Cross-cultural adaptation and psychometric properties of the Life Skills Transfer Survey (LSTS)

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ABSTRACT

The present study aimed to adapt the Life Skills Transfer Questionnaire (LSTS) into Brazilian Portuguese and estimate validity evidence and reliability. The sample was composed of 255 athletes (Age:17.6, 61.3% male). Judges' analysis and pilot study indicated content adequacy of the items. Confirmatory factor analysis indicated adequacy of the hierarchical structure composed of eight first-order factors (RMSEA=0.067, CFI=0.95, and TLI=0.95), all with good reliability indicators. A short version of the instrument was also proposed that adequately reproduced the psychometric properties of the original version. The results suggest that both versions of the LSTS are adequate measures of the target construct.
Keywords: validity, sports psychology, psychological assessment, factor analysis, positive development.

RESUMO – **Adaptação Transcultural e Propriedades Psicométricas do** *Life Skills Transfer Survey* **(LSTS)**

O presente estudo teve como objetivo adaptar o Questionário de Transferências de Habilidades para a Vida (LSTS) para o português brasileiro e estimar evidências de validade e precisão. A amostra foi composta por 255 atletas (idade:17,6, 61,3% masculino). A análise de juízes e estudo piloto indicaram adequação do conteúdo dos itens. A análise fatorial confirmatória indicou adequação da estrutura hierárquica composta por oito fatores de primeira ordem (RMSEA=0,067, CFI=0,95 e TLI=0,95), todos com bons indicadores de precisão. Também foi proposta uma versão breve do instrumento que reproduziu adequadamente as propriedades psicométricas da versão original. Os resultados sugerem que ambas as versões do LSTS se trata de medidas adequadas do construto alvo.
Palavras-chave: validade; psicologia do esporte; avaliação psicológica; análise fatorial; desenvolvimento positivo

RESUMEN – **Adaptación transcultural y propiedades psicométricas del** *Life Skills Transfer Survey* **(LSTS)**

El presente estudio tuvo como objetivo adaptar el Cuestionario de Transferencia de Habilidades para la Vida (LSTS) al portugués brasileño y estimar las pruebas de validez y precisión. La muestra incluyó a 255 atletas (Edad promedio:17,6; 61,3% hombres). El análisis realizado por jueces y el estudio piloto indicaron la adecuación del contenido de los ítems. El análisis factorial confirmatorio indicó la adecuación de la estructura jerárquica compuesta por ocho factores de primer orden (RMSEA=0,067, CFI=0,95 y TLI=0,95), todos con buenos indicadores de precisión. Además, se propuso una versión corta del instrumento que reproducía adecuadamente las propiedades psicométricas de la versión original. Los resultados sugieren que ambas versiones del LSTS son medidas adecuadas del constructo objetivo.
Palabras clave: validez, psicología del deporte, evaluación psicológica, análisis factorial, desarrollo positivo.

Positive youth development (PYD) represents a theoretical framework developed over recent decades, relating to the acquisition of skills and psychosocial behaviors that help with and optimize the choice of healthy attitudes throughout life (Lerner, 2017). This perspective combines strategies that adequately encourage and favor the transition from adolescence to adulthood and, is based on devices that seek to build an environment appropriate for promoting of positive experiences for youngsters. These strategies include promotion, retention, development, and transfer of life skills (Holt et al., 2020; Lerner et al., 2005). There is a notable scarcity of psychometric instruments investigating life skills. Despite evidence that practicing sports can positively help an individual's development, there is some doubt as to whether skills acquired in this particular context can be transferred to other environments. This demonstrates the need for investigation into the realization of the goal of promotion and teaching of life skills and, consequently, its transfer beyond the sporting context (Bean & Forneris, 2019), as well as the lack of measurement instrument to operationalize the life skill transference model and to promote empirical studies involving it. Therefore, the study aims to adapt cross-culturally and estimate the first validity evidence of the Life Skills Transfer Survey (LSTS) for a sample of Brazilian athletes.

