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# Reliability and Validity of Modified Turkish Version of Autism Behavior Checklist (ABC): Results of Pilot Study

## Abstract

*The purpose of this pilot study is to investigate reliability and validity of Modified Turkish Version of Autism Behavior Checklist (ABC) before carrying out Turkish standardization study. Participants included 163 principal caregivers/parents and 164 educators/professionals of individuals with Autism Spectrum Disorder (ASD) ages between 3 and 20. In order to explore discriminant validity of Modified Turkish Version of Autism Behavior Checklist, data were also collected from individuals with intellectual disability, hearing disability, and from those with typical development. Modified Turkish Version of Autism Behavior Checklist and Gilliam Autism rating Scale-2-Turkish Version were used to collect data. Results revealed that Modified Turkish Version of Autism Behavior Checklist has acceptable level of discriminant validity and criterion-related validity. Reliability results also indicated that Modified Turkish Version of Autism Behavior Checklist has acceptable level of internal reliability, and test-retest reliability. Other analyses also supported its reliability. Suggestions were provided for Turkish standardization of Modified Turkish Version of Autism Behavior Checklist.*

*Key Words: Autism spectrum disorders, autism behaviour checklist, validity, reliability, assessment, Turkish sample.*

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## Structured Abstract

### Introduction

According to Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013), Autism Spectrum Disorder (ASD) has been defined as a neuro-developmental disorder occurring before age of 3 and causing stereotyped behaviors and limitations in social interaction and communication skills in individuals with ASD. In order to deal with efficiently with symptoms of ASD, early identification and intervention are required. Therefore, several assessment tools for screening and diagnosis have been developed in especially the US and translated and adapted to other countries and languages. Filipek, Accardo, Ashwal, Baranek, Cook, & Dawson, (2000) categorized these tools as level 1 for screening purposes and level 2 for diagnosis purposes. Some of these tools are Modified Checklist for Autism in Toddlers, M-CHAT (Robins, Fein, Barton, & Green, 2001), Autism Diagnostic Interview-Revised, ADI-R (Lord, Rutter, & Le Couteur; 1994), Autism Diagnostic Observation Scale –ADOS (Lord, Rutter, DiLavore, & Risi, 2001), Gilliam Autism Rating Scale, GARS (Gilliam, 1995, 2005), Autism Behavior Checklist, ABC (Krug, Arick, & Almond, 2008).

In Turkey, there have been studies working on some these tools to adapt them into Turkish (e.g., Modified Checklist for Autism in Toddlers (M-CHAT), Autism Behavior Checklist (ABC), and Gilliam Autism Rating Scale (GARS). However, except for GARS-2, there is no assessment tool standardized in Turkey. Other studies (e.g., Yıkgeç, 2005; Tetik Kabil, 2005; Irmak, Sütçü, Aydın, & Sorias, 2007) worked on reliability and validity features of the tools with very limited number of participants and did not have norm group. On the other hand, Diken, Ardiç, & Diken, (2011) standardized GARS-2 in Turkey with 1191 participants who had been diagnosed with ASD. In order to screen and diagnose ASD reliably in Turkey, there is a great need to have more assessment tools for individuals with ASD. Therefore, we would like to adapt, modify and standardize Autism Behavior Checklist (ABC) in Turkey. With this main purpose, we intended to investigate reliability and validity of Modified Turkish Version of Autism Behavior Checklist (ABC) before carrying out Turkish standardization study.

### Method

#### *Participants*

Participants included 163 principal caregivers/parents and 164 educators/professionals of individuals with Autism Spectrum Disorder (ASD) ages between 3 and 20. In order to explore discriminant validity of Modified Turkish Version of Autism Behavior Checklist, data were also collected from individuals with intellectual disability (n=96), hearing disability (n=41), and from those with typical development (n=77).

#### *Measures*

*Autism Behavior Checklist (ABC, Krug, Arick, & Almond (2008).* Autism Behavior Checklist (ABC, Krug, Arick, & Almond (2008) has been developed first by Krug and

his colleagues in 1978, then revised in 1993 and in 2008. In its last revision, it is currently part of Autism Screening Instrument for Educational Planning, ASIEP-3 (Krug, Arick, & Almond, 2008). ABC comprises 47 behaviors rated by a person who knows the individuals best indicating 1 (Yes) and 0 (No). Data were collected 342 parents and 386 professionals of individuals with ASD and from 21 states in the US. Reliability and validity studies showed that ABC has .88 internal consistency, .99 test-retest reliability for professionals, and .76 test-retest reliability for parents, and had high level significant correlation with GARS-2.

