

Research Article

The Development of Intolerance of Uncertainty Scale for University Students

Zainab Sajjad,¹ Ayesha Jabeen ²

¹School of Professional Psychology, University of Management and Technology, Lahore, Pakistan/National University of Modern Languages, Lahore; ²School of Professional Psychology, University of Management and Technology, Lahore, Pakistan

Abstract

Background: Intolerance of uncertainty is a dispositional characteristic, which arises from negative beliefs about uncertainty and shows negative reactionary inclination to uncertain situations.

Objective: To develop an indigenous valid and reliable scale in order to explore intolerance of uncertainty among the university students in cultural context of Pakistan.

Method: A cross sectional study design was applied and it was conducted in public as well as private sector universities situated in Lahore city. The data was collected from November, 2020 to January 2021. A standardized three step model was used to develop a reliable scale to measure Intolerance of Uncertainty in university students. The interviews were conducted with 10 university students and initially 108 items were generated. The dubious items were eliminated and a list of 56 items was generated. Moreover, a panel comprising experts had reviewed these items for validating empirically and finalized 41 items were given to a group of 14 undergraduate students as pilot project. Hence, IUSS scale with an annotated performa acquiring the age, gender, class, parental educational status etc was provided to 310 students (44.80% male and 55.20% female) through a stratified sampling technique.

Result: A four (04) factor structure of Intolerance of Uncertainty scale was finalized through Exploratory Factor Analysis and the factors were named as apprehension (9 items), lack of Decisiveness (9 items), lack of Stability (11 items) and lack of Acceptance (7 items). Results showed that the indigenously developed self-report measure has good internal consistency (Chronbach's Alpha=.81), test re-test reliability $r = .88$ ($P < .001$), concurrent validity $r = .63$ ($P < .001$). Results also showed that 55.2% of participants have mild, 28.4% have moderate and 15.8% have severe level of intolerance of uncertainty.

Conclusion: An indigenous measuring tool containing 36 items with self-reporting features for ascertaining Intolerance of uncertainty in students enrolled in Universities was developed which possess sound psychometric properties.

Received: 02-09-2023 | **Revision:** 24-01-2024 | **Accepted:** 22-06-2024

Corresponding Author | Zainab Sajjad, Clinical Psychologist, School of Professional Psychology, University of Management and Technology, Lahore, Pakistan/National University of Modern Languages, Lahore

Email: hafizazainab2597@gmail.com

Keywords | Intolerance of Uncertainty, Validity, Reliability, University Students



Production and Hosting by KEMU

<https://doi.org/10.21649/akemu.v30i2.5491>
2079-7192/© 2024 The Author(s). Published by Annals of KEMU on behalf of King Edward Medical University Lahore, Pakistan.
This is an open access article under the CC BY4.0 license
<http://creativecommons.org/licenses/by/4.0/>

Introduction

In recent times, amidst the awake of Covid-19 crisis, Unplanned and uncertain things happened and we were being pushed to face the circumstances that we have not planned about and we as human being nervously

wonder about our present as well as future.¹ In the crisis situations, both individuals and organizations in nearly every field of life expressed uncertainty about the present as well as future daily activities and the possibility to minimize the impact on outcomes during these uncertain circumstances. Similarly, this uncertain situation was particularly a confusing, stressful and psychologically disturbing time for students.²

One of the strong contributing factor of psychological distress in university students is Intolerance of Uncertainty (IU) which has been defined as “a dispositional characteristic, which arises from negative beliefs about uncertainty and shows negative reactionary inclination on an emotional, cognitive, and behavioral level to uncertain situations and events.”³

As the university phase of study contributes in shaping up of emotional and intellectual personality of a student but unfortunately due to the uncertain COVID-19 situation, university students are full of fears and apprehensions about the present & future of their studies, their career, which adversely impact upon their emotional and psychological health.⁴ They were being isolated for such long period, many were far from home and lack of communication, lack of social support and issues in interpersonal relation. In addition, university students have greater exposure to internet and for this reason they have to deal with info-demic of confusions and rumors about the pandemic.⁵

