Getting Stuck in Thoughts: Development of Ruminative Inertia Scale for University Students

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The current study aimed to develop an indigenous assessment scale for Ruminative Inertia in university students. A three-step model was used to develop the scale including; items generation, expert validation, and pilot testing. Initially, a list of 46 items was generated as an outcome of open-ended interviews from 20 university students (men = 10 and women = 10). After removing the duplications and overlapping a list of 43 items were given to the eight clinical psychologists for the expert validations. Finally, Ruminative Inertia Scale (RIS) was converted into a self-report measure consisting of a 5-point Rating scale (0–4) where 0 (not at all) and 4 (always). In the main study phase, the final scale was administered to participants with age range 17 to 24 years ($M = 20.70$, $SD = 1.68$). Sample for the exploratory study included 250 men and women whereas for confirmatory factor analysis another data consisting of 200 participants was collected. Stratified Random Sampling was used to recruit the participants from Public and Private Universities. The exploratory factor analysis using Principal Component Factor Analysis (varimax rotation) revealed three factors included Self-ruminations, Social-ruminations, and Spiritual-ruminations. The Ruminative Response Scale (Nolen-Hoeskma, 2004) was used to find out the concurrent validity of RIS. RIS had an internal consistency of ($α = .89$), split-half reliability of (.84). The concurrent validity was found to be 0.96. Confirmatory factor analysis (CFA) generated good fit indices retaining the three-factor structure obtained in EFA.

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University time comes with more intellectual and emotional demands for an individual than any other level of education (Campbell et al., 2022). In this stage, a student experiences different and robust challenges and pressure in the form of physical, environmental, and emotional difficulties (Qasem & Zayid, 2019). This can lead to different mental health problems in University students. One of the leading causes of mental health problems are thought patterns as they trigger the emotions and behavior in a person (Tyng et al., 2017). According to Beck (Beck & Fleming, 2021), a person's thought pattern revolves around himself, the past experiences, world: how the environment, people, and his surroundings are affecting him and the future; what is in the box for him. They create a circuit that keeps on repeating subconsciously because it becomes a behavioral pattern and brings a person to the state of static. These repeated and excessive thoughts which interfere with everyday activity are called ruminations (VandenBos, 2015). The concept of ruminations is not new instead it is often studied along with depression. Nolen-Hoeksema (2008) proposed Response Style Theory (1991) in which they define ruminations as passive and continuous thinking about the symptoms, causes, and consequences of depression. Response styles theory focuses on how these ruminative thoughts just increase the symptoms and make them more chronic. Second, the ruminations interrupt their problem-solving skills, it interferes with instrumental behavior and people tend to ruminate and will, in the end, lose their peers and friends thus increasing the depression (Kuster et al., 2017).

Ruminations are preservative cognitive processes, and they are constant, continuous thoughts about the reasons, interpretation, and results of a negative experience (Hoeksema et al., 2008). There are two types of rumination one is brooding and the other is reflective pondering. The former is characterized by dwelling and self-criticism on one's own incapability to control the situation and emotions. On the other hand, reflective pondering is the constant attempt of self-reflection to gain insights (Yang & Li, 2020). These types are further divided into cognitive, emotional, moral, cultural, temporal, relational and achievement. These ruminations when become constant and are resistible to change this inability to change levels of rumination from one consecutive day to another are called ruminative inertia (Bean et al., 2020). Constantly thinking about the self negatively could reach a point where a person becomes cognitively stuck and where he is unable to deviate or distract himself from these thoughts. Ruminative

inertia is the rate of change measured in the extent of rumination from one measurement point to the next and it is not similar to the concept of magnitude or variability of rumination (Bean et al., 2020).

As there are cultural differences between a collectivistic and individualistic culture that's why there is a different set of thoughts that prevails among the individuals of those cultures (Zhang & Chen, 2020). Eastern culture upholds the concept of interdependency in society focusing more on social needs, demands, expectancies and religious obligations that's why they ruminate more about conflicts in social settings, failure of harmony, misunderstandings with other and about the impact of their behavior on others while western culture upholds the viewpoint of independence in society they have self-centered focus which tends them to ruminate about personal identity, individual failures and self-worth (Teng & Zhao, 2021, González & Brown, 2023). In many collectivistic culture, expression of negative emotions like anger, sadness, guilt and frustration is not much appreciated hence forth individuals suppress their emotions, this emotional suppression can accelerate ruminative thinking in individuals (Iqbal et.al., 2021). On the contrary in western culture people are allowed to express their negative emotions to friends and professionals but in case on unavailability of social circle solitary ruminations can increase (Zhang & Chen, 2020). This difference in the vital perception of the self and associating it with the concept that the self-forms the root of how a person thinks, feels, and behaves regarding the cognitions and behavior that society depicts (De Vaus et al., 2018).

Ruminations play a major role in the development of much pathology. In most of the scales to measure a disorder, there is a certain set of questions that surround thinking patterns. It is a root cause behind every psychological problem. In psychological disorders, the thoughts are vague, distorted, and disrupted. Depression, psychosis, anxiety, and OCD all are having problematic and repetitive thinking (Bean et al., 2020). Research shows that the effects of rumination are negative and increase different symptoms such as sadness, behavior problems, and symptoms of anxiety and depression after a stressful event (Brans et al., 2013). To control these symptomologies and adverse outcomes it is necessary to assess ruminations beforehand. Assessing ruminations is important as it gives a deep view of a person's mental health problem. Moreover, assessing ruminations will lead to early interventions of the thoughts which will then use to intervene in these thought patterns and prevent the individual from having pathology later in life.

