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ORIGINAL

Towards a Culturally Adapted JVQ: Rasch Model Validation among Adolescents in India

Hacia un JVQ culturalmente adaptado: validación del modelo Rasch entre adolescentes de la India

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ABSTRACT

Purpose: this study evaluates the psychometric properties of Juvenile Victimization Questionnaire (JVQ) based on the lifetime victimization and traumatic experiences reported by Indian adolescents.
Method: a cohort of 350 adolescents, aged 12 to 18 years, from various schools in Aligarh District of India participated in this study.
Result: the JVQ's content validity using Fleiss Kappa analysis, Unidimensionality, and item and person reliability were assessed through rasch measurement model. Moreover, the analysis yielded promising result for the JVQ, indicating high reliability, the Fleiss Kappa score of 0,92 suggest an almost perfect agreement, while the person and item reliability scores were recorded at 0,70 and 0,90, respectively.
Conclusion: this initial study supports the JVQ's potential reliability and validity, suggesting it could be foundational tool for broader research across multiple locations.

Keywords: Victimization; Traumatic Experiences; Adolescent; Juvenile Victimization Questionnaire; Validity; Reliability.

RESUMEN

Propósito: este estudio evalúa las propiedades psicométricas del Cuestionario de Victimización Juvenil (JVQ) basado en la victimización a lo largo de la vida y las experiencias traumáticas reportadas por adolescentes indios.
Método: una cohorte de 350 adolescentes, de 12 a 18 años de edad, de varias escuelas en el distrito de Aligarh de la India participaron en este estudio.
Resultados: se evaluó la validez de contenido del JVQ mediante el análisis Kappa de Fleiss, la unidimensionalidad y la fiabilidad de los ítems y las personas mediante el modelo de medición de Rasch. Además, el análisis arrojó resultados prometedores para el JVQ, indicando una alta fiabilidad, la puntuación Fleiss Kappa de 0,92 sugiere un acuerdo casi perfecto, mientras que las puntuaciones de fiabilidad de la persona y del ítem se registraron en 0,70 y 0,90, respectivamente.
Conclusiones: este estudio inicial apoya la fiabilidad y validez potenciales del JVQ, sugiriendo que podría ser

una herramienta fundacional para una investigación más amplia en múltiples lugares.

Palabras clave: Victimización; Experiencias Traumáticas; Adolescente; Cuestionario de Victimización Juvenil; Validez; Fiabilidad.

INTRODUCTION

Victimization has evolved its root mechanism all over the world, which involves the association between offender and victim in any crime causation. Generally, a victim may be a person, an organization, the ethical order, or the legal system when scarce, misuse, or ruined by a certain unlawful or illegal act.[1,2,3,4,5] It is an experience of being harmed either directly or indirectly or in-need of safeguard from harm by the measures of others.[6,7,8,9] Beyond the instantaneous outcomes, like physical harm or may be material loss, the victimization experiences at personal level may have the negative outcomes or emotions, for example, anger, depressive symptoms, anxiety, risk about affecting social cognitions, and also further future risks.[10,11]

Research in psychology and criminology has identified numerous forms of victimization, ranging from various abuses (physical, sexual, emotional) and neglect (physical, emotional), to more specific crimes like domestic violence, stalking, and human trafficking, among others.[7,12,13,14] To encompass these varied experiences under one umbrella, the concept of 'Polyvictimization' was developed. This term is used to describe experiences multiple types, of form, of victimization, highlighting the breadth of an individual's victimization experiences beyond repeated instances of a single type.[15]

Based on the recent evidences, it has become evident that the impact of various forms of victimization on mental well-being is apparent. It has been acknowledged that victimization constitutes a significant stressor and plays a crucial role in the development of numerous psychiatric disorders.[12] A sub-group of polyvictims has been recognized constantly in researches conducted with community, school, psychiatry, child welfare, and juvenile justice samples of children and adolescents in several countries globally.[7] However, polyvictimization may have a harsh and unfortunately lifelong biopsychosocial impact through significant developmental periods.[3]

Hence, the current study aimed to examine to assess the reliability and validity of the Juvenile Victimization Questionnaire (JVQ) when applied to Indian adolescents; to estimate the occurrence rates of different forms of victimization among adolescents aged 12 to 18 years in Aligarh District, India, through the JVQ; to validate the use of the JVQ as a foundational tool for broader research across multiple locations by establishing its potential reliability and validity within the context of Indian adolescents; and use the validated instrument to facilitate the development of appropriate interventions and policies that are tailored to support victimized youth more effectively, thereby benefiting this vulnerable demographic.

