Psychology of Uncertainty: Unraveling Psychological Factors from Threat Appraisal to Cognitive Avoidance

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Abstract

Introduction: Uncertainty is a natural part of life, but for young adults, it can be particularly challenging as they navigate major life transitions, whether in career choices, relationships, or personal growth. When individuals perceive uncertain situations as threatening, they may attempt to minimize discomfort by avoiding or suppressing thoughts about the future. This study examines how perceiving uncertainty as a threat contributes to cognitive avoidance, with a focus on the mediating roles of intolerance of uncertainty and future anxiety among young adults in Pakistan. Method: This study comprised of 475 university students (males (n=186) and females (n=289). The study utilized cross-sectional survey design in which standardized instruments were used. Results: The results from structural equation modeling showed that intolerance of uncertainty acts as a mediator in the association between threat appraisal and cognitive avoidance. Furthermore, future anxiety was found to be a nonsignificant mediator between threat appraisal and cognitive avoidance.

Conclusion: The findings from this study provide practical insights into underlying factors that influence fear of unknown among young adults in Pakistan. Perception of uncertainty as threatening and increased intolerance of uncertainty can lead to maladaptive avoidance patterns. Understanding these patterns can provide insight into how young people cope with uncertainty

Keywords: *Threat Appraisal, Intolerance of Uncertainty, Future Anxiety, Cognitive Avoidance, Collectivistic Culture, Young Adults*

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Introduction

Young adults experience uncertainty in various aspects of life, from career decisions and relationships to financial stability and personal identity. Their perception of uncertainty is shaped by individual temperament, past experiences, and societal expectations (Kwok, 2018). Some may view it as an opportunity for growth and exploration, embracing the unknown with curiosity and adaptability. Others, however, may find uncertainty overwhelming, associating it with anxiety and a lack of control. Factors such as support systems, self-efficacy, and coping strategies influence how young adults respond to uncertainty—whether they see it as a challenge to overcome or a threat to avoid (Gerstacker, 2009). As they navigate this transitional phase, their ability to tolerate and manage uncertainty plays a crucial role in shaping their confidence, decision-making, and overall well-being.

The need for certainty is a big part of making career choices, building relationships, and committing to long-term goals. It provides a sense of stability and security, making it easier to plan and move forward with confidence (Bottesi et al., 2020; Kiani et al., 2014). But life doesn't always go as planned—some things are simply out of our control, and not everything can be predicted. Learning to embrace uncertainty and adapt to unexpected changes is key to navigating life's twists and turns (Shihata et al., 2016).

1.1 Psychology of Uncertainty in Collectivistic Cultures

Uncertain and unpredictable circumstances beyond an individual's control can discourage action, promote resource conservation, and leads to risk aversion (Alquist & Baumeister, 2023). Uncertainty is categorized into Subjective Uncertainty, caused by a lack of information, and Objective Uncertainty, stemming from unpredictable outcomes. Morriss et al. (2022) outline three sources of uncertainty: (1) insufficient information, (2) conflicting information, and (3) uncertainty in response despite having details. In such cases, the Behavioral Inhibition System may activate to conserve resources and inhibit goal-seeking behaviors (Corr, 2013; Hirsh & Kang, 2016).

In collectivistic cultures, uncertainty is often perceived as threatening among youth because it challenges the stability, social norms, and familial expectations that define their identity and sense of belonging

(Damkier & Ozer, 2022). These societies prioritize group harmony, long-term security, and conformity, making unpredictability in career, education, or personal life feel like a risk—not just to the individual, but to their entire family and social circle. Uncertainty among young adults in Pakistan is driven by economic instability, societal expectations, and limited opportunities for career growth. The pressure to conform to traditional paths, coupled with political and financial unpredictability, creates anxiety about the future making it challenging for youth to navigate an evolving global landscape. Since youth are conditioned to follow predefined life paths, any deviation can evoke fear of failure, social judgment, or loss of familial support (Rockhill et al., 2010). This creates high intolerance of uncertainty (IU), where ambiguity is seen as a threat to both personal identity and social order (Carlton, 2012; Gvozden et al., 2021). The pressure to maintain social harmony amplifies stress, avoidance behaviors, and reliance on external validation (Taylor et al., 2004). Youth may hesitate to explore unconventional opportunities, delay major life choices, or settle for socially acceptable yet unfulfilling options to preserve a sense of security. Over time, this rigid mindset makes it harder for young people to adapt, grow, and navigate a fast-changing world, leaving them hesitant to take risks or embrace new opportunities (Fuchs et al., 2024).