Life skills can include asect as teamwork, leadership, discipline, emotional control, organization, responsibility, empathy, honesty, among other characteristics, which can be learned, developed and improved. These skills, when applied exclusively in the practice of sports, are regarded as sporting abilities. However, when transferred to other contexts which surround the life of the individual (such as school, family, and society), are transformed into life skills (Milistetd et al., 2020). These aspects are characterized as important tools for obtaining satisfaction throughout life's course, as they encourage, for example, responsibility, perseverance, discipline, and sociality, benefiting adolescent development (Cronin & Allen, 2017; Danish et al., 2005).

To measure the life skills transfer, Weiss et al. (2014) proposed the Life Skills Transfer Survey (LSTS), a self-report measure that identifies adolescents' perceptions of their capacity to use life skills learned specifically in the sporting context and transfer them to a different, social domain. The measure includes eight dimensions, namely: meeting and greeting, managing emotions, goal setting, resolving conflicts, making healthy choices, appreciating diversity, getting help from others and helping others, which represent the basic aspects for identifying the transfer of life skills, able to contribute important evidence in this area (Weiss et al., 2016). The LSTS is comprised of 50 items developed based on extensive review of the literature and information derived from interviews conducted with then adolescents, family members and sports coaches. With this, items and dimensions were constructed that were evaluated by specialist judges and then a pilot study was performed (12 girls from a soccer team). The evaluation of other psychometric properties of LTST were based on data collected in *The First Tee – Life Skills Experience*, which is described as a positive development program that uses golf as a means to teach life skills. The sample was composed of 533 youth (394 boys and 139 girls) aged between 10 to 18 years ($M=12.75$), who answered the LSTS and the General Life Skills Learning (YES; Weiss et al., 2014).

A confirmatory factor analysis (CFA) was performed in the study proposed by Weiss et al. (2014) and the results indicated the adequacy of the second-order factor model demonstrated a good fit, NNFI=0.99, CFI=0.99 and RMSEA=0.059 (90% CI [0.057 – 0.062]). Therefore, it was concluded that the LSTS measure represents a multidimensional construct specifically composed of eight first-order factors, and one second-order factor, which explains the correlations between the eight dimensions of the life skills transfer. Moreover, good reliability values were obtained in all eight of the LSTS dimensions (ranging from 0.80 to 0.92), indicating adequate internal consistency based on Cronbach's Alpha. those who took part in the study were reassessed one year after the first application ($n=303$), in this occasion, the eight LSTS subscales achieved good reliability values

($\alpha=0.82 – 0.93$), like the results obtained in the previous phase (Weiss et al., 2014).

Next, in the same study, Weiss et al. (2014) investigated evidence of convergent validity. The LSTS was correlated with the YES, an instrument which verifies perceptions regarding the learning of overall life skills within the context of a specific activity. It was assumed that some of the YES subscales would correlate moderately with the LSTS dimensions, as follows: goal setting (YES) with goal setting (LSTS), emotional regulation (YES) with managing emotions (LSTS), diverse peer relationships (YES) with appreciating diversity and meeting and greeting (LSTS), prosocial norms and adult networks and social capital (YES) with helping others and getting help from others (LSTS). As expected, the eight LSTS subscales were moderately correlated with the YES subscales ($r=0.49 – 0.62$), indicating that the instruments are evaluating different aspects of the same construct (Weiss et al., 2014).

Weiss et al. (2016), seeking new validity evidence for the LSTS, proposed two studies to evaluate the efficacy of *The First Tee*. In the first study, a comparison was made between youngsters who actively participated in *The First Tee* ($n=405$) and youngsters involved in other organized activities, with a focus on life skills transfer and development results ($n=159$). It was found that participants in *The First Tee* achieved higher scores than the comparison group for the following LSTS dimensions: meeting and greeting, managing emotions, resolving conflicts, appreciating diversity, and getting help from others.

The aim of the second study was to evaluate the efficacy of *The First Tee*, verifying the transfer of life skills over a period of three years to determine if youngsters were enhancing or maintaining their use of life skills ($n=192$), it was possible to infer that the model possessed an adequate fit to the data obtained (Weiss et al., 2016). Similar results that indicated good internal consistency were also observed in the application of the LSTS in the *Girls on the Run* (GOTR) program, which is based on the assumptions outlined in the Positive Youth Development (PYD), with the aim of teaching life skills through running (Weiss et al., 2020).

