

Exploring the Factor Structure and Psychometric Properties of the Life Events Checklist (LEC-5) Scale in Adolescent School Children

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Abstract

Background: Trauma exposure is a widespread phenomenon worldwide that often results in enduring mental and physical health disorders, such as posttraumatic stress disorder (PTSD). However, there are significant gaps in our knowledge of trauma exposure in the Pakistani context and in the validity of standardized tools for measuring potentially life-threatening trauma exposure. This study aimed to establish the psychometric properties of a translated and adapted version of the Life Events Checklist (LEC-5) among Pakistani school students, commonly utilized to assess traumatic events associated with psychopathology.

Method: This study utilized a cross-sectional research design and purposive sampling to examine the psychometric properties of the translated and adapted version of the LEC-5 scale in the Pakistani population. The back-translation technique was used for translation and adaptation. The study encompassed two phases: a pilot study and a main study. In the pilot study, the Urdu-translated LEC-5 was applied to 30 students aged 13 to 18 years to develop test-retest reliability. In the main study, 180 school students were included from private schools in Rawalpindi, Pakistan, from June 2022 to August 2022.

Results: The results of the exploratory factor analysis identified a four-factor model associated with and supportive of the DSM-5 criteria for symptoms of trauma exposure. This scale highlights the LEC-5's test-retest reliability and cross-cultural validity to examine trauma exposure symptoms in Pakistani school students. It can serve as a valuable and highly effective instrument for examining trauma exposure symptoms in both clinical practice and research in the Pakistani population.

Conclusions: This present study highlights the significance of the Urdu-translated LEC-5 as a reliable and valid tool for examining trauma exposure symptoms in Pakistani school students and its valuable contribution to both educational and clinical applications. Its results support the use of the LEC-5 in helping to develop a deeper insight into trauma experiences in schoolchildren, highlighting its importance for informed intervention development and promoting research endeavors.

Keywords: Post-traumatic stress disorder, child PTSD symptom scale, psychometric properties, children and adolescents

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Background

Exposure to trauma is a pervasive global concern that comprises a spectrum of negative experiences, ranging from isolated events to repetitive and prolonged occurrences, with every event leaving a diverse imprint on people. Although some people may show overt signs revealing posttraumatic stress disorder, the majority may exhibit resilient reactions and temporary subclinical symptoms that fall short of diagnostic thresholds (Bhatti et al., 2023; Geng et al., 2021; Granner et al., 2023; Kwobah et al., 2022; Melamed et al., 2024; Munawar et al., 2021; Pugach et al., 2023; Rajaraman et al., 2022; Röhr et al., 2024; Shuja et al., 2022; Spehr et al., 2019). The effect of trauma could be elusive, insidious, or outright devastating, which includes many factors such as people's characteristics, the severity or nature of the events, developmental stages, the impact recognized by the trauma, as well as sociocultural effects that mutually shape its influences on people (Abbasi & Aqeel, 2023; Aqeel et al., 2016, 2022; Day et al., 2024; Fatima et al., 2022; Khan & Aqeel, 2022; Melamed et al., 2024; Naeem et al., 2023; Peter et al., 2017; Sarfraz et al., 2021; Shuja et al., 2021; Tariq et al., 2023; Vennila & Rajaram, 2024).

Traumatic event survivors may endure PTSD, sadness, loneliness, anxiety, and other mental health problems (Adhikari et al., 2024; McLaren et al., 2024; Shorer et al., 2024). Among the most broadly explored repercussions of trauma exposure are PTSD indicators, which are essential to identifying the condition. Trauma is generally well-defined as any event personally experienced, witnessed, or learned about, including threatened or actual death, serious injury, or sexual violence. This kind of event can stimulate irrational anxiety or fear, leading to feelings or thoughts related to helplessness and persistent, fear-driven re-experiencing of the event (Abbasi & Aqeel, 2023; Adhikari et al., 2024; Aqeel et al., 2020; Chaman et al., 2022; Chebli et al., 2023; Gul et al., 2022; Naeem et al., 2021; Nisar et al., 2020; Shuja, Shahidullah, et al., 2020; Shuja et al., 2022; Shuja, Aqeel, et al., 2020; Subashani et al., 2024; Tariq et al., 2023).

