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RESEARCH PAPER

Rumination as Predictor of Anxiety, Depression, Stress and Affect among People with Traumatic Amputation in Pakistan

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PAPER INFO	ABSTRACT
 *Corresponding Author sumaya.batool@ uos.edu.pk	Researchers have depicted relationship between rumination and other psychological challenges, but rumination has never been examined as predictor of psychological illnesses among people with traumatic amputation. This research examines the possible role of rumination in predicting anxiety, depression, stress, negative affect (NA) and positive affect (PA) among (N = 200) people with traumatic amputation. Results revealed that rumination significantly predicted depression, anxiety, stress and negative affect (NA), while negative affect was found to mediate between rumination and stress, anxiety, and depression. In addition, the results revealed that the sub-dimensions of rumination, brooding and intrusion positively predicted negative outcomes while the instrumentality positively predicted positive affect. The present study suggests that early intervention in incidences of traumatic amputation might inhibit development of psychological problems.

Introduction

Epistemological analysis worldwide has identified trauma among one of the most cited reasons for amputation. (Kohler, Cieza, Stucki, Geertzen, Burger & Dillon, 2009 & Turaiki and Falahi,1993). The total number of amputees in Pakistan is nearly 1 million (Health Grades, 2014). In addition, Razzaq, Rasheed, Islam and Iqbal (2013) reported that in Pakistan 96.7% of carried out amputations had a traumatic etiology. As traumatic amputations are unplanned and sudden, empirical evidences suggest that people who confront traumatic amputation felt it as a stressful event (Solgajova,

Sollar & Vorosova, 2015). Specifically, research indicates that 84% people with traumatic amputation face psychological challenges (Sahu, Sagar & Sarkar, 2016).

Literature Review

Fatima and Khalid (2016) examined mental health difficulties and self-esteem among individuals with lower limb amputation and paraplegics in Pakistan. The outcome of the study exhibited elevated levels of depression and anxiety in both the groups, but low self-esteem in participants with lower limb amputation as compared to paraplegics. There are multiple reasons as to why traumatic amputation leads to deterioration in mental health. One explanation might be that traumatic loss of limb forces individual to redefine its body image and self. Both these aspects jointly present an individual with traumatic amputation as a new reality. Further this revised body image leads to perception of poor body image, enhanced social isolation, decreased self-esteem, discomfort and increased dependence on others (Lansever & Adnan, 2003), thereby initiating a decline in psychological well-being.

Traumatic amputation and such critical injuries change individuals' world view. It can dramatically alter the existing belief system and can result in changing of old formed life assumptions and thus one can feel a need to reconstruct perceptions of personal worth and faith in social system (Benetato, 2011). This restructuring is a consequence of repetitive thoughts which get initiated immediately after facing trauma. These repitetitive negative thoughts also referred as rumination are attributed as causes of distress (Arnoso, 2011). Many prominent psychologists have considered rumination or ruminating thoughts as risk factor in becoming a victim of various psychopathologies (Garcia, Cova, Rincon, Vazquez, 2015). Rumination literature depicts rumination a theoretical construct which is conceptualized as maladaptive repetitive thinking style (Hoekesma, 1991). Phelps, Williams, Raichle, Turner and Ehde (2008) worked with people having traumatic amputations. The finding revealed that persistent negative thinking resulted in predicting symptoms of depression, posttraumatic stress disorder. They further revealed that rumination not only predicted psychological issues but also difficulties in physical health. Additionally, among people with traumatic amputation negative psychosocial outcomes are in strong link with cognitive processing. To sum up ruminating thought patterns can result in depression, increased vulnerability to depression, impaired problem solving and negative mood (Lei, Zhong, Liu, Xi, Ling. Zhu, Yao & Yi, 2017).