This set of results suggests the adequacy of the LSTS to assess the transfer of skills developed in the context of sport to other areas of life, as well as highlighting the potential of the instrument for evaluating programs aimed at the PYD. Thus, the importance of instruments that measure the constructs addressed in the PYD, in different languages, should be stressed, thus that they can operationalize the models and achieve progress in studies in the area, as well as to evaluate sporting programs that focus specifically on learning, development and the transfer of life skills (Bean & Forneris, 2019; Rigoni et al., 2017).

In this way, the present study aimed to provide a cross-cultural adaptation of the LSTS to the Brazilian

Portuguese, to estimate the first validity evidence and reliability for the Brazilian sporting context and propose a short version of the instrument. Thus, the present study was based on the following hypotheses: 1. the adapted version should present validity evidence of content; 2. the internal structure of the adapted version of the instrument should conform to the hierarchical model in which eight first-order factors load a second-order factor, replicating the test's original structure; 3. adequate levels of reliability will be obtained for the specific dimensions comprising the LSTS; 4. the short version should maintain the coverage of the content evaluated in the long version, as well as replicate the factor structure and retain its psychometric properties of reliability.

Study 1 – Cross-cultural adaptation and validity evidence based on test content

Method

Participants

Translation and synthesis. The process of translating the questionnaire was independently carried out by two bilingual researchers (fluent in English and Brazilian Portuguese). The synthesis was performed by a group composed of four researchers.

Judges. For the evaluation of the synthesized version, three specialists in Sports and Exercise Psychology were invited, all of whom had over 10 years' experience.

Pilot study. A convenience sample was composed of six participants, namely three adolescents and three young adults, aged between 12 and 21 ($M = 17 \pm 3.46$), of both sexes (66.7% male), pupils in Elementary School (33.3%) and High School (66,7%), residing in the Southeast region of Brazil. Of the participants, 83.3% stated they had been practicing sports for between 1 and 3 years and 16.7% for over five years and, in terms of the chosen sport, 83.3% are involved in team sports (namely: dancing, basketball and soccer) and 16.7% in individual sports (specifically, taekwondo).

Instruments

Life Skills Transfer Survey **(LSTS).** Initially developed in the English language by Weiss et al. (2013), the instrument is composed of 50 items that evaluate the individual's perception of his/her capacity to transfer these skills, learned in sport, to other settings. The LSTS is divided into eight dimensions, namely: meeting and greeting, managing emotions, goal setting, resolving conflicts, making healthy choices, appreciating diversity, getting help from others and helping others. To answer the questionnaire, the subject must read each item and indicate the degree to which he/she agrees with the contents, expressed by way of a five-point Likert scale ranging from "1 – *not true for me*" to "5 – *really true for me*". The instrument exhibited good reliability indicators for all the dimensions (Cronbach's Alpha ranged from 0.8 to 0.92; Weiss et al., 2014).

Procedures

Ethical aspects. Having acquired the authorization of the author of the original version of the LSTS, the cross-cultural adaptation of the instrument was performed as indicated by International Test Commission (2017). From the translation, synthesis and evaluation of the judges, a single translated version of the instrument was obtained, considering the specific cultural aspects of the Portuguese language in Brazil. A pilot study was conducted with a sample of the target group to evaluate the adequacy of items' content and the instructions for the context of application (Borsa et al., 2012). All participants aged 18 and over formally consented to participate in the study by signing the Informed Consent Form (ICF), and those under 18 years of age signed the Informed Assent Form and their parents or guardians signed the ICF.

Statistical analyses. To estimate the evidence of content validity, the coefficient of validity of content (CVC) was employed, in accordance with the proposal put together by Hernández-Nieto (2002). This evaluation aimed to verify agreement between the specialists regarding clarity of language, practical relevance, theoretical relevance of the content (items) and, it should be stressed, that it is a subjective assessment. To interpret the results, items producing a CVC ≥0.8 (Cassepp-Borges et al., 2010) were considered adequate. In addition, to verify the eight dimensions of the instrument, with the aim of evaluating if the adapted items were grouped into the preestablished factors, a Kappa coefficient was calculated. The two procedures were adopted in such a way that the methods described complemented each other, contributing with information applicable to the process of adaptation. For the Kappa coefficient, values above 0.75 indicated excellent agreement, as proposed by the literature (Fleiss et al., 2003).

