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RESEARCH PAPER

Urdu Translation and Cross-Language Validation of Attentional Control Scale for Children

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ABSTRACT

The main objective of this study was to translate and validate the ACS-C for adolescents. The Attentional Control Scale for Children is an extensively used measure of attentional control in youth as well. Attentional control (AC) is the capacity to focus, sustain, and redirect one's attention deliberately and strategically. The scale translation process was carried out by following the standard International Testing Commission guidelines, including forward and backward translation, committee assessment, and pilot testing. This study sample for cross-language validation comprised 300 adolescents between the age range of 15 to 19 years (Mage= 17.50, SD = 1.32). The ACS-C is a 20-item scale with two subscales: attentional focusing and attentional shifting. The findings of Confirmatory Factor Analysis (CFA) demonstrated a good model fit to the data and the final model was retained with two- two-factor solution having 9 items in the attentional focusing subscale and 10 items in the attentional shifting subscale.

KEYWORDS Adolescents, Attentional Control, Confirmatory Factor Analysis

Introduction

Information processing models of anxiety and related illnesses heavily rely on attentional processes, especially when it comes to their treatment, maintenance, and development. Particularly in terms of development, maintenance, and therapy, attentional processes are important in information-processing models of anxiety and related diseases (Field et al., 2011). Attentional control is one attentional process that is gaining more and more attention. The capacity to deliberately and effectively concentrate, maintain, and change an individual's attention is known as attentional control (AC) (Derryberry & Reed, 2002). A substantial amount of attention control allows adolescents to control their psychological states by selectively directing attention toward and moving focus away from objects (Puliafico & Kendall, 2006). On the other hand, low AC levels are related to the onset as well as the persistence of anxiety and related disorders in young people by impeding their ability to respond adaptively to negative valence and threatening stimuli (Lonigan et al., 2004; Muris & Ollendick, 2005; Susa et al., 2012). Additionally, insufficient levels of Attention control have been associated with the emergence and maintaining conditions including ADHD and sadness, they usually co-occur with anxiety in young people (Nigg, 2006; Bechor et al., 2015).

For more than four decades, to measure the attention control processes and attentional biases different behavioral response time techniques have been used (MacLeod et al., 1986; Posner et al., 1980). However, several doubts have been raised concerning the internal consistency of behavioral response period procedures (Hedge et al., 2018; MacLeod et al., 2019), as a result prompting the introduction of alternate methods to quantify attentional processes such as eye tracking (Dodd et al., 2015; Lisk et

al., 2019) and electroencephalography (Bechor et al., 2019; van Son et al., 2018). As the discipline has moved ahead self-report measurements were introduced such as Attentional Control Scale for Children (ACS-C). The ACS-C is a 20-item instrument frequently administered to evaluate AC in adults (Derryberry & Reed, 2002). The two suggested aspects of attention control (AC) that are represented by the 9-item and 11-item subscales in the ACS are attentional shifting (capacity to transfer attention from one task to another) and attentional focusing (holding attention on one stimulus while focused on another). Undergraduate student samples from Iceland (Ólafsson et al., 2011), the United States (Judah et al., 2014), and Poland (Fajkowska & Derryberry, 2010) have all shown agreement with the two-factor structure of the ACS. According to Derryberry and Reed (2002), the attention control scale for children is an adolescent version of AC that has been scaled down.

Literature Review

Earlier investigations have established that the reliability of ACS and its subscales is satisfactory. The Cronbach's alpha for the overall score ranged from .71 (Gyurak & Ayduk, 2007) to .88 (Derryberry & Reed, 2002); the reliability value for the attentional focusing is .82 (Judah et al., 2014; Ólafsson et al., 2011); and the reliability value for the attentional shifting range from .68 (Ólafsson et al., 2011) to .77 (Judah et al., 2014). Therefore, the ACS has shown an adequate level of internal consistency. Concerning the convergent validity, the scores of the ACS-C have been found to have significant associations with the results of Performance-oriented assessments of sustained attentiveness, attentional transitioning, and selective focus (Muris et al., 2008). Concerning criterion-oriented validation, the ACS-C scores were found to have substantial cross-sectional relationships with oneself and parental assessments of the intensity of anxiety among young people (Muris et al., 2004, 2007, 2008), severity of depression among youth (Muris et al., 2007, 2008), and symptoms of ADHD among young people (Muris et al., 2008, 2007).

