traits, a strong need for control, or a persistent desire for certainty are likelier to display elevated intolerance of uncertainty (Çardak, 2012). It has also been underscored that individuals exhibiting elevated intolerance of uncertainty tend to expect unfavorable consequences when confronted with unclear or unpredictable situations. They tend to interpret these events exaggeratedly, display a negative cognitive bias, and experience impaired functionality when uncertain (Buhr & Dugas, 2002; Yook et al., 2010). It has also been observed that intolerance of uncertainty frequently leads to increased anxiety and the development of harmful emotional responses (Karataş & Uzun, 2018).

The Relationship Between Resilience, Cognitive Flexibility, Intolerance of Uncertainty, and Perfectionism

A strong positive correlation has been consistently reported between resilience and cognitive flexibility across various studies (Arici-Ozcan et al., 2019; Ateş & Sağar, 2021a; Bannazadeh et al., 2022; Güleç, 2020; Seçim, 2020; Taşkın-Aydın, 2022). Several studies also reveal notable positive associations between resilience, cognitive flexibility, and various psychological constructs, including life goals (Güleç, 2020), emotion regulation (Arici-Ozcan et al., 2019; Seçim, 2020), self-compassion (Yelpaze, 2020), self-efficacy (Ateş & Sağar, 2021b), insight (Kaya et al., 2021), and forgiveness (Demirtaş, 2021).

On the other hand, negative associations have been identified between resilience and loneliness (Yelpaze, 2020), as well as between resilience and cognitive flexibility and impulsivity related to suicide attempts (Ram et al., 2019). A significant inverse relationship has also been consistently documented between resilience and intolerance of uncertainty in numerous studies (Aydın & Ersoy-Özcan, 2021; Joshi, 2020; Karataş & Tagay, 2021; Lee, 2019; Saatçı, 2020; Taşkın-Aydın, 2022). Furthermore, empirical findings have demonstrated a meaningful inverse association between resilience and perfectionism (Klibert et al., 2014; Saadi et al., 2019; Sheppard & Hicks, 2017).

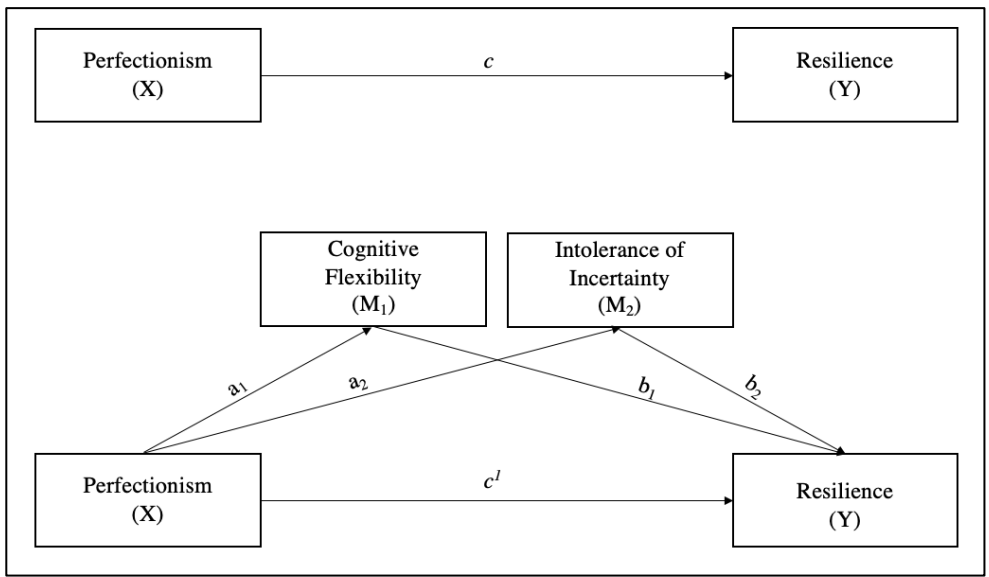
Likewise, research has identified a significant negative association between cognitive flexibility and perfectionism (Çutuk, 2020; Hayatbini et al., 2021). In contrast, a positive and significant correlation has been observed between intolerance of uncertainty and perfectionism (Reuther et al., 2013; Saatçı, 2020; Williams & Levinson, 2020).

The Current Study

Resilience is a crucial quality that enables university students to manage the challenges they face effectively and adjust successfully to university life. Perfectionism is associated with a rigid mindset, which may pose a risk to resilience. To gain a deeper insight into the interplay between perfectionism and resilience, exploring how cognitive flexibility and intolerance of uncertainty function as mediating variables within this relationship is crucial. Consequently, cognitive flexibility may alleviate the negative impact of perfectionism on resilience, whereas intolerance of uncertainty may amplify it.

An examination of the relevant literature suggests that these variables have not previously been investigated collectively within an integrated analytical model. It was hypothesized that university students' psychological resilience could be

predicted by their levels of perfectionism. In addition, cognitive flexibility and intolerance of uncertainty might operate as intermediary variables in the association between perfectionism and resilience (Figure 1).



(Abbreviations: X: Independent variables, Y: Dependent variables, M₁: Mediator 1, M₂: Mediator 2) (Hayes, 2013)
Model 4

Figure 1. The hypothetical model of the study

- H₁: A significant inverse association between perfectionism and resilience (path c) is observed.
- H₂: Perfectionism demonstrates a significant negative linkage with cognitive flexibility (path a₁)
- H₃: Perfectionism is positively and significantly associated with intolerance of uncertainty (path a₂).
- H₄: Cognitive flexibility is positively and significantly related to resilience (path b₁).
- H₅: Intolerance of uncertainty is negatively and significantly related to resilience (path b₂).
- H₆: Cognitive flexibility and intolerance of uncertainty mediate the relationship between perfectionism and resilience.

Method

Research Design

This study employed a relational survey design to examine the intermediary roles of cognitive flexibility and intolerance of uncertainty in the association between perfectionism and resilience. This design aims to determine whether a relationship

exists between two or more variables and to assess the magnitude of such associations (Creswell, 2012; Johnson & Christensen, 2010).

Participants

The participants comprised 424 students pursuing their studies at various public university departments during the 2022–2023 academic year. Of these, 140 students were from the Faculty of Education, including programs such as Guidance and Psychological Counseling, English Language Teaching, Preschool Teaching, and Mathematics Teaching. 145 students were from the Faculty of Economics and Administrative Sciences, studying in departments such as Economics, Econometrics, Finance, Business Administration, and Labour Economics and Industrial Relations. The remaining 139 students were from the Faculty of Engineering, which included programs such as Industrial Engineering, Environmental Engineering, Mechanical Engineering, and Electrical and Electronics Engineering. Of the individuals who participated in the study, 302 identified as female (71.2%) and 122 as male (28.8%). Participants' ages ranged from 18 to 23, with a mean age of 19.24.