Results

The LSTS was evaluated based on three criteria: clarity of language, practical relevance, and theoretical relevance. In this version of the instrument, two items (3.84%) produced a score below 0.8 (item 3 "I shake another person's hand when I meet them for the first time" gave a result of 0.73 for practical relevance, and item 39 "I have learned many things from individuals of different cultures" scored 0.73 in the clarity of language criterion). The remaining items (96.16%) produced results greater than or equal to 0.8 for the three criteria (varying from 0.8 to 1).

Considering the CVC values below those considered as adequate and the suggestions of the raters, item 3 and item 39 were fine-tuned (the items were modified to: 3. "Eu cumprimento uma pessoa que acabei de

conhecer" and 39. "Eu aprendi muitas coisas com pessoas com costumes e/ou características diferentes das minhas") and a second round of evaluation was submitted to the specialists. After the new evaluations, the criteria were recalculated and the items produced a CVC with values greater than or equal to 0.87 for the three criteria, indicating adequacy. As for the Kappa coefficient obtained through the classification of the items in each dimension, conducted by the specialists, the results demonstrated excellent agreement for the eight dimensions, showing 100% consensus among the judges.

In the pilot study, the reading and conversation process occurred in the same way in all the meetings, as they were performed on an individual basis. For every item read, the participants related their understanding of the content and if they encountered any difficulty in interpretation.

These results suggest the first validity evidence based on the content (AERA et al., 2014) of the Brazilian version of the LSTS, as well as the adequacy of this measure to be submitted to the assessment of other validity evidence, such as internal structure and reliability, that were conducted in study 2.

Study 2. Validity evidence based on internal structure and reliability

Method

Participants

The sample was composed of 255 participants of both sexes, of which 61.6% were male, aged between 12 and 24 ($M=17.6\pm3.45$), mainly originating from the Southeast region of Brazil (81.2%), involved in team sports (67.1%) and individual sports (32.9%). Of the participants, 75.3% stated that they belonged to a club, 9.8% practiced sports at school or university, 4.3% in social projects and 10.6% in other locations. As for the length of time in the sport, 69.4% had been practicing their sport for over five years. In terms of being able to continue sporting activities during the pandemic, 95.3% of the participants indicated having adapted their activities and, to this end, 72.5% used online platforms as tools.

Instruments
Life Skills Transfer Survey (LSTS). Adapted version obtained in Study 1.

Sociodemographic questionnaire. Constructed specifically to meet the objectives of the study, the instrument aims to collect sociodemographic information.

Procedures
Ethical aspects. The procedures complied with the Declaration of Helsinki in constant (World Medical Association, 2013). The work respected the Resolutions of the National Health Council nº 510, April 7, 2016

(Conselho Nacional de Saúde, 2016), and the Research Ethics Committee by which it was approved. After approval, a link to the form was made available on various social networks and publicized across the researcher's network of contacts, as the collection had been carried out virtually via the Google Forms platform. The participation of the adolescents, those under the age of 18, was conditional upon acceptance of the Free and Informed Consent Agreement by the parents or guardians, as well as the Assent Form signed by the adolescent him/herself. The participants then answered the sociodemographic questionnaire and the Life Skills Transfer Survey (LSTS). The estimated time for collection was 25 minutes.

Statistical analyses
To evaluate the first validity evidence of the internal structure of the Life Skills Transfer Survey (LSTS), a confirmatory factor analysis (CFA) was employed, using the Mplus software (Muthén & Muthén, 2012), with the Weighted Least Square (WLSMV) estimation method based on the polychoric correlation matrix, since the variables are ordinal (Izquierdo et al., 2014). The following goodness-of-fit indices were employed: chi-square (χ^2), degrees of freedom (*df*), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI). To interpret the results, the following values were used for the adequacy parameters: $\chi^2/df<5$, RMSEA<0.08, CFI and TLI>0.90 and factor loads greater than or equal to 0.3 (Marsh, 2007; Muthén & Muthén, 2012; Tabachnick & Fidell, 2019).