*Turkish Version of Gilliam Autism Rating Scale-2 (TV-GARS-2; Diken, Ardiç, & Diken, 2011).* In order to investigate criterion related validity, TV-GARS-2 was used in the current study. TV-GARS-2 has 45 items under three sub-factors: stereotyped behaviors, communication, and social interaction and standardized for screening, diagnosis and educational planning for individuals with ASD aged between 3-23 in Turkey. It was standardized with 1191 individuals with ASD living different cities and representing sample in Turkey. Reliability and validity studies showed that it has .88 internal consistency (Cronbach Alpha), .79 Cronbach Alpha for stereotyped behaviors, .77 Cronbach Alpha for communication, and .77 Cronbach Alpha for social interaction. Other results also supported that TV-GARS-2 has sound validity and reliability results and can be used with individuals with ASD in Turkey.

#### *Procedure*

Translation and back translation (Turkish-English-Turkish) procedures of Autism Behavior Checklist (ABC) have been carried out. According to suggestions came from professionals worked on translation and adaptation procedure, and parents who read the translated items, explanations under items have been developed in order to clarify meaning of items/behaviors. A matrix has been developed and items have been compared in this matrix with DSM-IV-TR, DSM-V, ICD-10 (International Classification of Diseases-10 suggested by World Health Organization-WHO), and GARS-2-TV. As final form, Modified Turkish Version of Autism Behavior Checklist (MTV-ABC) included 57 items. Out 57 items, 50 items were for individuals with ASD who did not have expressive language skills or speech behaviors and 7 items for those who had functional expressive language skills or speech behaviors.

#### *Data Collection*

Data were collected between September 2012-April 2013. Convenience sampling procedure was used and Private Special Education and Rehabilitation Centers who were willing to participate the study around Turkey were contacted. Professionals and parents of individuals with ASD filled out the ABCs for individuals with ASD getting training on these centers.

## Results

Discriminant validity results indicated that MTV-ABC discriminates individuals with ASD from other groups including individuals with intellectual disability, with hearing impairment and those with typical development.

Criterion related validity also revealed that there was a moderate to high level significant correlation ( $n=25$ , Pearson  $r= .67$ ,  $p<.01$ ) between total scores of MTV-ABC and TV-GARS-2.

Item analyses revealed that except for item 22 which had .22 item-total correlation score, all had significant item-total correlation scores between .30 and .64 ( $p<.01$ ).

Kuder Richardson-21 (KR-21) analyses showed that MTV-ABC has .91 KR-21 score. Test-retest reliability results yielded that MTV-ABC had .73 correlation coefficient for parents ( $n=35$ ), and .69 for professionals ( $n=32$ ).

Relationship between total scores of professionals and parents were also explored. Results showed that there was a significant relationship between these scores (Pearson  $r=.42$ ,  $p<.01$ ). Independent-Samples t-test was also showed that there was no significant differences between these scores ( $t(216)=-.381$ ,  $p = 0,704$ ).

Total scores of individuals with ASD who did not have expressive language skills or speech behaviors and those who had functional expressive language skills or speech behaviors were also compared with Independent-Samples t-test and found that ASD who did not have expressive language skills or speech behaviors had significant higher MTV-ABC scores from those who had functional expressive language skills or speech behaviors according to data coming from both parents ( $t(161)=7,463$   $p < 0,001$ ) and professionals ( $t(162)=5,622$ ,  $p < 0,001$ ).

## Conclusion and Suggestions

With the purpose of adapting ABC into Turkish and then exploring reliability and validity features of ABC with a pilot study before the standardization study, results as summarized above showed that MTV-ABC is a reliable and valid tool that can be studied for Turkish standardization. It can be suggested that MTV-ABC standardization study should be carried out with large sample representing Turkey, its construct validity should be explored and reported with Confirmatory Factor Analysis (CFA).