METHODOLOGY

Sampling

For this study, a Two-Stage Cluster Sampling Method utilizing "Disproportional Random Sampling" was employed in Aligarh district, India. The district was segmented into four zones: North, South, East, and West, referred to as 'Clusters', to facilitate data collection. Subsequently, respondents were selected from each zone using the Disproportional sampling method, considering factors such as availability and study requirements. Additionally, respondents were randomly chosen from various schools and local communities.

Participants

The target population for this study was 348 adolescents aged 12-18 years who live in Aligarh District, India. Only the data of only those respondents have be analyzed who have addressed at-least 2 or more types of victimization in their life-time based on the cut-score evaluation. For this study, the participants sample size was determined through G-power tool, administered as non-probabilistic sampling. Furthermore, the researcher focused on schools, coaching centers and local communities in order to collect data from Aligarh district. In order to do so, the research visited local schools from each zone based on the availability of number of schools and collect data of respondents. Then from coaching centers, researcher focused on each zone based on the availability of number and collect the data. And at-last data more respondents was collected from local communities of each zone.

Juvenile Victimization Questionnaire

The Juvenile Victimization Questionnaire (JVQ) was developed intended to focus on a broader range of information about multiple forms of victimization. It is a comprehensive questionnaire developed by David Finkelhor, Sherry Hamby, Turner & Ormrod (2005). The questionnaire was designed to be administered to children and teenagers from aged 8-17 years. Moreover, the adopted questionnaire consists of 34 items divided

into five major domains, which are: Conventional Crime (item 1-8), Child Maltreatment (item 9-12), Peer & Sibling Victimization (item 13-18), Sexual Victimization (item 19-25), and Witnessing & Indirect Victimization (item 29-34).[4] The questionnaire has a pattern such that respondents will be asked to respond on a scale of the dichotomous item, that is, "yes" or "no".

RESULTS

Statistical Analysis

The demographic profiles of the respondents and the occurrence rates extracted from JVQ were synthesized. To gauge the questionnaire's content validity, we conducted Fleiss Kappa Analysis, followed by Unidimensionality analysis employing the Rasch Measurement Model. The Winsteps software tool was utilized to assess both person and item reliability. Additionally, statistical analysis was conducted using SPSS 23.

Content Validity

The instrument was reviewed by four experts, who were the professionals and specialists in the field of counseling and psychology from India. Below table 2 indicates the Peer & Sibling Victimization subconstructs secure the highest kappa value (K=1,00) which is almost perfect agreement. It shows that almost every subconstructs has almost perfect agreement except child maltreatment, which is, substantial agreement (K=0,75). The overall kappa value for Juvenile Victimization Questionnaire (JVQ) is (K=0,92) and all the subconstructs values individually are greater than the considerable promise value (K≥0,40) among all the experts.[5]

Table 1 shows Fleiss Kappa for Juvenile Victimization Questionnaire (JVQ)

Table 1. Fleiss Kappa for Juvenile Victimization Questionnaire (JVQ)

Sr. No	Sub-Construct	Kappa Value	Interpretation
1.	Conventional Crime	0,89	Almost Perfect Agreement
2.	Child Maltreatment	0,75	Substantial Agreement
3.	Peer & Sibling Victimization	1,00	Almost Perfect Agreement
4.	Sexual Victimization	0,92	Almost Perfect Agreement
5.	Witnessing & Indirect Victimization	0,97	Almost Perfect Agreement
	Overall Fleiss Kappa	0,92	Almost Perfect Agreement

Construct Validity

Using the Rasch measurement model, Unidimensionality analysis was performed to evaluate the construct validity. In order to assess the construct validity, the model concentrates on analyzing a single attribute or dimension at a time.[2] Unidimensionality is established based on 20 % difference criteria, where at least 20 % of raw performance differences defined by measure are required. Additionally, the first construct's difference shouldn't be more than 15 %.[2] Reckase (1979) likewise implies that the instrument can tolerate a braw variance explained by measures more than 20 %.[9] Furthermore, based on the raw variance explained by measurements, Sumintono & Widhiarse (2015) testified that the interpretation values for unidimensionality were as follows: accepted if equal to or above 20 %; good if equal to or above 40 %; and excellent if equal to or above 60 %.[14] Additionally, the initial constrast's Eigen Value shouldn't be greater than 5.[6] The table 2 below displays the findings of the Unidimensionality analysis for the JVQ in this investigation.