Uncertainty Orientation Theory (UOT), developed by Sorrentino et al. (2005), explains how individuals differ in their responses to uncertainty, categorizing them as either uncertainty-oriented (UO) or certainty-oriented (CO). UO individuals actively engage with uncertainty, viewing it as a challenge and an opportunity for growth. They are curious, adaptable, and motivated to explore and analyze ambiguous situations, demonstrating high self-regulation and flexible thinking. In contrast, CO individuals perceive uncertainty as a threat and prefer structured, predictable environments. They seek clarity, rely on established routines or external guidance, and may experience discomfort or anxiety when faced with ambiguity. UOT also acknowledges that these orientations can vary depending on the situation, as personality traits, past experiences, and cultural influences shape how people respond to uncertainty. These differences affect decision-making, coping strategies, and even mental health, with UO individuals more likely to adapt through learning and

problem-solving, while CO individuals may resort to avoidance or rely on familiar heuristics

1.2 Threat Appraisal

People have different perceptions regarding the magnitude and severity of risk in the same uncertain situation (Carleton, 2016). When the exact nature and level of threat are unknown, it is perceived as impossible to plan ahead and prepare for such situations. The ambiguity of uncertain situations can also make people feel vulnerable, heightening their perception of risk and potential danger, leading to increased stress and anxiety (Slovic et al., 2016).

Threat appraisal is defined as the perception, evaluation, and interpretation of a situation based on the extent of harm to an individual and the likelihood of harm caused (Milne et al., 2019). Threat appraisal can be direct or indirect, i.e., caused directly by experiencing a threat or by learning through observation indirectly (Hong & Lee, 2015). Once the stimuli are identified, the person may evaluate it as a threat to their self-esteem, values, and goals.

Specific aspects of the threat itself and how it is communicated might increase or decrease emotional responses and threat perception (Caserotti et al., 2021). Among the most important factors are traits like perceived dreadfulness, controllability, and familiarity. Studies show that increased worry leads to an overestimation of a threat by triggering automatic, unfavorable emotional responses. Similarity and memorability serve as cues for the probability of threat occurrence. Higher familiarity may result in an undervaluation of the risk due to its existence being considered routine (Miloyan et al., 2016).

The responses to perceived threats may vary, as they may be handled either actively or through avoidance (Garrett et al., 2018). These responses are the result of an evolutionary advantage, leading to the fight-or-flight response (Al-Shawaf & Lewis, 2020; Brosschot et al., 2016).

1.3 Intolerance of Uncertainty

Threat and uncertainty reflect what is known and unknown in a situation. Uncertainty can trigger fear and anxiety due to doubts about potential outcomes, a phenomenon known as "fear of the unknown" (Carleton, 2016). This fear increases negative beliefs about future events, making individuals more likely to expect negative outcomes.

Person becomes more inclined to believe that the outcome of the situation is more likely to be negative. Intolerance of uncertainty (IU) reflects an inability to cope with uncertainty, leading to defensive reactions when individuals feel threatened (Haas & Cunningham, 2014).

Carleton (2016) defines IU as the inability to manage the negative emotions and consequences associated with uncertainty, driven by a perceived lack of sufficient information and a need for certainty. Unlike threat appraisal, IU involves viewing unknown outcomes as inherently aversive and unacceptable (Barlow et al., 2020; Carleton, 2016). It represents negative beliefs about uncertainty in a way that the individual perceives the possibility of a negative event occurring in the future as unacceptable and threat to their well-being regardless of its actual occurrence (Barlow et al., 2020; Carleton, 2016). The tendency to overestimate the likelihood of negative events occurring is linked to high intolerance of uncertainty. In other words, experiences related to uncertainty itself act as a threat for people with more intolerance of uncertainty (also known as "uncertainty-based reasoning").

Uncertainty paralysis— propensity to freeze and delaying actions under uncertainty due to lack of confidence or information— is used to explain the relationship between intolerance to uncertainty and self-reported maladaptive behavior (Koerner & Dugas, 2015). Koerner and Dugas (2015) observed that people with high Intolerance of Uncertainty exhibited following characteristics. These include (1) greater anxiety about positive, negative, and ambiguous scenarios, (2) reacting negatively to uncertainty by engaging in avoidance and uncertainty-reducing behaviors and (3) considering oneself as incapable of handling ambiguous situations and perceive uncertainty as threatening.

