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VALIDATION OF THE GEORGIAN ADAPTIVE BEHAVIOR SCREENING INSTRUMENT

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Abstract

No reliable and valid measure of adaptive behavior is available in the Republic of Georgia. Thus, the Georgian Adaptive Behavior Screening Instrument-Research Version (GABSI-RV) was designed to provide data from which individual educational plans can be designed and monitored. This study's aim was to determine the psychometric features of the GABSI-RV with emphasis on evaluating the discriminatory capacity of the GABSI-RV using clinical (intellectual disability) and non-clinical groups of different ages. Participants were children and adolescents ages 4-18 divided into clinical (N=315); intellectual disability) and non-clinical comparison (N=296) groups. Results showed strong test-retest and inter-rater reliability. Analyses showed high internal consistency and that the measure discriminated across age groups. This measure has strong potential to fill and important gap in Georgia's education and mental health service delivery systems. The strategies deployed in this study have broad applicability for similar efforts in developing countries.

Keywords: *Adaptive behavior, assessment, levels of the independence, screening instrument.*

1. Introduction

The adaptive behavior concept is widely recognized in the field of intellectual disability. Initially the term was introduced to describe individuals previously diagnosed with "mental retardation", and since 1959, adaptive behavior assessment, alongside IQ measures, are the internationally recognized gold standard for making the diagnosis of intellectual disability (Nihira, 1999). Early research on measures to assess adaptive behavior focused on developing strong psychometric support for the purpose of valid diagnosis. Later work has focused on broadening the adaptive behavior construct so that it can be used to determine an individuals' specific areas of need for support and targets for intervention.

Validation of this measure was timely as Georgian professionals are dealing with development of community services and with increasing inclusion of the population with special needs. The present study was timely, in that it was conducted in three regions of Georgia in 2005-2008 during the preparatory phase of state-wide de-institutionalization and implementation of the compulsory inclusive education. The development of GABSI-RV was aimed at addressing this urgent need (Gogichadze et al.,2007). The framework for this format was based on the Pupil Developmental Schedule (unpublished) used in Hamilton North School, New Zealand.

2. Method

2.1. Participants

For the research purposes, intellectual disability is used as the summative construct and the vision incorporated was very much in line with the definition introduced by the WHO "*a group of developmental conditions characterized by significant impairment of cognitive functions, which are associated with limitations of learning, adaptive behaviour and skills*" (Salvador-Carulla et al., 2011, p. 175).

Two groups of participants contributed to the present study: a clinical sample comprising 315 participants; and a corresponding a non-clinical comparison sample of 296 children from similar locations with no medical history of intellectual disability or developmental disorders. The inclusion criteria for the clinical group were age (4-18 years), enrollment in special education due to a diagnosis of intellectual disability, or exclusion from mainstream education due to such a diagnosis and identified inability to follow formal curricular requirements. Exclusion criteria applied to the clinical group were having a medical

diagnosis unrelated to intellectual or developmental disability or denial of parental consent for participation in the study.

The potential members of the clinical sample were initially identified by reviewing Georgia's mandatory State Registry. These participants were selected on the basis of their medical records, identifying them as developmentally or intellectually disabled.

The children comprising the clinical group were evaluated in the special educational settings such as their special school, integrated class or day care center in the capital city Tbilisi, and/or they were reached at home in the Regions of Zugdidi and Zestafoni, as in these two locations they were, at the time, still deprived of participation in the mainstream education. In order to ensure group comparability, case-control methods guided the selection of the control participants. After each representative of the clinical group was identified, where possible, a corresponding age and gender-related peer was located through the school systems in the matching geographical areas. The inclusionary criteria for the comparison group were age (4-18), an absence of documented or teacher reported problems in the mainstream education, school attendance and residence in the area as their corresponding counterparts from the clinical group.

Initial sample was combining 8 age groups composed almost equal number of participants and balanced across the gender:Igroup 4-5 years,IIgroup 6-7 years,IIIgroup 8-9 years,IVgroup 10-11years,V group 12-13 years,VIgroup 14-15 years,VIIgroup 1-5 years,VIIIgroup 18 year, but amended group cohorts were subsequently identified by comparison analyses using the Kruskal–Wallis H test indicating significant difference in all or almost all test items in age pairs. The summary of modified groups visualized in Table 1. Therefore, for further analyses participants were divided into 5 age cohorts (4-5 years, 6-9 years, 10-13 years, 14-17 years and 18).