As COVID-19 hit the globe by wreaking a great havoc and people have apprehensions about their present as well as uncertainty regarding their future.⁶ This fear along with uncertainty and apprehensions are leading them towards the manifestation of symptom of anxiety as the outcomes are really unknown to them and they are making negative interpretation about that unknown future out of fear.⁷

The importance of intolerance of uncertainty is being addressed by considering the drastic consequences of IU as researches showed that one of the leading and very common result of IU is worry (e.g., “Uncertain and novel situations let me get worried”). Moreover, a plethora of literature is evident that intolerance of uncertainty has been considered as a vulnerability factor as well as a maintaining factor along with a trans-diagnostic factor for some of the mental health issues.⁸

Drastic consequences are seen in university students due to ongoing uncertainty and mental health disturbances as these students are really uncertain about their future career options and next plans about professional life and a better mental health leads to a better overall university life and further⁹ (Brain, 2013). Researches are evident that if these mental health problems in university students left untreated, it would lead to severe consequences such as low academic performance of students, violent and risky behavior as mental health issues are also linked with physical illness.¹⁰

One of the leading factor behind the alarming situation of mental health issues in Asian countries is that less attention is being paid to this domain until now and there is less focus to study the structure of IU in-order to measure it exclusively. However, intolerance of uncertainty itself has impact on the overall performance and mental state of university students as literature is evident that students who have high level of intolerance of uncertainty also suffer from mental health issues as findings from a study that was conducted on medical students depicted that 27% students were experiencing psychological distress and this distress was directly linked with the presence of intolerance of uncertainty.¹¹

Viewing uncertainty in terms of Eastern-Western context, there exist structured environment in western culture and everything is pre planned which is executed in an organized way. Whereas, In Pakistan, we live in a highly unpredictable environment, as in minor uncertain situation we are never confirmed about whether students will come back to university tomorrow or not. Being part of Pakistani culture, where things are not pre planned, students have to tackle with uncertainty and economic instability along with political issues which also contributed towards unpredictability as educational institutions were closed without any confirmed notice of re-opening in past uncertain situations happened in Pakistan such as APS attack and long term dharnas / sit-ins in some big cities like Islamabad and Rawalpindi, which induced uncertainty in students making it difficult and challenging for them to deal with these unplanned circumstances.¹²

Earlier, for measuring IU, the commonly used tool was the western scale IUS and some its factors were not so clear in terms of their interpretation and cross cultural validity¹³. It is usually measured as a symptom in anxiety

and depression measures such as Beck Depression Inventory¹⁴, it is also a symptom of temperament and personality measures such as Ruthbart and Derry berry scale of temperament.¹⁵

Concerning the similarities and differences in factor themes of western IUS scale and the newly developed IUSS scale, it is noticeable that the western Intolerance of Uncertainty Scale showed that during uncertain and unprecedented times, individuals experience lower perceptual threshold of ambiguity, found uncertain events upsetting, uncertainty reflects poorly on individuals and they find difficulty functioning in uncertain situation. The western Intolerance of Uncertainty Scale – Short Form (IUS-S)) consisted of two factors named as prospective IU and Inhibitory IU and its items showed the desire for predictability, knowing what future hold, seeking more information, frustration, and getting away from such events.¹³ Whereas the indigenous Intolerance of Uncertainty Scale showed the prominent features of anxiety, fear and dread and uncertainty that nothing bad will happen.

The significant role of IU is evident from the researches which showed that behind the severity of social anxiety and other mental health issues, there is key role of intolerance of uncertainty and there are many ways how IU leads to major problems in one's life. In our surroundings when individuals have to face some unprecedented situations, some of them try to accept the change and show adaptability while others could not tolerate it and rather they face difficulty in everyday life and the situation becomes so worst that it leads to psychological distress like stress anxiety and depression etc. This individual difference in the reaction and experience of different people regarding uncertain situation has underlying roots in the factor which is known as intolerance of uncertainty.¹⁶ Furthermore, literature clearly showed that IU is the potential risk factor as well as it predispose the individual for developing mental health issues such as anxiety and further it plays important role in maintaining psychological disorders.¹⁷

Method

A design devised for cross-sectional research was applied to conduct the instant research study, and data was collected during the period Nov-20 to Jan-21. Prior to embark on the research, the permission was obtained

from the Department of Clinical Psychology of SPP, University of Management and Technology, which authenticated this research project, in question, with reference to APA's identified professional ethics.