On the ACS-C factor structure, no previously published investigation has been found. In a study, 280 non-referred Dutch teenagers were investigated to examine the factor arrangement of the ACS adult version. A two-factor model is supported along with components of attentional shifting and attentional focusing among a sample of 280 young people (Verstraeten et al., 2010). Furthermore, to our knowledge, in Pakistan, the study examining the validity and reliability of the ACS-C in a clinical population, incorporating children and adolescents is underreported.

As a result of the increased interest in focusing on AC for the treatment of young people with anxiety (Heeren et al., 2013; Wass et al., 2011) and ADHD symptoms (Shalev et al., 2007) is also evident in the previous literature. Moreover, the attention control documented contribution to the onset and maintenance of mental health issues like fearfulness (Derryberry & Reed, 2002), sadness (Joormann & Quinn, 2014), and ADHD (Nigg, 2006) remains significant. It is necessary to evaluate if the Attention control scale is a valid or reliable measure of attention control that can be used with Pakistan's population. It is necessary to determine if the ACS-C is a reliable psychometric tool for measuring AC in adolescents to measure their ability to allocate their attention resources to specific stimuli while ignoring distractions. Furthermore, to the adolescents who are referred to mental health professionals with psychological issues. Keeping in view this objective, the current research sought to translate and then determine the psychometric properties of the ACS-C for Pakistani adolescents.

Material and Methods

There were two phases of the investigation: the very first phase comprised a translation of the ACS-C into Urdu language while the second phase was carried out to establish the psychometric properties of the scale. The details of both phases are as follows:

Phase I: Translation Procedure

The translation process was completed following the International Testing Commission guidelines (ITC, 2019), which included steps like forward and backward translation, committee assessment, and lastly pilot testing. The following are the specifics of the translation process:

Forward Translation

In this phase, the Attentional Control Scale for Children was translated by five bilingual experts fluent in Urdu and English languages. They were asked to translate the text into Urdu while paying attention to context. After carefully examining and selecting the best translations based on the author's original expression, the translations that received the highest ratings were retained. A panel of five professionals, including an Associate Professor from the Department of Applied Psychology and four lecturers in the field of Psychology, thoroughly reviewed the Urdu-translated items to ensure that the content was clear and that grammatical and syntactic problems were avoided. After a thorough review, the finest translated items were retained.

Backward Translation

This phase involved translating the measures back into English to ensure correctness. A meticulous procedure called the back-translation approach is employed to minimize biases and inaccuracies in translation (Brislin et al., 1973). The Urdu items of the measure were to be re-translated into English by two PhD scholars from the Linguistic Department, Government College University Faisalabad, Pakistan. The sample selected for back-translation was not involved in the forward translation stage. Therefore, they were not acquainted with the measure's original items.

Committee Approach

Following a thorough evaluation and back translation of each item, the items were finalized for the Urdu version of both measures by two Assistant Professors from the Department of Applied Psychology, Government College University Faisalabad, Pakistan. Following revision procedures, there was a satisfactory level of agreement between the measure's English and Urdu versions. Regarding the translation's veracity, every expert agreed.

Pilot Testing

After that, the English, Urdu, and Back translated versions of ACS-C were administered to 30 participants. Participants were asked to identify any issues with the phrasing, and arrangement, provided instructions, and their ability to complete the questionnaire independently was monitored. The expert group then assessed these results.