To assess ruminations there are some assessment tools available in the West such as the Ruminative Response Scale (Nolen-Hoeskma, 2004). The Ruminative Response Scale is widely used in the west. It originally had 22 items but the items were highly correlated to those of depression. This scale gained quite a criticism because when used in studies that assessed the association between ruminations and depression, the high correlation was thought to be because of the confounding items of both the RRS and depression scale (Lee & Kim, 2014). Treynor et al. (2003) removed the 12 items which were highly depression-related and a short form of RRS comprising of remaining 10 items was formed. These 10 items covers the aspects of ruminations that are experienced in daily routine in western culture but Collectivistic culture needs more in-depth coverage as social and spiritual factors confounds with individual functioning of a person. Another scale is The Brief State Rumination Inventory (BSRI) (Marchetti et al., 2018) it lacks diversity in its samples. It gives clinical relevance but doesn't give relevance to the non-clinical population. The Positive and Negative Rumination Scale (Yang et al., 2020) includes the ruminations which just surround oneself whereas the cultural differences between Eastern and Western shows that a different set of thoughts which prevails among the individuals of those cultures. Similarly, ruminations in individualistic culture are more related to the self-related but collectivistic culture includes social and communal group as well suggesting cultural differences and thus emphasizing the need of developing a cultural fair tool (Li et al., 2022, Oyserman et al., 2002).

There is an indigenous scale Rumination Scale for Traumatic Amputees (RSTA), which is an 18-item self-report questionnaire with each item anchored on a five-point rating scale. It had three subscales which are instrumentality, brooding, and intrusion (Iqbal et al., 2021). This scale was constructed for the individuals who had a traumatic amputee and which could lead to a psychological disorder. The commonly used Depression, Anxiety and Stress Scale - 21 Items (DASS-21) for mental health issues comprise three self-report scales intended to measure the emotional states of depression, anxiety, and stress (Lovibond & Lovibond, 1995). This scale has some items which represent the thought process of a person having depression, anxiety, or stress but it also includes the other physical and psychological symptoms (Aeecteed et al., 2016). Thus it doesn't provide a complete picture of the ruminations experienced by the individuals.

Eastern and Western cultures also differ in the thought pattern of the individuals. The mindset of an individual living in the west is based upon the needs of the individual and the process of self-

individuation while in Asian individuals the mindset is holistic and less based on the formal logic or logical categories. While thinking about a stimulus or object a westerner is more likely to perceive the object while an easterner will be looking at the object as a whole and in relevance to its background (Sfera & Orosis, 2014). The dominant thinking pattern of East Asians is dialectical. This thinking pattern emphasizes more on the attention to the context and relationships. A stimulus is perceived as a part of a larger system instead of an independent component. The thought patterns of eastern show cohesion, coherence, and conformity. As the eastern culture follows the norms, values, morals, beliefs, tradition, and collectivism similarly their thought patterns are also complex and interrelated to the people, values, and culture (de Oliveira et al., 2017). This could also be understood through the example of a spider web where all the sections are connected to the whole web. If a disruption occurs at one end the whole web is affected. The difference between eastern and western thought patterns also includes the response to the contradiction. While facing any contradiction the westerns usually polarize their thoughts and beliefs while Eastern is likely to moderate their thoughts, they don't think of a contradiction as fact of life to be accepted rather they seek compromise or a middle way so that they strive for both sides of every situation (Laurel, 2017).

Like many collectivistic cultures, Pakistan is also influenced by religious practices. It gives doctrine purpose of life, rules, and regulations to spend life. It influences the thought patterns, perception, and validity of things among individuals (Thauvoye et al., 2018). According to Jung (2014), Asian minds are mystical, they are inward and enable both a closer contact with nature and the growth of religion. There are different functions served by religion, it gives meaning and purpose to life, it strengthens the social cohesion and stability among people side by side religion also guides the individual in terms of social control (Emerson et al., 2011). Along with playing role in forming self-identity religion also can bring guilt, doubts, anxiety, and depression through enhanced self-criticism. In Pakistan, culture and religion are part of the heritage. The community here is rationally and emotionally attached to religion. Hence religion can also influence the ruminations that a person experiences (Xavier et al., 2016).

Method

Development of Indigenous Scale for Ruminative Inertia

The following steps were done to develop an indigenous scale.

Phase I: Item Generation

This phase aimed to find out the experiences and expression of ruminative inertia by university students and generate a list of items.

Participants and Procedure

The sample of this phase consisted of 10 men and 10 women selected through the purposive sampling technique.

An open-ended interview was conducted based on the operational definition of ruminative inertia. The participants were approached by going to them and taking verbal consent from them. Their answer was probed until their meaning was clear. The verbatim of the participants was noted as it is. A list of verbatim was made in which they were listed according to the frequency. Subsequently, the ambiguous items were made indistinct and 43 items was generated.

Phase II: Content Validity

This step aimed to get the evaluation of the scale from experts and make the final list of items.

