Adaptation of the Questionnaire of Experiences Related to Video Games in Young Peruvians*

Adaptación del cuestionario de experiencias relacionadas con los videojuegos en jóvenes peruanos

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Abstract

The objective was to adapt the Questionnaire of Experiences Related to Video Games (CERV) for young people in Oxapampa, 2021. Following an instrumental design, the sample used consisted of 500 young men and women, aged 16 to 18 years, non-probabilistic snowball sampling. The CERV was modified to adapt it to sample sociocultural characteristics. The findings indicated an optimal Aiken's V index, which implies that the items have an adequate degree of representativeness, clarity and relevance. The two-dimensional structure explained 63% of the variance of scores, dimensions: dependence and avoidance, and negative consequences. These obtained optimal fit indices in the confirmatory factor analysis (CMIN = 1.887; RMSEA = 0.042; IFC = 0.986; TLI = 0.993). Reliability analysis determined that the dimensions had adequate internal consistency ($\Omega > .80$). It is concluded that the modified version of CERV demonstrated optimal validity and reliability, supporting its relevance for measuring video game dependence in this population.

Keywords:

videogames; youth; validity, reliability, adaptation

∗ Artículo de investigación.

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Resumen

El objetivo fue adaptar el cuestionario de experiencias relacionadas con videojuegos (CERV) en jóvenes de Oxapampa, 2021. Siguiendo método instrumental, la muestra utilizada consistió en 500 jóvenes, hombres y mujeres, con edades de 16 a 18 años, usando el muestreo de bola de nieve no probabilístico. El CERV fue modificado para adaptarlo a características socioculturales de muestra. Los hallazgos indicaron existe índice óptimo de Aiken "V", que implica que los ítems tienen un grado adecuado de representatividad, claridad y relevancia. La estructura bidimensional explicó 63% de variabilidad de puntajes, dimensiones: dependencia y evitación, y consecuencias negativas, obtuvieron índices óptimos de ajuste mediante análisis factorial confirmatorio (CMIN = 1,887; RMSEA = 0,042; CFI = 0,986; TLI = 0,993), el análisis de confiabilidad determinó que las dimensiones tenían consistencia interna adecuada ($\Omega > .80$). Concluyéndose que la versión modificada del (CERV) evidencia óptima validez y confiabilidad en sus puntajes, que implica su relevancia para medir dependencia de videojuegos en población.

Palabras clave:

videojuegos; juventud; validez; fiabilidad; adaptación

Introducción

In recent decades, the new scenario has been configured based on the immersion of information and communication technologies into everyday life. In this sense, its scope has led to growing development in all areas of human functioning such as work, academic, family, social and recreational.

Technological immersion has increased the sources of multimedia content and strengthened the inclusion of citizens. Worldwide, approximately 70,000 users have increased their daily internet consumption (World Health Organization [WHO], 2019). However, recent figures show that video game use patterns could become problematic, with an estimated 1.8 million men and 1.3 million women developing dependence on video games (Pan American Health Organization [PAHO], 2020).

In Peru, the increase in access to technology across various socioeconomic conditions, particularly internet use ($15.1\% < \Delta_{(2010-2021)} < 38.1\%) < 38.1\%$) (National Institute of Statistics and Informatics [INEI], 2021) has gained relevance in society. With the consolidation of the presence of the internet in all social strata, the scope of forms of socialization, learning and fun was extended. In turn, this has contributed to the mass adoption of entertainment systems such as video games (Andrade et al., 2018), with more than 80% of people between 18 and 70 years old who use the internet to navigate digital games, and 68% who support the exclusive use of video games as a recreational form (IPSOS, 2020).

In this sense, video games have captured the interest of over two million people around the world (Estrada et al., 2022) with higher rates during the covid-19 pandemic (Nugraha et al., 2021) due to the fact that physical restriction measures have led to

more recreation time in young people to access digital platforms where they come into contact with video games (Carrasco, 2020); this is mainly because video games activate positive reinforcement mechanism by producing pleasure or euphoria. The intermittent appearance of these reinforcing stimulus causes individuals to increase exposure time to obtain the expected reward (Cía, 2013).