For the assessment of the reliability of LSTS, an estimate of Cronbach's Alpha and McDonald's Omega coefficients was performed. As indicated by the literature, for both coefficients, values greater than or equal to 0.7 were considered good indicators of reliability (Tabachnick & Fidell, 2019). From the estimate of evidence based on the internal structure and the reliability of the LSTS, procedures were created to obtain a short version of the questionnaire. The four items with the highest factor load for each factor were selected (with the prospect of proposing a scale composed of 32 items). To ascertain if the short version of the instrument can maintain the coverage of the content evaluated in the long version and replicate the factor structure of the long version, a confirmatory factor analysis (CFA) was performed using the MPlus software (Muthén & Muthén, 2012), adopting the same fit indices mentioned above. In addition, the reliability indices of the short version of the instrument were verified. Lastly, an analysis of Pearson's correlation was performed to estimate the dimensions of the complete version of the instrument and the association with the dimensions in the short LSTS with the aim of ascertaining if the results obtained by the two versions were maintained.

Results

The fit indices in the model indicate the adequacy of the Brazilian version of the LSTS, with values classified as good: $\chi^2=2514.735$, $df=1167$, $\chi^2/df=2.15$, $p<0.001$, RMSEA=0.067 (CI 90%=0.064 – 0.071), CFI=0.95 and TLI=0.95. The factor loads presented by the items in the respective dimensions are displayed in Table 1.

Table 1
Factor Loads of the Items and Indices of Reliability of the Dimensions

Items	Factors				Items	Factors			
	MG	ME	GS	RC		MC	AD	GH	HO
MG1	**0.66**				MC1	0.51			
MG2	0.58				MC2	0.57			
MG3	0.65				MC3	**0.69**			
MG4	**0.69**				MC4	**0.75**			
MG5	**0.77**				MC5	**0.63**			
MG6	**0.69**				MC6	**0.85**			
ME1		0.42			AD1		**0.86**		
ME2		0.49			AD2		0.75		
ME3		0.55			AD3		**0.89**		
ME4		0.67			AD4		**0.85**		
ME5		**0.85**			AD5		**0.86**		
ME6		**0.81**			GH1			**0.92**	
ME7		**0.79**			GH2			**0.86**	
ME8		0.78			GH3			**0.86**	
ME9		**0.80**			GH4			**0.82**	
GS1			**0.89**		GH5			0.79	
GS2			**0.85**		HO1				**0.73**
GS3			0.76		HO2				**0.78**
GS4			0.75		HO3				**0.83**
GS5			**0.79**		HO4				**0.88**
GS6			**0.88**		HO5				0.70
RC1				0.71					
RC2				**0.89**					
RC3				**0.83**					
RC4				0.82					
RC5				0.86					
RC6				**0.97**					
RC7				**0.99**					
RC8				0.87					
H	0.64	0.71	0.64	0.68	H	0.63	0.82	0.69	0.82
α	0.75	0.78	0.89	0.91	α	0.77	0.87	0.88	0.81
ω	0.76	0.82	0.89	0.91	ω	0.78	0.87	0.88	0.82

Note. MG=meeting and greeting, ME=managing emotions, GS=goal setting, RC=resolving conflicts, MC=making healthy choices, AD=appreciating diversity, GH=getting help from others, HO=helping others, H=higher-order factor loadings

According to the data obtained, as displayed in Table 1, the hierarchical model indicated statistically significant factor loads ($p<0.001$). Notably, the meeting and greeting dimension (MG) displayed factor loads ranging from 0.58 (MG2) to 0.77 (MG5), while the managing emotions dimension (ME) went from 0.42 (ME1) to 0.85 (ME5). In the goal setting dimension (GS), the loads varied from 0.75 (GS3) to 0.89 (GS1), while in the resolving conflicts dimension, they ranged from 0.71 (RC1) to 0.99 (RC7). Making healthy choices (MC) showed factor loads of 0.51 (MC1) to 0.85 (MC6), while appreciating diversity (AD) varied between 0.75 (AD2) and 0.89 (AD3). Getting help from others (GH) exhibited factor loads varying from 0.79

(GH5) to 0.92 (GH1) and, lastly, the helping others dimension (HO) went from 0.70 (HO5) to 0.88 (HO4). The second-order factor, life skills transfer (LST), produced a variance of 0.18 ($p <$ 0.001) and, in addition, it was significantly related to the first-order factors, ranging from MC=0.63 to HO=0.82. Moreover, the indices of reliability, both Cronbach's Alpha and McDonald's Omega, demonstrated good reliability for all dimensions of the instrument ($\geq$0.8).