Mahoney and McEvoy's (2012) differentiated between two types of intolerance. Trait IU or Dispositional IU is characterized by the innate personal disposition influenced over time by a person's long-term experiences. These include set of unfavorable beliefs about uncertainty which influences the person to react to uncertain situations negatively. Whereas State or situational IU is characterized by the intensity of current specific uncertain event and its associated

emotional experiences. State intolerance of uncertainty is triggered by both situational factors and trait intolerance of uncertainty.

The Intolerance of Uncertainty Model (IUM), proposed by Dugas et al. (1998) states that people with lower tolerance of uncertainty and predispositions of high trait anxiety find uncertain or ambiguous situations to be "stressful and upsetting" and react to them by experiencing chronic anxiety. They believe that worrying will either make it easier for them to deal with the feared events or prevent them from happening at all. According to the IUM, IU initiates a cycle of worry by increasing the number and severity of "what if…" questions, regardless of their probability of occurrence (Hirsch & Mathews, 2012; Robichaud & Dugas, 2006). Worry is characterized by repetitive negative thinking about uncertain future events, triggered by the uncertainty of events as a whole rather than a part of the event. According to Intolerance of Uncertainty Model (IUM), there are four factors that trigger and maintains the cycle of worry. These four factors are Intolerance of Uncertainty, Positive Beliefs about Worry (PBW), Negative Problem Orientation (NPO), and Cognitive Avoidance (CA).

1.4 Future Anxiety

Uncertainty involves anticipating possible outcomes to plan and respond accordingly (Grupe & Nitschke, 2013; Tanovic & Joormann, 2019). When individuals predict outcomes different from expectations and perceive a lack of control, uncertainty can disrupt adaptive cognitive responses (Anderson et al., 2019; Schirrmeister et al., 2020). This disruption often leads to an overestimation of threat severity and increased vulnerability to anxiety (Carleton, 2016; Grupe & Nitschke, 2013).

Anxiety is an adaptive mechanism for coping with stress by alerting individuals to take safety-related actions. However, it is also associated with avoidance, defensive preparedness, and hypervigilance (Hamm, 2020). When faced with unpredictable events, individuals experience a diminished sense of control (Kemp et al., 2021). Studies suggest that greater perceived threat heightens fear responses (Nabi & Myrick, 2019). While fear is a reaction to an identifiable threat, anxiety arises from ambiguous or uncertain threats (Kozlowska et al., 2015; McFayden et al., 2022), making uncertainty itself a source of distress (Pepperdine, 2018; Wichman, 2013). This

heightened state of threat perception reinforces anxiety and avoidance behaviors (Kenwood, 2022).

Future anxiety is a specific form of anticipatory anxiety, involves fear and worry about long-term uncertainties (Kwapinska et al., 2018) , leading to overestimations of negative outcomes as a means of preparing for potential threats (Abramowitz & Blakey, 2020; Carleton et al., 2012). Zaleski (1996) defined future anxiety as a cognitive process centered on planning for unfavorable changes, often accompanied by maladaptive beliefs about impending catastrophes.

According to the cognitive model of anxiety, an individual's perception and interpretation of a threat shape their anxiety response more than the threat itself. Beck and Clark (1997) proposed that miscalculations of threat severity, along with perceived inability to manage negative outcomes, trigger maladaptive reactions. Anxiety-driven behaviors include avoidance and heightened physiological responses, such as fight-or-flight mechanisms, aimed at self-preservation. Beck and Clark (1997) further described anxiety as activating a cognitive "alarm system" that processes threats, selects responses, and mobilizes other psychological subsystems.

The intensity of anxiety depends on the balance between primary threat appraisal (initial threat perception) and secondary appraisal (coping ability and safety assessment). An imbalance between these processes amplifies threat perception, leading to hypervigilance and increased anxiety (Beck & Clark, 1997). Understanding these mechanisms highlights the link between uncertainty, anxiety, and avoidance behaviors, emphasizing the need for strategies to improve cognitive flexibility and threat appraisal accuracy.

