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TRANSLATION, ADAPTATION AND VALIDATION OF LOVE ADDICTION INVENTORY- SHORT FORM

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ABSTRACT

Objectives: *Current study involves translation, adaptation of the tool into Urdu language and determining the psychometric properties by assessing its factorial structure with its convergent and discriminant validity.*
Design of the study: *Survey Design*
Place and duration*: The study was conducted at Bahria University Islamabad, Pakistan from May 2024- Sep, 2024*
Sample and Method: *To examined the assessment of characteristics common in love addiction among married young adults one hundred and six married men (n=40, 37.7%) and women (n=66, 62.7%) in their young adulthood with a mean age of 31.24 and SD 5.21 were included in the study. Six bilingual translators used the back translation method to translate and adapt the tool cross-culturally. Test-retest reliability was determined by giving the Urdu-translated version of LAI-SF to the same participants in two visits with a two weeks gap. Confirmatory factor analysis was conducted to evaluate the fit indices and factor loadings of the translated version of LAI-SF.*
Results and conclusion*: Findings suggest that the translated version of the LAI-SF has high internal consistency (.80), showed significant correlation with convergent and discriminant scales, significant language equivalence and supports a single factor structure for the scale with factor loadings .45 to .73.*

Keywords*: Love Addiction Inventory; Pakistan; Translation; Cultural Adaptation; Validation Confirmatory Factor Analysis*

INTRODUCTION

Love is an indispensable aspect of the entire human experience which is continued for a lifetime. Therefore, it is a common phenomenon that everyone experiences. Love is known to bring all the positive emotions in an individual's life however; it also has its complexities which bring problems in relationships. Although, numerous studies explore the love psychology and conceptualize its underlying mechanisms which includes various love styles, taxonomies of love and the impact of context and personality (Weis, 2006). However, contemporary researches have highlighted the pathological aspects of maladaptive love relationships (Fisher, 2014; Stanbury & Griffiths, 2007; & Kwee, 2007) which characterized pathologies in love as love addiction due to the negative effects on a person's life manifested by anxiety, obsessive and compulsive behaviors in love relationships. In addition, loss of interest other than the love relationship is also seen which makes them vulnerable to function appropriately in other areas of their life such as work, friends, and hobbies (Earp et al., 2017).

Moreover, when the love partner is not available, individuals with love addiction displays a strong craving to be with their partner to relieve their stress. They also experience negative mood states in the absence of their love partner (Sussman, 2010). Love addiction makes the person prone to be in a problematic relationship compulsively, irrespective of the negative outcomes that it has on an individual's life (Reynaud et al., 2010). The concept of Love addiction was pioneered by Peele and Brodsky in their book "Love and Addiction" (1975) defining it as a state in which individuals become overly dependent on their intimate partner to an extent that it disturbs their functioning in other domains of life. This phenomenon is considered to be similar to individuals who become dependent on substances as suggested by Peele and Brodsky (1975). Moreover, Literature also suggests that multiple features are evident to be common in love addiction and drug addictions (Sussman, 2010; Fisher, 2014;Wolfe, 2000). Despite this evidence, love addiction being a behavioral addiction like gambling and gaming disorder is not yet included in ICD-11 and DSM-5TR which shows the need for this behavioral addiction to be investigated further as it is not recognized as one in the existing literature (Griffiths et al., 2016).

Love Addiction Inventory-Short Form is a tool that assesses the features of love addiction in individuals (Costa et al., 2019). The Urdu Version of this tool was not available in Pakistan therefore; it is translated into Urdu Language to use for research purposes. In addition, adaptation was also done in this tool as

it measures the features of love addiction in individuals who are in intimate love relationships with someone. However, the phenomenon of love is known and considered acceptable in the form of marital relationships in the Islamic Republic of Pakistan. Therefore, the word "partner" in the original version is adapted with "life partner" in the translated version to make the tool culturally relevant.