Whereas there is no collectively agreed-upon definition or classification, psychological trauma is normally implicit as exposure to events that substantially impede psychological and physiological functioning and well-being (Presseau et al., 2024; Rajaraman et al., 2022). According to estimates from the National Centre for PTSD, roughly 60% of men and 50% of women in the common population will experience at least one traumatic event in their lifetime. Certain individuals, such as military personnel, first responders, and individuals residing in or escaping from conflict zones, encounter a significantly higher risk of experiencing trauma. Such events can have persistent effects on people's mental health (Abida et al., 2023; Aqeel et al., 2021; Crumlish & O'Rourke, 2010; Fydrich et al., 1992; Khattak, 2023; Köhler et al., 2018; Presseau et al., 2019, 2024; Sarfraz et al., 2021).

The U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration describes individual trauma as an event, circumstance, or series of events perceived as physically and psychologically life-threatening, resulting in permanent negative effects on physical, mental, emotional, social, or spiritual well-being (Masiero et al., 2020; Scanu et al., 2023;

Wilson & Ford, 2012). Trauma characterizes an intense emotional reaction to a stressor that overwhelms people's coping mechanisms (Nicoll et al., 2023; Scanu et al., 2023).

Although traumatic events occur in the lives of most people, only a majority of those who experience trauma develop trauma-related mental health issues such as PTSD (Liu et al., 2022). Different reactions to trauma in people may be influenced by different psychological factors (Geng et al., 2021; Geng et al., 2021). In the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), PTSD is classified under trauma and stress-related disorders. It is considered in 8 sets of signs and 2 specifiers (Geng et al., 2021; Geng et al., 2021).

The most important symptoms of PTSD defined in the DSM-5 include: (1) exposure to the adverse trauma, either through direct or indirect experience, witnessing, or learning about it. (2) Repeated re-experiencing and recollection of the traumatic event. (3) Persistent avoidance of stimuli related to the adverse trauma, such as avoiding the location of the event or related triggers. (4) Enhanced adverse emotions resulting from the traumatic event. (5) Trauma-related arousal. (6) Duration of symptoms lasting at least one month. (7) Impairment in daily functioning in social, personal, occupational, or other settings as a result of symptoms. (8) Symptoms not attributable to the indirect or direct effects of medication or substances (Klein et al., 2024; Knopf, 2022; Marx et al., 2021, 2022, 2024).

However, in the latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5 TR), numerous changes have been made related to symptoms and age criteria. For example, experiencing a traumatic event now embraces exposure through electronic media, movies, television, or internet platforms. Moreover, the criteria for PTSD have been revised separately for children under the age of 6 and those over the age of 6 in the DSM-5 TR (Knopf, 2022; Lenferink et al., 2021; Lenferink et al., 2023).

The Life Events Checklist-5 (LEC-5) is a reliable self-report instrument that is extensively used to assess lifetime trauma. This measure was created by staff at the VA's National Centre for PTSD in 2013. The LEC-5 measures exposure to 16 events that are known to have the potential to cause PTSD or distress and contains a 17th item that measures any other extremely stressful event that was not covered by the first 16 items. Initially designed to be used before the Clinician-Administered PTSD Scale for DSM-IV (CAPS), the LEC was created concurrently with the CAPS (Gray et al., 2004). As a standalone measure of traumatic exposure, the LEC showed adequate psychometric qualities, especially when assessing the consistency of events that occurred to a respondent. The widely used LEC-5 is the latest version of the Life Event Checklist, which was developed for the fifth edition of DSM. The ability to consistently (a) report lifetime trauma exposure, (b) report across different event categories (e.g., sexual assault, natural disaster), (c) distinguish between exposure types (e.g., experiencing vs. witnessing), and (d) choose an index event via the "worst event" method are all necessary for the accurate identification of trauma exposure (Pugach et al., 2023). The LEC-5 is frequently used in collaboration with other tests (such as the CAPS-5 and PCL-5) to determine exposure to PTSD Criterion A traumatic events. The LEC-5 is available in three formats: 1) Standard self-report; 2) Extended self-report: to

determine the worst event if multiple events took place; and 3) Interview: to establish if criterion A is met.