1.5 Cognitive Avoidance

Individuals facing stressors use cognitive, behavioral, and emotional strategies to cope with internal and external demands (Nes, 2016). Experiential avoidance, a form of coping, involves avoiding and escaping unpleasant experiences, thereby restricting activities (Karekla & Panayiotou, 2011). Cognitive avoidance specifically refers to efforts to disengage from intrusive thoughts and memories to reduce exposure (Hirsch & Mathews, 2012; Zhao & Liu, 2021). When individuals perceive a lack of coping skills, they frequently turn to avoidance, which includes disengagement and denial, often leading to reduced perceived control (Dijkstra & Homan, 2016; Bishop et al.,

2017). Disengagement can be adaptive or maladaptive, depending on its intention, and may involve distraction or outright avoidance (Waugh & Furr, 2020).

Cognitive avoidance encompasses excessive negative evaluations of unwanted thoughts, feelings, and sensations, as well as attempts to suppress or escape them (Sangui-Henson, 2017; Kelso et al., 2020). This process prevents successful emotional processing of threats (Cameron et al., 2012). It manifests in various forms, such as thought suppression, emotional detachment, and rumination, reinforcing negative expectations (Dickson et al., 2012; Sexton & Dugas, 2008). As a disengagement strategy, cognitive avoidance shifts attention away from stressors, offering short-term relief but failing to reduce distress in the long run (Sagui-Henson, 2017).

Paradoxically, avoiding internal experiences can lead to increased rumination about suppressed thoughts (Chattoraj & Srivastava, 2022). Emotions provide valuable information about experiences, and avoidance hinders the processing of threatening meanings, maintaining distress (Dickson et al., 2012). The cognitive avoidance model of worry (Borkovec et al., 2006) suggests that worry functions as a strategy to evade distressing emotions and mental imagery. This model highlights two key functions: attempting to prevent aversive situations and reducing physiological fear responses. These avoidant functions reinforce cognitive avoidance, impeding the emotional processing required for anxiety reduction, which is particularly relevant in generalized anxiety disorder (GAD).

Ultimately, cognitive avoidance serves as a temporary coping mechanism but contributes to long-term emotional distress. While it may provide short-term relief, its role in reinforcing maladaptive thought patterns underscores the need for alternative coping strategies that facilitate emotional processing and adaptive stress management.

1.6 Hypotheses

1. Higher threat appraisal in uncertain situations will be positively associated with intolerance of uncertainty, future anxiety, and cognitive avoidance among youth.
2. Intolerance of uncertainty will mediate the direct association of threat appraisal with cognitive avoidance.

3. Future Anxiety will mediate the direct association of threat appraisal with cognitive avoidance.

METHOD

2.1 Research Design

The study used a cross-sectional research design to assess the relationship between constructs. Cross-sectional research design was deemed appropriate for the study as it allows us to examine a population or phenomenon at a specific point in time.

2.2 Sample

Convenient sampling technique was used for the current study. For the current study, a sample of (*N*=475) young adults between the ages of 18-25 were approached individually from various universities in Islamabad. Sample consisted of both males (*n*=186, 39.2%) and females (*n*=289, 60.8%) university students. 70% of the participants were undergraduates (*n*=332) and 30% were post-graduates (*n*=141).
Other than the basic demographic questions including age, gender, education, demographic sheet was comprised of specific questions regarding participants experiences with uncertain situations. These questions includes tendency to plan ahead of situation or adapt to the situation, feeling helpless, frustrated and the tendency to overthink the outcomes of the situation. The responses showed that 162 (34.1%) participants reported that they tend to plan ahead of situation, whereas 306 (64.4%) participants reported that they tend to adapt according to the situation, and 7 (1.5%) participants gave no response. Furthermore, 263 (55.4%) participants reported that they tend to always overthink the possible outcomes of the situation, 178 (37.5%) reported that they sometimes overthink the possible outcomes of the situation, and 30 (6.3%) participants responded that they never overthink the possible outcomes of the situation. 172 (36.2%) reported always feeling helpless when unsure of the situation. 219 (46.1%) reported sometimes feeling helpless, and 80 (16.8%) reported never feeling helpless. 263 (55.4%) reported always feeling frustrated in uncertain situations, 169 (35.6%) reported sometimes feeling frustrated, and 39 (8.2%) reported never feeling frustrated in uncertain situations.

2.3 Procedure

Permission to use the study meaures for the study was obtained from the scale developers before utilizing them for data collection (Details of the measures are given below). After being granted permission, participants of the study were approached individually. The medium of data collection was pen and paper. This means that participants were presented with a booklet comprising of study measures starting from informed consent sheet which highlighted the purpose of the study and informed participants of their ethical rights regarding confidentiality of the data, and right to withdraw from study at will. Instructions for each of the study measure were also provided. At the end, participants were thanked for their input.