Phase II: Cross-Language Validation of ACS-C

Participants

The second phase was carried out to evaluate the psychometric properties determined through a sample of 300 adolescents between the age range of 15 to 19 years (M_{age}= 17.50, SD = 1.32) drawn from schools and colleges of Sargodha city using a convenient sampling technique. Generally, it is recommended to have more than 250 samples since the greater the sample, the less error, however, 250 samples yield an 8% error or less, which is usually acknowledged in social sciences (Reyes & Ghosh, 2013). Every sample size greater than 300 is considered sufficient (Thompson, 2004)

Ethical Consideration

During the data collection, various ethical considerations were kept in mind such as ensuring confidentiality and anonymity for study participants. The nature and primary goals of the research were described to the participants and their agreement to take part in the research was obtained. They were asked to respond to the measures carefully and honestly. After data collection, all study participants were acknowledged for their active participation. The researcher answered all questions raised by study participants during the data collection process.

Measures

The following measures were employed in this phase:

Demographic Information Sheet

It includes the demographic information of the adolescent like their gender, age, class, parent's occupation, family system, number of family members, number of friends, and number of siblings.

Attentional Control Scale for Children (ACS-C; Muris et al., 2004). The ACS-C is comprised of 20 items and is a self-report assessment that investigates the capacity for attentional focus and shifting. The scale items are scored on a 4-point Likert-type scale, with 1 (almost never) to 4 (always) being the highest score. The range of total scores (20–80) shows that greater scores correspond to improved attentional control. The ACS-C yields two basic subscales: attentional focusing (items 1, 2, 3, 4, 5, 6, 7, 8, 9) and attentional shifting (items 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20). In this scale, reverse-scored items are item no1, 2, 3, 6, 7, 8, 11, 12, 15, 16, 18, and 20 are reverse-scored items. Both McDonald's total value (McDonald, 1999) and Cronbach's alpha were reported in previous studies as α=.76, whereas ωt= .79 (Revelle & Condon, 2019). There is no specific age range for the ACS-C. However according to the population tested in past studies (Muris et al., 2004; Melendez et al., 2017) it is suitable for children and youth between the age range of 8-19 years. The Urdu version of ACSC that was translated during the first phase of the investigation was used.

Procedure

Following the approval of the research proposal by the Department of Applied Psychology Board of Studies (BOS), the University faculty board, and the Ethical Review Committee, the present study was carried out. Permission from the author of the original English version of ACS-S was sought to translate and validate the scale in Urdu for the Pakistani adolescent sample. The data was collected after obtaining consent from

principals of the educational institutions (schools and colleges). A convenient sampling strategy was implemented to choose the adolescent sample. The demographic information sheet and ACS-C measure were filled by the study participants.

Results and Discussion

The descriptive and inferential statistics was employed for the analysis of data through the Statistical Package for Social Science (SPSS version 28). The frequency of demographic data was determined for categorical variables, and the mean and standard deviation were computed for continuous data. For phase I of the study internal consistency and intra-class correlation coefficients were used to compute reliability analyses. Regarding the study's second phase, CFA was performed to verify the measurement model and the structure of the ACS-C factors in Urdu version using Analysis of Moment Structures (AMOS-26). Furthermore, CFA was computed to validate the ASC-C factor structure and measurement model. The current study used several indices and criteria (including Root Mean Square Error of Approximation (RMSEA), Non-Normed Fit Index (NFI), and Comparative Fit Index (CFI)) to determine the best model fit.

CFA was used to assess the original model with a two-factor structure (Attentional Focusing and Attentional Shifting) based on the initial model fit criteria, i.e., item loading of +/-0.30 is considered to fulfill the minimum level of the required degree of structure's interpretation (Hair et al., 2006). According to the guidelines established by Hu and Bentler (1999), the model fit indices of the two-factor model are estimated. Furthermore, reviewing the modification indices, only those items' error variances were allowed to covariate, as recommended by the modification indices.