The LEC-5 serves as a standard clinical tool for gaining insight into the possibly traumatic experiences people have encountered globally. Whereas it helps recognize whether an individual has encountered any of the listed traumatic events, there isn't a systematic and standard scoring instrument or precise interpretation provided. Participants use a six-point Likert scale to designate the extent of their experience with each type of possibly traumatic event (Gray et al., 2004). It's likely for people to report different degrees of encounter with a similar type of trauma. The LEC-5 doesn't provide a composite or overall score. Thus far, the LEC-5 has been translated into two languages: Polish (Rzesutek et al., 2021; Rzesutek & Gruszczyńska, 2018) and (Bae et al., 2011) Korean language. The LEC-5 scale has also been culturally adapted in the Brazilian context (Lima et al., 2016).

Several instruments have been used to measure common traumatic situations in both clinical and research settings. A current study encompassing 227 trauma professionals recognized twelve tools applied to examine and screen possibly traumatic events in adults (Goodman et al., 1999). Only a few tools, like the Stressful Life Events Screening Questionnaire (Kubany et al., 2000), emerged as prominent options, and the Traumatic Life Events Questionnaire, have undergone comprehensive testing to ensure their psychometric soundness (Elhai et al., 2009). The Life Events Checklist was newly added and contributed to the list following the development of its psychometric properties, which established strong convergent and construct validity and sufficient test-retest reliability or internal consistency of the LEC-5 scale (Rzesutek et al., 2021; Rzesutek & Gruszczyńska, 2018).

Pakistan represents a culturally diverse and multilingual nation with 73 spoken languages. Among these 73 languages, Urdu represents the most prevalent and national in this linguistically vigorous locale. Whereas 8% of the populace considers Urdu as their prime language, it also functions as a common medium of communication for speakers of other native languages. In addition to serving as the national tongue, it is also employed as a teaching tool in educational institutions. The present study endeavors to translate and adapt an Urdu version of LEC-5 for the Pakistani school student population, as the scale has yet to be translated into the Urdu language.

Evidence of Complex Factor Structures of Life Events Checklist (LEC)

Many studies have been performed on this topic, exhibiting inconsistent results on the factor structure of LEC across different populations. Bae et al. (2011) performed an exploratory factor analysis (EFA) on the Korean-translated version of LEC, recognizing six unique factors that accounted for 52.7% of the total variance (Bae et al., 2011). These six factors were considered in determining exposure to trauma, such as accident or injury, physical assault, natural disaster or seeing an event happening, criminal assault, sexual violence, and man-made disaster. In contrast, Kwobah et al. (2022) also examined the factor structure of the LEC, exploring a seven-factor solution in a Kenyan population and revealing 55.3% of the common variance (Kwobah et al., 2022). This study further compared the results with previous

research, approving the theoretical seven-factor model based on the WMH SASH study, which comprised classifications including war, accidents, bodily harm, network trauma, sexual assault, extreme suffering, and witnessing a traumatic event (Kwobah et al., 2022). Moreover, Rzesutek et al. (2018) developed a four-factor structure of the LEC that aligns with the DSM-5 criteria for PTSD, explaining 56% of the total variance (Rzesutek & Gruszczyńska, 2018). The present study endeavors to translate and adapt an Urdu version of LEC-5 for the Pakistani school student population, explore its factor structure, and establish psychometrics for the Pakistani population.

Method

Research design

This study employed a cross-sectional research approach. This study encompassed two separate phases: (1) a pilot study and (2) a main study. Participants for both phases were recruited through purposive sampling methodology and a cross-sectional research design. The aims of the present study comprised the translation and cross-cultural adaptation of the LEC-5 among school students. This study was performed in two separate phases: (1) The preliminary phase encompassed employing the Urdu-translated version of the LEC-5 on a group of thirty adolescent students whose ages ranged from 13 to 18 years, aiming to establish the internal consistency and test-retest reliability of the LEC-5 for adolescent students. In the pilot study, the initial phase of this investigation encompassed the administration of the test to 30 school students at two-week intervals. Moreover, in the main study, one hundred eighty adolescent's students were recruited from different schools in Rawalpindi and Islamabad, Pakistan, to examine the factorial structure of the Life Events Checklist Urdu Version. Meanwhile, the main study, comprised of one hundred eighty school students, constituted the second phase of the research endeavor. During the preliminary study, the LEC-5's test-retest reliability and cross-language validity were assessed using the conventional back translation method (Anderson & Brislin, 1976; Hambleton, 1996).