In the Phase 1, Item Generation was done for the purpose of exploring phenomenology from students. Initially 10 participants (05 men, 05 women) age ranging 18-25 were selected from different Government and private universities by using purposive sampling technique and semi structured interviews were conducted. In this phase of item generation, university students were approached by the researcher and semi-structured interviews of participants were done lasting an average of 20 minutes. Participants were asked an open ended question regarding the Intolerance of uncertainty by keeping in mind the operational definition of Intolerance of uncertainty in which they were asked to share their experience regarding intolerance of uncertainty. Furthermore, probing questions were asked for more clarity. The average timing for each interview was 20 minutes and the participant's responses and verbatim were recorded in written form by the researcher. Participants verbatim were extracted, refined and different statements were assembled which were given to two professional clinical psychologists. Initially 108 items were identified and overlapping and unclear items were omitted and only 56 items were retained by using 0-3 Likert type scale (0=not at all, 1= little bit, 2= to some extent, 3=most of the time).

The aim of the second phase i.e "expert validation" was to empirically validate the newly devised IUSS and establish the validity of its contents. In order to validate whether the items assess the actual construct, IUSS items list was extended to a panel of 05 experts. The experts were professional clinical psychologists with minimum three years of experience. They were equipped with the established / approved original delineation of intolerance of uncertainty with a request to analyze and mark individually the IUSS statements by allotting 01 to 04 points on following Likert scale - 01 for being irrelevant, 2 for slightly relevant, 3 closely relevant and 4 exactly relevant. Item- content validity index and Scale-content validity index were also calculated of the said IUSS and those stood at .78 and above were accepted by discarding others. Consequently, 41 items were finalized in the newly developed indigenous IUSS scale and mostly the expert panel rated these items

as 4 (extremely relevant) on rating scale. After the expert validation phase, these 41 items were transformed into self-reporting statements with 0-4 points ranking measure (0 being absolutely 'not', 01 for 'sometimes', 02 for 'often' and 03 for 'most of the time'). Exploratory factor analysis of Intolerance of Uncertainty Scale for university students was done to understand, recognize and find the underlying factors of raw data presented in IUSS in order to extract a meaningful, clear and comprehensible sense and present them in a more presentable form and its detail is discussed in result section.

Afterwards, the third phase was a trial phase to check language difficulty, statements understanding level and queries which determined the feasibility of the research project. For that purpose, a pilot study was done by giving the newly developed scale to 14 participants' age ranging 18-25 years (07 men, 07 women) recruited from Government and private universities through purposive sampling technique. The pilot study revealed that scale was user friendly and items were clear and understandable hence the IUSS scale became finalized.

The aim of the next phase was to establish the psychometric properties of the newly developed scale and for this purpose, the reliability and validity of newly developed scale were seen to analyze the consistency of scores over period of time and to assess whether the items measure what it proposed to measure. For this purpose, the data was collected from (N=310) students from Government 173 (55.8%) and Private 137(44.2%) universities of Lahore including 139 men and 171 women with an age range 18-25 years (M=20.58, SD = 1.58) using stratified sampling. The sample was divided into main strata across gender and further sub divided across semester i.e. four years of BS Hons. (Under-graduation) including 76(24.5%) from (BS-I), 79(25.5%) from BS-II and 92 (29.7) from BS-III, and 63 (20.3%) from BS-IV.

For this stage of the study, the demographical form was used to assess the personal information of the participants acquiring about gender, age, university, semester, birth order, No. of siblings, father education, mother education and family system along with the newly developed indigenous scale IUSS and western Intolerance of un-certainty Scale- Short form- Concurrent validity of Intolerance of Uncertainty

Scale for university students was established with Intolerance of Uncertainty Scale - Short Form 17 in order to see how well a newly developed scale correlates with a previously validated measure.

The approval from institution and permission letter was taken to conduct this study. As well as, the prior permission was taken from authors to use the respective tools along with the institutions for study sample. Written informed consent was taken, instructions were given to participants and then the final protocol was given to participants and the average testing time was 20 minutes. The aims of the research were described to the participants and participants were ensured about the confidentiality, anonymity, privacy and the right to withdraw. A debriefing session was conducted at the end of each testing session and after data collection, SPSS 21 Version was used for data analysis.