Instruments

Brief Resilience Scale: The scale was initially developed by Smith et al. (2008) and subsequently adapted to Turkish culture by Doğan (2015). The instrument consists of six items on a 5-point Likert scale, with response categories ranging from “1 – Not at All Suitable” to “5 – Completely Suitable.” Items 2, 4, and 6 are scored in reverse. Higher total scores reflect greater levels of resilience. The scale is unidimensional, and results from the Exploratory Factor Analysis (EFA) conducted to assess its validity indicated that it accounts for 54% of the total variance. The scale's reliability was evaluated using Cronbach's alpha internal consistency coefficient, which was reported as 0.83 (Doğan, 2015). In this study, the psychometric properties of the Brief Resilience Scale were reassessed to evaluate its suitability for the target population. The Confirmatory Factor Analysis (CFA) conducted to examine the scale's validity indicated that the model-data fit was acceptable ($\chi^2/df = 2.326$, RMSEA = .056, SRMR = .0208, CFI = .993, NFI = .908, GFI = .987, TLI = .985) (Byrne, 2001; Kline, 2015). In the present research, the internal consistency coefficient of the scale, as measured by Cronbach's alpha, was calculated to be .89, indicating a high level of reliability. Example items from the scale include: Item 1: “*I can recover quickly after troubled times,*” and Item 4: “*When something bad happens, it is difficult for me to get over it.*”

Big Three Perfectionism Scale: The scale developed by Feher et al. (2020) was adapted to Turkish culture by Kaçar-Başaran et al. (2020). The instrument consists of 16 items formatted on a 5-point Likert scale, with response options

ranging from “(1) Strongly Disagree” to “(5) Strongly Agree.” Elevated total scores on the scale reflect greater levels of perfectionism. The instrument is structured around three subdimensions: Rigid Perfectionism, Self-Critical Perfectionism, and Narcissistic Perfectionism. The Cronbach’s alpha internal consistency coefficients for these subscales were reported as .85 for Rigid Perfectionism, .86 for Self-Critical Perfectionism, and .75 for Narcissistic Perfectionism. Test-retest reliability coefficients were .80, .87, and .79, respectively (Kaçar-Başaran et al., 2020). This study reassessed the validity and reliability analyses of the Big Three Perfectionism Scale to confirm its suitability for the research sample. The Confirmatory Factor Analysis (CFA) performed to evaluate the scale’s construct validity demonstrated that the model exhibited an adequate level of fit with the observed data ($\chi^2/df = 2.738$, RMSEA = .064, SRMR = .663, CFI = .912, NFI = .870, GFI = .932, TLI = .912) (Byrne, 2001; Kline, 2015). In the context of this study, the Cronbach’s alpha coefficient computed to evaluate the overall internal consistency of the scale was determined to be .82. Example items from the scale include: Item 6: “*When I do not do things perfectly, people get disappointed.*” and Item 14: “*Striving to be as perfect as possible makes me feel valuable.*”

Cognitive Flexibility Scale: Originally developed by Martin and Rubin (1994) and later adapted into Turkish by Çelikkaleli (2014), this instrument consists of 12 items rated on a 6-point Likert scale, with response options ranging from “(1) Strongly Disagree” to “(6) Strongly Agree.” Items 2, 3, 6, and 10 are reverse scored. Elevated scores on the instrument signify a higher degree of cognitive flexibility. The scale is unidimensional, and the Exploratory Factor Analysis (EFA) conducted to assess its validity showed that it explained 43% of the total variance. The scale’s reliability, as assessed through Cronbach’s alpha, was found to be 0.74 in the study conducted by Çelikkaleli (2014). This study’s validity and reliability analyses of the Cognitive Flexibility Scale were re-evaluated. The Confirmatory Factor Analysis (CFA) conducted to examine the scale’s validity indicated that the model-data fit was acceptable ($\chi^2/df = 3.245$, RMSEA = .073, SRMR = .054, CFI = .913, NFI = .880, GFI = .944, TLI = .880) (Byrne, 2001; Kline, 2015). The scale’s internal consistency, as measured by Cronbach’s alpha, was calculated to be .80, indicating an acceptable level of reliability. Example items from the scale include: Item 6: “*I cannot develop different perspectives when deciding how to behave,*” and Item 9: “*I can behave in different ways in any situation.*”

Intolerance of Uncertainty Scale: Initially developed by Carleton et al. (2007), the scale was later adapted to the Turkish context by Sarıçam et al. (2014). It consists of 12 items rated on a 5-point Likert scale, with response categories ranging from “(1) Not Suitable for Me at All” to “(5) Completely Suitable for Me.” The first item is reverse-coded. Higher scores reflect a higher level of intolerance of uncertainty. The scale is structured into two dimensions: Prospective Anxiety and

Inhibitory Anxiety. The Exploratory Factor Analysis (EFA) conducted to determine its validity showed that the total variance explained was 78%. The scale's reliability, as indicated by internal consistency coefficients, was found to be .88 for the overall measure, .84 for the Prospective Anxiety subscale, and .77 for the Inhibitory Anxiety subscale (Sarıçam et al., 2014). In this study, the validity and reliability analyses of the Intolerance of Uncertainty Scale were re-evaluated. The Confirmatory Factor Analysis (CFA) conducted to assess the scale's validity indicated that the model-data fit was acceptable ($\chi^2/df = 2.690$, RMSEA = .063, SRMR = .0436, CFI = .956, NFI = .933, GFI = .949, TLI = .942) (Byrne, 2001; Kline, 2015). The overall internal consistency of the scale, as determined by Cronbach's alpha, was calculated to be .87, indicating a high level of reliability. Example items from the scale include: Item 1: "*Unexpected events bother me a lot,*" and Item 5: "*I always want to know what the future holds for me.*"

Data Collection

In the present study, authorization was secured from the original researchers responsible for adapting the scales into Turkish, ensuring their appropriate use within the scope of the research. The necessary legal and ethical approvals were then secured from a state university's "Scientific Research and Publication Ethics Committee (Social and Human Sciences)" to implement the data collection tools. Following this, official approval for data collection was obtained from the administrative authorities of the university where the study was conducted. After receiving these permissions, the study's aims were explained to the university students who constituted the study group, and they were assured of the confidentiality of the data. The researchers administered the scale applications face-to-face in a classroom setting with volunteer participants.

Data Analysis

Before proceeding with the data analysis, the dataset was examined for incomplete entries, and it was verified that no missing data were present. In order to reassess the reliability of the measurement tools utilized in the study, Cronbach's alpha coefficients were calculated, and Confirmatory Factor Analysis (CFA) was employed to assess their construct validity. The findings indicated that the instruments demonstrated acceptable levels of validity and reliability.

This research explored the intermediary influence of cognitive flexibility and intolerance of uncertainty in clarifying the association between perfectionism and resilience. Mediation analysis was utilized to assess the degree to which one or more mediating variables (M) transmit the effect of an independent variable (X) on a dependent variable (Y). The current investigation utilized a multiple mediation framework to examine the indirect pathways underlying the relationship among the variables. This analytical model aims to illustrate the pathways through which the

independent variable impacts the mediators and, subsequently, how these mediators influence the dependent variable. This comprehensive structure evaluates the independent variable's direct and mediated (indirect) effects on the dependent variable (Hayes, 2013).

Before performing the analyses, it was verified that the assumptions of normal distribution and the absence of multicollinearity issues were met (Pallant, 2020). The skewness and kurtosis statistics, which were examined to assess the normality of the variable distributions, were determined to be within the acceptable thresholds recommended in the literature (Table 2) (Tabachnick & Fidell, 2013). Additionally, the z-scores calculated for the items were considered when identifying outliers related to the normality of the variables. Mertler and Vannatta (2016) state that data with z-scores less than -4 or greater than +4 are considered univariate outliers. The calculations revealed that no data points fell within these extreme values.

To assess multicollinearity, Tolerance Values (TV) were found to range between .737 and .905, and the Variance Inflation Factor (VIF) values ranged from 1.105 to 1.259 (Field, 2009). Additionally, the Durbin-Watson coefficient was calculated as 1.925, indicating independence of residuals and falling within the acceptable range (Tabachnick & Fidell, 2013). These results confirmed that all necessary assumptions were satisfied, permitting the execution of further analyses.