METHOD

Participants

Married individuals (n= 106) were taken for the current study with an age range of 20-40 years. They reported being married for at least six months. Descriptive statistics of the sample were men (n=40, 37.7%) and women (n=66, 62.7%). The mean age of the sample was calculated to be 31.24 (SD=5.21). Out of the 106 participants, 50 participants were selected for test-rest reliability in which men (n=25, 50%) and women (n=25, 50%) were included. However, individuals having no understanding of the Urdu and English language were excluded from the study. Data were collected from Rawalpindi and Islamabad from February 2024 to May 2024. Before collecting the data, Inform consent forms were signed by the participants who have contained information about the nature of the study, it stated that participants have the right to withdraw at any time during the research and their credentials will be kept confidential.

Materials

Demographic Form

Age, gender, language and duration of marriage were included in the demographic questionnaire.

Love Addiction Inventory-Short Form (LAI-SF) (Costa et al., 2019).

It is a six-item short form of the Love Addiction Inventory developed by Costa et al., 2019. In current study this tool is translated into Urdu language. Participants rated the responses on a five-point Likert scale: 1 (never), 2 (rarely), 3 (sometimes), 4 (often) and 5 (very often) with an alpha reliability $\alpha = .80$. English version of LAI-SF is also used for determining language equivalence on a sample of 50 participants.

International Positive Affect and Negative Affect Schedule- Short Form (I-PANAS-SF) (Thompson, 2007):

To measure the convergent and discriminant validity I-PANAS-SF (Urdu Version) translated by Arzeen (2021) and developed by Thompson (2007) is used which is a ten-item scale comprising five items for measuring positive affect (Discriminant Validity) with an α= .91 and five items for measuring negative affect (Convergent Validity) with an α= .89. Items are rated on a five-point Likert scale: 1 (never), 2 (rarely), 3 (sometimes), 4 (often), and 5 (always).

Procedure

Love Addiction Inventory- short form is translated into the Urdu language by following the guidelines of the World Health Organization (2009). The study was divided into three phases. Phase I involves translating and adapting the instrument (LAI- SF), phase II comprises administrating the finalized version on the selected population, and phase III involves validating the translated instrument.

Phase I

In this phase, the LAI-SF scale was translated from its original language (English) into Pakistan's National Language i.e., Urdu. For proceeding with the process of translation, the practical utility and psychometrics of the scale were examined and after that permission was taken from the author for translation and adaptation which were done by following the five steps.

Step 1 Translation from Source Language (English) to Target Language (Urdu):

Three bilingual experts who were fluent in English and Urdu languages were requested individually for the translation of LAI-SF. A brief explanation of translation was given individually to each of them. They were asked to give the best translation as per their knowledge while maintaining the original content and meaning of items while doing forward translation. The experts point out that the word "partner" in the original version of the scale is unrelated to the population that the current study has selected for the administration of the scale. As being a Muslim country, the intimate partner is considered in Religion and Law as being one's spouse. With the consensus, experts decided to adapt the scale to make it

culturally and religiously relevant to the Pakistani context and population and changed the word “partner” to “life partner”.

Step 2 committee approaches:

After the successful completion of the independent translation of every item of LAI-SF from three bilinguals, a committee of three experts was formed. Experts included one Assistant professor and two Ph.D. scholars of the Department of Professional Psychology, Bahria University, Islamabad, Campus. The committee consisted of professionals with a wide range of experience in the development, translation and adaptation of tools. In addition, they have profound efficiency in both source and target language.

The committee members closely analyzed translations of every item translated by the three bilingual experts to reach a final version. After completing the analyzing process, those statements were selected who gave the closest possible meaning to the original version and finalized for back translation.

Step 3 Translations from Target Language (Urdu) to the Source Language (English):

Back translation is done to analyze and compare of the back translation with the source text to evaluate the eminence of translation. All the translated items of LAI-Sf were enlisted and given to three bilingual expert individuals for back translation. These experts were not familiar with the original version of LAI-SF and were also not a part of the forward translation group.