Results

The descriptive analysis showed that the sample consisted of 139 (44.8%) males and 171 (55.2%) females among which 57.1% were young adolescents and 42.9% were from early adulthood group of age. Moreover, the government university students were 55.8% and private university students were 44.2% and 29.7% of participants were from 56th and 6th semester. Furthermore, first born participants were 26.8% and 24.8% participants had 0-3 siblings. Regarding parents, almost 25.5% of the participant's father had an education up to matriculation and almost 30.0% of the participant's mothers were educated up to matriculation level and 61.3% participants came from nuclear family system.

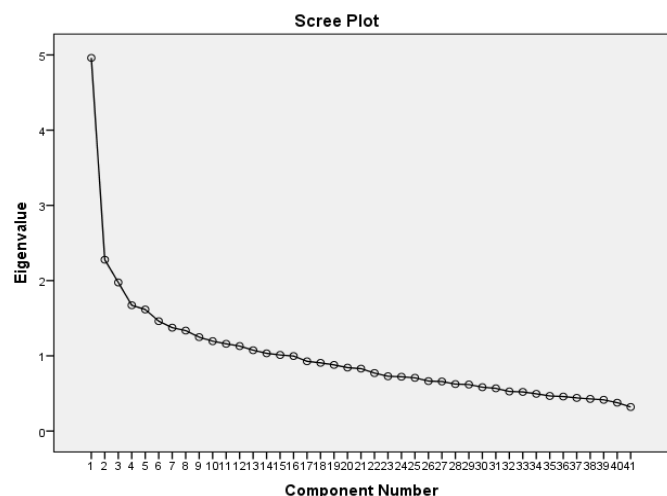


Figure 1: Scree Plot Showing the Factor Extraction of Intolerance of Uncertainty Scale

Exploratory Factor Analysis of IUSS was carried out in order to extract meaningful, clear and comprehensible underlying factors and present them in a more present-

able form. By applying Varimax rotation formulae with Principle component matrix, four (04) factor structure was extracted on 41 entities / items of IUSS and factors

Table 1: Factor Analysis of Intolerance of Uncertainty Scale for University Students

S.No.	IUSS Item		Factor Loading			
	Factor 1:	Apprehension	1	2	3	4
1	1	Anxiety over trivial matters	.56			
2	3	Fear and dread	.55			
3	5	Uncertainty about the future so that nothing bad will happen	.49			
4	17	Anxiety about academic performance	.47			
5	4	Difficulty coping with uncertainty	.41			
6	2	Don't accept situations too quickly	.41			
7	9	Thinking of the future or the past instead of the present	.38			
8	13	Difficulty in getting out of situations	.36			
9	16	To be sensitive	.33			
	Factor 2:	Lack of Decisiveness				
10	29	Not being mentally strong		.64		
11	30	Uncertainty about one's abilities		.58		
12	28	Be behind in everything		.53		
13	31	Not being ready for the ups and downs of life		.49		
14	7	Not being able to make a quick decision		.47		
15	32	Everything seems difficult		.46		
16	12	Lack of will-power		.43		
17	27	Leaving your work unfinished		.32		
18	8	Having difficulty about deciding on the future		.31		
	Factor 3:	Lack of stability				
19	11	Don't listen to others			.51	
20	10	Trying to escape the situation			.51	
21	22	Looking at things from the same perspective instead of alternatives			.51	
22	18	Don't be happy in your life			.48	
23	24	lack of search to get out of the situation			.45	
24	20	Don't cooperate with others			.44	
25	15	Not being serious about solving problems			.41	
26	25	Fed up with hasty situations			.36	
27	26	Thinking conditions will get worse			.35	
28	21	Hard to convince			.34	
29	19	Not being able to achieve your goals			.31	
	Factor 4:	Lack of Acceptance				
30	37	Lack of endurance				.55
31	34	Don't admit the truth				.52
32	36	Sticking to one thing instead of showing flexibility				.50
33	33	Showing impatience				.45
34	23	Keep thinking about the same thing				.38
35	38	Don't be difficult to prepare for the situation immediately				.35
36	39	Being emotionally weak				.34
		Eigen Value				2.45
		% of Total Variance				5.98
		% of Cumulative Variance				26.55