In the analyses, the SPSS 25.0 Process Macro 4.1—specifically Model 4, which utilizes the bootstrap method developed by Hayes—was employed to test the hypotheses within the scope of multiple mediation analysis. This procedure examined the intermediary functions of cognitive flexibility and intolerance of uncertainty in the association between the predictor variable (perfectionism) and the outcome variable (resilience). Furthermore, descriptive indicators such as frequency, percentage, standard deviation, skewness, and kurtosis were computed to facilitate the interpretation of the data.

The mediating roles of cognitive flexibility and intolerance of uncertainty in the link between perfectionism and resilience were analyzed through the Bootstrap technique, employing 5000 resampling iterations. This approach yields more robust and dependable estimates than the Sobel test (Gürbüz, 2019). In mediation analyses conducted via the Bootstrap technique, the research hypothesis is supported only if the derived 95% confidence interval does not encompass the value zero (MacKinnon et al., 2004). The AMOS 21.0 software package was also utilized for data analysis, with the significance level set at .05.

Findings

Descriptive statistics for perfectionism, resilience, cognitive flexibility, and intolerance of uncertainty were analyzed. The findings from these analyses are displayed in Table 1.

Table 1. Descriptive Statistics of Perfectionism, Resilience, Intolerance to Uncertainty, and Cognitive Flexibility Variables

Variables	<i>n</i>	Min.	Max.	$\bar{x}$	<i>Sd</i>	Skewness	Kurtosis
Perfectionism	424	23.00	76.00	47.927	9.317	.108	-.007
Resilience	424	6.00	30.00	18.296	5.332	-.098	-.259
Cognitive Flexibility	424	30.00	72.00	52.895	7.749	-.058	-.098
Intolerance of Uncertainty	424	16.00	60.00	39.141	9.232	-.126	-.372

$\bar{x}$, arithmetic mean; *Sd*, Standard deviation.

An examination of Table 1 reveals that the arithmetic means ($\bar{x}$) and standard deviations (*SD*) for the variables are as follows: perfectionism ($\bar{x} = 47.93$, *SD* = 9.32), resilience ($\bar{x} = 18.30$, *SD* = 5.33), cognitive flexibility ($\bar{x} = 52.90$, *SD* = 7.75), and intolerance of uncertainty ($\bar{x} = 39.14$, *SD* = 9.23). Furthermore, the skewness values for the variables range from $-.058$ to $-.126$, while the kurtosis values range from $-.007$ to $-.372$, indicating that the data distributions are approximately standard. The relationships among the variables—perfectionism, resilience, cognitive flexibility, and intolerance of uncertainty—were also analyzed, and the results are presented in Table 2.

Table 2. Pearson Correlation Analysis Results for the Relationship between Perfectionism, Resilience, Cognitive Flexibility, and Intolerance of Uncertainty

Değişkenler	(1)	(2)	(3)	(4)
(1) Perfectionism	1.00			
(2) Resilience	-.24**	1.00		
(3) Cognitive Flexibility	-.16**	.46**	1.00	
(4) Intolerance of Uncertainty	.45**	-.42**	-.31**	1.00

** $p < .01$

A review of Table 2 reveals several statistically meaningful associations among the variables examined in the study. More precisely, perfectionism demonstrated a statistically significant inverse correlation with both resilience ($r = -.24$, $p < .01$) and cognitive flexibility ($r = -.16$, $p < .01$), whereas it exhibited a significant positive association with intolerance of uncertainty ($r = .45$, $p < .01$). Additionally, resilience showed a significant positive correlation with cognitive flexibility ($r = .46$, $p < .01$) and a significant negative correlation with intolerance of uncertainty ($r = -.42$, $p < .01$). A significant negative relationship was also observed between cognitive flexibility and intolerance of uncertainty ($r = -.31$, $p < .01$).

A regression analysis was performed using the Hayes Process macro with the bootstrap method to determine whether cognitive flexibility and intolerance of uncertainty function as mediators in the association between perfectionism and resilience. The outcomes of this analysis are detailed in Table 3.

Table 3. Regression-based findings of the multiple parallel mediation model (n=424)

Independent Variables	Dependent Variables											
	M ₁				M ₂				Y			
	<i>b</i>	<i>SE</i>	<i>LLCI</i>	<i>ULCI</i>	<i>b</i>	<i>SE</i>	<i>LLCI</i>	<i>ULCI</i>	<i>b</i>	<i>SE</i>	<i>LLCI</i>	<i>ULCI</i>
<i>Direct Effects</i>												
X	-.131*	.040	-.209	-.052	.411**	.042	.329	.493	-.031	.026	-.083	.020
M ₁	-	-	-	-	-	-	-	-	.252**	.029	.194	.310
M ₂	-	-	-	-	-	-	-	-	-.164**	.027	-.218	-.111
Constant	59.152*	1.952	55.315	62.989	34.758**	3.607	27.667	41.848	12.887**	2.240	8.482	17.292
	<i>R</i> ² =.246				<i>R</i> ² =.263				<i>R</i> ² =.303			
<i>Indirect Effects</i>					<i>b</i>	<i>SE</i>	<i>LLCI</i>	<i>ULCI</i>	Full Standardized Effect Size			
X → M ₁ → Y					-.032**	.011	-.057	-.012	(b = -.187**, %95 BCA CI [-.253 to -.119])			
X → M ₂ → Y					-.067**	.014	-.096	-.041				
X → M ₁ + M ₂ → Y					-.006**	.003	-.012	-.002				

* $p < 0.05$, ** $p < 0.001$ Abbreviations: X, Perfectionism; Y, Resilience; M₁, Cognitive Flexibility, M₂, Intolerance of Uncertainty; *b*, Standardized beta coefficients; *SE*, Standard error; *LLCI*, Lower-limit of confidence interval; *BCA*, Biased corrected accelerated; *ULCI*, Upper-limit of confidence interval; *CI*, Confidence interval

When the direct effects in Table 3 were analysed, it was found that the independent variable perfectionism negatively and significantly predicted one of the mediating variables, cognitive flexibility ($b = -.131$, 95% CI [-.209 to -.052]). On the other hand, perfectionism positively and significantly predicted intolerance of ambiguity, another mediator variable ($b = .411$, 95% CI [.329 to .493]). In addition, cognitive flexibility, a mediating variable, positively and significantly predicts resilience, the dependent variable ($b = .252$, 95% BCA CI [.194 to .310]). An examination of the indirect effects presented in the table revealed that cognitive flexibility served as a mediating variable in the association between the independent variable, perfectionism, and the dependent variable, resilience ($b = -.032$, 95% BCA CI [-.057, -.012]). Intolerance of uncertainty also mediated the relationship between perfectionism and resilience ($b = -.067$, 95% BCA CI [-.096 to -.039]). The mediating roles of cognitive flexibility and intolerance of uncertainty in the link between perfectionism and resilience were supported, as evidenced by the indirect effect ($b = -.006$, 95% BCA CI [-.012, -.002]). The table indicates that the fully standardized magnitude of the mediation effect is $K2 = -.187$, representing the proportion of the maximum potential indirect effect. According to Preacher and Kelly (2011), an effect size approaching 0.01 is considered small, around 0.09 as moderate, and near 0.25 as large. Within this framework, the strength of the

mediation effect observed in the model appears to approach a high magnitude. The related statistical outcomes of the model are illustrated in Figure 2.