Instruments

Life Events Checklist-5 (LEC-5)

The LEC-5 was developed by the team at the National Center for PTSD within the U.S. Department of Veterans Affairs in 2013 (Gray et al., 2004; Kwobah et al., 2022; Pugach et al., 2023). It serves as an initial screening tool designed to identify exposure to several possible traumatic experiences. It measures exposure to 16 events that are known to have the potential to cause PTSD or distress and contains a 17 items that measures any other extremely stressful event that was not covered by the first 16 items. Participants are prompted to select the level that best corresponds to their experience. Those acknowledging exposure to at least one event are further asked to specify the index or "worst" event encountered. This approach enhances the accuracy of responses regarding potential traumatic experiences (PTEs), though some respondents may find terms such as "witnessing" and "learning about it" ambiguous. This approach improves PTEs' responses, although some respondents might find the terms "witnessing" and "learning about it" to be unclear. Due to this, our study divided the responses into two categories: experience and lack of experience. As a result, both seeing the incident and

hearing about it were considered to be neutral experiences. Items 14 and 15, which directly inquire about witnessing the events, were the two exceptions. As a result, seeing these things was considered to be equivalent to experiencing the event (Bae et al., 2011; Gray et al., 2004).

Sample

A purposive sampling technique was used to recruit participants in both studies from various private schools in Rawalpindi and Islamabad, Pakistan. In the pilot study, 30 participants (13 males and 17 females) whose ages ranged from 13 to 17 years were included from different private schools in Rawalpindi and Islamabad, Pakistan. All volunteer participants were bilingual and proficient in both Urdu and English. This bilingualism was important to ensure comprehension of the language nuances and to develop the test-retest reliability and internal consistency of the translated scale. In the main study, one hundred eighty school students (74 males and 106 females) aged 13 to 18 years were recruited using purposive sampling from different private schools in Rawalpindi (78.9%) and Islamabad (21.1%), Pakistan, between June 2022 and August 2022. Most volunteer participants were aged 13, 15, or 16 years, and predominantly from grades 8 and 9. Inclusion criteria stipulated participants to be aged between 13 and 18, bilingual, able to understand and speak English and Urdu, and willing to participate voluntarily. They don't have any psychological or physical issues; those participants who had psychological or physical issues were excluded from the present study.

Translation and adaptation process of LEC-5

The process of translating and adapting the LEC-5 started with a literal translation from English to Urdu with the help of a subject matter expert (SEM) committee encompassing bilingual experts. These professionals had a PhD degree in clinical psychology with at least three years of professional experience, with Urdu being their mother tongue. The translation criteria proposed by Hambleton (1996) comprised proficiency in both target and source languages, knowledge of relevant cultures, strong writing skills, and expertise in the material being translated in the present study (Hambleton, 1996).

Step 1: Forward translation

In the initial step, the LEC-5 scale was translated from English into Urdu with the help of the SEM committee, properly addressing any ambiguities using a parallel forward translation method. Each item of the LEC-5 scale was individually translated and then discussed among the translators to achieve consensus (Hambleton, 1996; Ozolins et al., 2020; Youngcharoen & Vincent, 2016).

Step 2: Back translation

Following the review by the committee and suggested modifications, the translated scale underwent a back translation process from Urdu to English to recognize any inconsistencies between the target (Urdu) and source (English).

Step 3: Committee approach

Subsequently, employing the SEM committee approach, the same bilingual professionals who previously translated the Urdu version of the LEC-5 scale were tasked with translating and culturally adapting the English version of the LEC-5 scale. The experts placed emphasis on clarity, specificity, simplicity, and cultural relevance, specifically for

the target audience of 13–18-year-old school students. Professionals were instructed to use neutral or scientific language and avoid possible offensive terms, with recommendations for word replacements welcomed to improve understanding.