Having estimated the first evidence based on the internal structure of the LSTS, it was sought to propose the brief version of the instrument. To this end, the items presenting the highest factor loads for each of the dimensions was used as the item selection criterion, except for the resolving conflicts dimension. This dimension is made up of eight items, four designed for the resolution of conflicts with friends and four items related to siblings. Accordingly, to maintain the items that specified different types of relationships, two items with the highest factor loads involving friends were selected and two, also with the highest factor loads, that described the resolution of conflicts with siblings. The selected items are displayed in bold type in Table 1.

Moreover, the internal structure and reliability of the short version of the LSTS were evaluated. The results are exhibited in Table 2. As far as the model fit is concerned, the parameters indicated results regarded as good: χ^2=1136.522, df=456, χ^2/df=2.4, $p <$0.001, RMSEA=0.077 (CI 90%=0.071 – 0.08), CFI=0.97, TLI=0.97. The items, as can be noted, produced factor loads close to those found in the long version of the instrument ($\geq$0.54). It should be noted that the second-order factor, LST, showed a variance of 0.19 ($p <$ 0.001) and was also significantly correlated with the first-order factors with factor loading raging from MC=0.61 to AD=0.84. In addition, the indices of reliability, Cronbach's Alpha and McDonald's Omega, obtained in the short version, suggest good indices of reliability for the dimensions of the LSTS ($\geq$0.7). In view of this, it was possible to establish that the short, 32-item version can preserve the coverage of the content evaluated in the long, 50-item version and replicate the factor structure of the long version.

Table 2
Confirmatory Factor Model and Indices of Reliability in the LSTS Short Version

Items	Factors				Items	Factors			
	MG	ME	GS	RC		MC	AD	GH	HO
MG1	0.60				MC3	0.68			
MG4	0.62				MC4	0.77			
MG5	0.72				MC5	0.63			
MG6	0.54				MC6	0.86			
ME5		0.86			AD1		0.85		
ME6		0.83			AD3		0.89		
ME7		0.78			AD4		0.83		
ME9		0.82			AD5		0.86		
GS1			0.91		GH1			0.91	
GS2			0.86		GH2			0.87	
GS5			0.79		GH3			0.87	
GS6			0.88		GH4			0.79	
RC2				0.86	HO1				0.75
RC3				0.83	HO2				0.80
RC6				0.97	HO3				0.86
RC7				0.99	HO4				0.90
H	0.74	0.71	0.62	0.68	H	0.61	0.84	0.71	0.77
α	0.7	0.81	0.86	0.86	α	0.75	0.85	0.86	0.83
ω	0.7	0.82	0.87	0.86	ω	0.76	0.85	0.86	0.83

Note. MG=meeting and greeting, ME=managing emotions, GS=goal setting, RC=resolving conflicts, MC=making healthy choices, AD=appreciating diversity, GH=getting help from others, HO=helping others, H=higher-order factor loadings

Lastly, to check if the brief version of the LSTS maintains the relationship between the dimensions, in similar fashion to the long version, a Pearson's coefficient correlation was performed, as set out in a mirrored matrix exhibited in Table 3. The values displayed in bold text correspond to the correlations between the dimensions in the short-form version of the LSTS, while the other results represent the values of

the correlation between dimensions in the long version. Based on the values obtained, it is possible to verify that the relationships between the dimensions do not significantly differ, as the correlation outcomes are very close. This suggests that, even with an abridged instrument, there was no detriment in terms of access to the scope of the psychological construct evaluated in the long version.