2.4 Measures

2.4.1 Threat Appraisal of Negative Events Scale

Perceived threat in uncertain situations was assessed by Threat appraisal of negative events scale developed by Kliewer (2008). The scale consists of 24 item, categorized into six subscales: harm to self, harm to others, negative self-evaluation, negative evaluation by others, material loss, and loss of relationships. The scale employs a 4-point Likert response format, ranging from 1 (not at all) to 4 (a lot). It has demonstrated strong internal consistency, with a Cronbach's alpha reliability coefficient of 0.81 (Kliewer, 2008).

2.4.2 Dark Future Scale

Future anxiety to uncertain situations was assessed by Dark future scale developed by Zaleski et al. (2017). The scale is comprised of 5 items rated on a 7-point Likert scale, ranging from 0 (Decidedly False) to 6 (Decidedly True). The scale demonstrates a reliability coefficient of 0.90 (Zaleski et al., 2017). The scale is a revised/short form of 29-item Future Anxiety Scale developed by Zaleski (1996).

2.4.3 Intolerance of Uncertainty Scale

The Intolerance of Uncertainty Scale (IUS-12) developed by Carleton (2012) was used in this study. It consists of 12 items divided into two

subscales: Prospective Intolerance of Uncertainty (IU) and Inhibitory IU. The scale demonstrated strong internal consistency, with a reliability coefficient of 0.92. Responses were recorded on a five-point Likert scale, ranging from 1 (Not at all characteristic of me) to 5 (Very characteristic of me).

2.4.4 Cognitive Avoidance Scale

The Cognitive Avoidance Scale, developed by Sexton and Dugas (2008b), was utilized in this study. It consists of 25 items categorized into five subscales (i.e., Thought Suppression, Thought Substitution, Distraction, Avoidance of Threatening Stimuli, and Transforming Images into Thoughts) and has demonstrated a reliability coefficient of 0.89. Responses were measured using a five-point Likert scale, ranging from 1 (Not at all typical) to 5 (Completely typical).

2.5 Statistical Analysis

Statistical Analysis on the data was conducted using IBM SPSS (version 25) by assessing relationship between variables using Pearson Bivariate Correlation Analysis. Structure Equation Modeling was conducted using IBM AMOS (version 22) to investigate the direct and indirect pathway between variables. For the current study, it was used to assess the mediating role of intolerance of uncertainty, and future anxiety between threat appraisal and cognitive avoidance.

RESULTS

The main purpose of this study is to test the validity of the model that addresses the relationship between threat appraisal and cognitive avoidance, and the mediating role of intolerance of uncertainty and future anxiety. Descriptive statistics and the correlations between the study constructs were examined using Pearson Bivariate Correlation analysis using IBM SPSS. Structural Equation modeling was conducted using IBM AMOS. Analysis results are as follows.

Preliminary analysis was conducted to assess whether all assumptions of the structural equation modeling were met. The assumption of normality was checked through skewness and kurtosis < 2 (Field, 2009). This showed that the data is normally distributed. The

assumption of no multicollinearity was met, as indicated by tolerance values exceeding 0.2 (Coakes, 2005; Field, 2009), suggesting that the predictors were not highly correlated. Additionally, the assumptions of homoscedasticity was satisfied, as evidenced by the scatterplot and residual analysis, which showed a relatively consistent spread of data. The assumption of independence of residuals was also confirmed, as indicated by the Durbin-Watson test value of 1.83.

Table 1
Correlations Between Study Variables (N=475)