Step 4: Cross-language validation

Finally, cross-language validation was performed to reconcile any discrepancies and confirm that the cultural perspective was precisely represented in the translated version of the LEC-5 scale. The assessment of translated items encompassed mutual discussions within committee members that led to the selection of the most suitable items. Further, a systematic review was performed to fix any remaining inconsistencies. Lastly, a pilot study was carried out to ensure cross-language validity, involving 30 adolescents whose ages ranged from 13 to 17 years and designed the culmination of the translation and adaptation process (Hambleton, 1996; Ozolins et al., 2020; Youngcharoen & Vincent, 2016).

Procedure

This research was approved by the Ethical Review Board of the Foundation University School of Science and Technology, Pakistan, and adhered to the guidelines recommended by the American Psychological Association. This study was comprised of two phases. In the initial phase, thirty students were recruited for cross-cultural validation from a private school in Rawalpindi, Pakistan. After getting their written informed consent, the Urdu-translated version of the LEC-5 scale was administered to the 30 students in the first week. After a fifteen-day interval, the English version was administered for cross-cultural validation. The aim of the pilot study was to identify and minimize inconsistencies between the two translated versions of the LEC-5 scale among the Pakistani school population.

In the main study, 180 students were included from different private schools in Rawalpindi and Islamabad, Pakistan. To perform this study, permission was obtained from the respective principals after explaining the study's objectives to school authorities. Participants were provided with both verbal and written informed consent and a demographic data sheet. Clear instructions were delivered to volunteer students before providing the translated LEC-5 scale, and student concerns were promptly addressed, which were raised during data collection by the researcher.

Data Analyses

The statistical analysis was performed through SPSS 22 software. Initially, descriptive statistics were calculated for demographic data and each item of the administered LEC-5 scale, as outlined in Table 1. Further, mean and standard deviation values were also calculated to mitigate the risk of a floor effect in the present study. An investigation of these values shows a normal distribution of the data. Afterward, EFA analysis employed with principle component analysis (PCA) with variable rotation was carried out to examine the construct validity of the LEC-5 scale in a Pakistani student sample. Eigenvalues and the variance explained by each factor were used to calculate the number of factors present. Missing data was dealt with by the imputation method. Low values of both kurtosis and skewness demonstrated the absence of missing data or outliers, approving the normal distribution of the dataset (Field, 2013).

Results

Pilot Study

This pilot study sought to examine the cross-language validation of the LEC-5 for school students by assessing test-retest reliability. Table 1 displays the findings, illustrating the test retest reliability of the LEC-5.

Table 1 demonstrates the descriptive statistics of the data as well as the Pearson product moment correlation between the Urdu-translated and English-original versions of the Life Events Checklist (LEC). The high value of the Pearson moment correlation indicates that the LEC has high test-retest reliability.

Main Study Results

In the main study, 180 school students were recruited, with an average age of 14 years. The majority of students were studying in grade 8, as shown by the mean grade. The statistical analyses used to examine the psychometric properties of the Urdu-translated Life Events Checklist (LEC-5) included reliability analysis using Cronbach's alpha, correlation analysis for assessing test-retest reliability, item-total correlation analysis, and exploratory factor analysis to determine construct validity for school students.

The findings presented in Table 2 exhibited the high internal consistency of both the translated and original versions of the LEC-5 scale. All items revealed significant item-total correlations Urdu version of LEC-5 scale. None of the item was discarded or revised in the Urdu-translated LEC-5 due to the absence of any non-significant item-total correlation scores.

Table 2 also highlighted the overall internal consistency of both the translated and original versions of the LEC-5 for the school student sample. Internal consistency was examined using Cronbach's alpha reliability. The correlation values for both versions of the scale (LEC-U = .70) and the original (LEC-5 = .67) indicate moderate test-retest reliability, suggesting both versions of the scale are moderately reliable for the Pakistani student sample. The results of the reliability analysis align with the reliability of the original scale.