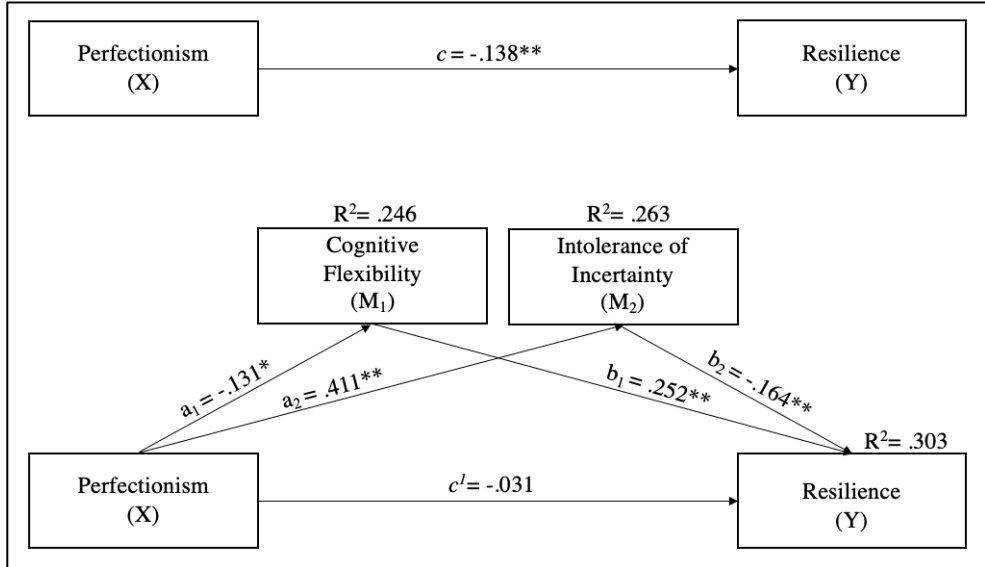


Figure 2. Illustration of the hypothetical mediation model proposed in the study

Examining the R^2 values in Figure 2 shows that perfectionism accounts for 25% of the variance in cognitive flexibility, 26% in intolerance of uncertainty, and 30% in resilience when considered alongside cognitive flexibility and intolerance of uncertainty. The model indicates that the combined influence of perfectionism, cognitive flexibility, and intolerance of uncertainty on resilience constitutes a large effect size ($R^2 = 0.26$), as Cohen (1988) suggested.

Figure 2 reveals that in the absence of mediating variables, the predictor variable perfectionism demonstrates a statistically significant association with the outcome variable resilience ($c = -.138$). However, after incorporating the mediators—cognitive flexibility and intolerance of uncertainty—into the model, the direct effect of perfectionism on resilience becomes statistically insignificant ($c' = -.031$). This finding indicates that cognitive flexibility and intolerance of uncertainty fully mediate the relationship between perfectionism and resilience (Baron & Kenny, 1986). All research hypotheses—H₁ through H₆—were supported based on these results.

Discussion

This study primarily explores the connections among perfectionism, cognitive flexibility, intolerance of uncertainty, and psychological resilience in university students. It specifically seeks to clarify the nature of the link between perfectionism and psychological resilience, while examining whether cognitive flexibility and intolerance of uncertainty act as mediating variables in this relationship.

The empirical data corroborated the initial assumption of the research, suggesting that a meaningful and inverse association exists between perfectionism and resilience. A review of the literature shows that numerous studies are consistent with this finding (Klibert et al., 2014; Saadi et al., 2019; Sheppard & Hicks, 2017). Perfectionist individuals often experience various psychological problems when they fail to achieve their self-imposed goals or make even minor mistakes (Eley et al., 2020). Hibbard and Davies (2011) emphasized that university students exhibiting perfectionistic traits are at greater risk for psychological challenges such as depressive symptoms, eating-related disturbances, and social isolation. Perfectionist individuals are known to hold unrealistic and excessively high expectations for both themselves and others.

In contrast, resilience is typically associated with developing realistic and reasonable expectations in adversity. Therefore, these two characteristics contradict each other. In this context, the low tolerance for mistakes observed in perfectionist individuals may prevent them from maintaining psychological strength when confronted with errors or setbacks.

The study further revealed a significant negative association between perfectionism and cognitive flexibility. This result aligns with earlier studies by Çutuk (2020) and Hayatbini et al. (2021). Frost et al. (1993) highlighted that a core feature of perfectionism involves an overwhelming preoccupation with making mistakes. According to this perspective, perfectionist individuals hold extremely rigid beliefs about avoiding mistakes and maintain very high personal standards (Frost et al., 1990). In contrast, individuals with high cognitive flexibility tend to view mistakes as a regular part of daily life and believe that the important aspect is to learn from them (Anderson, 2002). Additionally, those with high cognitive flexibility possess a more adaptable mindset than perfectionist individuals, enabling them to adjust more easily and consider alternative situations effectively (Martin & Anderson, 1998). Given these explanations, it can be inferred that perfectionism, rooted in a rigid way of thinking, is inversely associated with cognitive flexibility, which reflects openness to diverse perspectives.

In addition, the findings confirmed a significant and positive relationship between perfectionism and intolerance of uncertainty. Examining existing scholarly work indicates that multiple prior investigations align with and substantiate this

result (Reuther et al., 2013; Williams & Levinson, 2020). Perfectionist individuals frequently establish unattainable goals and persistently strive to attain them (Burns, 1980). They also tend to exert substantial control over the steps to reach these goals (Periasamy & Ashby, 2002). Similarly, it has been observed that individuals with high intolerance of uncertainty often regard the possibility of adverse events as intolerable and burdensome to accept (Dugas et al., 2001). Therefore, it can be inferred that there is a linear relationship between the excessive desire for control characteristic of perfectionism and the inability to accept situations beyond one's control, as seen in intolerance of uncertainty.

The study also confirmed a significant positive relationship between cognitive flexibility and resilience. This outcome is consistent with existing studies (Southwick & Charney, 2018; Sünbül, 2020). Individuals demonstrating elevated cognitive flexibility are characterized by their capacity to focus on specific issues, adopt a solution-oriented perspective in confronting difficulties, and adapt proficiently to diverse contexts and novel circumstances (Jonassen & Grabowski, 1993). Additionally, individuals with high levels of resilience demonstrate strong adaptation and coping skills (Block & Kremen, 1996). Those with high cognitive flexibility perceive themselves as capable of effectively overcoming challenging situations by adjusting their thought patterns (Dennis & Vander Wal, 2010). Similarly, individuals with high resilience, like those with high cognitive flexibility, tend to emerge stronger from difficult experiences (Earvolino-Ramirez, 2007). These findings imply that cognitive flexibility, which facilitates smooth adaptation to novel situations, and resilience, which involves recovering from adverse experiences, are interrelated traits that mutually enhance each other.

