

## An Evaluation of Psychometric Properties of an Indigenous Anger Scale

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Anger being one of the primitive emotions often interferes with the sense of well being of a person. The present study aims to explore the psychometric properties of Trait Anger and Expression Scale (TAES; Rashid & Siddiqui, 2005) against the State Trait Anger Expression Inventory (STAXI). Pilot study was conducted (N=10) on student sample to check the ease of understanding of STAXI Urdu translation. Data was collected from the 400 university students of five different educational institutes (government and private) of Lahore. Their age ranged from 18-25 years. Data was collected through administering TAES along with STAXI. The results showed that the alpha coefficient of TAES is (.78). Two factors emerged through EFA and named as Anger Expression and Anger In with good alpha coefficients ( $\alpha=.78$ ,  $\alpha=.68$ ). Most of the items of TAES correlate significantly with the total score of TAES which indicate internal consistency of items. Both factors along with TAES total score show an average correlation with subscales of STAXI which represents concurrent validity of TAES. Average correlation was found between TAES and subscales of STAXI i.e., State anger ( $r=.41$ ), Trait Anger ( $r=.60$ ), Anger In ( $r=.42$ ), Anger Out ( $r=.40$ ), Anger control ( $r=-.52$ ) and with Anger Expression ( $r=.63$ ). TAES is a valid and reliable scale for the assessment of anger.

**Keywords:** Anger, psychometric and assessment

Sometimes we wonder whether anger has become a problem emotion in today's stressful world. Although, it is described as a natural emotion which is experienced by all human beings and it is reported to have physical, emotional, intellectual and spiritual impact in the lives of human beings (Golden, 2003). It works as defense mechanism to protect oneself against the stressful situations (Han, Won, Kim, & Lee, 2015). Impact of anger on physical and psychological health has been explored extensively. The relationship between cardiovascular parameters and expression of anger is examined for instance anger expression in three domains (work, home and leisure) is associated with blood pressure (Bishop, Ngau, & Pek, 2008). Anger is often expressed indirectly as 58% of smokers smoke to relieve anger (Khawaja, 2004). This shows that it can be expressed directly as well as indirectly. The role of anxiety, anger and depression among migraine patients suggest that trait anxiety and trait anger significantly correlate with depression and anger expression (Mahajan, 2004).

The suppression and expression of anger play a significant role in the interpersonal relations of human beings as it is found that perceived low social support is associated with anger (Martin & Dahlen, 2005). Moreover, the expression of anger in youth leads to problems in interpersonal relationships (Kerr & Schneider, 2008). As anger contributes to many physical, mental and interpersonal problems, therefore, its assessment and measurement is a pertinent but rigorous process.

According to Novaco's model of anger arousal (1976), anger has a diverse impact on human behavior in terms of its adaptive and maladaptive functions. Anger management involves dealing with stressful situations with patience and finding the constructive thoughts for the solution of problems. Spielberger (1988) conceptualizes anger as a complex emotion, comprised of state anger, trait anger, and anger in, anger out, anger control and anger expression. It may manifest itself as a transitory state (state anger) or an enduring characteristic of an individual (trait anger). 'Anger in' is explained as the feelings of anger which are directed towards oneself. 'Anger out' is defined as the feelings of anger which are directed towards someone else. 'Anger control' is explained as the individual's ability to control his/her feelings. 'Anger expression' is defined as an umbrella term, which covers expression, suppression and controlling element of an anger. The applicability of above said conceptualizations across cultures requires further research to establish that complexity is similar across culture and context. The variation in context can influence the strength and expression of felt anger for instance, expression of anger is said to be more found in African Americans as compared to Whites (Mabry & Kiecolt, 2005). The general observation of Pakistani context is that people are prone to aggress in day to day situations. On the other hand anger is also withheld depending on the values promoted by the community one is raised in (Cole, Bruschi, & Tamang, 2002). It seems that age, gender, socio demographic variables, education and language are basic units of a culture which influence the expression of intense emotions such as anger (Antony, Orsillo, & Roemer, 2001).