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. TA	58.18	13.36	-																
2. HtO	10.36	2.77	.68**	-															
3. HtS	9.05	2.60	.62**	.36**	-														
4. NEO	9.24	3.19	.78**	.39**	.38**	-													
5. NSE	9.10	3.01	.76**	.38**	.42**	.53**	-												
6. ML	9.99	2.75	.81**	.45**	.40**	.55**	.62**	-											
7. RL	10.42	3.43	.80**	.49**	.34**	.58**	.48**	.63**	-										
8. FA	14.14	6.69	**.43****	.23**	.26**	.30**	.39**	.36**	.38**	-									
9. IU	34.12	9.15	**.45****	.26**	.26**	.29**	.45**	.39**	.35**	**.61****	-								
10. PI	19.66	5.63	.45**	.26**	.25**	.29**	.45**	.39**	.35**	.63**	.96**	-							
11. II	14.46	4.06	.39**	.23**	.23**	.24**	.40**	.34**	.30**	.49**	.92**	.77**	-						
12. CA	78.41	18.57	**.42****	.30**	.26**	.29**	.36**	.36**	.32**	**.42****	**.59****	.59**	.52**	-					
13. TSup	16.00	4.51	.39**	.32**	.24**	.26**	.32**	.34**	.30**	.35**	.51**	.51**	.45**	.80**	-				
14. TSub	14.67	4.27	.31**	.19**	.20**	.21**	.28**	.27**	.26**	.35**	.50**	.50**	.43**	.77**	.45**	-			
15. Dist	16.37	4.60	.35**	.26**	.20**	.24**	.30**	.31**	.27**	.37**	.49**	.51**	.41**	.87**	.66**	.56**	-		
16. AvTh	16.28	4.55	.33**	.24**	.21**	.25**	.28**	.28**	.25**	.35**	.50**	.49**	.44**	.86**	.63**	.59**	.72**	-	
17. Trans	15.07	4.32	.35**	.21**	.23**	.23**	.32**	.29**	.26**	.32**	.46**	.53**	.42**	.84**	.58**	.65**	.65**	.64**	-

Note. ***p*<.01, *TA= Threat Appraisal, HtO= Harm to Others, HtS=Harm to Self, NEO=Negative Evaluation by Others, NSE=Negative Self-evaluation, ML=Material Loss, RL=Relationship Loss, FA=Future Anxiety, IU=Intolerance of Uncertainty, PI=Prospective Intolerance, II=Inhibitory Intolerance, CA=Cognitive Avoidance, TSup=Thought Suppression, TSub=Thought Substitution, Dist=Distraction, AvTh=Avoidance of Threatening Stimuli, Trans=Transforming Images into Thoughts*

Table 1 shows significant positive correlation between the study measures (Threat Appraisal, Future Anxiety, Intolerance of Uncertainty, and Cognitive Avoidance) as well as its subfactors. Results show a significant positive correlation between threat appraisal and future anxiety (r=.43, p<.01), intolerance of uncertainty (r=.45, p<.01), and cognitive avoidance (r=.42, p<.01). Furthermore, a significant positive correlation was found between future anxiety and intolerance of uncertainty (r=.61, p<.01) and cognitive avoidance (r=.42, p<.01). Moreover, a significant positive correlation was found between intolerance of uncertainty and cognitive avoidance (r=.59, p<.01). The findings suggest that as higher the threat appraisal in uncertain situations, higher the level of intolerance of uncertainty,

higher anxiety regarding the future outcomes, and greater inclination towards engaging in cognitive avoidance.

3.1 Structural Equation Modeling

Model testing was conducted using Structural Equation Modeling to test the influence of mediators (i.e., Intolerance of Uncertainty, and Future Anxiety) between Threat Appraisal and Cognitive Avoidance. Mediation Analysis using SEM was assessed based on Baron and Kenny (1986) classical approach.

Model of the study was assessed in terms of subfactors of each construct. SEM was conducted to validate the the hypothesized model to the observed data. and the covariance matrix and maximum likelihood method were preferred in the analysis. Result show that the fit indices lie within the acceptable range which indicated that the model is a close representation to the observed data (χ^2=311.373, *df*=73, *CMIN*/*df*=4.26, *p*=.000, *CFI*=.93, *GFI*=.91, *TLI*=.91, *IFI*=.93, *NFI*=.91, *RMSEA*=.08).

Table 2

Standardized Path Coefficients for Total, Direct and Indirect Effects for Mediation Analysis using Structure Equation Modeling

Effect	*B*	*95% CI*
Threat Appraisal<Cognitive Avoidance (Total Effect)	.65(.49)**	[.49, .82]
Threat Appraisal<Cognitive Avoidance (Direct Effect)	.23(18)**	[.08, .40]
Threat Appraisal<Intolerance of Uncertainty	1.16(.57)**	[.92, 1.43]
Intolerance of Uncertainty<Cognitive Avoidance	.34(.54)**	[.26, .43]
Threat Appraisal<Intolerance of Uncertainty<Cognitive Avoidance	.40(.30)**	[.29, .53]
Threat Appraisal<Future Anxiety	1.33(.52)**	[1.05, 1.64]
Future Anxiety<Cognitive Avoidance	.01(.02)	[-.04, .06]
Threat Appraisal<Future Anxiety<Cognitive Avoidance	.01(.10)	[-.06, .08]

Note. **$p < .01$; values in parentheses indicate standardized estimates.