Table 2. Unidimensionality of Juvenile Victimization Questionnaire

		Empirical		Modeled
Total raw variance in observation	42,8	100,0 %		100,0 %
Raw variance explained by measures	12,8	29,9 %		30,2 %
Raw variance explained by persons	3,1	7,3 %		7,4 %
Raw variance explained by items	9,7	22,6 %		22,8 %
Raw unexplained variance (total)	30,0	70,1 %	100,0 %	69,8 %
Unexplained variance in 1st contrast	2,6	6,2 %	8,8 %	
Unexplained variance in 2nd contrast	2,5	5,9 %	8,4 %	
Unexplained variance in 3rd contrast	2,4	5,6 %	8,0 %	
Unexplained variance in 4th contrast	2,2	5,1 %	7,3 %	
Unexplained variance in 5th contrast	1,9	4,5 %	6,4 %	

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Figure 1 indicates the unidimensionality of Juvenile Victimization Questionnaire (JVQ). The value of unidimensionality is 29,9 % which is higher than 20 %; which indicates that the value is accepted. And the Eigen value of first contrast, i.e. error is 2,6, which is less than 5, so it is accepted. Hence the instrument subconstruct is valid.[6,9]

Item Statistics: Misfit Order

Moreover, there were some negative polarities in items from the misfit order in item statistics. However, after removing the negative polarities, that is, item 10,5,15,11. The value of item and person reliability become much more balanced. Therefore, the current questionnaire will be consisting of 30 items instead of 34 items. The following table no.4 shows the item statistics of the questionnaire JVQ.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
9	60	53	1.30	.45	.91	-.2	1.28	.8	A .43	.41	90.6	89.0	A9
2	64	53	.65	.37	1.23	1.0	1.20	.8	B .18	.39	79.2	82.1	A2
16	63	53	.79	.38	1.07	.4	1.22	.8	C .31	.40	81.1	83.8	A16
30	57	53	2.08	.58	1.04	.2	1.20	.5	D .37	.42	92.5	93.5	A30
6	63	53	.79	.38	1.18	.8	1.17	.6	E .23	.40	81.1	83.8	A6
7	58	53	1.77	.52	1.16	.5	.84	-.1	F .36	.42	90.6	92.1	A7
29	63	53	.79	.38	1.13	.6	1.13	.5	G .28	.40	81.1	83.8	A29
19	90	53	-1.79	.31	1.06	.6	1.13	.5	H .15	.23	67.9	70.0	A19
17	66	53	.40	.35	1.11	.6	1.11	.5	I .27	.38	73.6	78.8	A17
20	65	53	.52	.36	1.03	.2	1.11	.5	J .33	.38	81.1	80.4	A20
4	67	53	.28	.34	1.03	.2	1.10	.5	K .32	.37	79.2	77.3	A4
32	78	53	-.75	.29	1.09	1.1	1.06	.4	L .22	.31	54.7	62.4	A32
24	83	53	-1.17	.29	1.06	.8	1.03	.2	M .22	.28	50.9	62.1	A24
21	81	53	-1.00	.29	1.02	.3	.99	.0	N .27	.29	58.5	61.5	A21
23	88	53	-1.60	.30	1.02	.2	.96	-.1	O .24	.25	62.3	66.9	A23
22	83	53	-1.17	.29	1.02	.3	.97	-.1	o .27	.28	62.3	62.1	A22
27	75	53	-.50	.30	1.01	.1	.97	-.1	n .32	.33	60.4	65.2	A27
31	63	53	.79	.38	1.00	.1	.88	-.3	m .42	.40	84.9	83.8	A31
12	72	53	-.23	.31	.97	-.2	.93	-.3	l .38	.34	69.8	69.5	A12
28	74	53	-.41	.30	.97	-.3	.93	-.4	k .37	.33	67.9	66.5	A28
18	64	53	.65	.37	.94	-.2	.96	-.1	j .44	.39	83.0	82.1	A18
25	75	53	-.50	.30	.95	-.5	.92	-.4	i .38	.33	67.9	65.2	A25
33	80	53	-.92	.29	.94	-.8	.89	-.5	h .37	.30	64.2	61.5	A33
34	100	53	-3.07	.44	.93	-.1	.72	-.4	g .26	.15	88.7	88.7	A34
13	63	53	.79	.38	.91	-.3	.79	-.7	f .50	.40	84.9	83.8	A13
8	63	53	.79	.38	.89	-.4	.73	-.9	e .53	.40	84.9	83.8	A8
26	94	53	-2.21	.34	.89	-.6	.77	-.5	d .34	.20	77.4	77.4	A26
14	67	53	.28	.34	.89	-.6	.81	-.8	c .50	.37	79.2	77.3	A14
1	61	53	1.11	.42	.80	-.6	.87	-.2	b .57	.41	88.7	87.3	A1
3	59	53	1.52	.48	.82	-.4	.66	-.7	a .59	.42	92.5	90.6	A3
MEAN	71.3	53.0	.00	.36	1.00	.1	.98	.0			76.0	77.1	
S.D.	11.4	.0	1.21	.07	.10	.5	.16	.5			11.7	10.2	

