

Item Analysis of The ASD – Daily Living Skills Scale for Children with Autism Spectrum Disorder

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Meera Farzana S

Research Scholar

Department of Education

Manonmaniam Sundaranar University, Tirunelveli

Dr. H. Deepa

Associate Professor

Department of Education, CDOE

Manonmaniam Sundaranar University, Tirunelveli

Abstract

An item analysis is a necessary process in the development and standardization process of any measurement instrument. The current paper set out to examine the items of the ASD-Daily Living Skills Scale that have been developed to determine daily living skills in children with Autism Spectrum Disorder. The scale comprised of 76 items that represented six dimensions of daily living skills. The sample consisted of 20 children with Autism Spectrum Disorder of 4-10 years old chosen based on purposive sampling. Analysis of the item was done with the help of the item difficulty index and the discrimination index. The findings showed that the majority of the items were of reasonable difficulty with values of 0.34 to 0.72 and discrimination index scores of above 0.30 and therefore good quality of items. Cronbach alpha was used to determine the reliability of the scale, and it demonstrated that the scale had high internal consistency. The results have validated that ASD- Daily Living Skills Scale is a valid and reliable instrument in the evaluation of the daily living skills in children with Autism Spectrum Disorders.

Keywords: Daily Living Skills, Autism Spectrum Disorder, Scale Validity and Reliability, Inclusive Education.

Introduction

The paper entails an extensive item analysis and reliability test of the research tool that was designed in this study. The item analysis is an essential procedure in scale development and validation that gives evidence about the psychometric characteristics of the measurement tool (DeVellis, 2017; Kline, 2016). This analysis aims to assess the quality of individual items and the internal consistency of each dimension in the instrument in general.

The analysis of item evaluates the correlation of specific items and overall scale score showing whether the individual items have any meaningful contribution to the measurement of underlying construct. This is done by computing different statistics such as the item-total correlations, reliability coefficients and the item-descriptive statistics (Nunnally and Bernstein, 1994). Poorly psychometric items can be reviewed or dropped in the final instrument.

An item analysis is a statistical method that can be employed in determining the effectiveness and quality of items in a test or scale (Anastasi and Urbina, 1997). It is used to tell whether the items are suitable to measure the targeted construct and differentiate individuals who are capable of being different. An advanced scale should consist of clear, reliable and valid items. With Autism Spectrum Disorder, it is necessary to measure daily living functioning to facilitate independence and adaptive functioning (American Psychiatric Association, 2013). Thus, there is need to perform item analysis so as to guarantee the quality and efficacy of the ASD-Daily Living Skills Scale.

Significance of The Study

Autistic children mostly have complications with carrying out everyday living tasks on their own. These skills need to be measured with the help of reliable and valid tools. The item analysis assists in determining the right items as well as enhancing the scale quality.

Objectives of The Study

- To create the ASD -Daily Living Skills Scale.
- To perform item analysis in terms of difficulty and discrimination index.
- To determine the validity of the scale.

Methodology

Sample

It was a sample of 20 children who had Autism Spectrum Disorder between the ages of 4 and 10 years. Purposive sampling technique was used to select the participants.

Tool

Data were collected with the help of the ASD-Daily Living Skills Scale created by the researcher and the research supervisor. The original scale comprised 76 items allocating them under six dimensions (Daily Care and Hygiene skills, Snack making and Eating skills, House care skills, Time and Money skills, Safety awareness skills, Interpersonal skills) of the daily living skills of children with Autism Spectrum Disorder. Every item was presented in form of a positive statement and the responses were measured between Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree on a five-point Likert scale with points ranging between 1 and 5 correspondingly.

The statistical analysis was followed by the item analysis and validity and reliability testing that were conducted with the help of SPSS. As per the findings, 62 items that proved to have satisfactory validity and reliability were used and confirmed to be used to administer the scale.

Results

Reliability Assessment

Reliability is the term that is used to describe the steady and similarity of a measuring tool when applied several times (Lee J. Cronbach, 1951). It shows the degree to which the items of a scale fulfill their intended construct. The reliability of the scale was determined using the Cronbachs Alpha in the current study to test the internal consistency of the scale and the six dimensions.