Participants and Procedure

In this phase, eight experts were reached out. These experts were qualified in Clinical Psychology and given the expert validation form. The expert validation form was made according to the list of items that were generated in the first phase. It included a five-point Likert type (0-4) scale. The Likert scale provides five probable answers to a statement that allows participants to indicate a range of strengths or feelings concerning the statement (Joshi et al., 2015). Where 0 was irrelevant and 4 was very much relevant. After conducting the expert evaluation, the forms were collected. The suggestions were incorporated into the final list of items and reviewed again. Content Validity Index for items (I-CVIs) and scale (S-CVI) was calculated. Items having, I-CVIs lower than .70 was subjected to exclusion but no item in the current scale was excluded however the changes regarding statement structure were incorporated (Lynn, 1986). Furthermore, the averaging approach (S-CVI/Ave) was used to calculate the S-CVI of RIS). Waltz et al. (2005) recommended that S-CVI/Ave should be 0.90 or higher. For the current research, S-CVI/Ave was found. 93 indicating good content validity of RIS. Finally, RIS was converted into a self-report measure consisting of a 5-point rating scale (0–4) 0 (not at all), and 4 (always).

Phase III: Pilot study

This phase aimed to determine the time requirement, quality of scale, nature, and wording of items so that the in-time modifications were made with the scale.

Participants and Procedure

15 participants (Julias, 2004) from the university population were taken for the pilot study of the scale. The students were approached through purposive sampling and were asked to fill up the scale the approximate time of filling the questionnaire was reported. Participants faced no difficulty in understanding and comprehending the statements. The final measure relatively free from difficult and ambiguous instructions and questions was generated as a result of this phase.

Phase IV: Main Study

This phase aimed to develop the psychometric properties i.e. reliability and validity.

Participants and Sampling Technique

The data was collected from 450 participants consisting of 250 sample for the exploratory study phase and 200 sample for confirmatory factor analysis phase. The age of the participants ranged from 17 to 24 years ($M = 20.70$, $SD = 1.68$). The sample included both men (221) and women (229) and was selected through stratified sampling technique. Two hundred and twenty five participants were recruited from Public institutes and 225 from private. Participant's belonged to joint family was 284 and to nuclear family were one sixty six. Any student with psychological or physical disability was excluded.

Measures

Demographic Sheet

The demographic information was comprised of age, gender, education, and family system.

Ruminative Inertia Scale (Shahzad & Jabeen, 2021)

The scale which was developed in phase III was used. It consisted of 43 items with likert-type scale ranging from 1-5 where 1 was never and 5 were very much. The chronbach alpha for the scale was calculated to be 0.89 and concurrent validity was .92.

Rumination Response Scale (Nolen-Hoeskma, 2004)

It was used for finding out the concurrent validity of the developed indigenous scale. The Scale had 10 items and is based on a Likert-type response where 0 means 'not at all and 3 means 'always'. The reliability of the scale was .85.

Results

The current study examined the factor structure of indigenously developed scale and then the psychometric property of the scale. Below is the step by step explanation of all the results.

Exploratory Factor Analysis

Factor Structure was done through exploratory factor analysis to uncover the relationship between the items on the data of 128 women and men 132. The latent structure of 43 items was determined.

Varimax rotation was used to analyze the data of 250 participants. These participants were included in the study by keeping the criteria given by Tabachnick and Fidell (2007) according to which there should be 5 cases for each item on the scale. Initial Analysis converged 30 iterations. Nine factors solution was revealed following Kaiser's criterion i-e., eigenvalue > 1.0. (Kaiser, 1960). A Scree plot was used to determine the number of factors that were to be retained in the exploratory factor Solution. The eigenvalues of each factor solution were given in Scree Plot. Three-factor solution was found to be the best factor solution. Fist three factors out of nine factors were clear, interpretable, and theoretically relevant and were retained.

Table 1 shows the factor retention of the three factors. The factors were observed in detail based on the content and factor loadings. Each factor was named according to the items which are contained by it. (See Table 1).

Figure 1: *Scree Plot Emerged from Exploratory Factor Analysis*
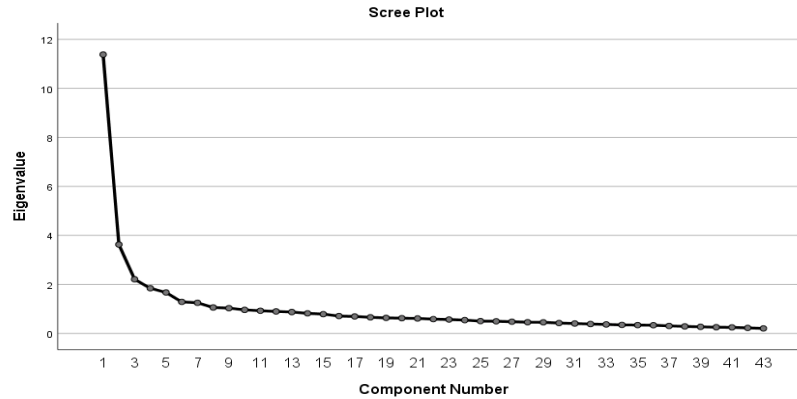
Table 1: *Retained Factors and Item Correlation of 24 Items of Ruminative Inertia Scale with Varimax Rotation (N = 450)*