Note. Factor Loading > 0.30 has been bold faced

were decided on the basis of criteria where Eigen value was >1 . Scree plot being a graphical representation of the Eigen value was used for more clarification of the factors¹⁹. The factors secured their position under the elbow of the scree plot showing factor loading more than 0.30 KMO were retained. The factor solution of 4 factors was considered to be clearer and specific in describing the differences between the factors and reflection of the existing themes, hence, 4 factor solution was used for further analysis. Five items were reduced in the process as these items were loaded as less than 0.3020. The factors of IUSS were named as Apprehension, Lack of Decisiveness, Lack of stability and lack of acceptance. In order to check the adequacy of the factors of IUSS scale, Bartlett test values were calculated and found it as .00, which fulfilled the property within network of psychometrics. Table 1 shows the Exploratory factor analysis of the IUSS scale.

Reliability as well as validity of the freshly devised measure was established which also included Cronbach alpha, concurrent validity, split half reliability and test-retest reliability. The scale showed high internal consistency (Chronbach's Alpha=.81), test re-test reliability $r=.88$ ($P<.001$), and for split half reliability, the correlation between two forms was .65 and Guttman split half coefficient was .79. Test retest reliability of IUSS was established and 20 of the main study participants were retested after the interval of two weeks. Moreover, split-half reliability was established by using odd-even method in order to determine whether this scale can be used as Form A and Form B. The concurrent validity of Intolerance of Uncertainty Scale for university students was established with Intolerance of Uncertainty Scale - Short Form and it was found to be .63 which indicate sound concurrent validity of the new indigenous self-reporting measure.

The initial one was an Apprehension factor, which comprised total 9 items, which explains university student's apprehensions and anxiousness regarding their present as well as future. The sample items consisted of anxiety over trivial matters, fear, dread, and uncertainty about the future so that nothing bad will happen etc. The second factor, Lack of Decisiveness was comprised total 9 items, which explains university student's difficulties that they have to face with during unprecedented times regarding their ability to make decisions quickly and effectively. The sample items consisted of not being mentally strong, not being able to make a quick decision etc. The third factor, Lack of Stability comprised total 11 items, which explains tendency to behave in an unpredictable manner

during unprecedented situations and the following sample items were considered: trying to escape the situation, looking at things from the same perspective instead of alternatives etc. The fourth factor, Lack of Acceptance comprised total 7 items, which explains student's failure or refusal to accept something and the following sample items were taken into account: don't admit the truth, sticking to one thing instead of showing flexibility etc.

Table 2 depicted that a significant positive relationship was established among all the four (04) factors of Intolerance of Uncertainty.

In the Table 2, it can be seen that the first factor of intolerance of uncertainty scale, apprehension had highly significant positive relationship with other three

Table 2: Means, Standard Deviation and Inter-Factor Correlation between The Factors of IUSS Scale

	N	M	SD	1	2	3	4
1 F1 IUSS	310	11.52	4.31	-	-	-	-
2 F2 IUSS	310	10.10	4.88	.30***	-	-	-
3 F3 IUSS	310	11.52	5.11	.24***	.36***	-	-
4 F4 IUSS	310	7.18	3.44	.40***	.31***	.32***	-

Note. N = Sample size, M = Means, SD = Standard Deviation, F1 IUSS = Apprehension, F2 IUSS = Lack of Decisiveness, F3 IUSS = Lack of Stability, F4IUSS = Lack of Acceptance, * $p>.05$, ** $p<.01$, *** $p<.001$.

factors of IUSS i.e. lack of decisiveness, lack of stability and lack of acceptance. Table 2 also showed a highly significant positive relationship of lack of decisiveness with other two factors of intolerance of uncertainty scale i.e. lack of stability and lack of acceptance. Moreover, it can be seen that a highly significant positive relationship of lack of stability was found with lack of acceptance.

Table 3 shows the prevalence rate of Intolerance of Uncertainty in university students.