Table 1
Socio-Demographic Characteristics of the Participants

Variables	Groups	M(SD)	f (%)
Age		17.50 (1.32)	
Number of family members		7.71 (2.90)	
No of Siblings		3.56(2.06)	
Birth Order		2.12(1.10)	
Gender	Male		151 (50)
	Female		149 (49)
Family System	Nuclear		207 (69)
	Combine		93 (31)
Institute	Private		150(50)
	Government		150 (50)
Parents Martial Status	Married		282 (94)
	Divorce		5 (1.7)
	Widow		13 (4.3)

Table 2
Summary of Reliability Coefficients and Inter- Correlation among Scores on the English, Backward, and Urdu Versions of ACS-C

Scales	1	2	3	α
1. English Version	-			.77
2. Backward Version	.91***	-		.76
3. Urdu Version	.97***	.90***	-	.87

Table 2 shows that the reliability of the all three version of ACSC. The values of Cronbach's alpha for English and Backward version of ACS-S scale are acceptable. For the Urdu version of ACS-C reliability of scale is good (>.8) (Hulin et al., 2001).

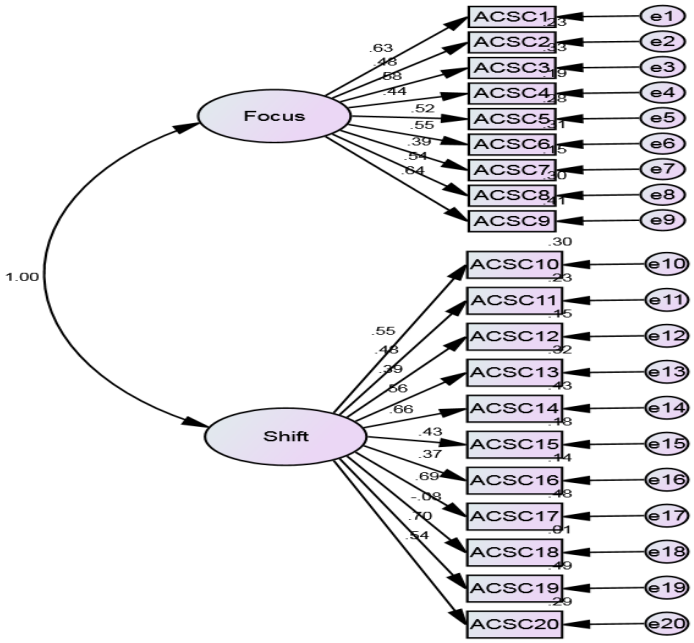

Figure 1 CFA for Initial Model ACS-C Urdu Version (N=300)

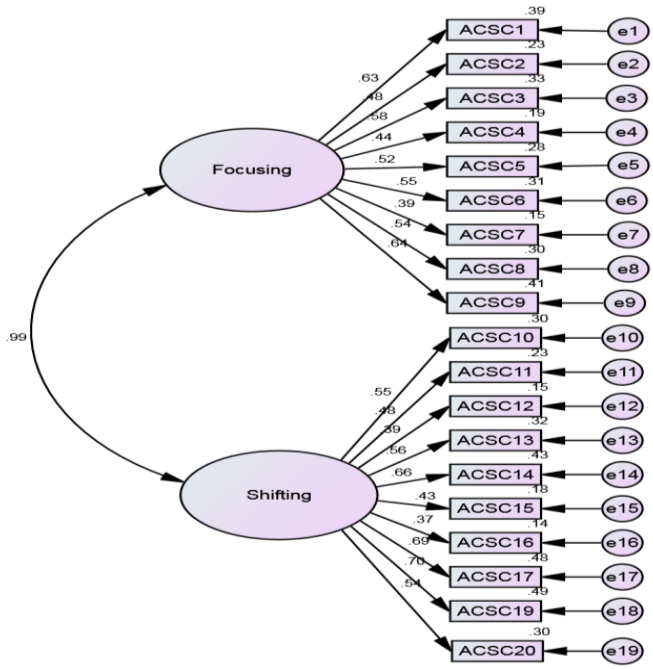

Figure 2 CFA for Revised Model ACS-C Urdu Version (N=300)