Sr.no	Item no.	Items	FI	FII	FIII
1	12	problems not being solved	**.41**	.33	.30
2	18	mistakes of past	**.58**	.14	.04
3	19	making a hard decision	**.56**	.18	.03
4	20	completion of degree on time	**.52**	.18	.04
5	21	fights with friends	**.50**	-.03	.15
6	24	the wrong decisions of past	**.70**	.16	.16
7	26	Regrets	**.58**	.17	.35
8	27	incapability to do something	**.47**	.03	.31
9	28	masking emotions	**.47**	.12	.16
10	32	bad behavior of friends	**.52**	.16	.17
11	06	losing a favourite thing/person	.13	**.44**	.30
12	23	achieving the study goals	.24	**.43**	.02
13	31	spreading religion	.11	**.51**	.06
14	36	concentrating on study	.08	**.47**	.06
15	40	about hereafter	.09	**.76**	.10
16	41	fear of hell	.09	**.82**	.07
17	42	breaking of trust	.39	**.47**	.15
18	43	fear of God	.18	**.78**	.07
19	04	Breakup	.10	.02	**.67**
20	07	about the boy/girlfriend	.19	.17	**.74**
21	14	praise on social media	.15	.21	**.58**
22	25	pressure of study from parent	.38	.01	**.42**
23	29	grabbing attention of people on social media	.20	.00	**.58**
24	34	not having romantic relationship	.12	.02	**.60**

Note. F1 is Factor 1 which is Self, F2 is Factor 2 spirituality and F3 is Factor 3 of Other, Items with factor loadings less than .40 were not retained.

Factor Description

Factor 1. It contained 10 items which were 12,18,19,20,21,24, 26,27,28 and 32. Items retained were having the content related to the self-thoughts of regrets, problems, decision making, decisions of past, in competencies, and hiding of emotions. This factor was named "self-related ruminations" as all the items were directed towards the self. The highest factor loading was of item no 24 which was 0.70 and the lowest was 0.41 for item no 12. The eigenvalue of factor 1 is 6.53, the percentage variance is 15.21 and the cumulative percentage is 15.21.

Factor 2. It contained total of 8 items which were 6,23,31,36,40, 41,42 and 43. Items retained have tendencies that were more related to spirituality and study-related. As the predominant theme of the factor was spiritual that's why it was named spirituality related ruminations. The highest factor loading was of item 43 which was 0.78 and item 23 have the lowest factor loading i.e. 0.43. The eigenvalue of factor 2 is 5.75, the percentage variance is 13.38 and the cumulative percentage is 28.59.

Factor 3. It contained 6 items which included items no. 4,7,14, 25, 29 and 34. The factor was named 'Social related Rumination' because it contained the items regarding romantic relationships, social media, and family. The highest factor loading was 0.74 for item no 7 and the lowest was for item no 25 i.e., 0.42. The eigenvalue of factor 3 is 4.92, the percentage variance is 11.44 and the cumulative percentage is 40.04.

Confirmatory Factor Analysis

CFA was done to verify the factor structure and to get the best picture of the developed measure of ruminative inertia by testing the relationship between observed and latent variables (Diana, 2010). In the Table given below the three-factor solution of the Ruminative Inertia Scale (RIS) emerged from Exploratory Factor Analysis (EFA) and was cross-validated by running CFA Analysis. Confirmatory factor analysis was reported according to the guidelines of Jackson, et al. (2009).

Using AMOS (Analysis of Moment Structure) 24.0 version best fit model was obtained. the goodness of fit indices used were CMIN/df, Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

Table 2: *Confirmatory Factor Analysis of Ruminative Inertia (N = 200)*

	χ²(df)	χ²(/df)	CFI	GFI	TLI	RMSEA	SRMR
Model 1	869.61(228)		.83	.85	.81	.07	.15
Model 2	206.02(81)		.95	.95	.93	.05	.11

Note. χ² = chi-square, CFI = comparative fit indices, GFI = goodness of fit indices, TLI = tucker lewis indices, RMSEA = root mean square error of approximation, SRMR = standardized root mean residual.

The figure shows the final CFA for the sample. The initial model obtained (Model 1) was a poor fit to make its best fit correlation and covariances between the error terms were made to obtain the best fit model. The analysis of the modification indices in AMOS (Arbuckle & Wothke, 1999; Kline, 2016) indicated that significant improvement could be achieved if error terms of items of the scale are correlated. Moreover, after covarying the error terms, items explaining minimum variance and having low loading were removed to improve the model as these items are also considered a source of error in the model. To make the model fit covariances were added between e23 and e21, e21 and e20 in Factor 3. In factor, 2 covariances were added between e14 and e12, e13 and e11. In factor 1 covariance was added between e9 and e4 and e9 and e5. To get a moderate fit model. In this way, nine items were removed from the original model providing no harm to the factor structure.
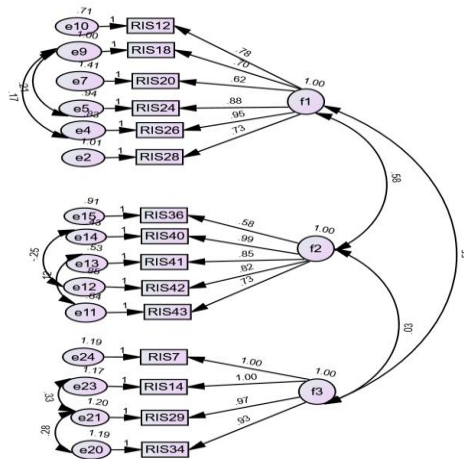
Figure 2: *The CFA Path Diagram Showing Factors and Their Correlations are as Under*