Table 1. Age and Gender distribution of Clinical and Comparison Groups.

Baseline Characteristics	Clinical		Comparison		Full Sample	
	n	%	n	%	n	%
Gender						
Male	148	50	169	54	317	52
Female	148	50	146	46	294	48
Age groups						
I. 4-5 years	36		35			
II. 6-9 years	88		94			
III. 10-13 years	78		87			
IV.14-17 years	72		75			
V. 18 years	22		24			

Table 2 shows a stratified sample in both groups by age and gender where no significant difference was identified.

Table 2. Comparative analyses of modified age groups across test dimensions.

Dimensions	Compared pairs of age groups									
	I-II	I-III	I-IV	I-V	II-III	II-IV	II-V	III-IV	III-V	IV-V
1.1										
1.2					*					
1.3										
1.4										*
1.5										
1.6										
2.1										*
2.2								*		
2.3						*	*	*	*	*
2.4								*		
3.1										
3.2										
3.3								*		
3.4								*		*
4.2										
4.3										
4.4										
4.5								*		
5.1										
5.2					*	*		*		
5.3										
5.4										
5.5					*					

** There is no significant difference (p>.05).*

2.2. Procedures

Research staff collected all data relating to this study after obtaining signed informed consent from each child's legal guardian. When educational settings such as schools and daycare centers were the first

point of contact, the principal or a child's teacher contacted parents and obtained written consents. Each child's natural environment, such as their home or typical educational setting, was used as the assessment venue. Instructions regarding the protocol for administering the GABSI-RV are described in the procedural manual. Research assistants were post-bachelor's-level (psychology or social work) specialists with experience in the provision of services for special needs children.

2.3. Measure

The GABSI-RV is designed to gain data from three major sources: a semi-structured interview with the caregiver, direct observation, and behavior probing (direct demonstration) of adaptive behavior mastery. Detailed standardized instructions in the test manual guided the administration of all three components. All data obtained from the assessment were recorded on a test-specific evaluation sheet. Content validation for the items in the GABSI-RV was conducted in a prior pilot study using theoretical grounding and a survey of other well-accepted measures of adaptive behavior (Gogichadze et al., 2007).

The GABSI-RV consists of 5 adaptive behavior domains including: 1) *Personal Independence:* key skills related to self-care of eating, toileting, dressing, personal hygiene, personal health-care and domestic skills. 2) *Physical Competence:* fine and gross motor skills, including assembly and artistic skills, ball skills, balance and body movement, 3) *Social Skills and Respect:* skills around relating to and interacting with others, and responding to authority figures, 4)*Communication Skills:* expressive (speaking) and receptive (listening) language including reading and writing skills and self-awareness, and 5) *Community Participation Skills:* skills of helping at home (domestic), shopping, ability to use money (economic), independent travel, work skills, and broader engagement in the community.

The GABSI-RV also includes a *Maladaptive Behavior* domain which identifies behaviors commonly associated with five domains including: autism spectrum disorder, expression and self-control, self-harm, withdrawal, and epilepsy.

2.4. Data analyses

Data analyses are conducted in several directions such as Reliability, Construct validation and Convergent and Divergent validity.

Mann-Whitney (U) test was used to indicate test-retest reliability. The Construct validation was calculated by evaluating the relationship between age and mastery of adaptive behavior domains for typically developing and the comparison groups. This data was analyzed by calculating Pearson correlation coefficient. Convergent and divergent validity was analyzed, item correlation was calculated to identify less congruent sections of the whole measure by deriving Cronbach's Alpha scores.

3. Results

3.1. Reliability

Test-retest reliability was analyzed by application of Mann-Whitney U test with two independent selections. Inter rater reliability was assessed for 16% of the total sample. Analyses (Mann-Whitney U test) revealed that there was no significant test-retest and inter-rater reliability difference between raters' initial and second assessment across all GABSI-RV domains with the exception of only sphere Expression of emotions and self-control (6.1) which identified a significant difference in reassessment over the retest period of 6 weeks.