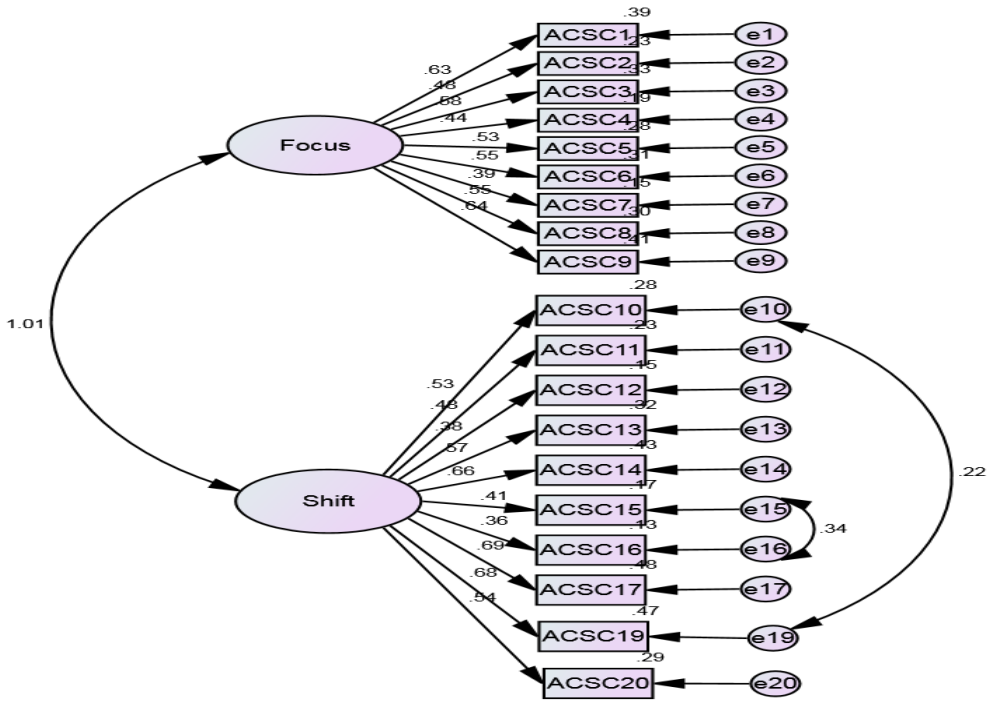

Figure 3 CFA for Final Model ACS-C Urdu Version (N=300)

Table 3
Model Fit Indices on CFA for the Initial, Revised, and Final Model of Attentional Control Scale (ACS-C) for Children

Model	χ^2	df	χ^2/df	CFI	NFI	TLI	RMSEA	PCLOSE
Initial Model	396.81	169	2.35	.85	.77	.83	.06	.001
Revised Model	353.53	151	2.34	.87	.79	.85	.06	.001
Final Model	304.82	149	2.04	.90	.82	,88	.05	.05

Note. N=300, χ^2 >.05, CFI=Comparative Fit Index, NFI = Non-Normed Fit Index, TLI= Tucker Lewis Index, RMSEA=Root Mean Square Error of Approximation, PCLOSE: P value of close fit.

Table 3 shows the fit indices for the initial model (CMIN/DF = 2.34; CFI = .85; NFI = .77; TLI = .83; RMSEA = .067; PCLOSE = .001). However, item no 18 from the Attentional control scale for children was eliminated because of lower factor loading i.e. -.08 (see Figure 1). After removing the item, the fit indices of the revised model are slightly improved (CMIN/DF = 2.34; CFI = .87; NFI = .79; TLI = .85; RMSEA = .067; PCLOSE = .001). To fit the model, error terms were correlated as recommended by the modification indices (e10-e19 and e15-e16). The results showed that after modifications the model fit indices of final Model indicated a satisfactory model fit between the data and the measurement model. The RMSEA value was 0.05, which is within the accepted range of .05-.08 (Byrne, 1994). In final model, the CFI values were greater than 0.90. These data suggested that final model provided a better fit than initial and revised model.

Discussion

Attention Control is a vital psychological construct, yet most scales to measure this construct have been established for individuals other than adolescents. In Pakistan, the attention control instrument for adolescents with psychometrically strong factor structures is underreported. Therefore, the current study aimed to translate ACS-C, and its cross-language validation was carried out across the adolescent population. As Urdu is the first language of Pakistan, the target population easily comprehends the Urdu language and feels at ease addressing items in Urdu.