Exploratory Factor Analysis (EFA)

EFA is a statistical technique in the cluster of multivariate statistical methods that aims to recognize the smallest unit of the underlying construct that is referred to as factors, subscales, dimensions, internal attributes, or latent variables that can efficiently explain the covariance observed in a set of measured or observable variables.

EFA with the varimax rotation method was used to explore the underlying factor structure of LEC-U and establish construct analysis for school students. Scree plot suggested and identified a four-factor solution for LEC-U for school students. The four factors that were retained explained 54.6% of the total variance. Additionally, Kaiser-Meyer-Olkin (KMO) was employed to examine sample efficacy (Kaiser, 1964). The obtained KMO value of .61 falls within the acceptable range recommended for EFA analysis. Principal Component Analysis (PCA) was applied as the factor extraction method due to its widespread use and its data reduction approach (Netemeyer et al., 2003).

The significant result of Bartlett's test of Sphericity ($p < .05$) exhibited that the correlation matrix was not an identity matrix (Bartlett, 1950). Orthogonal rotation was

selected as it produces more easily interpretable results and is somewhat simpler than oblique rotation. Varimax rotation, the most common orthogonal rotation method, was employed to yield a simple structure of factors in exploratory factor analysis.

Content Validity

Following the successful extraction, retention, and rotation of four factors, these factors were classified, and the content of each item was associated with other items within the same identified factor. Through the consultation of two subject experts (SME), one of whom was a PhD candidate and the other was a university professor, the legitimacy of the content was established. They were told to give names to four factors based on the content to confirm the accuracy of the content in both versions. On the basis of the content of each factor, they were asked to suggest the best name for the identified factors. Following their recommendations, factors 1, 2, 3, and 4 of the LEC scale were named: 1) personally experienced traumatic events; 2) natural and manmade disasters; 3) serious threat and death events; and 4) criminal assault and other injuries.

Final structure of the Scale

The final structure of the LEC-U contained four factors under which the items were categorized. Factor 1 was named 'personally experienced traumatic events, and it included items 4, 8, 9, 13, 16, and 17. Factor 2 was named 'natural and manmade disaster' and this factor included items 1, 2, 5, and 10. Factor 3 was named 'serious threat and death events' and included items 7, 14, and 15. Factor 4 was named 'criminal assault and other injuries, and it included items 3, 6, 11 and 12. Items 8 (.79), 9 (.76), and 14 (.73) loaded highly onto the first factor, which included items related to directly experienced traumatic events. Items 2 (.77) and 5 (.70) loaded highly onto the second factor, which included items related to the trauma caused by natural or manmade disasters or conditions. Items 7 (.70) and 14 (.70) loaded highly on the third factor, which included items related to life-threatening and death events, and item 11 (.76) loaded highly on the fourth factor, which endorsed items related to traumatic events caused by serious injuries or due to criminal assault.

Discussion

The previous study exhibited that a significant portion of participants stated direct exposure to natural disasters (34%) and physical assault (46%), with physical assault being the most frequently reported traumatic life event. Moreover, global mental health surveys have revealed accidents and injuries as the most distressing experiences (Benjet et al., 2016). These results highlight the variability in the most general traumatic event's types depending on the situation. Therefore, reliable measurements are very important to recognize prevalent types of possible traumatic events in various settings.

Of concern, a significant percentage of participants described direct exposure to sexual assault (26.7%), such as unwanted sexual experiences, attempted rape, or sexual harassment. These results highlight the significance of LEC-5 as a scale for measuring traumatic incidents. Conversely, it's important to observe that the LEC-5 is not a diagnostic or clinical instrument but rather an examination of trauma exposure, as it lacks components to fulfil criterion A of traumatic experiences, such as great horror or fright.

Results

Table 1

Pearson product-moment correlation coefficient, mean and standard deviation (SD), range values associated with the test-retest administration of the Urdu version of Life Events Checklist-5 (LEC-5) and the English version of Life Events Checklist-5 (LEC-5) (N = 30).

LEC-5	Test (E)	Retest (U)	Correlation Coefficient	p-value
Life Events Checklist (LEC-5)				
Mean	44.13	44.47	.96**	.000
SD	13.33	12.66		
Range	1.07	1.01		

Table 2

Item to total correlation of Urdu and English versions for Life Events Checklist-5 (LEC-5) (N = 180).