The present research was undertaken to explore the impact of rumination and its sub-dimensions (brooding, instrumentality, and intrusion) on positive and negative affect, anxiety, stress, and depression in traumatic amputees in Pakistan. Several studies have shown that rumination inculcates pessimism and a self-defeating attitude towards oneself, which colonizes low moods and negative affect and eventually lead to the development of depression and other psychological distresses (Broderick & Korteland, 2004; Vergara-Lopez, Lopez-Vergara, and Roberts, 2016). In the light of this data, the present study was also planned to

investigate the mediating role of positive and negative affect between rumination and anxiety, stress, and depression.

Material and Method

Research design

The present study employed cross sectional research design. Details of the method are given below.

Sample

The sample comprised of people with traumatic amputation, *N*=200 was selected through convenient sampling technique from hospitals, medical institutes and rehabilitation centers located in Islamabad and Rawalpindi, Pakistan. Participants were contacted individually and informed consent was obtained after receiving approval from the concerned authorities of the institutes. Endorsement from the ethical review committee, Preston University-Kohat, Islamabad campus was also acquired. The inclusion criteria for the participants included: a) traumatic amputees only, b) both men and women, and c) participants who were passing through an active phase of rehabilitation. Amputees who were suffering from cognitive problems or who were unable to follow instructions were excluded. The age range of sample varied between 18 to 34 years. Among participants, 180 were men and 20 were women. The mean age of participants was 31 years. The sample comprised mainly below knee amputees which amounted up to 46% (N=93) of the total sample. Others included 34% (N=68) above knee amputees and 19% (N=39) elbow amputations. Participants of the study were sampled from hospitals during working days of the week.

Procedure

Prior to data collection, permission was obtained from the original authors and researchers who had translated and adapted the scales utilized in present study to measure study variables. Since, all the measuring scales were available in Urdu language, it took participants an average 25 minutes to provide their responses on all scales. Traumatic rumination was assessed by Rumination Scale for Traumatic (RSTA), which is an 18-item self-report questionnaire with each item anchored on a five-point rating scale. It comprises of three subscales namely instrumentality, brooding, and intrusion (Iqbal & Khalid, 2018). Positive Affect and Negative Affect (PANAS) was used to measure the two types of affects: positive and negative (Rasheed & Kausar, 2012). PANAS contains 20 items, 10 for each dimension and its responses range from '1' to '5'. Lastly, stress, anxiety and depression were measured through 42-item Depression, Anxiety, Stress Scale (DASS; Zafar & Khalily, 2013). The items are placed on a four-point rating scale. Reliability estimates for RSTA, PANAS, and DASS (.90, .92, .90, respectively) in the present study suggested that the scales were highly reliable and appropriate for the target population.

Data-Analysis Strategy

In order to ascertain the objectives of the present study, the statistical methods Simple and Multiple Regression Analysis, and Path Analysis were used. The data were entered into SPSS 24 and screened for further analysis. For path analysis, Maximum Likelihood method in AMOS-23 was employed for testing mediational analysis.

Results and Discussion

The results show that rumination suggest pathways through which it is linked with depression, anxiety, stress, positive and negative affect in everyday life. The relationship between measured variables and latent constructs in the hypothesized model are schematically portrayed in Figure 1 and 2.In Table 1 rumination was taken as predictor of depression, anxiety, stress, positive and negative affect. Results indicated that rumination significantly regress depression (β = .17, *p*< .05), anxiety (β = .26, *p*< .01), stress (β = .80, *p*< .01) and negative affect (β = .92, *p*< .01). Moreover, it was also found that negative affect (R^2 = 84%) and stress (R^2 = .64%) highly predicts the rumination. In Table 3 sub-scales of rumination were taken as predictor of depression, anxiety, stress, positive and negative affect. Results indicated that instrumentality sub-scale significantly predicts depression (β = -.61, *p*< .01), anxiety (β = -.40, *p*< .01), stress (β = .76, *p*< .01), positive affect (β = .28, *p*< .01) and negative affect (β = -.50, *p*< .01). Intrusion sub-scale significantly predicts anxiety (β = .23, *p*< .01), stress (β = -.31, *p*< .01), and negative affect (β = .07, *p*< .05). Brooding sub-scale significantly predicts depression (β = .48, *p*< .01), anxiety (β = .40, *p*< .01), stress (β = .30, *p*< .01), positive affect (β = -.50, *p*< .01) and negative affect (β = .73, *p*< .01). Moreover, R^2 for depression (R^2 = 61%), anxiety (R^2 = 37%), stress (R^2 = 76%), positive affect (R^2 = 34%) and negative affect (R^2 = 79%).