Step 4 committee approaches:

After completing the independent translations of LAI-SF, a committee of three experts was formed, consisting of three Ph.D. faculty members of the Department of Professional Psychology, Bahria University, Islamabad, Campus. They were requested to scrutinize the translated items and pick the most appropriate translation. After the analysis of the committee no item was eliminated from the scale. After the Committee Approach, the Urdu version of LAI-SF was finalized. The scale was now ready to use for pilot testing.

Step 5 cognitive interviewing**:**

The finalized Urdu version by committee approaches was given to N=25 participants to determine the comprehensibility of the translated scale LAI-SF.

These participants were asked to comprehend the translated items and discuss their understanding with the researcher to make sure that the intended meaning of the items is well synchronized and that the tool has retained its semantic properties in its Urdu-translated version. No modifications were made by the participants as they understand the meaning of items very well and did not experience any difficulty in responding appropriately.

Step 6 final version:

The final version of the LAI-SF scale was available to use after completing all the translation steps.

Phase II and Phase III:

Phase II involved administrating the translated scale on the selected sample of 106 married individuals in their young adulthood. The administration consisted of two visits, on the first visit, consent form was signed by the participants and verbal explanations were given to them related to the nature, purpose and duration of the study. After that, out of these 106 participants, 50 participants were given one original version and one translated version of LAI-SF to determine language equivalence and the remaining sample was given only the translated version. On the second visit after two weeks, the same 50 participants were given the translated version of LAI-SF to determine test-retest reliability. Along with that, 106 participants were given I-PANAS-SF to determine the convergent and discriminant validity.

Phase III involved validating the translated scale by following two methods, firstly by conducting confirmatory factor analysis and secondly by determining convergent and discriminant validity. Fifty participants were given both English and Urdu Version of Love Addiction Inventory- Short form to assess language equivalence. After a period of two weeks, translated version of LAI-SF was given to the same participants (n=106) to measure test-retest reliability.

Convergent validity assesses the extent to which the measure correlates with another criterion that is occurring concurrently. However, discriminant validity refers to the degree to which the measure is not related to other measures that assess different criteria (Cheung & Wang, 2017). For determining convergent validity, the Negative Affect subscale of I-PANAS-SF was used

whereas for assessing discriminant validity, the Positive Affect subscale of I-PANAS-SF was used.

Statistical Analysis

Data analysis was performed by using Statistical Package for the Social Sciences (SPSS) Version 27 and Analysis of Moment Structure (AMOS) Version 26. Descriptive statistics including mean, standard deviation, percentage, frequency and range for demographic variables were carried out. Internal consistency was assessed by determining Cronbach's Alpha. Alpha value greater than .70 is considered to be adequate (Nunnally, 1994). Correlational Analysis was done between the English and Urdu version of LAI-SF to assess the language equivalence. Confirmatory Factor Analysis was conducted on the responses of Urdu translation of LAI-SF to assess the factorial structure of the items. Problems related to nonnormality of data were controlled by using maximum likelihood with standard errors as an estimator in this analysis. Multiple fit indices were assessed to evaluate the model; the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the comparative fit index (CFI) and the Tucker-Lewis index (TLI). The data fitted well with the model when the value of SRMR is less than .05, RMSEA is lower than .06, CFI and TLI are greater than .90 (Hu &Bentler, 1999). The Pearson Coefficient Correlation was utilized to assess the discriminant and convergent validity by running correlation analysis between LAI-SF and I-PANAS-SF. The strength of the correlations was determined by Pearson correlation coefficients and interpreted as very strong (.90 to 1.00), strong (.70 to .90), moderate (.50 to .70), weak (.30 to .50) and slight correlation (.00 to .30) (Hinkle et al., 2003). To measure test-retest reliability, intraclass correlation coefficient (ICC) was calculated that gives the relative reliability between two assessments at different times. Two-way mixed model under consistency was used to calculate intraclass correlation coefficient. ICC values were interpreted as poor (.00 to .20), fair (.21 to .40), good (.41 to .60), very good and excellent (.81 to 1.0) (Nair et al., 2012).