Table 2 shows the Confirmatory Factor Analysis (CFA) of the Interpersonal Skills Scale (IPSS). The model resulted from CFA indicated good fit to the data with CFI = 0.95, GFI = 0.95, TLI = 0.93, RMSEA = 0.05, SRMR = 0.11 (Jackson et al., 2009; Schumacker & Lomax, 2004). The final model contains 15 items. Factor one contains 6, factor 2 contains 5, and factor 3 contains 4 items.

Table 3: *Number of Participants, Mean, Standard Deviation, and Correlation Values of Factor 1, Factor 2, Factor 3, and Factor Total of Ruminative Inertia Scale*

		N	*M*	*SD*	1	2	3	RIS Total
1.	F1	250	24.83	8.36	-			
2.	F2	250	22.98	6.23	.56**	-		
3.	F3	250	10.23	6.25	.55**	.13**	-	
	RIS Total	250	58.04	16.60	.92	.71	.70	-

Note. N = Number of Participants, *M* = Mean, *SD* = Standard Deviation, F1 = Factor Self, F2 = Factor Spiritaulity and F3 = Factor Social and RIS = Ruminative inertia scale total.

The above Table shows the Mean, Standard Deviation, and correlation values among the three factors and also the factor total. The correlation of factor 1 is 0.56 with factor 2 and 0.55 with factor 3 which depicts that participants who experience self-ruminations are tended to experience moderate spiritual and social thoughts whereas the correlation of factor 1, factor 2, and factor 3 with total is .92, .71 and .70 respectively which means that overall these factors uphold the ruminations in participants.

Table 4: *Chronbach Alpha and Split Half Reliability of Scale*

Scale	Chronbach alpha (α)	Split half	No. of items
Ruminative Inertia	.89	.84	24
Factor 1	.85	.81	10
Factor 2	.83	.80	8
Factor 3	.81	.85	6

The above Table shows that reliabilities of both internal consistency and split-half reliabilities of subscales and ruminative Inertia scale are excellent.

Table 5: *Concurrent Validity of RIS with RRS*

	RIS	RRS
RIS	-	.96

Note. RIS = Ruminative Inertia scale.

The above Table shows good concurrent validity of the Ruminative inertia scale by indicating the strong correlation with the Rumination response scale.

Table 6: *Gender Differences Across Perception of Self, Ruminative Inertia (N = 450)*

No.	Men			Women					95% *CI*		Cohen's d
	n	*M*	*SD*	*n*	*M*	*SD*	*t*	*p*	*LL*	*UL*	
RIS1	221	22.00	7.62	229	27.55	8.14	-7.46	001***	-7.01	-4.09	-.70
RIS2	221	21.28	6.49	229	24.62	5.51	-5.89	001***	-4.45	-2.22	-.55
RIS3	221	9.47	5.33	229	10.97	6.96	-2.56	.01**	-2.65	-.35	-.24
RIST	221	52.75	14.57	229	63.15	16.87	-6.98	001***	-13.32	-7.47	-.66

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The above Table shows that women scored significantly higher in Ruminative inertia and its all factors. In Self-related Rumination, Spiritual related rumination, Social related rumination and Total Score of Ruminative Inertia Scale respectively than Men.

Discussion

An indigenous scale on ruminative inertia was developed in the first phase of the study. The aim was to develop a scale that is according to our culture and manifests the ruminations that are experienced by the university population in Pakistan. Although ruminations have been studied in the west and they have scales to measure the ruminations such as the ruminative response scale by Nolen and Hoeskma (2004) and other scales too but the content of both the scales were showing significant cultural differences. The ruminations in western culture were more related to self-centered thoughts, problems, and regrets (Markus & Kityama, 2010) but in an eastern culture other than self the thoughts the concluded responses involved were more related to societal pressure, religious thoughts, and conformity according to the norms and persons. East and West may have myriad differences based on culture and education. These differences include the behavior and attitude of people. Eastern people

are more traditional than western people. Xavier et al., (2016) explain that there is a difference in the manifestation of mental health problems in both Eastern and Western cultures because western culture is individualistic while here the culture is collectivistic, we have our societal norms, dependency on parents and family members, moreover, religion is a basic component of the culture. The oriental society has a deep-rooted family theory and is unavoidable. Students are not certainly put behind the house when they are young. Western society centers on the individual's self-growth, and parents and children are habitually independent individuals. Therefore, developing an independent personality is easy for westerners but at the same time eastern society doesn't follow the concept of independence, and people living here are tied to each other through strong emotional, spiritual, and familial bonds (Shuper et al, 2004). Moreover, within Pakistan, there is a diversity of cultures people live in different cities, have a different cast, and belong to different sects this increases the diversity and variability within the cultures of Pakistan. This makes a lot of differences in the individuals. That's why it was important to develop a scale that could measure the ruminations in the context of the culture and the differences experienced over here.