Results further indicated significant indirect effect of positive affect on depression (*B* = -.28, *p*< .01), anxiety (*B* = -.19, *p*< .01) and stress (*B* = -.17, *p*< .01). The Direct effect for depression (*B* = .13, *p*< .05), anxiety (*B* = .26, *p*< .01) and stress (*B* = .53, *p*< .01) were significant. Furthermore, to test the significance of indirect effects parametric bootstrapping was used. In bootstrapping, Monte Carlo method by using 95% bias-corrected confidence intervals was examined (Table 3). It was found that positive affect negative and significantly mediate (partially) the relationship between independent and dependent variables. Moreover, results indicated significant indirect effect of negative affect on depression (*B* = .31, *p*< .01), anxiety (*B* = .47, *p*< .01) and stress (*B* = .66, *p*< .01). The Direct effect for depression (*B* = -.06, *p* = ns), anxiety (*B* = -.06, *p*= ns) and stress (*B* = -.07, *p* = ns) were non-significant. Furthermore, to test the significance of indirect effects parametric bootstrapping was used. In bootstrapping, Monte Carlo method by using 95% bias-corrected confidence intervals was examined (Table 4). It was found that negative affect positive and significantly mediate the relationship between independent and dependent variables.

Table1
Rumination as a Predictor of Depression, Anxiety, Stress, Positive and Negative Affect

Predictor	Depression	Anxiety	Stress	Positive	Negative
Rumination	.17	.26	.80	.13	.92
SEB	.02	.01	.01	.03	.01
P	.016	.000	.000	.062	.000
R²	.03	.07	.64	.02	.84

Note. SEB = standard error of regression, *p* = significant level

Table2
Sub-scales of Rumination as a Predictor of Depression, Anxiety, Stress, Positive and Negative Affect

Predictor	Depression	Anxiety	Stress	Positive	Negative
Instrumentality	-.61**	-.40**	.76**	.28**	-.50**
Intrusion	.20	.23**	-.31**	-.10	.07*
Brooding	.48**	.40**	.30**	-.50**	.73**
R²	.61	.37	.76	.34	.79

Note. SEB = standard error of regression, **p < .01, *p < .05

Table 3
Mediation Effect of Positive affect as Mediator between the Relationship of Rumination and Depression, Anxiety, Stress (N = 200)

Path (x to y)		Mediator	Estimands	SE*B*	Direct effect	95% CI LL	UL
Rumination	Depression	Positive affect	-.28**	.03	.13*	-.01	.08
Rumination	Anxiety	Positive affect	-.19**	.02	.26**	.00	.06
Rumination	Stress	Positive affect	-.17**	.04	.53**	-.01	.04

Note. Bootstrap sample size = 2000. *B* = standardized regression coefficient.
Estimands = indirect effect
** *p* < .01, **p*< .05.

Table 4
Mediation Effect of Negative affect as Mediator between the Relationship of Rumination and Depression, Anxiety, Stress (N = 200)

Path (x to y)		Mediator	Estimands	SE*B*	Direct effect	95% CI LL	UL
Rumination	Depression	Negative affect	.31**	.08	-.06	.09	.39
Rumination		Negative	.47**	.04	-.06	.18	.56

| Anxiety | | affect | | | | | |
| Rumination | Stress | Negative affect | .66** | .08 | -.07 | .37 | .56 |

Note. Bootstrap sample size = 2000. *B* = unstandardized regression coefficient. Estimands = indirect effect