Table 3: Prevalence Rate of Intolerance of Uncertainty (IUSS) in University Students

	Mild		Moderate		Severe	
	F	%	F	%	f	%
F1 apprehension	135	43.5	115	37.1	60	19.4
F2 Lack of Decisiveness	257	82.9	35	11.3	18	5.8
F3 Lack of Stability	242	78.1	50	16.1	17	5.5
F4 Lack of Acceptance	226	72.9	77	24.8	6	1.9
IUSS_TOTAL	171	55.2	88	28.4	49	15.8

Note. f= frequency, %= percentage

Discussion

The current study was undertaken with an aim to develop an indigenous valid and reliable scale in order to explore Intolerance of Uncertainty among the university students in cultural context of Pakistan. Life is full of uncertainties, unpredictable / unplanned events, which greatly influence on a person's behavior and mental approach how to tackle with them effectively & efficiently. Taking its impact on present, future and overall course of life, one gets confused, hesitant and nervous in decision making.¹ At this time of uncertainty, we as human being nervously wonder about our present as well as future¹ and in this scenario, University population is more vulnerable in facing the challenges of uncertainty, which includes developmental stage problems, growing adulthood responsibilities, practical life demands, developing and maintaining relationships as well as psychological issues like stress, anxiousness, depression intrapersonal and interpersonal issues.⁴ Hence, worth considering was to ascertain the prevailing rate of IUSS experiencing by the students studying in higher educational institutes in Pakistan.

Here, it is important to discuss the psychometric properties of already existing tools for measuring intolerance of uncertainty which is IUS, a 27 item scale comprised of four factors and studies were being conducted on development, evaluation and validation of psychometric properties and they have provided evidence that its convergent and divergent reliability are not well established along with issues such as poor interpretability and cross loaded items. One of the major concern was that some of the items of that scale indicated the theme that linked with generalized anxiety disorder which could be problematic in getting the exact theme of intolerance of uncertainty. So, a 12 item IUS-short form was developed and studies have evidence for its good psychometric properties.¹³ Moreover, previously no such tool was developed in Pakistan as researches on Intolerance of Uncertainty were conducted by using western tool in Pakistan.

Concerning the similarities and differences in factor themes of western IUS scale and the newly developed IUSS scale, it is noticeable that the western Intolerance of Uncertainty Scale) showed that in western culture, individuals want to fix the uncertain situation, they are more solution oriented whereas the themes of the newly

developed indigenous IUSS scale showed that in our Pakistani culture, people are more problem oriented as they keep thinking about what is happening, how bad is happening, and keep on ruminating rather taking desired step.¹³

The factor analysis of the scale revealed the sense of Apprehension, Lack of decisiveness, Lack of Stability and Lack of Acceptance. The first factor of IUSS is Apprehension which refers to university student's apprehensions and anxiousness regarding their present as well as future. When it comes to expression and experience of apprehension in our Pakistani culture, the possible reasons for university student's anxieties and apprehensions include anxieties and apprehensions regarding their academic concerns and they were worried for their future and career and academic status due to this crisis situation.²¹ Furthermore, these apprehensions and anxieties are being accompanied by uncertainties as students are threatened regarding what future holds for them due to the ongoing crisis of COVID-19, this fear along with uncertainty and apprehensions are leading them towards the manifestation of symptom of anxiety as the outcomes are really unknown to them and they are making negative interpretation about that unknown future out of fear.⁷

Afterwards, another strong factor that is Lack of Decisiveness and while highlighting the role of collectivistic culture, a number of factors could be responsible for the minimized decision making skills of students such as decision making is being negatively affected by lack of strategy and planning during crisis situation of COVID-19.²² Moreover, when decisions are imposed on students by their parents or teachers regarding area of specialization, career choices, school choices and other educational matters, students felt that they didn't own those decisions and they were not ready to implement them and this situation leads to minimized participation of students on decision, less efforts and as a result academic performance is also being declined and it also negatively effects student's responsibility, maturity, independence, rationality and academic performance too.²³ Another significant factor of IUSS is Lack of stability and by keeping in view the current uncertain scenario, preventative measures amid COVID-19 outbreak like social distancing, no social gatherings in the educational institutes which have been recognized

as support system and a source of security etc are also a cause of unease for students and as a result student's routines are being disrupted.²⁴