Mediating role of Future Anxiety and Intolerance of Uncertainty between Threat Appraisal and Cognitive Avoidance was assessed by conducting Structural Equation Modeling. Table 2 show that total effect of threat appraisal on cognitive avoidance (β = .65, 95% CI [.49, .82], $p < .05$) is significant. Furthermore, the direct effect of threat appraisal on cognitive avoidance in presence of the mediators was also found significant (β = .23, 95% CI [.08, .40], $p < .05$)

Bootstrapped confidence intervals (5,000 resamples) confirmed that the indirect effects of Threat Appraisal on Cognitive Avoidance through Intolerance of Uncertainty (β = .40, 95% CI [.29, .53], $p < .05$) was found to be significant. however the indirect effect through Future Anxiety (β = .01, 95% CI [-.06, .08]) was found to be nonsignificant, even though the path between Threat Appraisal and Future Anxiety was found to be significant (β = 1.33, 95% CI [1.05, 1.64], $p < .05$). These findings indicate that higher threat appraisal predicts greater cognitive avoidance, in part due to increased intolerance of uncertainty.

Overall, analysis showed that Threat Appraisal accounts for 44% variance in the outcome variable (Cognitive Avoidance). Furthermore, intolerance of uncertainty accounts for 32% variance in cognitive avoidance, and 32% variance was accounted through future anxiety.

Figure 1

Structural Equation Modeling of the Study Model

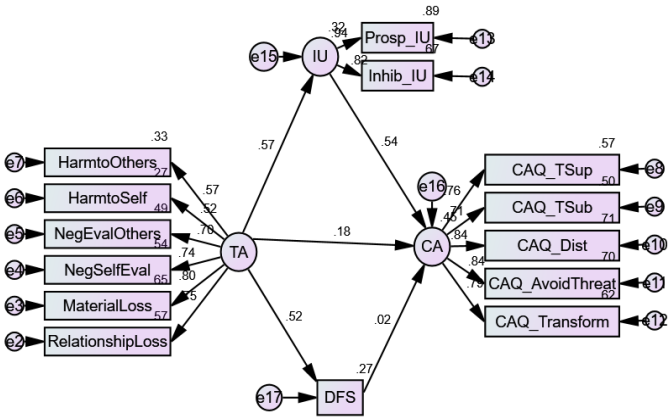

Figure 1 presents the structural equation model examining the relationships between Threat Appraisal as predictor, Intolerance of Uncertainty, and Future Anxiety as mediators, and Cognitive Avoidance as outcome. Threat appraisal is comprised of 6 subfactors i.e., Harm to others, Harm to self, Negative evaluation by Others, Negative Self-evaluation, Material Loss, and Loss of Relationship. Intolerance of uncertainty is comprised of two subfactors i.e., Prospective Intolerance of uncertainty and Inhibitory intolerance of uncertainty. Cognitive avoidance is comprised of 5 factors i.e., Thought Suppression, Thought Substitution, Distraction, Avoidance of Threatening Stimuli, and Transforming Images into Thoughts. Standardized path coefficients (β) are reported in the figure. The path from Threat Appraisal to Cognitive Avoidance (direct effect) was significant (β = .18, p < .001), indicating that higher threat appraisal is associated with greater cognitive avoidance. Similarly, Threat Appraisal significantly predicted Future Anxiety (β = .52, p < .001). However, the indirect effect of Future Anxiety on Cognitive avoidance was non-significant (β = 0.02, p < .21), suggesting that future anxiety does not fully mediate this relationship.

Moreover, Indirect path from Threat Appraisal to Intolerance of uncertainty was found to be significant (β = .57, p < .001). Furthermore, the indirect path from intolerance of uncertainty to cognitive avoidance was found to be significant (β = .54, p < .001), indicating full mediation. This indicates that intolerance of uncertainty mediates the relationship between threat appraisal and cognitive avoidance. This suggests that young adults perceive uncertainty as threat, develop intolerance of uncertainty and tend to engage in cognitive avoidance as a mean of coping with the distress associated with uncertainty. However, young adults who perceive uncertainty as a threat experience future anxiety, but may not necessarily engage in cognitive avoidance.