Despite the multiple benefits of video games as a mechanism for interaction with the environment (Vaamonde et al., 2018; Nuñez-Barriopedro et al., 2020), excessive use has produced negative consequences, such as sedentary lifestyle, poor impulse control, emotional fatigue, increased tolerance, and compulsively. These patterns configure a nosological condition referred to as "behavioral addiction" to video games (Wittek et al., 2016).

With the inclusion of video game addiction as a diagnostic category in recent versions of psychiatric diagnostic manuals, the scientific community has focused on clarifying etiological mechanisms (Plante et al., 2019), comorbidities (Mathews et al., 2019), conceptual boundaries (Gros et al., 2020) and evaluative aspects of the nosological picture (Taquet et al., 2017; van Rooij et al., 2017) in the age group most vulnerable to video game addiction: youth (Nugraha et al., 2021)

However, the last point has received considerable attention from the academic community due to its implication in the process of psychological evaluation and assessment of the degree of affectation of dependence on video games in the areas of human functioning (Fernández-Ballesteros, 2011). In this sense, Carbonell (2020) highlights that different measures have been developed and adapted to the Spanish language to assess dependence on video games such as the Internet Gaming Disorder Scale - 20 (Fuster et al., 2016), Internet Gaming Disorder Scale - short form - 9 (Beranuy et al., 2020), and the Questionnaire of experiences related to video games (CERV) (Chamarro et al., 2014). Cole and Griffiths (2007) emphasize that the scales that pose the measurement of dependence towards video games share methodological similarities in reference to global scores, conceptualization of dimensions, process of checking metric properties and emphasis on the indicators recorded in clinical diagnostic manuals.

Despite the measures available for the evaluation of dependence on video games, there are still few studies leading to adaptation in the Peruvian context, among which are the Video Game Addiction Scale (GAS) (Castañeda and Velarde, 2020) and Video Game Dependence Test (TDV) (Salas-Blas et al., 2017). In this context, Belli and López (2008) emphasize the importance of obtaining measures focused on the particularities of populations given that dependence on video games has patterns and graphic sequences in constant interaction and evolution, providing increasingly stimulating and immersive content for individuals.

Previous studies have oscillated between two categories proposed by Chamarro et al. (2014).For example, Castañeda and Velarde (2020) identified dimension of dependence and avoidance (tolerance, problems, withdrawal and relapse), and

negative consequences (modification and mood, prominence, conflicts). On the other hand, the contribution of Salas-Blas et al. (2017) reported abstinence, abuse and tolerance (dependence and avoidance) and problems caused by video games and lack of control (negative consequences) (CFI = .946, TLI = .932, RMSEA = .060, RMR = .066).

Therefore, this study seeks to fill a methodological gap in relation to the joint adaptation of a scale of measurement of dependence to video games in a poorly studied sample and proposes a practical guide for the psychometric adaptation of scales based on diagnostic criteria. Also, on a practical level, it will cement the evidence to primarily detect the severity of dependence in young people in Pasco given the particularities of the region.

In line with this rationale, the objective of this study was to adapt the Questionnaire of Experiences Related to Video G (CERV) for young people in the city of Oxapampa, 2021.

Materials and methods

Research Design

This was an instrumental study, as it is aimed at adapting and collecting sources of evidence of validity and reliability to corroborate the psychometric functioning of the instrument (Montero and León, 2007; Muñiz, 2018)

Participants

The calculation of the sample size was estimated based on the a priori power criterion using the lower limit method (Vargas and Mora-Esquivel, 2016), in consideration of previous studies a minimum expected effect of r = .3, equivalent test power .95, and 5% probability of Type I error were considered. Consequently, the minimum size was established at 147 sample units. However, due to the robustness of the analysis and the number of procedures, the final sample consisted of 500 young people (men and women) between 16 and 18 years old from the city of Oxapampa (Hernández et al., 2017). In addition, the type of sampling used was non-probabilistic snowball to the extent that it was established by the dissemination of the instrument in social networks (Otzen and Manterola, 2017).