Ruminations are self-generating thoughts that are difficult to stop, and they are continuous (Bean et al., 2020). Through this definition phenomenology was explored, Scale was developed, and data was collected. The factor analysis gave a three-factor solution.

Factor one includes the items related to self-thoughts of regrets, problems, decision making, decisions of past, in competencies, and hiding of emotions. The cognitive triad by Beck explains that the thought processes are dependent on three views self, other, and world (Fenn & Byrne, 2013).

Following the model of the Beck, (Fenn & Byrne, 2013) the factor of the Ruminative Inertia Scale resonates with it. One of the factors comprises the questions having self-related thoughts. This factor depicts that a person has ruminations that are related to himself and the problems, and regrets he has. It presents the ruminations because of getting failed in achieving a goal instead of seeing it as a response to the mood state. The goal progress theory suggests rumination as a response to the unfinished tasks of an individual. It proposes that a person tends to think more about his failures and undone tasks rather than his accomplishments (Martin et al., 1993). Moreover, this factor had conformity with the western scale as well because both of them had this same component.

The Second factor that emerged after exploratory factor analysis was spirituality. This was a unique and prime factor of our study. Following the collectivistic cultural context, religion holds a great share in forming our culture. It gives doctrine purpose of life, rules and regulations to spend life. It influences the thought patterns, perception, and validity of things among individuals (Thauvoye et al., 2018). The community here is rationally and emotionally attached to religion. According to attachment theory by John Bowlby, states that secure attachment influences overall well-being, coping, better mental health functioning outcomes, increased self-esteem, and stronger relationship functioning. Thus the people living here are of this thought pattern that healthy attachment to Allah will also lead to better psychological health. Similarly, when a barrier comes in between such as wrongdoing, act or thought hinders the psychological functioning which ultimately brings an obstacle to the secure attachment with God. This fear of breaking the attachment with God leads them to fear and doubts (Sabry & Vohra, 2013). The doubts related to religion increase the thought which leads to brooding. This type of rumination increases the risk of getting pathology (Thauvoye et al., 2018). Often in the practice, clinical psychologists report cases of schizophrenia that which the patients are having religious hallucinations. The cause of this functioning could be the regrets or fear of punishment that is induced by a deviant action that generates the thoughts (Van et al., 2018). When a person finds it difficult to come out of that pool of thoughts, he experiences disturbing thought patterns, perceptual problems, and abnormalities. The studies show that perceptual abnormalities such as hallucination are linked to intrusive thoughts and they both could partly inhibit the activities (Soriano & Bajo, 2011).

The third factor was social ruminations. Referring back to Beck's model (Fenn & Byrne, 2013) one of the components of the cognitive triad is "others". The beck model refers to the views and beliefs of people. So according to that "other" has an important role in contributing to the negative thoughts. Erikson's psychosocial theory (Orenstein & Lewis, 2020) also explains that in young adulthood the conflict is between intimacy vs. isolation. In this stage romantic attachment is a basic need. This factor also contains some items related to the boyfriend/girlfriend. Moreover, Pakistan is a collectivistic culture. The university students here are dependent on their parents for financial, emotional, and social support (Nosheen et al. 2017). This dependency tends them to ruminate about the expectations, the problems, and the nature of their parents. The social world of an individual comprises his family, friends, romantic partner,

teachers, and acquaintances. Being embedded in a society there are some specific norms, demands, rules, and roles that have to be followed. If not followed, or done something which is not in accordance there comes a conflict. The conflict generates different thoughts and generates ruminations regarding how to solve it. It tends a person to think consistently about that conflict and thus pushing him into a psychological problem (Sarah et al., 2021).

So that's why it was important to develop a scale to assess the ruminations which are experienced by university students. University is a high time in which a student face stressor in all the domains such as emotional, financial, and career. The problems or wrong habits of overthinking developed in this stage could lead to significant problems in later adulthood. As rumination is the start of every pathology that's why it was important to assess the level of ruminations that were causing inertia in individuals and thus leading toward serious mental pathologies theory (Orenstein & Lewis, 2020).

Limitations

The global impact of the coronavirus pandemic extends beyond health, politics, and society (Uludag, 2022). The study was conducted in Pandemic so replicating studies in future can collect from different universities to increase generalizability. Interventional studies can be conducted to research about effective intervention on Ruminative Inertia. In future indigenously developed Ruminative Inertia Scale can be used to assess mental health problems and disorders. The demographic information of any psychological problem can be added in order to identify the co morbidity of ruminative inertia with different psychological problems. The population can be taken from different cities of the Pakistan to enhance the generalization of the research work.

Conclusions

Thoughts are the basis of most of the pathological disorders in psychology. Even without any psychological problem, thinking about every situation whether of past, present or future is a common habit of the individuals. Thinking patterns and styles are diverse in nature and each person has its own style but persistent thinking also known as ruminations can cause different problems if remained consistent.

The aim of the research was to explore the manifestation of rumination in university student. The ruminations explored were quite differently manifested in Pakistani Students than in west. The

component of self, spirituality and other ruminations were the main themes of the scale. The spiritual factor was the key factor of the study which was different from the western scales previously developed on ruminations. Hence this study provides with a scale which will be quite helpful in understanding not only everyday ruminations but the ruminations which could lead towards pathology.