RESULTS

During the process of translation, appropriate words of Urdu language were found for each word in the item however, there was difficulty reported in finding a word in Urdu language for depressed in the second item of LAI-SF as its Urdu connotation is making the meaning of the word as problematic. Hence, by mutual discussion, the translators agreed to use the word "Afsurda" for depressed. During cognitive interviewing, the participants did not report any difficulty in understanding the translated items. One hundred and six married men and women in their young adulthood were included in the present study with a mean age of 31.24 years (SD= 5.21) the study participants needed five minutes to complete LAI-SF.

As the tool is translated into Urdu language, it was necessary to retain the semantic properties of the items in the translated version. For this purpose, the statistical properties of the two versions were analyzed by administering both versions on the same sample. To determine whether both versions gave similar responses, Pearson product moment correlation was carried out which showed that there is a significant positive correlation between both versions with a value of .99 determining an adequate linguistic equivalence between original and translated version of LAI-SF.

Table 1

Language Equivalence for the Translated LAI-SF (n=50)

	*LAI*Urdu	*LAI*Eng
LAIUrdu	1	.99***
LAIEng	.99***	1

Notes: LAIUrdu: Love Addiction Inventory Urdu; LAIEng: Love Addiction Inventory English.

Table I shows the correlation between the original version and the translated version of LAI-SF.

Internal consistency of the translated version is determined through Cronbach's alpha value. It determines the extent to which all the items in a scale measure the similar concept. Current study determined the reliability of the translated version as .80 which suggested a good internal consistency. Intra class correlation determines the test-retest reliability of the measures administered at two different times. A value of ICC from .50 to .75 is considered moderate (Portney & Watkins, 2009) which corresponds with the results of the current study with a significant value of ICC as .68 and .81. Moreover, mean of the both versions were also calculated to determine the difference between two versions that comes out to be 3.95 and 3.78 indicating nearly similar mean.

Table 2
Test-Retest Reliability (n=106)

Variables		*M*	*SD*	*ICC*	*P*
LAITEST		3.95	.78	.68	< .001
LAIRETEST		3.78	.69	.81	< .001
Cronbach's Alpha	.80				

Notes: LAITEST: Love Addiction Inventory Test; LAIRETEST: Love Addiction Inventory Retest; SD: Standard deviation; ICC: Intraclass correlation coefficient; p: Significance.

Table 2 shows the Cronbach's Alpha reliability (.80) of the LAI-SF Urdu Version with a test mean of 3.95 and a retest mean of 3.78. Interclass correlation coefficients are significant (.68 and .81) ($p < .001$)

Table 3
Correlation for Convergent (Negative Affect) and Divergent Validity (Positive Affect) (n=106)

	LAI	*PA*	*NA*
LAI	1		.53**
PA	-.32**	1	
NA			1

Notes: LAI: Love Addiction Inventory; PA: Positive Affect; NA: Negative Affect.

Table 3 shows the correlation between the LAI-SF Urdu Version and the I-PANAS-SF Urdu Version for determining the convergent and discriminant validity. Positive Affect subscale is used to determine discriminant validity of LAI-SF since they measure opposite constructs whereas negative affect subscale is used to measure convergent validity of LAI-SF since they measure similar construct. Results indicate that PA (Positive Affect) has a negative correlation with LAI (Love Addiction Inventory, Translated Version) (r= -.32**) and NA (Negative Affect) has a positive correlation with LAI (.53**). This suggests that translated version of LAI-SF has acceptable convergent and discriminant validity.

Table 4
Model Fit Indices of Confirmatory Factor Analysis for the Love Addiction Inventory-Short Form (LAI-SF) Urdu Version (n= 106)

Model	χ_2	*Df*	χ_2/ *df*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Model Fit	7.34	9	.82	1.00	1.01	.00	.03

Notes: χ_2: Maximum likelihood; df: degree of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; SRMR: Standardized root mean square residual.