Instrument

The instrument used was CERV, originally develop by Chamarro et al (2014). It is compsed of two interrelated dimenasions: (a) dependence and 1= Never to 4 = Almost always. It can be administered individually and in groups. The original version contains 17 items, while the adapted version has 25 items. Theoretical contributions were used to expand the information framework of the research. Likewise, permission to adapt was requested from the author of the questionnaire and then applied to the Peruvian context.

Ethical aspects

The study was conducted according to the ethical principles in Internet-mediated research regarding the presence of informed consent to initiate the data management process (*person*), protection of sensitive information (*justice*) and balance between maximizing the gain and minimizing the

harm of the participants during the collection of the data (*benefit*) (Dominguez -Lara and Torres-Villalobos, 2021).

Procedure

First, the faculties of the creator of the test were requested for the modification of the instrument to attend to the sociodemographic characteristics of the participants. In this way, the information concerning the instrument was increased. Second, evidence of validity based on the content of the test was collected through judges' criteria. Once the semantic and cultural functioning of the test was refined and corroborated, a Google Forms form was developed to collect the information, and its dissemination was established through social networks. Finally, the evaluated data was moved to a spreadsheet built in Microsoft Excel 2019.

Statistical analysis

Evidence of content-based validity was collected using the judges' criterion (n=5) to determine whether the new reagent configuration optimally represents the domain through Aiken's "V" index (Pedrosa, 2013) with 95% confidence intervals (Merino and Livia, 2009) and was taken as a cut-off point .80 to establish that the coefficient is optimal (Boluarte and Tamari, 2017).

Evidence of validity based on internal structure was estimated by factor analysis. In the evaluation of the robustness of the correlation matrices to opt for factor analysis, the Kaiser-Meyer-Olkin (KMO) sample adequacy index was obtained, whose values close to unity (KMO < 1) represent that the sample size is optimal for factor

analysis (Aliaga, 2006) and the Bartlet statistical significance test to estimate the presence of identity matrices in the data, "VARIMAX" rotation was used since the meaning of the dimensions of a questionnaire based on diagnostic categories tends to be divided to obtain greater precision, therefore, low relationship indices are assumed and factorial load indices below .60 were taken into consideration as elimination criteria (Hogarty et al., 2005). Confirmatory factor analysis was established with the following cut-off points: CMIN < 3 (Pilatti et al., 2011), CFI > .95, TLI > .95, RMSEA < .06, SRMR < .08 (Hu & Bentler, 1999) and graph of loads on a trail diagram.

Finally, evidence of reliability of the scores was identified through internal stability with an interval of $.70 < \Omega/ < .90$ to determine the acceptability of the coefficients (Campo-Arias and Oviedo, 2008) complemented by confidence intervals adjusted to 95% (Dominguez-Lara, 2016b). Analyses were performed on IBM SPSS 25.0 and JAMOVI 2.3.18 statistical software.

Results

Content-based evidence of validity

In **Table 1**, the Aiken's V indices of the reagents were identified according to the five judges specialized in the subject according to the clarity and relevance of the content of the items, optimal indicators were observed in the domains evaluated. Therefore, the composition of the scale was 27 items.