While keeping in view the cultural expression of Intolerance of Uncertainty Scale, the last factor which is Lack of Acceptance highlighted university student's failure or refusal to accept something. There exist several factors behind lack of acceptance in Pakistani university students which include difficulty in accepting online medium, lack of trust on vaccines etc. Literature is evident that students who have high level of intolerance of uncertainty also suffer from mental health issues as findings from a study that was conducted on medical students depicted that 27% students were experiencing psychological distress and this distress was directly linked with the presence of intolerance of uncertainty.²⁵

Keeping in view the results of current study, significant gender differences emerged where female students scored significantly higher on all the factors of Intolerance of Uncertainty scale. Viewing these findings regarding cultural aspect of Pakistan, societal attitudes and norms, as well as cultural practices, religious and ethnic conflicts, women being suppressed, workload, more responsibilities, no freedom, extended family system, household chores load along with academic workload, burdened daily life, less freedom of speech, oppressive trends, violence, harassment and communication gap play a vital role in women's mental health. Such practices in Pakistani culture have created marginalization of women in nearly all domains of life, which has had an adverse psychological impact.²⁶

The findings of the current research have implications for clinical services and for further research. It will be helpful in exploring risk and protective factors of intolerance of uncertainty and will help us for the early identification of those tendencies which leads towards mental health problems in university students. Moreover, the newly developed IUSS scale will be helpful in exploring early identification of those tendencies which leads towards intolerance of uncertainty. Furthermore, by using the newly developed scale, we will be able to find prevalence rate of intolerance of uncertainty on a smaller scale. Considering the important and urgent need to address the intolerance of uncertainty and its drastic consequences, this study will be helpful in conducting workshops to address those deficiencies and tendencies

which lead to mental health problems and how would they overcome. Previous studies are mostly on correlational, protective and risk factors so interventional studies are needed which would include therapies to effectively decrease the effects of COVID-19 and enhance the tolerance in university students. Longitudinal study should be carried out on Intolerance of Uncertainty that explore how culture, ongoing situation influence Intolerance of Uncertainty in students with the passage of time.

Conclusion

The current research is an innovative work to measure Intolerance of Uncertainty in university students by devising an indigenous, cultural specific scale having sound psychometric properties. The newly developed scale comprised of 4 factors named apprehension, lack of Decisiveness, lack of Stability and lack of Acceptance. This scale has high internal consistency (Chronbach's Alpha=.81), test re-test reliability $r = .88$ ($P < .001$), concurrent validity $r = .63$ ($P < .001$) and for split half reliability, the correlation between two forms was .65 and Guttman split half coefficient was .79. The prevalence rate of intolerance of uncertainty was alarming as 55.2% of participants have mild, 28.4% have moderate and 15.8% have severe level of intolerance of uncertainty. This research will be helpful in exploring the role of intolerance of uncertainty in unprecedented times and early identification of those tendencies that leads to severe mental health problems in university students.

Ethical Approval: The Institutional Review Board, University of Management and Technology, Lahore approved the study vide letter No. IRB# 2019-05-094 & Ref. ICPY/20/178.

Conflict of Interest: The authors declare no conflict of interest.

Funding Source: None

Authors' Contribution:

ZS: Conception & Design, acquisition of data, analysis & interpretation, drafting of article

AJ: Conception & Design, drafting of article, revising it critically for important intellectual content