The research further confirmed a meaningful inverse association between intolerance of uncertainty and resilience. A literature review also indicated a similar negative association (Joshi et al., 2020; Kılınç & Uzun, 2022; Lee, 2019). Uncertainty is a cognitive condition that arises when individuals struggle to interpret or find meaning in the events they encounter (Crigger, 1996). In addition, individuals may perceive uncertainty as threatening and anxious (Dugas et al., 1994) and experience intense stress during uncertainty (Bailey et al., 2009). For this reason, people intolerant of uncertainty may also react negatively in behavioural, emotional, or intellectual terms during uncertainty (Buhr & Dugas, 2002). While uncertainty is recognized as a significant risk factor that can undermine resilience (Weick & Sutcliffe, 2011), individuals with high levels of resilience tend to handle uncertain situations more effectively (Fraser et al., 1999). Moreover, individuals exhibiting high levels of resilience tend to withstand adverse consequences better than those who do not (Lee, 2009). Kim (2016) emphasized that individuals with high resilience possess stronger adaptive skills and an enhanced ability to cope with uncertain situations they may face in the future. In the same vein, school belonging has also been found to positively predict psychological resilience, partially through its inverse relationship with digital game addiction (Aslan et al., 2024). These insights

highlight that resilience is fundamentally connected to the ability to withstand uncertainty and sustain psychological stability during challenging circumstances.

Finally, the results revealed that cognitive flexibility and intolerance of uncertainty mediate the link between perfectionism and resilience. Canas et al. (2006) conceptualized cognitive flexibility as utilizing mental processing strategies effectively when confronted with unexpected conditions. Accordingly, individuals possessing elevated cognitive flexibility are expected to modify their problem-solving techniques by situational requirements (Orendain & Wood, 2012). Research has shown that individuals with high cognitive flexibility are more effective in handling personal challenges and managing stress (Koesten et al., 2009), report higher levels of life satisfaction (Smith & Konik, 2021), and generally experience greater happiness (Demirtaş, 2020).

In contrast, individuals exhibiting elevated levels of intolerance of uncertainty may refrain from engaging in problem-solving when encountering routine difficulties, which can in turn intensify feelings of anxiety (Zlomke & Jeter, 2014). Studies have also indicated that such individuals are more prone to experiencing elevated levels of anxiety and depression (Carleton et al., 2012). Furthermore, intolerance of uncertainty has been found to trigger feelings of insecurity and negatively impact physical and psychological well-being (Morse, 2021). It has also been noted that individuals with high intolerance of uncertainty often exhibit increased anxiety, possess limited coping abilities (Taha et al., 2013), and struggle with effective problem-solving when faced with ambiguous or uncertain circumstances (Yook et al., 2010).

Limitations and Implications

This study has certain limitations. Primarily, the proposed model was examined using a cross-sectional design, which restricts the ability to make causal interpretations. As a result, establishing cause-and-effect relationships among the variables is not possible. Future studies could benefit from adopting longitudinal research designs to more effectively explore the causal links between perfectionism, cognitive flexibility, intolerance of uncertainty, and resilience. Longitudinal approaches enable researchers to track changes and interactions over time, offering a more comprehensive understanding of how these variables influence one another.

Moreover, the study is limited by the inherent constraints of a quantitative research framework. In future inquiries, employing integrated methodological strategies, such as mixed-method approaches, could yield a more comprehensive and nuanced exploration of the interrelations among the examined constructs. The current sample, comprising undergraduate students from a public university in Turkey, restricts

the applicability of the results to comparable cohorts. For enhanced generalizability, subsequent studies might include broader and more heterogeneous participant groups, such as individuals from varying age ranges or sociocultural backgrounds.

The participant group in this research was selected through a convenience sampling technique, which may restrict the extent to which the findings can be generalized to a broader population due to potential limitations in sample representativeness. To enhance the generalizability of future findings, it is recommended that researchers employ probability sampling techniques, allowing for broader and more accurate population inferences. This would provide a more representative view of the broader population and strengthen the reliability of the findings.

The findings of this study emphasize the critical role of cognitive flexibility and tolerance of uncertainty in buffering the adverse impact of perfectionism on resilience. These findings suggest that cognitive flexibility is a buffer against the rigid thought patterns characteristic of perfectionism. At the same time, the acceptance of uncertainty helps alleviate anxiety and stress related to unexpected challenges.

From an applied standpoint, the findings suggest that psychoeducational interventions targeting the enhancement of cognitive flexibility and the reduction of intolerance of uncertainty may offer valuable benefits for university students. Integrating resilience-building programs into the academic curriculum, particularly those targeting perfectionist students, may foster psychological well-being and promote adaptive coping strategies. Furthermore, therapeutic approaches like Cognitive Behavioral Therapy (CBT), Acceptance and Commitment Therapy (ACT), and Mindfulness-Based Stress Reduction (MBSR) can be employed to support individuals with perfectionistic tendencies in cultivating more adaptable thought patterns and enhancing their tolerance for uncertainty. These interventions may support students in better managing academic pressures, building psychological strength, and ultimately enhancing their overall well-being and success.

Conclusion

The study's findings suggest that enhancing cognitive flexibility and decreasing intolerance of uncertainty are key factors in lessening the adverse effects of perfectionism on resilience. Accordingly, enhancing cognitive flexibility and tolerance for ambiguity helps decrease rigid thinking associated with perfectionism while increasing resilience. Consequently, promoting adaptability and tolerance for uncertainty can weaken rigid thought patterns linked to perfectionism, fostering greater resilience.

Authors' Notes

Authors' Contributions: İ.T. identified the research question, conducted the analyses, and drafted the manuscript; O.A. assisted with interpreting the study findings, and collaborated in drafting and revising the manuscript. F.C. collected research data and reported the research. All authors read and approved the final manuscript.

Data Sharing and Declaration: Materials and analysis code for the current study are available from the corresponding author on reasonable request.

Ethical Approval: All procedures performed in this study were in accordance with the ethical standards of the institutional research committee, as well as with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Conflict of Interest: The authors have no competing interests to declare that are relevant to the content of this article. No funding was received for conducting this study.

Consent to Participate: Informed consent was obtained from all individual participants or their legal guardians included in the study.

References

- Aluede, O., Imhonde, H., & Eguavoen, A. (2006). Academic, career, and personal needs of Nigerian University students. *Journal of Instructional Psychology*, 33(1), 50–57.
- Anderson, P. (2002). Assessment and development of executive function (EF) during childhood. *Child Neuropsychology*, 8, 71–82. <https://doi.org/10.1076/chin.8.2.71.8724>
- Aslan, O., Topuz, İ., & Eldeleklioğlu, J. (2024). Investigating the mediating role of digital game addiction in the relationship between adolescents' school belonging and resilience. *Educational and Developmental Psychologist*, 42(1), 37–49. <https://doi.org/10.1080/20590776.2024.2402398>
- Arıcı-Ozcan, N., Cekici, F., & Arslan, R. (2019). The relationship between resilience and distress tolerance in college students: The mediator role of cognitive flexibility and difficulties in emotion regulation. *International Journal of Educational Methodology*, 5(4), 525–533. <https://doi.org/10.12973/ijem.5.4.525>
- Ateş, B., & Sağar, M. E. (2021a). Cognitive flexibility, emotion regulation skills and resilience as predictors of self-efficacy in university students. *İstanbul Aydın Üniversitesi Sosyal Bilimler Dergisi*, 13(3), 679–695. https://doi.org/10.17932/iau.iausbd.2021.021/iausbd_v13i3006