** *p* < .01

Discussion

This present study depicts three distinct results. Firstly, it confirms the prior finding that rumination predicts depression, anxiety, stress and negative affect (Nifer & Blankenship, 2002; Birrer & Michael, 2011 & Harding & Mezulis, 2014). This finding remained consistent for people with traumatic amputations i.e., results implicated rumination as a significant risk factor for the development of depression, anxiety, stress, negative affect. Compared to positive affect ('one's positive emotions, experiences and the positive way one takes life challenges') negative affect ('low mood, negative thoughts, and behaviors which consistently divert individual's attention on negative feelings and emotions') was found to strongly and significantly predict rumination (Mor & Winquist, 2002).
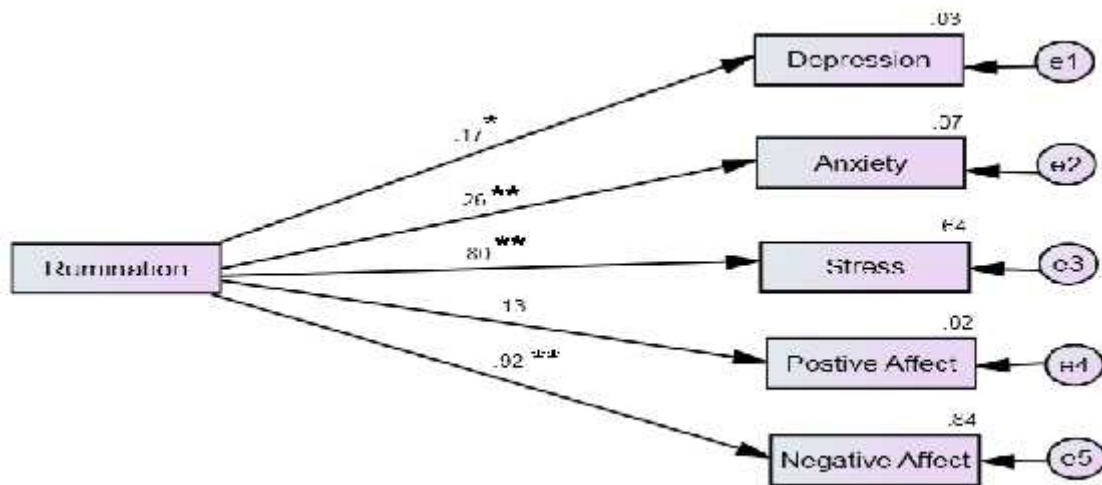
Figure1

Second, in the exploration of relationship between the dimensions of rumination i.e., intrusion, instrumentality, and brooding with proposed outcomes, results indicated that 'instrumentality' which is explained as 'positive rumination and it mostly results in positive belief and thoughts which are helpful in coping up and finding a new meaning to life' (Fritz, 1999; Soo, Sherman, Kangas, 2014)