Table 3
Correlation Matrix: Long Version vs. Short Version

	MG	ME	GS	RC	MC	AD	GH	HO
MG	-	**0.37**	**0.28**	**0.41**	**0.26**	**0.47**	**0.30**	**0.48**
ME	0.39	-	**0.51**	**0.44**	**0.50**	**0.47**	**0.31**	**0.48**
GS	0.31	0.56	-	**0.35**	**0.43**	**0.33**	**0.35**	**0.32**
RC	0.38	0.44	0.35	-	**0.34**	**0.47**	**0.42**	**0.44**
MC	0.25	0.53	0.45	0.38	-	**0.34**	**0.30**	**0.36**
AD	0.45	0.45	0.35	0.48	0.30	-	**0.50**	**0.58**
GH	0.27	0.36	0.30	0.41	0.30	0.49	-	**0.42**
HO	0.49	0.44	0.40	0.46	0.32	0.62	0.43	-

Note. $p<0.001$; MG=*meeting and greeting*, ME=*managing emotions*, GS=*goal setting*, RC=*resolving conflicts*, MC=*making healthy choices*, AD=*appreciating diversity*, GH=*getting help from others*, HO=*helping others*

Discussion

The intention of the present study was to adapt and estimate the first validity evidence of the Life Skills Transfer Survey (LSTS) in a sample composed of adolescents and young adults in Brazil. To this end, different statistical methods were employed in accordance with the validity evidence confirmed, namely: content, internal structure, internal consistency, and operationalization of a short version of the instrument. The results obtained demonstrate the adequacy of the Brazilian version of the instrument and, in addition, corroborate the study proposed by Weiss et al. (2014) and Weiss et al. (2016). These results indicate a hierarchical structure in which eight first-order factors load a second-order factor (LST) with good indices of reliability for all dimensions of the instrument.

Of the five sources of validity evidence that can be used to evaluate the instruments for specific purposes, as indicated by the literature, there is validity evidence based on the content of the test (AERA et al., 2014). This evidence instigates the need to verify the level at which the content matches the instrument's proposition, corroborating the cross-cultural adaptation proposal (Sireci & Faulkner-Bond, 2014). Based on the results obtained in the process of adaptation, which considered cultural, linguistic, and subjective aspects of the target group composed of adolescents and young adults, it was found that the item content of the LSTS was maintained in the analytical phases, based on the CVC (≥0.80). Moreover, the Kappa coefficient obtained by way of an analysis performed by the judges to ascertain the multidimensionality of the LSTS, and determine if the items belonged to the respective factor, demonstrated 100%

agreement. These preliminary results, therefore, indicated the first validity evidence based on the content of the Brazilian version of the LSTS. Cross-cultural studies make it possible to operationalize the construct in different cultural and linguistic contexts, considering the peculiarities and the similarities between them. Satisfactory results, such as those found in the study, indicate equivalence between the versions of the instrument, regardless of the setting of application, demonstrating satisfactory conditions for use based on the psychometric characteristics obtained through the stages of adaptation (Borsa et al., 2012).

The results of the CFA indicated the adequacy of the hierarchical model, since the structure's goodness-of-fit indices are satisfactory. These results are similar to the values found in previous studies with the original version, proposed by Weiss et al. (2014). Moreover, the tested model corroborates the theoretical proposal that the eight first-order dimensions (MG, ME, RC, MC, AD, GH, HO) load the first-order factor LST, which adequately explains the correlations between the life skills dimensions, thereby demonstrating that the life skills transfer construct is multidimensional (Weiss et al., 2014; Weiss et al., 2016). In this sense, these results support the first validity evidence based on the internal structure of the LSTS (AERA et al., 2014).

Regarding the consistency of the internal structure, the reliability indicators found in the present study demonstrated results consistent with those observed in the original version of the LSTS which, using Cronbach's Alpha and McDonald's Omega, produced good results for all dimensions of the instrument (Weiss et al., 2014; Weiss et al., 2016; Weiss et al., 2020). Therefore, this indicates reliability for

a measurement of the life skills transfer and the instrument's capacity to appraise the construct with a low level of error associated with the participants' score estimation (Tabachnick & Fidell, 2019). In this way, they demonstrate the first evidence based on the internal consistency of the LSTS in a Brazilian sample comprising adolescents and young adults, satisfactorily achieved.