References

Arbuckle, J. L., & Wothke, W. (1999). *AMOS 4.0 user's guide* (pp. 1995-2005). Small Waters Corporation. https://www.scirp.org/reference/referen cespapers?referenceid=1209328

Aslam, N., & Kamal, A. (2017). Translation, validation and effectiveness of depression, anxiety and stress (Dass-21) in assessing the psychological distress among flood affected individuals. *Journal of Pakistan Psychiatry Society*, *14*(4), 16-20.

Bean, C., Heggeness, L., Kalmbach, D., & Ciesla, J. (2020). Ruminative inertia and its association with current severity and lifetime course of depression. *Clinical Psychological Science,* *8*(6), 1007-1016. https://doi.org/10.1177/2167702620949174

Beck, J. S., & Fleming, S. (2021). A brief history of Aaron T. Beck, MD, and Cognitive Behavior Therapy. *Clinical Psychology in Europe*, *3*(2), 1-7. https://doi.org/10.32872/cpe.6701

Brans, K., Koval, P., Verduyn, P., Lim, Y. L., & Kuppens, P. (2013). The regulation of negative and positive affect in daily life. *Emotion, 13*(5), 926-939. https://doi.org/10.1037/a0032400

Campbell, F., Blank, L., Cantrell, A., Baxter, S., Blackmore, C., Dixon, J., & Goyder, E. (2022). Factors that influence mental health of university and college students in the UK: A systematic review. *BMC Public Health*, *22*(1), 1778. https://doi.org/10.1186/s12889-022-13943-x

Dagdag, J., Cuizon, H., & Bete, A. (2019). College students' problems and their link to academic performance: Basis for needs-driven student programs. *Journal of Research, Policy & Practice of Teachers & Teacher Education, 9*, 54-65. https://doi.org/10.37134/jrpptte.vol9.no2.5.2019

De Oliveira, S., & Nisbett, R. E. (2017). Culture changes how we think about thinking: From "human inference" to "geography of thought." *Perspectives on Psychological Science*, *12*(5), 782-790. https://doi.org/10.1177/1745691617702718

De Vaus, J., Hornsey, M. J., Kuppens, P., & Bastian, B. (2018). Exploring the East-West divide in prevalence of affective disorder: A case for cultural differences in coping with negative emotion. *Personality and Social Psychology Review*, *22*(3), 285-304. https://doi.org/10.1177/1088868317 736222

Eckland, N. S., Sperry, S. H., Castro, A. A., & Berenbaum, H. (2021). Intensity, frequency, and differentiation of discrete emotion categories in daily life and their associations with depression, worry, and rumination. *Emotion, 22*(2), 305-317. https://doi.org/10.1037/emo0001038

Emerson, M. O., Monahan, S. C., & Mirola, W. A. (2011). *Religion matters: What sociology teaches us about religion in our world*. Prentice Hall. https://doi.org/10.4324/9781315662909

Fenn, K., & Byrne, M. (2013). The key principles of cognitive behavioral therapy. *Education and Inspiration for General Practice, 6*(9), 579-585. https://doi.org/10.1177/1755738012471029

Flett, G. L., Nepon, T., Hewitt, P. L., Zaki-Azat, J., Rose, A. L., & Swiderski, K. (2020). The Mistake Rumination Scale: Development, validation, and utility of a measure of cognitive perfectionism. *Journal of Psycho educational Assessment*, *38*(1), 84-98. https://doi.org/10.1177/073428291 209879538

Gebremariam, E. T., & Gadisa, D. A. (2021). Factors affecting the quality of undergraduate pharmacy students' researches in ambo university, Ethiopia: A qualitative study from advisors' perspective. *Advances in Medical Education and Practice*, *12*, 745-754. https://doi.org/10.2147/20 AMEP.S316201

González, A., & Brown, R. (2023). Shame and rumination in collectivistic cultures: Implications for mental health interventions. *Asian Journal of Psychiatry*, *77*.

Iqbal, A., Khalid, S., Batool, S., & Ashraf, S. (2021). Development and validation of rumination scale for traumatic amputees (RSTA). *Ilkogretim Online*, *20*(5), 7275-7284.

Jackson, D. L., Gillaspy, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods*, *14*(1), 6-23. https://doi.org/10. 1037/a0014694

Johnson, D. P., & Whisman, M. A. (2016). Gender differences in rumination: A meta-analysis. *Personality and Individual Differences*, *55*(4), 367-374. https://doi.org/10.1016/j.paid.2013.03.019

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *British Journal of Applied Science & Technology*, *7*(4), 396. http://doi.org/10.9734/BJAST/2015/14975

Julious, S. A. (2005). Sample size of 12 per group rule of thumb for a pilot study. *Pharmaceutical Statistics*, *4*(4), 287-291. https://doi.org/10.1002/p st.185

Uludag, K. (2022). Coronary blindness: Desensitization after excessive exposure to coronavirus-related information. *Health Policy and Technology*, *11*(3). https://doi.org/10.1016/j.hlpt.2022.100625

Kaiser, H. F. (1960). Directional statistical decisions. *Psychological Review, 67*(3), 160-167. https://doi.org/10.1037/h0047595

Kuster, F., Orth, U., & Meier, L. (2017). Rumination mediates the prospective effect of low self-esteem on depression: A five-wave longitudinal study. *Personality & Social Psychology Bulletin, 38*, 747-59. https://doi.org/10.1177/0146167212437250