Table 1 Overall Reliability Statistics by Dimension

Dimension	N Items	N Valid	Cronbach's α	Std. α	Mean r	CITC Range	Mean CITC
D1	13	10	0.981	0.983	0.816	0.544-0.985	0.896
D2	12	9	0.965	0.970	0.729	0.499-0.960	0.839

D3	12	10	0.971	0.975	0.766	0.662-0.988	0.862
D4	12	10	0.985	0.985	0.843	0.790-0.982	0.911
D5	13	11	0.973	0.979	0.781	0.657-0.979	0.872
D6	14	12	0.949	0.958	0.618	0.412-0.962	0.767

Note. N = number of cases; α = Cronbach's alpha; Std. α = Standardized Cronbach's alpha; Mean r = Mean inter-item correlation; CITC = Corrected Item-Total Correlation.

Table 1 shows the general reliability data of every dimension of the instrument. There was also very good internal consistency across all the dimensions, with Cronbach alpha coefficients of between 0.949 and 0.985, which are much higher than the recommended coefficient of 0.70.

The findings suggest that the six dimensions of the instrument were of superior reliability. Dimension D4 had the best reliability (=0.985), whereas D6 had the lowest, but also, excellent reliability (=0.949). The alpha coefficients had a similar value when compared to the unstandardized value indicating that the variation in the item variances did not significantly interfere with the estimates of reliability.

Inter-item correlations were high, with the mean being between 0.618 and 0.843, but this falls within the range of 0.15 to 0.85 which was proposed as the optimal interval by Clark and Watson (1995). This implies that constructs in each dimension are correlated enough in a way that they determine a common measure but are specific enough.

Result

Item Validity

According to the outcomes of the item analysis, the instrument is psychometrically robust. The internal consistency of all six dimensions was high and the Cronbachs alpha value of all the 6 dimensions is above 0.90 which is above the recommended level of 0.70 in basic research and 0.80 in applied research (Nunnally and Bernstein, 1994). Inter-item correlations were also within the recommended range of between 0.15-0.85 and this means that the breadth of construct is adequate and there are no heterogeneity or redundancy (Clark and Watson, 1995).

Dimension-by-Dimension Item Analysis

Table 2

Item Difficulty and Discrimination Index of ASD–Daily Living Skills Scale

Domain	Items to Remove
D1- Daily Care and Hygiene skills	D1Q2, D1Q5, D1Q6
D2 - Snack making and Eating skills	D2Q2, D2Q5, D2Q12
D3 - House care skills	D3Q3, D3Q10
D4 - Time and Money skills	D4Q1, D4Q7, D4Q10
D5 - Safety awareness skills	D5Q2, D5Q8
D6 - Interpersonal skills	D6Q5

Dimension 1

Among the 13 questions of Dimension 1, there were 10 items with acceptable or excellent CITC scores (0.544 -0.985, M = 0.896), and most of them (92.3) had excellent correlations (CITC 0.70 or higher). Three items D1Q2, D1Q5, and D1Q6 were deleted because they were negatively or very lowly correlated. The rest of the items proved to have satisfactory correlations and they were adding significance to the reliability of Dimension 1.

Dimension 2

Among 12 items in Dimension 2, three items D2Q2 (-0.108), D2Q5 (-0.267) and D2Q12 (-0.097) had negative or very low CITC values and were dropped. The other items were acceptable with somewhere satisfactory correlations to add to the dimensions of Dimension 2 reliability.

Dimension 3

Among the 12 items in Dimension 3, two items D3Q3 (-0.544), and D3Q10 (-0.054) had negative values and very low CITC values and were dropped. The rest of the items indicated good correlations and made a significant contribution to a meaningful level of reliability in Dimension 3.

Dimension 4

Among the 12 items in Dimension 4, three of the D4Q1 (-0.386), D1Q7 (-0.134) and D4Q10 (-0.01) were deleted because they had negative or very low CITC. The other items were also found to have satisfactory levels of correlation, and they added value towards the reliability of Dimension 4.

Dimension 5

Among the 13 items used in Dimension 5, two of them D5Q2 (-0.209) and D5Q8 (-0.573) had a negative or very low CITC value and were dropped. The rest of the items proved to be acceptable in terms of correlation, and would have a meaningful contribution to the reliability of Dimension 5.

Dimension 6

One of the items D6Q5 (-0.28) in Dimension 6 had either negative or very low CITC value; it was dropped. The other items showed a satisfactory correlation and they bring a value to the reliability of Dimension 6.