An additional goal of the current investigation was to establish the cross-language validity of the translated scale by comparing the translated Urdu version to the original English language version of the scale and to further confirm the factor structure of the ACS-C translated version. The scale was validated by administering English, backward, and Urdu versions to a sample of individuals. The results indicated a significant positive correlation among these three versions of scales (see Table 2). This shows that the vocabulary of the Urdu version of the scale was simple and easier to comprehend for a target population. Furthermore, to explain the concept, words are appropriately combined to produce understandable sentences, and scale items are effectively written following the context of our culture. Cronbach's alpha was employed to evaluate the ACS-C's internal consistency. The internal consistency of the two-dimensional model of ACS-C was adequate in our sample (see Table 2). The findings of earlier research have shown that ACS-S is a reliable measure for investigating the attention control construct (Muris et al., 2004; Van Son et al., 2021). Thus, the current study's findings showed that ACS-S is a suitable instrument to measure attention control construct and administered confidently in our cultural context.

ACS-C was comprised of two subscales namely Attentional Focusing and Attentional Shifting Scale. The reliability analysis of ACS-C and its subscales are reliable with the original scale among adult samples (Judah et al., 2014; Ólafsson et al., 2011). The original scale's reliability investigation revealed that items measuring focusing and shifting also reflect focusing and shifting among the adolescent Pakistani population. The factor structure of the measure and the model's fit to the data collected from the Pakistani population were verified using confirmatory factor analysis. The model was fit using correlations, with acceptable values for CFI, NFI, RMSEA, and $\chi 2/df$ (Hu & Bentler, 1999). However, item 18 of the ACS-C ("When I am daydreaming or having distracting thoughts, it is easy for me to switch back to the work I have to do") based on poor factor loading was eliminated from the model (see Figure 2). Poor factor loading indicates that items of the scale do not contribute to the measurement of the construct itself. In our cultural context, the length and complicated sentence structure of this item makes it difficult to comprehend for the target population.

After considering a few indicators' error variances to covariate, the model specifications were revised. As recommended by the modification indices, error variances of items were allowed to co-vary (see Figure 3). This item error covariance shared identical conceptual contents and language, indicating a distinct variance origin (Brown, 2015). To fit the model, correlations between error terms were introduced as mentioned in modification indices. The results showed that after modifications, the chi-square to df ratio of the final model, and the other model fit indices likewise indicated satisfactory model fit between the data and measurement model (see Table 3). These findings are align with the initial studies conducted on this scale as Van Son et al. (2021) also noted that a good model fits with the two-factor structure of the ACS-C, and these factors correspond to Attentional Focusing and Attentional Shifting. These study data

suggested that the final model better fit than the initial model and revised model in the cultural context of Pakistan. The final model fit of CFA indicated that the ACS-C measure is a reflection of the target population's understanding of the nature of the construct. The proposed final model also demonstrates how well covariance is captured between items of the scale that account for the covariance in the instrument.

Conclusion

Based on the research findings it is concluded that both the English and Urdu version of ACS-C has the conceptual equivalence of the construct. In the present study, during the translation process, the Urdu vocabulary used in the scale is easy to comprehend, with words meaningfully incorporated to represent the concept of attention control, and the scale items are well stated. The cross-language validation of the Urdu version of ACS-C demonstrated that the measure appears valid and reliable for the adolescent population of Pakistan. Thus, the results of the study provide more confidence to the researcher in administering the Urdu version to the Pakistani adolescent population without facing differences in the concepts and interpretation of the scale. Moreover, the ACS-C was found to be a psychometrically sound measure to be used with the Pakistani adolescent population.

Recommendations

It is recommended that a larger, more accurately representative sample of respondents from different Pakistani provinces should be selected for the validation study to strengthen the scale's construct validity. Second, as the data was only obtained from educational institutions; the general population of adolescents was not part of this study. In future research, adolescents from the general population should also be targeted. In the future, the ACS-C can also be validated for the clinical population so that it can be applied in clinical contexts and other settings to address the difficulties in the area of attentional focusing among adolescents.

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