- Ateş, B., & Sağar, M. E. (2021b). Resilience, cognitive flexibility and self-efficacy as predictors of academic success in psychological counsellor candidates. *Erzincan University Journal of Education Faculty*, 24 (1), 1-9. <https://doi.org/10.17556/erziefd.894637>
- Aydın, A., & Ersoy-Özcan, B. (2021). Levels of intolerance of uncertainty, rumination and resilience among healthcare workers during the Covid-19 pandemic. *Cukurova Medical Journal*, 46(3), 1191-1200. <https://doi.org/10.17826/cumj.925771>
- Bailey Jr, D. E., Landerman, L., Barroso, J., Bixby, P., Mishel, M. H., Muir, A. J., ... & Clipp, E. (2009). Uncertainty, symptoms, and quality of life in persons with chronic hepatitis C. *Psychosomatics*, 50(2), 138–146. <https://doi.org/10.1176/appi.psy.50.2.138>
- Bannazadeh, B., Heidari, S., & Hadianfard, H. (2022). Personal thermal comfort through psychological adaptation: The effects of cognitive flexibility resilience. *International Journal of Architectural Engineering & Urban Planning*, 32(1). <https://doi.org/10.22068/ijaup.32.1.577>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social-psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personal Social Psychology*, 51, 1173–82. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety, and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology*, 43, 667- 672. <http://dx.doi.org/10.1007/s00127-008-0345-x>
- Benton, S A., R., J. M, Tseng, W., Newton, F.B., & Benton, S. L. (2003). Changes in counseling center client problems across 13 years. *Professional Psychology: Research & Practice*, 34, 66–72. <https://doi.org/10.1037/0735-7028.34.1.66>
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, 70(2), 349. <https://doi.org/10.1037/0022-3514.70.2.349>
- Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30 (1), 29–50. <https://doi.org/10.1111/j.1467-6494.1962.tb02303.x>
- Buhr, K., & Dugas, M.J. (2002). The Intolerance of Uncertainty Scale: Psychometric properties of the English version. *Behaviour Research and Therapy*, 40(8), 931–946. [https://doi.org/10.1016/S0005-7967\(01\)00092-4](https://doi.org/10.1016/S0005-7967(01)00092-4)
- Burns, D. D. (1980). The perfectionist's script for self-defeat. *Psychology today*, 14(6), 34–52.
- Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*, 1(1), 55–86. https://doi.org/10.1207/S15327574IJT0101_4
- Camadan, F., & Kırac, S. N. (2020). Examining self-esteem and various demographic variables as a predictor of university students' psychological

- resilience *Journal of Higher Education and Science*, 10(2), 253–263. <https://doi.org/10.5961/jhes.2020.387>
- Canas, J. J., Fajardo, I., & Salmeron, L. (2006). Cognitive flexibility. *International Encyclopedia of Ergonomics and Human Factors*, 1(3), 297-301. <https://doi.org/10.13140/2.1.4439.6326>
- Carleton, R. N., Norton, M. A. ve Asmundson, G. J. (2007). Fearing the unknown: A short version of the intolerance of uncertainty scale. *Journal of Anxiety Disorders*, 21 (1), 105-117. <https://doi.org/10.1016/j.janxdis.2006.03.014>
- Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. (2012). Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. *Journal of Anxiety Disorders*, 26(3), 468-479. <https://doi.org/10.1016/j.janxdis.2012.01.011>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Erlbaum.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). New York: Pearson.
- Crigger, N. J. (1996). Testing an uncertainty model for women with multiple sclerosis. *Advances in Nursing Science*, 18(3), 37-47. <https://doi.org/10.1097/00012272-199603000-00005>
- Crone, E. A., Ridderinkhof, K. R., Worm, M., Somsen, R. J. M., & Van der Molen, M. W. (2004). Switching between spatial stimulus-response mappings: A developmental study of cognitive flexibility. *Developmental Science*, 7(4), 443–455. <https://doi.org/10.1111/j.1467-7687.2004.00365.x>
- Çardak, M. (2012). Investigation of the effects of the psycho-education curriculum to enhance the tendency of forgiveness on intolerance to uncertainty, psychological well-being, persistent anxiety, and anger. [Yayınlanmamış doktora tezi]. Sakarya Üniversitesi.
- Çelikkaleli, Ö. (2014). The validity and reliability of the cognitive flexibility scale. *Education and Science*, 39(176) 339-346. <https://doi.org/10.15390/EB.2014.3466>
- Çutuk, Z. A. (2020). Relationship between multidimensional perfectionism and cognitive flexibility in university students. *Journal of Human Sciences*, 17(4), 1263–1274. <https://doi.org/10.14687/jhs.v17i4.6090>
- Demirtaş, A. S. (2020). Optimism and happiness in undergraduate students: Cognitive flexibility and adjustment to university life as mediators. *Anales de Psicología/Annals of Psychology*, 36(2), 320-329. <https://doi.org/10.6018/analesps.381181>
- Demirtaş, A. S. (2021). Ego-resiliency and forgiveness in emerging adults: the parallel multiple mediation of cognitive control/flexibility. *OPUS International Journal of Society Researches*, 17(35), 1968-1989. <https://doi.org/10.26466/opus.790362>
- Dennis, J. P., & Vander Wal, J. S. (2010). The cognitive flexibility inventory: Instrument development and estimates of reliability and validity. *Cognitive*

- Therapy and Research*, 34(3), 241-253. <https://doi.org/10.1007/s10608-009-9276-4>
- Doğan, T. (2015). Adaptation of the brief resilience scale into turkish: A validity and reliability study. *The Journal of Happiness & Well-Being*, 3(1), 93–102. <https://doi.org/10.19128/turje.181073>
- Donat A., Bilgiç B., Eskiocak A., & Koşar D., (2019). Problems of university students and suggestions for solutions. *Journal of Higher Education and Science*, 9(3), 451-459. <https://doi.org/10.5961/jhes.2019.345>
- Dugas, M. J., Gosselin, P., & Ladouceur, R. (2001). Intolerance of uncertainty and worry: Investigating specificity in a nonclinical sample. *Cognitive Therapy and Research*, 25, 551-558. <https://doi.org/10.1023/A:1005553414688>
- Earvolino-Ramirez M. (2007). Resilience: a concept analysis. *Nursing Forum*, 42(2), 73–82. <https://doi.org/10.1111/j.1744-6198.2007.00070.x>
- Eley, D. S., Bansal, V., & Leung, J. (2020). Perfectionism as a mediator of psychological distress: Implications for addressing underlying vulnerabilities to the mental health of medical students. *Medical Teacher*, 42(11), 1301-1307. <https://doi.org/10.1080/0142159X.2020.1805101>
- Erdur-Baker, Ö. E., & Bıçak, B. (2006). Psychological problems of university students. *Abant İzzet Baysal University Journal of Faculty of Education*, 6(2), 54–66.
- Erkan, S., Özbay, Y., Cihangir-Çankaya, Z., & Terzi, Ş. (2012). Problems experienced by university students and their willingness to seek psychological help. *Education and Science*, 37(164), 94–107.
- Feher, A., Smith, M. M., Saklofske, D. H., Plouffe, R. A., Wilson, C. A., & Sherry, S. B. (2020). The big three perfectionism scale–short form (BTPS-SF): Development of a brief self-report measure of multidimensional perfectionism. *Journal of Psychoeducational Assessment*, 38(1), 37–52. <https://doi.org/10.1177/0734282919878553>
- Field, A. (2009). *Discovering Statistics using SPSS* (3rd ed.). Sage Publications Ltd.
- Fraser, M. W., Galinsky, M. J., & Richman, J. M. (1999). Risk, protection, and resilience: Toward a conceptual framework for social work practice. *Social Work Research*, 23(3), 131-143. <https://doi.org/10.1093/swr/23.3.131>
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218–226. <https://doi.org/10.1037/0003-066X.56.3.218>
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, (14), 449-468. <https://doi.org/10.1007/BF01172967>
- Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, 14(1), 119-126. [https://doi.org/10.1016/0191-8869\(93\)90181-2](https://doi.org/10.1016/0191-8869(93)90181-2)
- Gu, Q., & Day, C. (2007). Teacher's Resilience: A Necessary Condition for Effectiveness. *Teaching and Teacher Education*, 23, 1302–1316. <https://doi.org/10.1016/j.tate.2006.06.006>