Assessment of anger has clinical significance as mismanaged anger creates hindrance in the lives of individuals. It is plausible, therefore, to think that while assessing anger we should not overlook the cultural parameters which shape its expression. It is also necessary to assess anger with a tool which covers all its

aspects in a specific culture. As in our context, only anger scales which are developed in west are available. This guiding thought was the reason behind the development of Trait Anger and Expression Scale (Rashid & Siddiqui, 2005). Trait Anger and Expression Scale (TAES) was developed through the semi structured interviews from the psychiatrists and clinical psychologists (N=4). Their experience ranged from 10-15 years. They were asked to report the expression (verbatim of patients) of anger as manifested by psychiatric patients in Pakistan. Afterwards, pool of 25 items was compiled in the form of 5 point rating scale. Dubious and vague items were excluded from the list. Psychometric properties were explored on a group of soldiers (N=110), mean of that study was 51.53 with a standard deviation of 12.22. Cronbach's alpha is .82 and Guttman's split half reliability is .80. Two factors were identified and labeled as Trait Anger and Anger Expression with eigenvalue of 4.73 and 1.84 respectively. The unique aspect of TAES is that it explores the different ways of suppression and expression of anger which are prevalent in our society. The current research, therefore aims to carry the work further so that its findings may be generalized. For that purpose, the psychometric properties of TAES were explored against State Trait Anger Expression Inventory in student population. The purpose of using STAXI against TAES is that it has adequate psychometric properties and it is frequently used in researches conducted in Pakistan for the assessment of anger (Majeed & Farah, 2017; Mushtaq & Najam, 2014; Zafar & Kausar, 2014).

### Objectives of the study

The main objectives of study were

- To investigate the psychometric properties of TAES.
- To establish the concurrent validity of TAES with STAXI.

### Method

The present study aims to explore the psychometric properties of TAES against STAXI. The study consists of two phases. First phase involves the translation of STAXI (into Urdu) and testing out the translation in a pilot study while the second phase examines the psychometric properties of TAES.

#### Phase 1

The purpose of this phase was the translation of STAXI. It was translated and back translated by bilingual experts (2 Assistant Professors, 2 Clinical Psychologists). The appropriate translation of the items of STAXI was selected by a committee of 6 judges (3 Clinical Psychologists and 3 trainee Clinical Psychologists) on their mutual agreement.

#### Pilot Study

Pilot study was carried out to examine the accuracy of translation of STAXI. The sample consisted of 10 graduate and post graduate students. Their age ranged from 18-23 years ( $M=20.80$ ,  $SD=1.75$ ). Female students were 60% and male students were 40%. Graduate students were 60% and post graduate students were 40%. Both original and translated STAXI were administered on the sample along with TAES to evaluate the ease of understanding of the translation. The order of administration of both scales (STAXI and TAES) was altered to balance out the order effect of questionnaire. Majority of students did not report ambiguity in the understanding

of Urdu translation. Minor corrections were made in the expression of the Urdu translation (1 item) of STAXI obtained from sample.

### Phase 2: Main Study

#### Sample

The sample consisted of 400 graduate and post graduate students who were taken from five educational institutes of Lahore. Their age ranged from 18 to 25 years ( $M=20.82$ ,  $SD=1.62$ ). The sample involved 206 males and 194 females.

#### Instruments

Following research instruments were used.

##### *State Trait Anger Expression Inventory (STAXI)*

The State Trait Anger Expression Inventory (Spielberger, 1988) involves an integration of two previously developed inventories, the State Trait Anger Scale and the Anger Expression (AX) Scale. It comprises of 44 items with four point rating scale (1= almost never - 4= almost always). It gives scores in the form of its subscales which are State Anger, Trait Anger, Anger in, Anger out and Anger Control and sixth scale involves a combination of Anger-in, Anger out and Anger Control which provide frequency of expressed anger. The internal reliabilities of the State Anger, Trait Anger and Anger Expression scales are reported to be .93, .87 and .80 respectively (Spielberger, 1996). Individuals who scored above 75<sup>th</sup> percentile on STAXI are more likely to prone to psychological or physical disorders as compared to the individuals who scored below 25<sup>th</sup> percentile.