Item	J1	J2	J3	J4	J5	M	In	95% CI [LI:LS]
I1	3	3	3	3	3	3	1	.796:1
I2	3	3	3	3	3	3	1	.796:1
I3	3	3	3	3	3	3	1	.796:1
I4	3	3	3	3	3	3	1	.796:1
I5	3	3	3	3	3	3	1	.796:1
I6	3	3	3	3	3	3	1	.796:1
I7	3	3	3	3	3	3	1	.796:1
I8	3	3	3	3	3	3	1	.796:1
I9	3	3	3	3	3	3	1	.796:1
I10	3	3	3	3	3	3	1	.796:1
I11	3	3	3	3	3	3	1	.796:1
I12	3	3	3	3	3	3	1	.796:1
I13	3	3	3	3	3	3	1	.796:1
I14	3	3	3	3	3	3	1	.796:1
I15	3	3	3	3	3	3	1	.796:1
I16	3	3	3	3	3	3	1	.796:1
I17	3	3	3	3	3	3	1	.796:1
I18	3	3	3	3	3	3	1	.796:1
I19	3	3	3	3	2	2.8	0.93	.702:.988
I20	3	3	3	3	3	3	1	.796:1
I21	3	3	3	3	3	3	1	.796:1
I22	3	3	3	3	3	3	1	.796:1
I23	3	3	3	3	3	3	1	.796:1
I24	3	3	3	3	3	3	1	.796:1
I25	3	3	3	3	3	3	1	.796:1
I26	3	3	3	3	3	3	1	.796:1
I27	3	3	3	3	3	3	1	.796:1

Table 1. *Analysis of the clarity, relevance and relevance of the reagents according to judges' criteria (n=5)*
Source: own elaboration.

KMO and Bartlett Test		
Índice Kaiser-Meyer-Olkin (KMO)		,979
Bartlett's sphericity test	Approx. Chi-square	6705,834
	Gl	300
	Itself.	,000

Table 2. *Analysis of the assumptions for the performance of factor analysis*
Source: own elaboration.

Evidence of validity based on internal structure

Table 2 showed an index of .979 that indicates an optimal adequacy of the data for the use of factor analysis. Likewise, Bartlett's sphericity test indicated that there are statistically significant differences between the correlation matrix with the identity matrix (p=.000).

The eigenvalues above the unit in conjunction with the percentage of variance explained of 63% allowed to determine the presence of two dimensions, as well as, to specify which items are grouped in the dimension's rotation was performed.

In this sense, **Table 3** showed the configuration of the reagents with values ranging from .634 to .830 in dimension 1, and .643 to .839 for dimension 2, during the process reagents 26 and 27 were eliminated by minimum factorial load criterion.

Sequentially, the two-dimensional structure was checked by restricting the parameters and defining the reagents. **Table 4** identifies that the parameters fit the two-dimensionality optimally since they are in the margins and cut-off points established (CMIN = 1.887; RMSEA=.042; CFI=.986; TLI=.993).

Reliability by internal stability

Table 5 shows reliability indices in the range of optimal values using Cronbach's coefficient and McDonald's Ω, that is, the scores of the dimensions remain stable through their use.

Discussion

Based on the main objective of adapting a questionnaire of experiences related to video games, sufficient evidence of validity and reliability was obtained. Previous studies (Cabero et al., 2020; Lloret, 2018) confirmed similar findings, reporting optimal validity indices in instruments designed to evaluate video games dependence.

Regarding content validity, the judges' criterion method was prioritized through five expert evaluators, following the psychometric standards established by the International Test Comission (International Test Commission [ITC], 2017). Chamarro et al. (2019) obtained "V" indices with partial similarities, reaching optimal values of acceptance of reagents (V>.80), that is, the items are adapted with clarity, relevance and relevance to the construct that is intended to be measured in consideration of the social and cultural characteristics of the evaluated sample (Boluarte and Tamari, 2017).

Reagents	1	2
Item 1	0.664	
Item 2	0.634	
Item 3	0.718	
Item 4	0.741	
Item 5	0.776	
Item 6	0.777	
Item 7	0.785	
Item 8	0.773	
Item 9	0.756	
Item 10	0.830	
Item 11		0.839
Item 12		0.766
Item 13		0.785
Item 14		0.797
Item 15		0.797
Item 16		0.763
Item 17		0.797
Item 18		0.771
Item 19		0.796
Item 20		0.673
Item 21		0.822
Item 22		0.793
Item 23		0.786
Item 24		0.707
Item 25		0.643

Table 3. *Rotated component matrix of the dimensions of the questionnaire of experiences related to video games*
Source: own elaboration.