- Güleç, S. (2020). Mediator role of life goals in the relationship between cognitive flexibility and resilience in high school student, *Journal of Development and Psychology*, 1(1), 27-35.
- Gürbüz, S. (2019). *Structural equation modeling with AMOS* (1st ed.). Seçkin Publishing.
- Hayatbini, N., Knauff, K., ve Kalia, V. (2021). Cognitive reappraisal moderates the relationship between perfectionism and cognitive flexibility. *Journal of Clinical Psychology*, 77(7), 1685-1699. <https://doi.org/10.1002/jclp.23124>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.
- Henderson, N., & Milstein, M. M. (1996). Resiliency in schools: making it happen for students and educators. *Thousand Oaks, CA: Corwin Press*.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60(3), 456. <https://doi.org/10.1037/0022-3514.60.3.456>
- Hibbard, D. R., & Davies, K. L. (2011). Perfectionism and psychological adjustment among college students: does educational context matter?. *North American Journal of Psychology*, 13(2).
- Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations. *Behavior Research and Therapy*, 41 (7). [https://doi.org/10.1016/S0005-7967\(02\)00184-5](https://doi.org/10.1016/S0005-7967(02)00184-5)
- Hyun, J., Quinn, B., Madon, T., & Lustig, S. (2007). Mental health needs, awareness, and use of counseling services among international graduate students. *Journal of American College Health*, 56(2), 109–118. <https://doi.org/10.3200/JACH.56.2.109-118>
- İkiz, F. E., & Mete-Otlu, B. (2015). The problems faced in the process of adapting the university life and the ways of dealing with these problems. *Manisa Celal Bayar University Journal of Social Sciences*, 13(4), 35-51. <https://doi.org/10.18026/cbusos.93556>
- Jonassen, D.H & Grabowski, B. (1993). *Handbook of individual differences, learning, and instruction*. New Jersey: Lawrence Erlbaum Associates Publishers. <https://doi.org/10.4324/9780203052860>
- Johnson, B., & Christensen, L. (2010). *Educational research: Quantitative, qualitative, and mixed approaches (4th ed.)*. Thousand Oaks, CA: Sage.
- Joshi, K., Kate, S., Shitole, S., Kashika, S., & Date, P. (2020). A correlational and comparative study of perceived stress, intolerance of uncertainty, and resilience among students and working individuals during the COVID-19 pandemic. *International Journal of Advanced Research*, 6(3), 965–971.
- Kaçar-Başaran, S., Gökdağ, C., Erdoğan-Yıldırım, Z. & Yorulmaz, O. (2020). A different view to perfectionism: An investigation of the psychometric properties of the Big Three Perfectionism Scale in a Turkish community sample. *Current Psychology*, 1-11. <https://doi.org/10.1007/s12144-020-01131-2>

- Karataş, Z. & Uzun, K. (2018). Positive and negative beliefs about worry as the predictors of intolerance of uncertainty. *Kastamonu Education Journal*, 26 (4), 1267-1276. <https://doi.org/10.24106/kefdergi.434169>
- Karataş, Z., & Tagay, Ö. (2021). The relationships between resilience of the adults affected by the COVID-19 pandemic in Turkey and COVID-19 fear, meaning in life, life satisfaction, intolerance of uncertainty, and hope. *Personality and Individual Differences*, 172. <https://doi.org/10.1016/j.paid.2020.110591>
- Kaya, M. E., Eken, F. O., & Ümmet, D. (2021). The predictor effect of insight and cognitive flexibility on psychological hardiness. *Cyprus Turkish Journal of Psychiatry & Psychology*, 3(1), 22–29. <https://doi.org/10.35365/ctjpp.21.1.05>
- Kenny, M., Aluede, O., & McEachern, A. (2009). A comparison of counselling students' needs in the United States and Nigeria. *Australian Journal of Guidance & Counselling*, 19(1), 41–55. <https://doi.org/10.1375/ajgc.19.1.41>
- Kim, J. A. (2016). The effects of resilience on adjustment to college and career barriers of college students majoring in secretarial studies. *Journal of Secretarial Studies*, 25(1), 161–183.
- King, K., Vidourek, R.A., Merianos, A.L., & Singh, M. (2014). A study of stress, social support, and perceived happiness among college students. *The Journal of Happiness & Well-Being*, 2(2), 132-144
- Kılınç, M., & Uzun, K. (2022). Investigation of the mediator role of psychological mindedness in the effect of intolerance of uncertainty on psychological counselors' resilience. *Journal of Kirsehir Education Faculty*, 23(3). <https://doi.org/10.29299/kefad.1178241>
- Klibert, J., Lamis, D. A., Collins, W., Smalley, K. B., Warren, J. C., Yancey, C. T., & Winterowd, C. (2014). Resilience mediates the relations between perfectionism and college student distress. *Journal of Counseling & Development*, 92(1), 75–82. <https://doi.org/10.1002/j.1556-6676.2014.00132.x>
- Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). New York: Guilford Publications.
- Koesten, J., Schrod, P., & Ford, D. J. (2009). Cognitive flexibility as a mediator of family communication environments and young adults' well-being. *Health communication*, 24(1), 82-94. <https://doi.org/10.1080/10410230802607024>
- Lee, J. S. (2019). Effect of resilience on intolerance of uncertainty in nursing university students. *Nursing Forum*, 54(1), 53–59. <https://doi.org/10.1111/nuf.12297>
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1), 99–128. https://doi.org/10.1207/s15327906mbr3901_4.
- Martin, M. M., & Anderson, C. M. (1998). The cognitive flexibility scale: Three validity studies. *International Journal of Phytoremediation*, 21(1), 1–9. <https://doi.org/10.1080/08934219809367680>