Items	LEC-E	LEC-U
1	.09*	.17*
2	.41**	.49**
3	.35**	.37**
4	.28**	.33**
5	.48**	.51**
6	.15**	.23**
7	.21**	.24**
8	.53**	.60**
9	.76**	.78**
10	.33**	.39**
11	.37**	.19*
12	.15*	.20**
13	.55**	.58**
14	.17*	.21**
15	.30**	.36**
16	.48**	.50**
17	.36**	.48**

Note: LEC-E = Life Events Checklist-5 English Version and LEC-U Life Events Checklist-5 Urdu Version

Table 3

Reliability coefficients of the translated (LEC-U) and the English version (LEC-E) (N = 180).

	LEC-U (α)	LEC-E (α)	LEC-U (Item-total)	LEC-E (Item-total)
LEC-5 total (17 items)	.67	.70	.04 - .70	.09 - .76

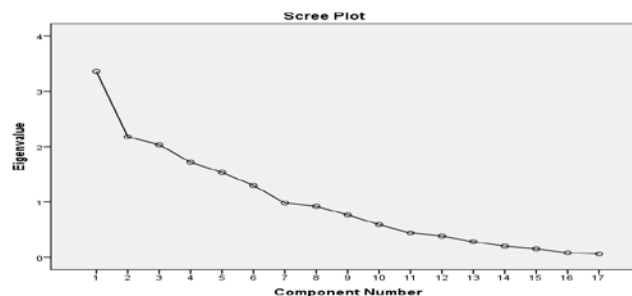
Table 4

Factor loadings of life events checklist-5 (LEC-5) through the principal component analysis by using the varimax method (N = 180).

Items	n	Score Range	M (SD)	S	K	Statements	1	2	3	4
LECU8	180	1-6	2.27 (1.97)	1.11	-.53	Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)	.79			
LECU9	180	1-6	2.73 (2.22)	.61	-	Other unwanted or uncomfortable sexual experience	.76			
LECU17	180	1-6	3.00 (2.22)	.36	-	Any other very stressful event or experience	.73			
LECU4	180	1-6	2.73 (2.10)	.55	-	Serious accident at work, home, or during recreational activity	.49			
LECU16	180	1-6	2.27 (1.93)	1.10	-.58	Serious injury, harm, or death you caused to someone else	.48			
LECU13	180	1-6	3.70 (2.33)	-.14	-	Severe human suffering	.46			
LECU2	180	1-6	2.57 (1.98)	.59	-1.44	Fire or explosion		.77		
LECU5	180	1-6	1.40 (1.08)	3.11	9.42	Exposure to toxic substance (for example, dangerous chemicals, radiation)		.70		
LECU1	180	1-6	4.00 (2.07)	-.59	-	Natural disaster (for example, flood, hurricane, tornado, earthquake)		.66		
LECU10	180	1-6	1.33 (1.13)	3.45	10.47	Combat or exposure to a war-zone (in the military or as a civilian)		.48		
LECU7	180	1-6	1.57 (1.36)	2.11	2.56	Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)			.70	
LECU14	180	1-6	2.23 (1.69)	.76	-1.25	Sudden violent death (for example, homicide, suicide)			.70	
LECU15	180	1-6	3.50 (1.67)	-.56	-	Sudden accidental death			.46	
LECU12	180	1-6	2.00 (1.77)	1.34	.01	Life-threatening illness or injury				.31
LECU3	180	1-6	3.80 (2.01)	-.47	-1.47	Transportation accident (for example, car accident, boat accident, train wreck, plane crash)				.32
LECU11	180	1-6	1.37 (.65)	2.27	6.07	Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)				.76
LECU6	180	1-6	4.00 (2.31)	-.49	-1.70	Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)				-.64
Eigen Values							3.36	2.18	2.03	1.71
% of variance							19.78	12.82	11.97	10.10
Cumulative variance							19.78	32.60	44.58	54.68

Note. Factor 1: personally experienced traumatic events; Factor 2: natural and manmade disasters; Factor 3: serious threats and death events. Factor 4: criminal assault and other injuries