3.2. Construct validation

The comparison group data were analyzed to evaluate the relationship between age and mastery of adaptive behavior domains for typically developing children. As expected, the Pearson correlation coefficient indicated that there was a significant positive correlation at ($p<.001$) between age and the mastery of skills on adaptive behavior 9 domains. The highest correlation was identified between age and Time skills (5.5) from the domain of Community participation skills ($r=.81$) and also other 3 spheres, from the fifth domain, such as Travel (5.1) ($r=.79$), Economic Skills (5.4) ($r=.77$) and Shopping Skills (5.3) ($r=.71$). The first domain of Personal Independence indicated high correlation in two spheres Dressing (1.3) ($r=.74$) and Personal health-care (1.5) ($r=.74$). The third domain Social Skills and Respect, was presented by two spheres Peer Relations (3.1) ($r=.71$) and Social Interaction (3.2) ($r=.71$) and the only one sphere Verbal Receptive (4.3) ($r=.73$) from the forth domain of Communication Skills showed high correlation.

All Spheres indicating high correlations with the age at the significance level of ($p<.001$), are presented in the Table 3.

Table 3. The high Correlation between Sphere of Adaptive behaviors with age.

Domain	Code	Sphere	Correlation coefficient (r)
Community Participation Skills	(5.5)	Time skills	.81***
	(5.1)	Travel	.79***
	(5.4)	Economic Skills	.77***
	(5.3)	Shopping Skills	.71***
Personal Independence	(1.3)	Dressing	.74***
	(1.5)	Personal health-care	.73***
Social Skills and Respect	(3.1)	Peer Relations	.71***
	(3.2)	Social Interaction	.71***
Communication Skills	(4.3)	Verbal Receptive	.73***

***p<.001

There was moderate (.46≤r≤.69) correlation of eleven GABSI-RV spheres and the age at the significance level of (p<0,001). Four spheres from the first domain The Personal Independence showed moderate correlation Eating (1.1) (r=.60), Toileting (1.2) (r=.55), Personal hygiene (1.4) (r=.69), Domestic skills (1.6) (r=.61).Only one sphere form the second domain of Physical Competence, Gross Motor Skills-Movement (2.4) (r=.52), also one from Social Skills and Respect, sphere Respect for others (3.3) (r=.67), and sphere Work skills (5.2) (r=.55) from fifths domain Community Participation Skills have moderate correlation with age. The almost all spheres from the fourth domain of Communication Skills, such as Self-awareness (4.1) (r=.68), Verbal Expressive (4.2) (r=.69), Reading (4.4) (r=.63) and Writing (4.5) (r=.66).

A weak correlation at the (p<.001) level of significance was observed between age and two spheres form the second Domain -Physical Skills, such as Fine Motor Skills-Artistic (2.2) (r =.46) and Gross Motor Skills - Movement (2.3) (r=.31). Data obtained using the GABSI-RV reliably differentiates the comparison sample from the clinical sample showing a significant difference between them.

The correlation is very low (.001≤r≤.43) between comparison and the clinical groups across ages showing that the GABSI-RV can discriminate those groups from each other, indicating that comparison and the clinical groups significantly differ from each other in the demonstration of Adaptive Behavior skills across all ages.

3.3. Convergent and Divergent validity

3.3.1. Adaptive Behavior section. Cronbach's Alpha scores for each of the spheres on the Adaptive Behavior section for the clinical group was higher than ($\alpha \geq .9$). The same tendency was calculated for the comparison group indicating that spheres of Adaptive Behavior are well-connected and GABSI-RV is characterized with high internal consistency (Schalock.1999 p.109).

The test item correlation analyses identified less congruent sections of the whole measure. Cronbach's Alpha scores for each of the spheres on the Adaptive Behavior section for the comparison group indicated four spheres: (1.2) Toilet skills (α=.691), (2.2) Fine Motor Skills-Artistic (α=.573) and (2.3) Gross Motor Skills-Movement (α=.524), (5.2) Work skills (α=.545), having Cronbach's Alpha coefficient less than (α =.7) in presence of the item.