##### *Trait Anger and Expression Scale (TAES)*

It was developed by Rashid and Siddiqui (2005). It consists of 25 items in Urdu language. It is a 5 point rating scale and scores range from 0 to 4. The score of 0 stands for not at all and the score of 4 stand for almost accurate. The high score on TAES shows that an individual experiences and expresses more anger as compared to an individual having low score on TAES. And that individual needs management of anger as it is interfering in one's life.

#### Procedure

Written permission was taken from the directors of concerned institutes and departments of universities. After introducing herself to the students, the researcher explained them the purpose of research. Those students were included in research who gave their written consent. Then researcher administered both scales (TAES & STAXI) alternatively on the students. After completing questionnaire, participants were thanked by the researcher.

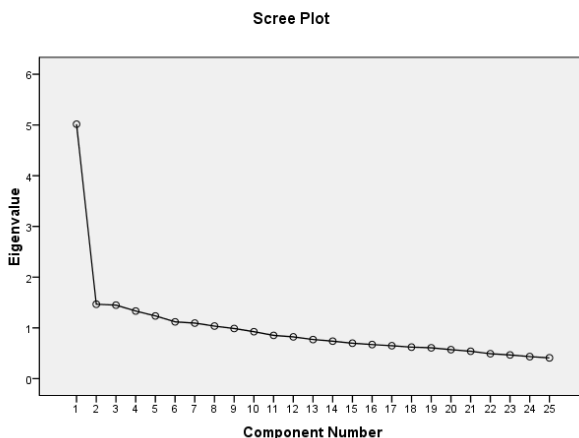
### Results

In order to establish the psychometric properties of TAES, data from 400 university students was analyzed by using SPSS (version 20). Exploratory factor analysis with varimax rotation was used along with alpha coefficient, item total correlation, and correlation among variables.

Table 1  
Factor Structure of TAES with Varimax Rotation (N=400)

Sr. #	Item #	Factor I	Factor II
1	2	<b>.47</b>	.19
2	4	<b>.45</b>	.24
3	5	<b>.53</b>	.09
4	8	<b>.61</b>	.07
5	14	<b>.57</b>	.05
6	17	<b>.59</b>	.28
7	18	<b>.67</b>	-.11
8	21	<b>.44</b>	.10
9	22	<b>.46</b>	.12
10	23	<b>.55</b>	-.16
11	24	<b>.44</b>	.27
12	25	<b>.46</b>	.01
13	3	.35	<b>.36</b>
14	7	.26	<b>.49</b>
15	10	.30	<b>.40</b>
16	11	.38	<b>.43</b>
17	15	.28	<b>.40</b>
18	16	.34	<b>.48</b>
19	19	-.01	<b>.67</b>

EFA with varimax rotation as suitable practice model was used to identify the factor structure of TAES (Henson & Roberts, 2006). The first criterion that was followed to determine the factor structure was scree plot. It was used to determine the number of factors. Secondly, retaining factors with Eigen value greater than 1 and thirdly, items with high loadings on a particular factor but different from other factors were retained (Kaiser, 1974; Kline, 1994). Items with >.30 loadings were retained. Table 1 indicates the two factor structure of TAES. Total 19 items emerged on first two factors and last two factors were deleted as they included only 3, 3 items. The reason behind excluding last two factors is that the number of items was less and content was unclear. First factor that was retained is labeled as (AEF1=Anger Expression) and contains 12 items which represents expression of anger. The content of items is related to “I become very angry if somebody criticizes me”, “I sometimes scream in the state of anger”, “Sometimes I can beat someone in uncontrollable state of anger”, “I shout on the minor mismanagement at home”.