References

1. Buheji M, Ahmed D, Jahrami H. Living uncertainty in the new normal. *Int. J. Appl. Psychol.* 2020;10(2):21-31.
2. Makwana N. Disaster and its impact on mental health: A narrative review. *J Family Med Prim Care.* 2019;8(10):3090.
3. Bavolar J, Kacmar P, Hricova M, Schrötter J, Kovacova-Holevova B, Köverova M, et al. Intolerance of uncertainty and reactions to the COVID-19 pandemic. *J. Psychol.* 2023;150(2):143-70.
4. Shahbaz S, Ashraf MZ, Zakar R, Fischer F, Zakar MZ. Psychosocial effects of the COVID-19 pandemic and lockdown on university students: Understanding apprehensions through a phenomenographic approach. *Plos one.* 2021;16(5):e0251641.
5. Rovetta A, Bhagavathula AS. COVID-19-related web search behaviors and infodemic attitudes in Italy: Infodemiological study. *JMIR public health and surveillance.* 2020;6(2):e19374.
6. Buheji M, Ahmed D. Foresight of Coronavirus (COVID-19) opportunities for a better world. *Am. J. Econ.* 2020;10(2):97-108.
7. Wang T, Jiang L, Li T, Zhang X, Xiao S. The relationship between intolerance of uncertainty, coping style, resilience, and anxiety during the COVID-19 relapse in freshmen: A moderated mediation model. *FPSYT.* 2023;14(1):1136084.
8. Boelen PA, Lenferink LI. Latent class analysis of indicators of intolerance of uncertainty. *Scand. J. Psychol.* 2018;59(3):243-51.
9. Brain AP, Wrap S, Surfers C. *Archive for June, 2013.* *J. Psychiatr. Res.* 2013; 62(16): e147-e239.
10. Reavley NJ, McCann TV, Jorm AF. Actions taken to deal with mental health problems in Australian higher education students. *Early Interv. Psychiatry.* 2012;6(2):159-65.
11. Lally J, Cantillon P. Uncertainty and ambiguity and their association with psychological distress in medical students. *Acad. Psychiatry.* 2014;38(1):339-44.
12. Rehman SU, Ullah R, Imran M, Iqbal K, Saleem Z, Khattak SR. Intolerance of Uncertainty and Mental Well-being: Important Role of Loneliness and Fear of COVID-19: Evidence from Higher Educational Institutions. *Multicult. Educ.* 2021;7(1):147-54.
13. Birrell J, Meares K, Wilkinson A, Freeston M. Toward a definition of intolerance of uncertainty: A review of factor analytical studies of the Intolerance of Uncertainty Scale. *Clin. Psychol. Rev.* 2011;31(7):1198-208.
14. Ganji KK, Alam MK, Siddiqui AA, Munisekhar MS, Alduraywish A. COVID-19 and stress: An evaluation using Beck's depression and anxiety inventory among college students and faculty members of Jouf University. *Work.* 2022;72(2):399-407.
15. Rothbart MK, Posner MI. Individual differences in temperament and the efficiency of brain networks. *Curr. Opin. Behav. Sci.* 2022;43(1):242-8.
16. Flores A, López FJ, Vervliet B, Cobos PL. Intolerance of uncertainty as a vulnerability factor for excessive and inflexible avoidance behavior. *Behav. Res. Ther.* 2018;104(1):34-43.
17. Carleton RN, Collimore KC, Asmundson GJ. "It's not just the judgements—It's that I don't know": Intolerance of uncertainty as a predictor of social anxiety. *J. Anxiety Disord.* 2010;24(2):189-95.
18. Mahmood Z, Saleem S. Assessing psychological problems in university students in Pakistan: A psychometric study. *FWU J SOC SCI.* 2010;4(2):21-27.
19. Shrestha N. Factor analysis as a tool for survey analysis. *Am. J. Appl. Math.* 2021;9(1):4-11.
20. Peterson RA. A meta-analysis of variance accounted for and factor loadings in exploratory factor analysis. *Mark. Lett.* 2000;11(1):261-75.
21. Mahmood Z, Saleem S, Subhan S, Jabeen A. Psychosocial reactions of Pakistani Students towards COVID-19: A prevalence study. *PJMS.* 2021;37(2):456.
22. Kaleem M, Talha M, Nazir R, Hafeez R. Perception and the associated apprehension stemming from novel COVID-19 among pakistani students. *PAFMJ.* 2020;70(2):S552-59.
23. Mati A, Gatumu JC, Chandi JR. Students' Involvement in Decision Making and Their Academic Performance in Embu West Sub-County of Kenya. *Univers. J. Educ. Res.* 2016;4(10):2300-4.
24. Browning MH, Larson LR, Sharaievska I, Rigolon A, McAnirlin O, Mullenbach L, et al. Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PloS one.* 2021;16(1):e0245327.
25. Lally J, Cantillon P. Uncertainty and ambiguity and their association with psychological distress in medical students. *Acad. Psychiatry.* 2014;38(1):339-44.
26. Niaz U. Women's mental health in Pakistan. *World J. Psychiatry.* 2004;3(1):60-67.