depicted a positive relationship with stress and positive affect only. This is consistent with empirical evidence suggesting that rumination might help the individual experiencing traumatic amputation to accept and cope with sudden physical disability (Fritz, 1999). Studies have provided sufficient support for the link between rumination and positive growth (see, for instance, García, Cova, Rincón, Vázquez & Páez, 2016). Other dimension of rumination included intrusion which is defined as 'uncontrollable negative thoughts' and lastly, brooding which refers to 'negative experiences and perceiving consequences of illness' (Fritz, 1999; Soo, Sherman, Kangas, 2014) yielded positive relationship with anxiety, negative affect and depression, anxiety, stress and negative affect respectively. Though anxiety and depression are operationalized as theoretically different constructs, there is some overlapping between the two and both have been observed to have a high comorbidity (Olatunji, Kristin &Taylor, 2013). Nevertheless, substantial amount of studies have shown that brooding rumination significantly contributed to depression, stress and anxiety and intrusion positively relates to anxiety and negative affect.
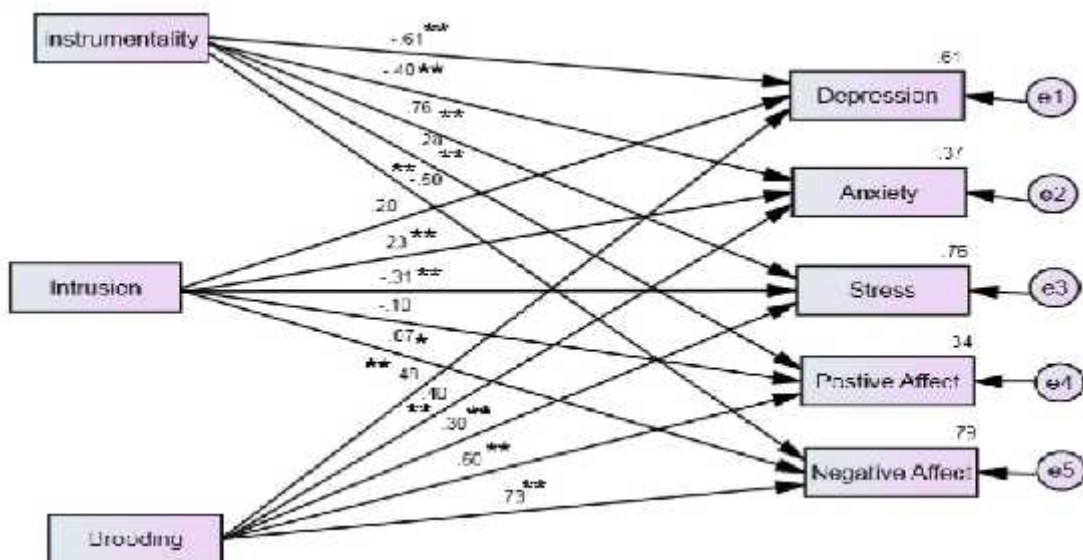
Figure2

Finally, the third noteworthy finding was that negative affect positively and significantly mediated the relationship between rumination and depression, anxiety and stress. The result is well consistent with other investigations. In last two decades, researchers have shown a keen interest in investigating association between depression, rumination, and metacognition (Sarvestani & Azam, 2013). Fredrickson (2004) originated a theory titled as the Broaden and Build theory. It has attempted to conceptualize a frame work under which brooding and positive emotions can affect positive and negative moods. The consequences of negative affect can expedite depression or depressive symptoms and rigid cognitive patterns as well (Peterson &Seligman, 1984). To conclude this argument, it was made rationalized that

brooding depressive symptoms pathway is completely different from positive affect positive rumination depressive symptoms pathway (Mezulisd, 2011).
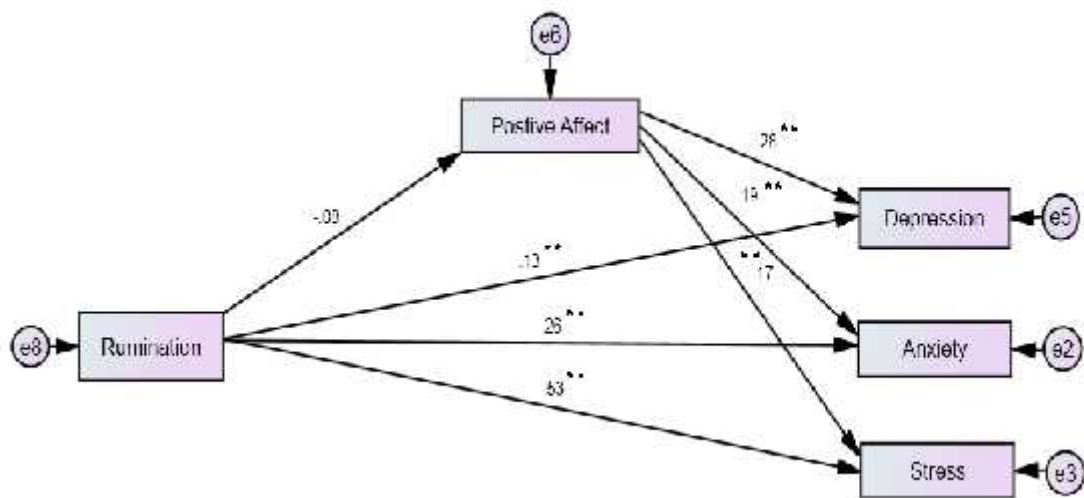