Second factor is named as (AIF2= Anger In) and contains 7 items which shows feelings that are directed towards oneself. 19 items have come on these two factors. the content of items is related to “I rebuke myself in state of anger”, “I become irritated due to excessive workload”, “Usually I feel headache and body pains in state of anger”, “I often inwardly direct my anger instead of venting out”.

Table 2  
Eigen values and Variance of Two Factors of TAES

Factors	Eigen values	% of Variance	% of total Variance
1	3.95	15.81	15.81
2	2.49	9.95	25.77

Table 3 shows the alpha coefficients of TAES and its subscales. TAES along with its subscales (AEF1=anger expression, AIF2=anger in) show good alpha coefficients which depicts the internal consistency of the scale and its two subscales.

Table 3  
Alpha Coefficients, Means and Standard Deviations of TAES and its Subscales

Variables	No of Items	$\alpha$	$M$	$SD$	Range	
					Actual	Potential
TAES	19	.78	38.30	13.82	9-93	0-100
AEF1	12	.78	17.13	8.68	0-45	0-48
AIF2	7	.68	11.40	5.64	026	0-28

Table 4 presents the item total correlation of TAES. Most of the items of TAES correlate significantly with the total score on test which indicate internal consistency of items. The uncorrelated items are those which are added by authors of TAES to break the response style. So these items are kept back in TAES.

Table 4  
Item Total Correlation of TAES

Item No	$r$	Item No	$r$
1	.04	14	.50**
2	.47**	15	.56**
3	.45**	16	.51**
4	.54**	17	.58**
5	.49**	18	.51**
6	.04	19	.31**
7	.53**	20	.07
8	.54**	21	.43**
9	.18**	22	.46**
10	.38**	23	.40**
11	.53**	24	.48**
12	.06	25	.41**
13	.31**		

\*\* $p < 0.01$

Table 5 indicates that both subscales of TAES significantly correlate with total score of TAES which depicts that both subscales are measuring the construct of anger. Total TAES score along with its two subscales show an average correlation with the subscales of STAXI which shows that although both scales measure the same

domain (anger) but the expression and manifestation varies across cultures.

Table 5  
*Zero Order Correlation between TAES and STAXI along their Subscales*

Scales	2	3	4	5	6	7	8	9
1. TAES	.87**	.80**	.41**	.60**	.42**	.40**	-.52**	.63**
2. AEF1	-	.60**	.43**	.57**	.32**	.48**	-.48**	.60**
3. AIF2		-	.35**	.45**	.42**	.22**	-.38**	.48**
4. State.anger			-	.41**	.25**	.40**	-.26**	.41**
5. Trait.anger				-	.35**	.51**	-.48**	.62**
6. Anger.In					-	.33**	-.19**	.70**
7. Anger.out						-	-.30**	.70**
8. Anger.control							-	-.75*
9. Anger expression								-*

\*\*p<0.01

### Discussion

Anger is considered a response towards distress when an individual faces frustration in the environment (Schieman, 2003). Anger has two aspects in the lives of human beings, one is constructive and the other is destructive (Rashid & Siddiqui, 2005). In a constructive sense, it motivates an individual to achieve his/her goals whereas when destructive, it creates disturbance in one's life both on physical and emotional level. It is necessary therefore, to assess the intensity of anger and provide intervention plan for its management.

A number of anger tools are available for the purpose of assessing anger but the dilemma is that all of them are developed in western cultures. Every culture has its own uniqueness that distinguishes it from other cultures. The manifestation of any phenomenon e.g., psychiatric illnesses and communication styles vary from culture to culture. Using a tool which is not developed in a specific culture, may not capture the exact picture of anger. Thus, there is a need to develop indigenous tools with sound psychometric properties to assess the manifestation of any problem in a specific culture. The aim of the present study was, therefore, to validate TAES which was developed in Pakistan, so that it can be used for assessing and screening anger.