Li, H., Lee, B., Reyneke, T., Haque, S., Abdullah, S. Z., Tan, B. K. W., Liddell, B., & Jobson, L. (2022). Does culture moderate the relationships between rumination and symptoms of posttraumatic stress disorder and depression? *Plos One, 17*(11), https://doi.org/10.1371/journal.pone.0278328

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6), 382-385. https://doi.org/10.1097/00006199-198611000-00017

Marchetti, I., Mor, N., Chiorri, C., & Koster, E. H. (2018). The brief state rumination inventory (BSRI): Validation and psychometric evaluation. *Cognitive Therapy and Research*, *42*(4), 447-460. https://doi.org/10.1007/s10608-018-9901-1

Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, *5*(4), 420-430. https://doi.org/10.1177/1745691610375557

Martin, L, Tesser, A., & McIntosh, W. (1993). *Wanting by not having: The effects of unattained goals on thoughts and feelings*. Handbook of Mental Control Englewood Cliffs. New Jersey: Prentice Hall.

Nolen-Hoeksema, S. (2004). The Response Styles Theory. *Depressive rumination*, 105-123. http://doi.org/10.1002/9780470713853

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). *Rethinking Rumination. Perspectives on Psychological Science, 3*(5), 400-424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Nosheen, A., Riaz, M. N., Malik, N. I., Yasmin, H., & Malik, S. (2017). Mental health outcomes of sense of coherence in individualistic and collectivistic culture: Moderating role of social support. *Pakistan Journal of Psychological Research, 32*(2), 563-579. https://psycnet.apa.org/record/2018-17750-013

Orenstein, G. A., & Lewis, L. (2020). *Eriksons stages of psychosocial development*. https://www.ncbi.nlm.nih.gov/books/NBK556096/

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, *128*(1), 3-72. https://doi.org/10.1037/0033-2909.128.1.3

Qasem, F., & Zayid, E. (2019). The challenges and problems faced by students in the early stage of writing research projects. *Journal of Mental Health, 4*(5), 23-34.

Sabry, W. M., & Vohra, A. (2013). Role of Islam in the management of psychiatric disorders. *Indian Journal of Psychiatry*, *55*(2), S205-S214. https://doi.org/10.4103/0019-5545.105534

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*. New York, NY: Routledge.

Sfera, A., & Osorio, C. (2014). Thinking pattern East and West. *SOJ Psychol 1*(4), 1-2. http://doi.org/10.15226/2374-6874/1/4/00117

Shuper, P. A., Sorrentino, R. A., Otsubo, Y., Hodson, G., & Walker, A. M. (2004). A theory of uncertainty orientation: Implications for the study of individual differences within and across cultures. *Journal of Cross Cultural Psychology*, *35*, 460-480.

Soriano, M. F., & Bajo, T. (2011). *Hallucinations and intrusive thoughts. Hallucinations: Types, Stages and Treatments.* 79-96. https://www.researchgate.net/publication/287562999_Hallucinations_and_intrusive_th oughts

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (5th ed.). pp. 481-498. Pearson.

Teng, F., & Zhao, X. (2021). Individualism-collectivism and mental health: The mediating role of rumination and social support. *International Journal of Psychology*, *56*(3), 435-442.

Thauvoye, E., Nijsten, E., & Dezutter, J. (2018). Religious doubt, depressive symptoms, and rumination at an advanced age: A longitudinal study in residential care settings. *Archive for the Psychology of Religion*, *40*(2), 287-306. https://doi.org/10.1163/15736121-12341355

Tyng, Chai M., Amin, Hafeez U., Saad, Mohamad N. M., Malik, & Aamir S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology, 8,* 1454. http://doi.org/10.3389/fpsyg.2017.01454

Van, M. K., Van, D.V. M., & ESM-MERGE Investigators. (2018). How does rumination impact cognition? A first mechanistic model. *Topics In Cognitive Science*, *10*(1), 175-191. https://doi.org/10.1111/tops.12318

VandenBos, G. R. (Ed.). (2015). *(2nd ed.). American Psychological Association.* https://doi.org/10.1037/14646-000

Waltz, C. F., Strickland, O. L., & Lenz, E. R. (2005). *Measurement in nursing and health research.* New York: Springer. https://dl.uswr.ac.ir/bitstream/Hannan/138859/1/9780826105080.pdf

Xavier, A., Cunha, M., & Pinto-Gouveia, J. (2016). Rumination in Adolescence: The distinctive impact of brooding and reflection on psychopathology. *Spanish Journal of Psychology, 19.*

Yang, H., & Li, H. (2020). Training positive rumination in expressive writing to enhance psychological adjustment and working memory updating for maladaptive ruminators. *Frontiers in Psychology, 11.* https://doi.org/10.3389/fpsyg.2020.00789

Yang, H., Wang, Z., Song, J., Lu, J., Huang, X., Zou, Z., & Pan, L. (2020). The positive and negative rumination scale: Development and preliminary validation. *Current Psychology*, *39*(2), 483-499.

Zhang, H., & Chen, Y. (2020). Cultural differences in rumination: The role of cultural orientation and emotional regulation. *Cultural Psychology*, *26*(2), 232-249.