Table 4 shows Model Fit Indices of Confirmatory Factor Analysis for the Love Addiction Inventory-Short Form (LAI-SF) Urdu Version (n= 106). The factor loadings are indicated as .74 (Item 1), .68 (Item 2), .72 (Item 3), .69 (Item

4), .58 (Item 5), .45 (Item 6). CFI (1.00) and TLI (1.01) are greater than .95 which indicates adequate fit indices. The value of χ_2/ df comes out to be .82, RMSEA comes out to be .000 and SRMR .03. These values suggest that the one factor model of LAI-SF fitted well with the data.

Table 5

Psychometric Properties through Confirmatory Factor Analysis of the Translated Scale

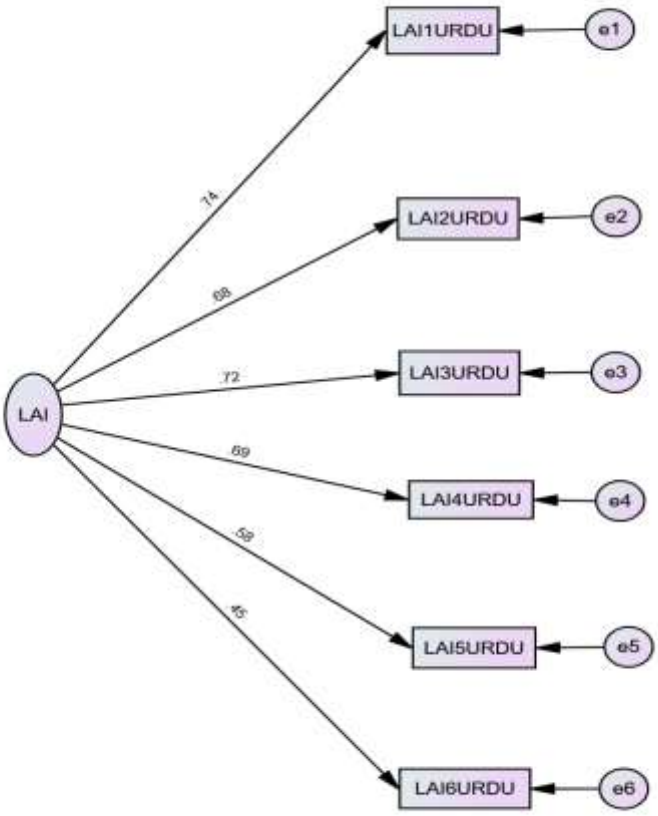
Item no.	*AVE*	*CR*	*λ̂*
1	.41	.80	.74
2			.68
3			.72
4			.69
5			.58
6			.45

AVE: Average Variance Extracted, CR: Composite Reliability, λ̂: Standardized Factor Loading

Table 5 shows the standardized items loading of the Urdu translated version of LAI-SF with a composite reliability of .80 suggesting good internal consistency and average variance extracted which shows convergent validity comes out to be .41 which is a little less than .50 suggesting less than half of the variance.

Figure I

Path Diagram showing factor loadings for items of Love Addiction Inventory-Short Form Translated Version



Confirmatory Factor Analysis showed factor loadings of items from .45 - .74

DISCUSSION

The current study was conducted for the translation and adaptation of Love Addiction Inventory- Short Form into Urdu language and determining the validity and reliability of the Urdu Version. Adequate levels of reliability and validity were established for the Urdu version of LAI-SF. LAI-SF is a tool which is used to assess the features of love addiction also known as pathological love in individuals. This tool aims to help the clinicians and healthcare professionals in identifying the problems and its roots associated with the pathological love relationships that compromises individuals' life in its every domain. In Pakistan, the literacy rate is 62.3% which means the remaining population cannot read or write foreign languages. Moreover, there was no such scale available in Pakistan that assesses love addiction. Hence current study aimed at translating a foreign scale into Urdu language to help illiterate population in addressing their problematic relationship issues