The purpose of the present study is to examine the internal consistency and construct validity of TAES. The findings of the present study show that TAES has an adequate level of psychometric properties. The mean of TAES is 38.30 and standard deviation is 13.75 which is less than the mean and standard deviation of development, pilot reliability and validity study (Rashid & Siddiqui, 2005). The alpha coefficients of TAES and its subscales are significant ( $\alpha=.78$ ,  $\alpha=.78$ ,  $\alpha=.68$ ) which shows adequate level of reliability and internal consistency of TAES.

The factor structure also emerged differently. The development, pilot reliability and validity study on soldier population reported two factors and they were named as 'Trait Anger' and 'Anger Expression'. In the present study, to understand the underlying construct meaningfully exploratory analysis was run. Repeated and on command factor analyses were run to arrive at the meaningful picture of TAES. The most suitable picture emerged on command of 4 factors. The first two factors contain the items related to expression and suppression of anger while the third and fourth factors had only 3 and 3 items respectively. These last two factors (3 and 4) were discarded with the consensus of authors as they were

not properly reflecting any construct. The first two factors were retained and labeled as AEF1 (anger expression) and AIF2 (anger in).

The factor analysis covers the two different dimensions of anger in student population. These two factors include 19 items of TAES which have high loadings as compared to the remaining 6 items which are worded positively. There is a need for more validation studies with a large number of participants to understand these factors more meaningfully. This study plays a significant role in understanding the underlying constructs of TAES.

In the development, pilot reliability and validity study Rashid and Siddiqui (2005) had a mean of 51.53 and standard deviation was 12.22. It is understandable to find a greater mean in a sample of soldiers who are required to be gregarious as compared to students who tend to enjoy more liberal environment. Also the authors used the scoring system of (1-5) while in the present study; scoring system of (0-4) was followed with the consensus of authors of TAES. The reason for replacing category of scoring of (0) instead of (1) is to help signify the absence of anger with a mark zero (0) for clearer understanding of the phenomena. The sample characteristics and the scoring range, therefore, might have contributed to raise the mean in the development, pilot reliability and validity study (Rashid and Siddiqui, 2005).

It has adequate level of internal consistency among items. Most of the items of TAES correlate significantly with the total score. Items which do not correlate significantly are those which assess anger control in a positive way. They were included to break the response style of respondents. TAES along with its factors and subscales of STAXI show significant positive correlation. This reveals that the items of both scales are similar in a dimension but their similarity is minimal as the correlation value of TAES and subscales of STAXI ranges from -.48 - .63. This could be a reflection of difference in expression of anger in the context of a different culture. From the stand point of test construction, a moderate or weak but linear correlation against the criterion measure is encouraging as it strengthens the argument that simple translation of the western instruments is not applicable. The items of TAES thus contain elements which are different from STAXI.

Our findings are contrary to Spielberger's concept of state and trait anger. It is possible that the notion of state and trait is not reflective of how anger is expressed in our society. The common understanding also substantiates that in our context people differ in terms of how and how much expression they give to their negative emotion. Moreover, the social desirability plays its role too. The respondents will seldom admit having a predisposition to act

angrily. They would instead ascribe it to the situational variables. TAES can be used for screening anger in both physically and psychologically disturbed people. As well as it will help to ascertain specific goals for counseling and management of anger.

### Limitations

The present study sample consisted of student population and its findings can only be generalized to student population. It is suggested to validate the TAES on a large number of clinical and non clinical population to increase its robustness.

### Conclusion

It is concluded from the present research that TAES has an adequate level of internal consistency and has satisfactory concurrent validity with the STAXI. Further factor analysis on a large number of data across various social strata is to be done in future to tap the emotion of anger in a consistent and meaningful manner so that it can become a reliable tool for the assessment and screening of anger in Pakistan.

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