	Adjustment Indices	Model	Optimal Indices
χ^2/Gl	Chi-squared ratio/degrees of freedom	1.887	≤ 3.00 (Acceptable)
RMSEA	Adjusted goodness of fit index	0.042	≤ 0.05 (Acceptable)
CFI	Comparative fit index	0.986	≥ 0.90 (Acceptable)
TLI	**YourIndex - Lewis**	**0.993**	≥ 0.90 (Acceptable)

Table 4. *Indices of adjustment and of the two-dimensional structure dthe questionnaire of experiences related to video games*
Source: own elaboration.

	A	Oh	N° items
Dimension 1: Dependence and Evasion	.864 [.788 - .940]	.866 [.790 - .942]	10
Dimension 2: Negative consequences	.892 [.814 - .970]	.895 [.817 - .973]	15
Total. Scale: Video Game Addiction	**.960** [.876-1.00]	**.950** [.867-1.00]	25

Table 5. *Analysis of internal consistency of the dimensions of the scores of the questionnaire of experiences related to video games*
Source: own elaboration.

With respect to validity based on internal structure of the modified scale, an exploratory factor analysis was carried out where an explanation of 63% was reached by the two-dimensional structure, that is, the instrument is essentially distributed in two dimensions such as dependence and evasion, and negative consequences. Since these dimensions are based on diagnostic categories, their independent treatment is pertinent to specify indicators, so orthogonal rotation was used to specify the behavior patterns of the scale scores (Méndez and Rondón, 2012).

In contrast to previous studies (Ávila, 2020; Salas-Blas et al., 2017), which identified different factorial solutions, the present study favors the principle of parsimony, highlighting that the optimal factorial solution is the one that is least complex and most consistent with cultural and structural characteristics of the samples. On the other hand, it was complemented with confirmatory factor analysis to confirm the bifactorial structure of the scores, finding optimal values of relative and absolute adjustments. So, the two-dimensional solution was effective against null and randomized hypothetical models.

The evidence of reliability mediated by the analysis of the structural stability of the coefficients of Cronbach and Ω of McDonald obtained indices above .90, which reflected that there is an optimal consistency of the dimensions of the scale (Campo-Arias and Oviedo, 2008). Previous studies have reported reliability coefficients with similarity in the category from acceptable to optimal (Chamarro et al. , 2019). However, there are several methodological dissents to specify in the use of the coefficient.

First, the conceptualization of response styles in psychology is usually conceived at the ordinal level when it comes to fewer than five response styles (Brown, 2015), which represents a stumbling block for the use of reliability coefficients ( ) executed for interval and ratio levels. Second, the requirement of tau equivalence to use the coefficient , that is, equivalence of factorial loads is a requirement scarcely fulfilled in psychology (Ventura-León, 2019; Dominguez-Lara, 2016a). Consequently, the weaknesses of Cronbach's should be highlighted in the explanation of the findings and complemented with more robust and less demanding indices for categorical variables such as McDonald's Ω coefficient.

Conclusions

According to the findings of the present study, it is concluded that the modified version of the Questionnaire of Experiences Related to Video Games (CERV) for young people in Oxapampa presents adequate psychometric properties of both validity and reliability in their scores.

The implications of the results indicate that an optimal and culturally relevant instrument was obtained in the regional context of Pasco, incorporating the necessary modifications to reflect the sociocultural characteristics of the inhabitants of Oxapampa.

With regard to the methodological limitations, it is important to highlighted that limited internet t connectivity in some regions may have affected the response process. In addition, the length of the instrument could represent challenge for participants, possibly influencing the detection of experiences

related to video games in the evaluated population.

It is recommended that future studies examine the psychometric properties related to the comparability with other sociodemographic characteristics through measurement invariance procedures, as well as establishing precision and sensitivity analyses to detect the clinical validity of the instrument as a diagnostic tool for video game dependence.

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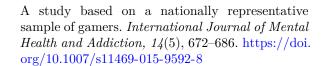
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