Moreover, as far as the psychometric properties of the short version of the LSTS are concerned, the results observed by way of confirmatory analysis, indicate good validity evidence based on the internal structure, replicating the factor structure of the long version. The abbreviated version also showed good indices of reliability, with alphas greater than or equal to 0.8, as with those obtained in the long version. The values of the correlations between the dimensions in the long and short versions contributed to the assessment that the factor structure was maintained, since by comparing them, it is possible to ascertain that the results of the two proposed alternatives for measuring life skills transfer are similar.

The similarity of the results between the two versions demonstrates an agreement with the analyzed construct, with indices of validity evidence based on the internal structure and reliability seen to be satisfactory for the short version of the LSTS. The aim of moving to a short version of the instrument, capable of restoring the psychometric properties of the long version, is the conformity with practical challenges faced by the sports psychologist who, in settings such as bleachers, fields, gymnasiums, swimming pools, locker rooms, etc. This often limits the use of long instruments as tools in the evaluation process and, moreover, the instruments require longer application times, possibly reducing athletes' response rates. Accordingly, the need to simplify and condense the instruments is understandable. However, abbreviated versions do not always reproduce the quality of the original version of an instrument. In this sense, the results of the present study translate the efforts to produce these options that offer good psychometric quality and, consequently, facilitate and benefit application in the sporting context (Horvath & Röthlin, 2017).

As for the sports psychology survey, the length of time required to finalize the test responses is one aspect to be considered when collecting data. Thus, relying on an abbreviated version of the instrument may be a useful and efficient tool (Hanrahan & Grove, 1990). However, it is only possible to use these versions when they possess robust psychometric properties that can adequately reproduce the original version. In this regard, besides the quality of the instruments employed, it is essential to understand the component aspects of the sporting environment. The athletes, for example, follow a specific program when they go

training and there is a greater inclination to dedicate themselves to the proposed exercises, depending on the sport, rather than set aside time to answer the tests (Horvath & Röthlin, 2017).

Lastly, to adapt a valid, reliable instrument that evaluates life skills transfer, as perceived by the subjects, to other social domains in the Brazilian sporting context, is to provide researchers with a necessary tool that permits the evaluation of programs based on the PYD and, consequently, establish if the desired objectives are being met (Weiss et al., 2014). Thus, it is necessary to stress the importance of instruments that measure the constructs dealt with in the PYD in different languages, to operationalize the models and achieve progress in studies in the area and the evaluation of sports programs focusing specifically on learning, development, and life skills transfer. By continuing to perform studies that add to the theoretical and empirical foundation, this elevates the visibility of the topic, affording credibility to the area of study and, in addition, it contributes by orienting programs based on the PYD perspective (Bean & Forneris, 2019; Rigoni et al., 2017).

Conclusions

The LSTS as an instrument to be used by sports psychologists, makes it possible to undertake empirical investigations to ascertain the efficiency of projects aimed at positive youth development (PYD) by teaching how to transfer life skills acquired in practicing sports to other settings (Weiss et al., 2013). Based on the results obtained in the present study, it is possible to infer that the established objectives of adapting the LSTS to Brazilian Portuguese and estimating its first validity evidence have been achieved. However, even with this important outcome, there are some limitations of the study, such as the convenience sample having been formulated on an online platform. It should be stressed that, due to social distancing, recommended by the WHO to contain the advance of COVID-19, the study was only conducted in a virtual environment. Moreover, caution is required not to generalize from the results considering that the sample is not representative, as it was primarily composed of subjects from the Southeast region of Brazil, and only those with access to the internet and electronic equipment could access the form, which is known not to apply to youngsters in situations of social or financial vulnerability, who do not have access to these services. In this regard, it is suggested that new studies be conducted post-pandemic and that validity evidence be measured based on pencil-paper application. Lastly, it is recommended that other validity evidence should be explored, such as that which is based on the relationship with other variables and the investigation of explanatory models that may suggest determinants of life skills transfers.

Availability of data and materials

All data and syntax generated and analyzed during this research will be treated with complete confidentiality due to the Ethics Committee for Research in Human Beings requirements. However, the dataset and syntax that support the conclusions of this article are available upon reasonable request to the principal author of the study.

Competing interests

The authors declare that there are no conflicts of interest.

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