Figure 1. Item statistics

Reliability

Using the item reliability and person reliability and separation using the Rasch Measurement Model analysis, the reliability of the instrument was determined. It has been suggested that the required value of reliability acceptance in the Rasch Model is 0,6.[2]

Table 4. Person Reliability of Juvenile Victimization Questionnaire

PERSON	350 INPUT		329 MEASURED		INFIT		OUTFIT	
	TOTAL	COUNT	MEASURE	REALSE	IMNSQ	ZSTD	OMNSQ	ZSTD
MEAN	40,4	30,0	-,81	,48	1,00	,0	,98	,0
S.D.	4,3	,0	,89	,06	,20	,9	,33	,8
REAL RMSE	,49	TRU SD	,74	SEPARA-TION	1,53	PERSON RELIABILITY ,70		

JVQ (Juvenile Victimization Questionnaire), REALSE (Real Standard Error), IMNSQ (Mean Square Infit Statistic), ZSTD (Infit Mean Square Fit Statistic), OMNSQ (Mean Square Outfit Statistic), REAL RMSE (Real Root Mean Square Error), S.D (Standard Deviation), INFIT (Information Weighted Fit Statistic), OUTFIT (Outlier Sensitive Fit Statistic)

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Table 5. Item Reliability of Juvenile Victimization Questionnaire

ITEM	34 INPUT		30 MEASURED		INFIT		OUTFIT	
	TOTAL	COUNT	MEASURE	REALSE	IMNSQ	ZSTD	OMNSQ	ZSTD
MEAN	71,3	53,0	,00	,37	1,00	,1	,98	,0
S.D.	11,4	,0	1,21	,08	,10	,5	,16	,5
REAL RMSE	,38	TRU SD	1,15	SEPARA-TION	3,03	ITEM RELIABILITY ,90		

JVQ (Juvenile Victimization Questionnaire), REALSE (Real Standard Error), IMNSQ (Mean Square Infit Statistic), ZSTD (Infit Mean Square Fit Statistic), OMNSQ (Mean Square Outfit Statistic), REAL RMSE (Real Root Mean Square Error), S.D (Standard Deviation), INFIT (Information Weighted Fit Statistic), OUTFIT (Outlier Sensitive Fit Statistic)

Tables 4 and 5 illustrates Juvenile Victimization Questionnaire (JVQ) yielded person reliability and item reliability values of 0,70 and 0,90, correspondingly. These values surpass the threshold of 0,6, as recommended by Bond and Fox (2007), thus indicating acceptable person reliability and item reliability. Furthermore, the person ad item separation values for questionnaire were determined to be 1,53 and 3,03, respectively. These figures meet the satisfactory criteria, given that the minimum acceptable values for person separation are 1,5 (Souza et al., 2017) and for item separation are 2 (Linacre, 2007). Consequently, the JVQ screener sum version demonstrates acceptable person and item reliability and separation. It is important to note that four items were excluded from JVQ in order to achieve such satisfactory values of reliability. Therefore, the final version of the JVQ questionnaire comprises 30 items, enabling the exploration of various forms of victimization among adolescents in the Aligarh district, India.