For determining language equivalence, a correlation between the original tool and the translated tool of LAI-SF was carried out showing that they have a significant positive correlation (r= .99***). This showed that language compatibility is retained in the translated tool. The role of a translator is crucial in the process of retaining the pragmatic meaning of the item by giving it words that are implied culturally and comprehendible for the target population (Ghanooni, 2011). For assessing test re-test reliability, Cronbach's alpha was calculated (.80). The original study of the LAI development reported the internal reliability (.82) (Costa et al., 2019). The psychometric properties of LAI-SF were not assessed in other languages as it was not translated in to any other language hence its reliability in the current study cannot be compared with other studies in the literature. Means for the test and re-test scales which were administered on similar samples in two time periods (after two weeks) were 3.95 and 3.78 respectively. Intraclass Correlation for test and re-test scales were found to be significant (.68, .81) ($p < .001$).

For measuring the convergent and discriminant validity of the translated tool, a Correlational Analysis was conducted which showed that love addiction inventory scores are positively correlated with negative affect scores (r= .53**) and negatively correlated with positive affect scores (r= -.32**) of the I-PANAS-SF. This is also evident in a study showing significant positive relationship between negative affect and addictions (Matthews et al., 2009). This showed that the translated tool has good convergent and discriminant validity. Confirmatory factor analysis on the translated tool responses showed standardized factor

loadings for the six items ranged from .45 to .74 and they were significant ($p<.01$). These factor loadings were similar to the factor loadings of the original version of LAI-SF (Costa et al., 2019). Moreover, this single-factor model fitted well with the data as the findings were; TLI (1.01), CFI (1.00), RAMSEA (.000) and SRMR (.03). As per Hu and Bentler (1999), χ_2/ df should be between zero and three and the current study findings are .82, comparative fit indices and Tucker-Lewis index should be greater than .90. Furthermore, standardized root mean square residual should be lower than .05 and root mean squared error of approximation should be less than .06. These values suggested that the initial model fir indices fitted well with the data and are significant. The average variance extracted which shows convergent validity was found to be .42 which is a little less than .50 suggesting less than half of the variance. Composite reliability was also calculated which came out to be .80 suggesting good internal consistency. These values suggest that the translated version of LAI-SF showed good factorial structure as reported in the original development study of this tool by Costa et al. (2019).

LAI-SF was found to have psychometrically robust properties including a good level of Cronbach's alpha reliability, concurrent validity, and model fit with the data. The Urdu version of LAI-SF is a cross-culturally adapted tool that is useful in assessing love addicts is less time-consuming due to fewer items and could be used by clinicians and researchers on the Urdu-speaking population since there was no such reliable and valid tool available in Urdu language. Despite its adequate validity, reliability and good factorial structure established among married young adults, the study holds few limitations. Firstly, Love addiction was not diagnosed in the current study however the scale assesses the symptoms in individuals. Secondly, due to a shortage of time and resources, the short form of Love Addiction Inventory was translated. Lastly, the data was collected from healthy individuals; therefore the findings should be dealt carefully with individuals having love addiction.

Conclusion

Present study showed that the Urdu Version of Love Addiction Inventory-Short Form (LAI-SF) is an effective tool to assess the features of love addiction among married young adults. The Urdu version of LAI-SF showed good reliability and validity and can be used by the clinical practitioners and researchers easily as it is a six-item tool and need only five minutes to complete. However, LAI-SF is based on addiction model due to its similarity with the

symptom manifestation of substance addiction. Future researchers can work on extracting its more defined criteria to make a diagnostic tool and work on its longer form that gives more clear manifestations of love addiction.

Limitations and Recommendations

LAI-SF is based on addiction model due to its similarity with the symptoms manifestations of substance addiction, future researchers can work on extracting its more defined criteria to make a diagnostic tool and work on its longer form that gives more clear manifestations of love addiction.

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