DISCUSSION

The current study aimed to examine the psychological factors that contribute to the avoidance of uncertain situations among youth. The underlying premise is that uncertainty is percieved as a threat, and provokes fear which drives a person to engage in avoidance in order to reduce the associated anxiety and apprehension (Grupe & Nitschke,

2013). The study conducted assesses the relationship between threat appraisal in uncertain situation, intolerance of uncertainty, future anxiety, and cognitive avoidance among youth of Pakistan.

In accordance with the aim of the study, it was hypothesized that threat appraisal is positively associated with cognitive avoidance, intolerance of uncertainty, and future anxiety. Bivariate Correlation analysis was conducted to test the strength and direction of relationship between variables. Bivariate correlation means that it assesses changes in one variable correspond to changes in the other.

Results show a positive correlation between threat appraisal and intolerance of uncertainty indicating that when threat appraisal increases, individual level of intolerance to uncertain situations also increases. This is because uncertainty leads to ambiguity, making risk assessment and planning harder. To cope, individuals develop lower tolerance for unpredictability (Pepperdine et al., 2018). Perception of an uncertain situation as threatening lowers the tolerance towards uncertainty due to increased discomfort, thus leading to expecting more negative outcomes, even in low-risk situations (Freeston et al., 2020). Furthermore, positive correlation was found between threat appraisal and future anxiety indicating that greater threat perception in uncertain situation lead to increased anxiety regarding the future. This occurs as ambiguity in uncertainty increases threat perception, leading to increased fear and anticipation of negative outcomes. Miceli and Castelfranchi (2005) found that individuals with high trait anxiety are especially prone to feeling threatened in unknown situations.

Furthermore, positive correlation was found between threat appraisal and cognitive avoidance. This indicates that greater levels of threat perception in uncertain situation can influence individuals to adopt cognitive avoidance. Individuals who percieve uncertainty as threatening or aversive tend to use cognitive avoidance strategies to minimize the associated distress (Gillanders et al., 2015).

Furthermore, positive correlation was found between intolerance of uncertainty and cognitive avoidance. This suggests that individuals who are more intolerant of uncertain situations are more likely to engage in cognitive avoidance strategies to deal with the negative effects of uncertainty (Boswell et al., 2013)

Furthermore, positive correlation was found between future anxiety and cognitive avoidance. The findings suggest that when anxiety

regarding the future increases, individual tend to use cognitive avoidance strategies as a coping mechanism by avoiding, suppressing, or substituting anxiety provoking thoughts. Avoidance behaviors can act as coping mechanisms to help individuals feel more in control of their environment and perceived threats (Hofmann & Hayy, 2019).

Moreover, intolerance of uncertainty and future anxiety were hypothesized to play a mediating role between threat appraisal and cognitive avoidance. Structure equation modeling showed that Intolerance of uncertainty play a significant mediating role betweeen threat appraisal and cognitive avoidance. The findings suggest that people are more likely to engage in cognitive avoidance behaviors when they feel threatened, largely due to intolerance of uncertainty. Research suggests that individuals who perceive situations as dangerous tend to have higher intolerance for uncertainty (Mertens & Morriss, 2021), leading them to rely on cognitive avoidance strategies (Besharat & Mirjalili, 2019). However, the mediating role future anxiety was found to be nonsignificant. This may be because future anxiety is a broader, more generalized worry about upcoming events, rather than a direct response to immediate uncertainty (Newman, 2023). Additionally, individuals may engage in avoidance behaviors due to immediate discomfort rather than long-term anxiety, reducing its impact as a mediator in this process (Berghoff et al., 2017). However, repeated perception of uncertainty as threat may lead to greater use of avoidance techniques thus maintaining the symptoms of anxiety.

4.1 Limitations and Suggestions

This study employed a cross-sectional design, restricting the ability to determine causality. Future research could utilize longitudinal or experimental designs to better establish causal relationships. Additionally, the study focuses on perceiving uncertainty as negative or threatening, while some individuals may view it as an opportunity, adventure, or challenge. Future studies should consider both perspectives—uncertainty as a threat and as a challenge.

4.2 Conclusion

This study explored how threat appraisal influences cognitive avoidance, with intolerance of uncertainty and future anxiety as mediators in young adults facing uncertainty. Findings suggest that perceiving uncertainty as threatening increases intolerance for it, triggering future anxiety due to a lack of clarity and focus on negative outcomes. To cope, individuals engage in cognitive avoidance by suppressing thoughts or avoiding uncertain situations. The study highlights how perceived threats heighten anxiety and intolerance for uncertainty, reinforcing fear of future uncertainties.

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