Figure 1: Scree plot showing a four factor structure of Life Events Checklist (LEC) for school students



EFA analysis of the LEC-5 exhibited commonly acceptable factor loadings for Pakistani students in terms of construct validity. The four factors extracted and retained through EFA in this study, which encompassed direct exposure, natural disasters, criminal assault, life-threatening or fatal situations, and other injuries, these findings support previous research, which examined prevalent traumatic experiences in cultural contexts (Bae et al., 2011; Geng et al., 2021; Granner et al., 2023; Gray et al., 2004; Kwobah et al., 2022; Melamed et al., 2024; Pugach et al., 2023; Rajaraman et al., 2022; Röhr et al., 2024; Spehr et al., 2019)

Moreover, internal consistency was examined, demonstrating a Cronbach alpha reliability of ($\alpha = 0.67$), falling between the permissive ($\alpha = 0.60$), and acceptable upper limits ($\alpha = 0.70$). It's worth observing that potentially traumatic event experience isn't a singular construct, which has led some studies to challenge the internal consistency analysis of traumatic event assessment (Netland, 2001). Despite this, none of the items in the LEC scale were revised or discarded from this study. Conversely, item 6 showed a negative item loading (-0.64) on the fourth factor, suggesting a lower association with other highly loaded items on the same factor (Bae et al., 2011; Geng et al., 2021; Granner et al., 2023; Gray et al., 2004; Kwobah et al., 2022).

Nevertheless, this study has its limitations. Meanwhile, Urdu versions of other instruments weren't available, and concurrent and construct validity couldn't be confirmed by comparing measures with recognized trauma event exposure measures. Nonetheless, the examination successfully established construct validity for school students sampled within Pakistan.

Implications

The present study developed the underlying novel factorial structure of the LEC-5 scale for a Pakistani school student sample and highlighted the first cross-cultural validation of the LEC-5 scale to date. These results substantially contribute to the adaptation and translation of the Urdu version of the LEC-5, which is approving its efficacy in evaluating trauma exposure in school students in Pakistan. Furthermore, the study approves the psychometric properties of the LEC-5 Urdu version, endorsing its use as a suitable and effective initial screening instrument for potentially traumatic events in clinical and educational situations. Using the Urdu version of LEC-5 in trauma-related evaluation can assist mental health professionals in quickly initial screening an individual's exposure to trauma and advising patient care decisions.

Limitations

This study has many important limitations that warrant discussion. Firstly, it was performed without criterion validity and its type's concurrent and predictive validity assessments due to the unavailability of Urdu versions of LEC-5 for the clinical population, hampering the ability to efficiently diagnose trauma in affected students. Furthermore, the exclusive emphasis on Pakistani school students raises concerns related to the generalizability of results to clinical populations or different contexts. Moreover, depending only on the Urdu-translated version of

the LEC-5 may overlook cultural variations present in other indigenous languages, potentially limiting the applicability of the study's conclusions to diverse linguistic populations.

Conclusion

The implications of this study are noteworthy for both research and clinical practice in Pakistan. It highlights the significance of culturally sensitive evaluation instruments like the Urdu-translated LEC-5 in both clinical and educational settings, enabling better comprehension and treatment of trauma in the Pakistani sample. Furthermore, it underscores the dire need for further study to establish and validate trauma assessment instruments tailored to various cultural and linguistic contexts. These indigenous findings could inform policy development that aims to address trauma-related concerns in the Pakistani school context, while further highlighting the importance of training psychologists and psychiatrists to efficiently use culturally suitable assessment instruments and interventions for school students.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Consideration

The study was approved by Department of Psychology, Foundation University School of Science and Technology, Pakistan. Consent Form was taken before taking data and participants were asked to take voluntary participation.

Acknowledgement

The author thanks to Department of Psychology, Foundation University School of Science and Technology, Pakistan, Pakistan.

Availability of data and materials

The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions/Author details

Anam Tariq performed this study under the guidelines of American Psychological Association.

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Ethics declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board of Department of Psychology, Foundation University School of Science and Technology, Pakistan. A written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare to have no competing interests.

Additional Information

Not applicable.

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