DISCUSSION

This research aimed to adapt and validate the Juvenile Victimization Questionnaire (JVQ) within the Indian adolescent context, reflecting a significant step towards understanding and measuring victimization cross-culturally. The validation process yielded a Fleiss Kappa score of 0,92, indicating almost perfect agreement among experts, and reliability scores for items and persons at 0,90 and 0,70, respectively. These results are pivotal, underscoring the JVQ's robustness and applicability for Indian adolescents. The successful adaptation of the JVQ in this study resonates with the instrument's original design and validation work by Finkelhor et al. (2005), which emphasized its reliability and validity across diverse victimization domains. The high reliability and validity scores reported herein are not only indicative of the JVQ's comprehensive nature but also its adaptability across cultural boundaries, reinforcing the instrument's foundational utility for global research endeavors.

Moreover, this study's methodological approach, particularly the use of the Rasch model for validating the JVQ, aligns with the guidelines proposed by Bond and Fox (2007). Their work on applying the Rasch model in the human sciences underscores the importance of rigorous measurement and validation techniques in ensuring the reliability of psychometric tools across different populations and cultural settings. The cultural adaptation and validation of the JVQ also contribute to the broader discourse on polyvictimization and its impacts, as explored in studies such as those by Soler et al. (2013) and Charak et al. (2016). These studies highlight the complex interrelations between multiple victimization experiences and psychological outcomes, underscoring the necessity of nuanced, culturally sensitive tools like the JVQ for capturing the breadth of victimization experiences among adolescents. Furthermore, the study's adaptation process, which involved the removal of certain items to enhance the tool's cultural relevance and reliability, mirrors the adaptive measures recommended by Reckase (1979) in ensuring the unidimensionality and validity of psychometric instruments. This adjustment underscores the critical need for cultural sensitivity in the measurement of complex constructs like victimization.

However, the study's scope, focused on a specific region within India, presents limitations regarding the JVQ's applicability across the diverse Indian cultural landscape. Future research should aim to validate the JVQ across various Indian states and socio-cultural contexts, enhancing the tool's utility for national-level victimization assessment and intervention planning. Hence, this study affirms the JVQ's potential as a reliable and valid instrument for assessing adolescent victimization in India, advocating for its broader application across different cultural contexts. It emphasizes the ongoing need for culturally adapted psychometric tools, crucial for the global endeavor to understand and mitigate victimization among vulnerable populations.

CONCLUSION

In conclusion, the investigation was grounded in the necessity to understand the reliability and validity of the JVQ in capturing a wide array of victimization experiences among Indian adolescents, thereby offering a foundational tool for broader research applicability across diverse geographical and cultural landscapes.

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The research achieved significant milestones by demonstrating that the JVQ holds high reliability and validity within the Indian context, as indicated by the almost perfect Fleiss Kappa score of 0,92 and the substantial reliability scores for both items and persons. This achievement not only underscores the JVQ's effectiveness in assessing victimization among Indian adolescents but also its potential as a critical instrument for identifying and understanding the prevalence and nature of adolescent victimization across India. Furthermore, the study adeptly addressed the need for culturally sensitive research tools. Through the adaptation process—where certain items were refined to better suit the cultural context—this research illuminated the path for future endeavors in cross-cultural studies. The methodological rigor applied, particularly the use of the Rasch measurement model, exemplifies the study's commitment to maintaining scientific precision while navigating the complexities of cultural adaptation.

In essence, this study not only validates the JVQ's applicability among Indian adolescents but also contributes significantly to the ongoing discourse on victimization research. It paves the way for future investigations to further explore the nuances of victimization in varied cultural settings, enabling the development of targeted interventions and policies to support victimized youth. This research serves as a beacon for subsequent studies, advocating for the importance of cultural sensitivity in the psychometric evaluation of tools designed to measure complex social phenomena such as victimization.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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