Figure3. Mediation model with Positive affect as mediator between the relationship of rumination and depression, anxiety, stress (*N* = 200). **p* < .01
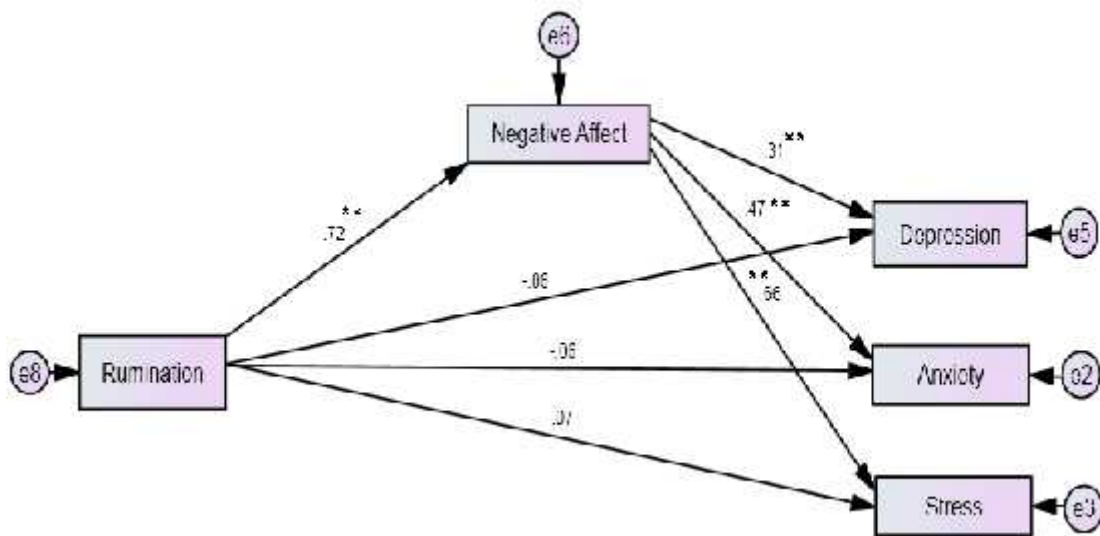

Figure4. Mediation model with negative affect as mediator between the relationship of rumination and depression, anxiety, stress (*N* = 200). **p* < .01

These findings however must be considered in the context of the limitations of this study. The foremost limitation in the current study is the dearth of an ethnically varied sample. Due to the limitations of the collected samples, it is not clear whether the findings would perform evenly with individuals belonging to

minority, ethnic or other racial groups. Dissimilarities across ethnic and cultural clusters might happen in the experience of rumination. The sample of present study mostly comprised male participants. This aspect requires concern in making interpretation and implementation of findings or calculated index for females. In future, a longitudinal study may be planned to evaluate the age, gender and socioeconomic related issues involved in influencing rumination as response among people with traumatic amputation and efforts should be made to recruit a large female sample to establish empirical evidences for accurate assessment of rumination among females with traumatic amputations.

Conclusion

Rumination predicted depression, anxiety, stress and affect. Moreover, negative affect positively and significantly mediated the relationship between rumination and depression, anxiety and stress among individuals experiencing traumatic amputation.

Implications

The study has its significance contribution in the field of clinical and health psychology. Findings of the study will be helpful for mental health professionals working with amputees and those specifically working in rehabilitation centres to develop management plans, so that people suffering from amputation trauma can cope with it. Moreover, coping strategies may be designed to improve resilience among amputees.

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