In the clinical group Cronbach's Alpha scores on the Adaptive Behavior section showed spheres with weaker correspondence to the other spheres. In the data of clinical group there were three spheres such as Gross Motor Skills-Movement (2.3) (α=.552) and Work Skills (α=.628) (5.2) and Domestic skills (1.6) (α =.638). The data analyses of both groups has identified the weakest segment of the measure for both groups, such as Gross Motor Skills-Movement (2.3) and Work Skills (5.2).

3.3.2. Maladaptive behavior section. In Maladaptive Behavior section, the Cronbach's Alpha coefficient was above ($\alpha \geq .7$) for the clinical group but was (α=.26) for the comparison group. The section was designed especially for clinical group and these data indicate that scores of Maladaptive Behavior section effectively discriminates the clinical sample from the comparison sample making it possible to consider this section as a useful and integral part of the whole instrument.

An correlational analysis comparing two spheres of maladaptive behavior scale in the comparison sample indicates that there are only three spheres with very slight degree of overlap; The Pearson correlation coefficients vary (.15≤r≤.29), in spheres such as (6.1) Emotional Expression and Self-Control with (6.2) Self-harm Behaviors (r=.15) (p<.05), and (6.3) Withdrawal with (6.1) Emotional Expression and Self-Control (r=.29) and (6.3) Withdrawal with (6.2) and Self-harm Behaviors (r=.16), (p<.01).

According to the data obtained from clinical samples responses to the GABSI-RV domain of maladaptive behavior, a reliable (p<.05) and strong internal connection was indicated only for two

components, (6.3) Withdrawal and (6.4) Autism Spectrum Behavior (r=.56). On average connection was calculated between 6.1 Emotional Expression and Self-Control and (6.2) Self-harm Behaviors (r=.47), all other spheres were shown to have a low relationship with in each other (.04≤r≤.37), (p≤.1).

The analysis of construct validity was calculated using the α coefficient. The Domain of maladaptive behavior was considered to be as independent from other adaptive domains, because it has specifically designed for clinical group.The analyses of comparison group data indicated a very low prevalence of maladaptive behavior, therefore the correlation between items was rather weak and not statistically significant (α=.26) This leads us to conclusion that application of GABSI-RV maladaptive domain should be considered as having little relevance for the comparison (non-clinical) group.

4. Discussion

The results of this study point to the preliminary validation of a measure of adaptive behavior using the Georgian language. The results of reliability analyses confirm that GABSI-RV is reliable instrument as measured by test-retest reliability and when used by different evaluators (inter-observer agreement). Moreover, the GABSI-RV appears to effectively measure adaptive behavior as demonstrated by results from analyses evaluating validity of the measure. Analyses evaluating the consistency of items within domains as well as in split-parts of the whole GABSI-RV showed strong properties. An evaluation of typically developing comparison children showed increases in adaptive behavior consistent with chronological age as expected, another indicator that the measure is valid. With these results, the GABSI-RV represents a potentially strong measure for clinical use in Georgia.

The presented data showed some significant differences in children's performances on the measure across three different regions of Georgia. It is possible that cultural norms specific to these regions influence the development and nature of some adaptive behaviors. The research uncovered relatively weak components of GABSI-RV, including the Works Skills section, which appears to be more applicable to children above the age of fourteen. In addition, the Maladaptive Behavior domain is completely distinct from other domains and has unique features that did not allow its full evaluation in this study. Future research should evaluate these idiosyncratic domains and determine their test properties and identify areas for amendment.

5. Conclusion

The GABSI-RV is an easily administered questionnaire for assessing the mastery of adaptive behaviours and related skills for children aged 4 to 18 years old. The information gained through the GABSI-RV indicates the level of independent function in accordance with the conceptual framework of adaptive behavior. Data obtained by GABSI-RV reliably differentiated a comparison sample from a clinical sample, showing significant differences between them. The psychometric features of the GABSI-RV evaluated in the present study allow it to be considered a sound and reliable instrument for screening the level of mastery of the targeted skills across several domains and spheres of adaptive behavior relevant to assessing Georgian special needs children.

The limitation of the data obtained on GABSI-RV is related to its construct validity. At the time of researching this study there was no Georgian version of alternative measures available for conducting comparative analyses. This leaves a further opportunity for research in direction of expanding dimension by adding item related to digital literacy.

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