- Martin, M. M., & Rubin, R. B. (1994). Development of a communication flexibility measure. *Southern Communication Journal*, 59(2), 171–178. <https://doi.org/10.1080/10417949409372934>
- Masten, A.S. (2014). Global perspectives on resilience in children and youth. *Child Development*, 85, 6–20. <https://doi.org/10.1111/cdev.12205>
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology*, 2(4), 425–444. <https://doi.org/10.1017/S0954579400005812>
- Mertler, C. A., & Vannatta, R. A. (2016). *Advanced and multivariate statistical methods: Practical application and interpretation* (6th ed.). Pyrczak Publishing. <https://doi.org/10.4324/9781315266978>
- Morse, J. L. (2021). *The Effects of intolerance of uncertainty and meaning in life on psychological and physical health* [Unpublished Doctoral Dissertation]. Colorado State University.
- Nicotera, N. & Laser-Maira, J. A. (2017). *Innovative skills to support well-being and resiliency in youth*. Oxford University Press.
- Orendain, A. D. O., & Wood, S. (2012). *An account of cognitive flexibility and inflexibility for a complex dynamic task*. In Proceedings of the 11th International Conference on Cognitive Modeling (Berlin) 49-54.
- Özel Y, Türkleş S, Erdoğan S. (2020). Investigation of mental state in university students. *Jaren*, 6(2), 220-8. <http://dx.doi.org/10.5222/jaren.2020.41033>
- Pacht, A.R. (1984). Reflections on Perfectionism. *American Psychologist*, 39, 386–390. <http://dx.doi.org/10.1037/0003-066X.39.4.386>
- Pallant, J. (2020). *SPSS survival manual* (7th Edition). Taylor & Francis Group.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1988). Adaptive strategy selection in decision making. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14(3), 534. <https://doi.org/10.1037/0278-7393.14.3.534>
- Periasamy, S., & Ashby, J. S. (2002). Multidimensional perfectionism and locus of control: Adaptive vs. maladaptive perfectionism. *Journal of College Student Psychotherapy*, 17(2), 75-86. https://doi.org/10.1300/J035v17n02_06
- Preacher, K. J., & Kelly, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16(2), 93–115. <https://doi.org/10.1037/a0022658>.
- Ram, D., Chandran, S., Sadar, A., & Gowdappa, B. (2019). Correlation of cognitive resilience, cognitive flexibility, and impulsivity in attempted suicide. *Indian Journal of Psychological Medicine*, 41(4), 362–367. https://doi.org/10.4103/IJPSYM.IJPSYM_189_18
- Reuther, E. T., Davis III, T. E., Rudy, B. M., Jenkins, W. S., Whiting, S. E., & May, A. C. (2013). Intolerance of uncertainty as a mediator of the relationship between perfectionism and obsessive-compulsive symptom severity. *Depression and Anxiety*, 30(8), 773–777. <https://doi.org/10.1002/da.22100>

- Rice, K. G., Ashby, J. S., & Slaney, R. B. (2007). Perfectionism and the Five-Factor Model of Personality. *Assessment*, 14(4), 385–398. <https://doi.org/10.1177/1073191107303217>
- Richer, T. (2011). Cognitive flexibility and epistemic validation in learning from multiple texts. In J. Elen, E. Stahl, R. Bromme, & G. Clarebout (Eds.), *Links between beliefs and cognitive flexibility*. Springer. https://doi.org/10.1007/978-94-007-1793-0_7
- Rutter, M. (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorder. *The British Journal of Psychiatry*, 147, 598–611. <https://doi.org/10.1192/bjp.147.6.598>
- Saadi, R. H., Delavar, A., Zarei, E., & Dortaj, F. (2019). The relationship between perfectionism and resilience is mediated by students' academic adjustment. *Avicenna J Neuro Psycho Physiology*, 6(3). <https://doi.org/10.32598/ajnpp.6.3.202.1>
- Saatçı, E. (2020). *The effect of perfectionism, intolerance to uncertainty and psychological resilience on self-handicapping in university students* [Unpublished master's thesis]. Fatih Sultan Mehmet Vakıf University.
- Sarıçam, H., Erguvan, F. M., Akın, A. & Akça, M. Ş. (2014). The Turkish short version of the intolerance of uncertainty (IUS-12) scale: The study of validity and reliability. *Route Educational and Social Science Journal*, 1(3), 148-157. <https://doi.org/10.17121/ressjournal.109>
- Seçim, G. (2020). The effect of cognitive flexibility and emotion regulation characteristics on psychological resilience. *Turkish Journal of Educational Sciences*, 18(2), 505–524. <https://doi.org/10.37217/tebd.716151>
- Sheppard, L., & Hicks, R. (2017). Maladaptive perfectionism and psychological distress: The mediating role of resilience and trait emotional intelligence. *International Journal of Psychological Studies*, 9(4), 65. <https://doi.org/10.5539/ijps.v9n4p65>
- Seligman, M. E., & Csikszentmihalyi, M. (2000). *Positive psychology: An introduction* (Vol. 55, No. 1, p. 5). American Psychological Association. <https://doi.org/10.1037/0003-066X.55.1.5>
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15(3), 194–200. <https://doi.org/10.1080/10705500802222972>
- Smith, C. A., & Konik, J. (2022). Who is satisfied with life? Personality, cognitive flexibility, and life satisfaction. *Current Psychology*, 41(12), 9019-9026. <https://doi.org/10.1007/s12144-021-01359-6>
- Southwick, S. M., & Charney, D. S. (2018). *Resilience: The science of mastering life's greatest challenges*. Cambridge University Press.
- Sünbül, Z. A. (2020). Mindfulness, positive affection and cognitive flexibility as antecedents of trait resilience. *Studia Psychologica*, 62(4), 277-290. <https://doi.org/10.31577/sp.2020.04.805>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Pearson.

- Taha, S., Matheson, K., Cronin, T., & Anisman, H. (2014). Intolerance of uncertainty, appraisals, coping, and anxiety: The case of the 2009 H1N1 pandemic. *British Journal of Health Psychology*, 19(3), 592–605. <https://doi.org/10.1111/bjhp.12058>
- Taşkın-Aydın, N. T. (2022). *Examination of the relationship between the anxiety of aged 4–6 and the anxiety of their mothers, psychological resilience, and cognitive flexibility* [Unpublished master's thesis]. Gaziantep University.
- Tuncer, B. & Voltan-Acar, N. (2006). The traits of perfectionism of university preparatory class students who have different levels of trait anxiety. *Journal of Crisis*, 14 (2), 1-15 . https://doi.org/10.1501/Kriz_0000000247
- Watters, E. R., Aloe, A. M., & Wojciak, A. S. (2023). Examining the Associations Between Childhood Trauma, Resilience, and Depression: A Multivariate Meta-Analysis. *Trauma, Violence & Abuse*, 24(1), 231–244. <https://doi.org/10.1177/15248380211029397>
- Weick, K. E., & Sutcliffe, K. M. (2011). *Managing the unexpected: Resilient performance in an age of uncertainty*. John Wiley & Sons.
- Weston, K. J. & Parkin, J. R. (2010). *Resilience*. In: *Encyclopedia of Cross-Cultural School Psychology* (pp. 808–815). Springer US. https://doi.org/10.1007/978-0-387-71799-9_356
- Williams, B. M., & Levinson, C. A. (2020). Intolerance of uncertainty and maladaptive perfectionism as maintenance factors for eating disorders and obsessive-compulsive disorder symptoms. *European Eating Disorders Review*, 29(1), 101–111. <https://doi.org/10.1002/erv.2807>
- Yelpaze, İ. (2020). Cognitive flexibility as a predictor of psychological resilience of university students: The mediating role of self compassion. *Erzincan University Journal of Education Faculty*, 22(2). <https://doi.org/10.17556/erziefd.631767>
- Yıldız, M. E., Günel, İ., & Dalbudak, İ. (2024). The relationship between physical activity and mindful awareness of university students. *Physical Education of Students*, 28(2), 234-245. <https://doi.org/10.15561/20755279.2024.0406>
- Yook, K., Kim, K. H., Suh, S. Y., & Lee, K. S. (2010). Intolerance of uncertainty, worry, and rumination in major depressive disorder and generalized anxiety disorder. *Journal of anxiety disorders*, 24(6), 623-628. <https://doi.org/10.1016/j.janxdis.2010.04.003>
- Zautra, A. J., Hall, J. S., & Murray, K. E. (2010). Resilience: A new definition of health for people and communities. In J. W. Reich, A. J. Zautra, & J. S. Hall (Eds.), *Handbook of adult resilience* (pp. 3–29). The Guilford Press.
- Zlomke, K. R., & Jeter, K. M. (2014). Stress and worry: examining intolerance of uncertainty's moderating effect. *Anxiety, Stress & Coping*, 27(2), 202-215. <https://doi.org/10.1080/10615806.2013.835400>