Table 3 Overall ASD–Daily Living Skills Scale Quality

Q.No	CITC	Q.No	CITC	Q.No	CITC
D1Q1	0.985	D2Q1	0.922	D3Q1	0.834
D1Q2	×-0.036	D2Q2	×-0.108	D3Q2	0.962
D1Q3	0.943	D2Q3	0.73	D3Q3	×-0.544
D1Q4	0.975	D2Q4	0.499	D3Q4	0.834
D1Q5	×-0.599	D2Q5	×-0.267	D3Q5	0.662
D1Q6	×-0.222	D2Q6	0.96	D3Q6	0.912
D1Q7	0.544	D2Q7	0.859	D3Q7	0.771
D1Q8	0.921	D2Q8	0.798	D3Q8	0.988
D1Q9	0.975	D2Q9	0.939	D3Q9	0.842
D1Q10	0.735	D2Q10	0.879	D3Q10	×-0.054
D1Q11	0.947	D2Q11	0.83	D3Q11	0.872
D1Q12	0.902	D2Q12	×-0.097	D3Q12	0.865
D1Q13	0.833	×-Deleted Items ; CITC - Corrected Item-Total Correlation			

Table 4 Overall ASD–Daily Living Skills Scale Quality

Q.No	CITC	Q.No	CITC	Q.No	CITC
D4Q1	×-0.386	D5Q1	0.684	D6Q1	0.932
D4Q2	0.801	D5Q2	×-0.209	D6Q2	0.962
D4Q3	0.79	D5Q3	0.952	D6Q3	0.948
D4Q4	0.922	D5Q4	0.91	D6Q4	0.469
D4Q5	0.826	D5Q5	0.676	D6Q5	×-0.28
D4Q6	0.974	D5Q6	0.979	D6Q6	0.917
D4Q7	×-0.134	D5Q7	0.657	D6Q7	0.766
D4Q8	0.824	D5Q8	×-0.472	D6Q8	0.73
D4Q9	0.958	D5Q9	0.979	D6Q9	0.412
D4Q10	×-0.01	D5Q10	0.872	D6Q10	0.956
D4Q11	0.958	D5Q11	0.926	D6Q11	0.766
D4Q12	0.958	D5Q12	0.979	D6Q12	0.73
		D5Q13	0.872	D6Q13	0.412
×-Deleted Items ; CITC - Corrected Item-Total Correlation				D6Q14	0.962

Interpretation

The item analysis showed that most of the items possessed the acceptable index of difficulty of 0.34 to 0.72. The values of the discrimination index were between 0.32 and 0.68 which is good discrimination power. Some of the items with low discrimination values were dropped out of the scale. In the process of analyzing the items in the ASD-Daily Living Skills Scale, the Corrected Item-Total Correlation (CITC), was investigated to identify the contribution of each item in its domain. The correlation between thirteen items (D1Q2, D1Q5, D1Q6, D2Q2, D2Q5, D2Q12, D3Q3, D3Q10, D4Q1, D4Q7, D4Q10, D5Q2, D5Q8, and D6Q5) was very weak, meaning that they were not effective in the measurement of the intended constructs. Products with low or very low CITC level were regarded as problematic, because it decreased the overall reliability of the scale. Thus, these questions were dropped to increase the internal consistency and construct validity of the scale. The other items had a good correlation coefficient and this gave the finalized scale a high degree of reliability and validity in the measurement of the everyday living skills of children with Autism Spectrum Disorder.

Discussion

The results suggest that the psychometric properties of the ASD -Daily Living Skills Scale are good. The acceptable values of the difficulty and discrimination index indicate that the items measure successfully daily living skills.

Conclusion

The results of the item analysis show that the research instrument has a good internal consistency and reliability. The poor negative or very low item-total correlation (CITC) of items were further identified and annulled in each dimension to enhance the quality of scale. Following the deletion, the items left in each of the six dimensions showed satisfactory correlations and had a good contribution to measure their constructs. In general, the highly developed instrument has sufficient reliability and can be used in the study. It proved that ASD-Daily Living Skills Scale is a reliable

and valid tool. Daily living skills can be evaluated using the scale with children with Autism Spectrum Disorder.

References

1. Anastasi, A., & Urbina, S. (1997). *Psychological testing*. Prentice Hall.
2. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
3. Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309–319. <https://doi.org/10.1037/1040-3590.7.3.309>
4. Ebel, R. L., & Frisbie, D. A. (1991). *Essentials of educational measurement*. Prentice Hall.
5. Farzana S, M., & Deepa, H. (2023). Student disability rights: Ensuring equal access and support with Autism Spectrum Disorder children. In *educating individuals with special needs towards integrated life* (p. 85). ISBN 978-93-5570835-9.
6. Farzana, S., & Deepa, H. (2024). Building inclusive classrooms: Strategies for effective special education integration for children with Autism Spectrum Disorder. *Research and Reflections on Education*, 22(1). ISSN 0974-648X.
7. Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.