



The Reliability of the Persian Version of the School Function Assessment in Iranian Students 6 to 12 Years Old in Tehran's Schools

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Abstract

Background: Ability of the students to perform a variety of functional activities leads to their participation in school-based learning activities. Therefore, it is essential to provide a reliable and credible criterion that provides information about the students' actual performance in school activities. The purpose of this study is to assess the reliability of the Persian version of school function assessment (SFA) for Iranian students 6 to 12 years old.

Methods: The SFA was designed to assess a range of school-specific functional skills in the three areas of participation, task support, and activity performance. In this methodological study, 150 students were randomly selected from the public schools in Tehran. A demographic questionnaire was used to gather data. The SFA was completed by teachers. To test the reliability of the test-retest, after 2 weeks, the questionnaire was completed by the 40 teachers. The internal consistency was examined by using the Cronbach's alpha and the reliability of the test-retest was examined by the intraclass correlation coefficient (ICC).

Results: The average age of students in this study was 9 years old. The Cronbach's alpha coefficient for the different parts of this tool was excellent ($0.84 < \alpha < 0.99$). The test-retest reliability of the test was good for the subtest of this tool ($0.85 < ICC < 0.99$).

Conclusions: The results showed that the Persian version of the SFA is a good test for the assessment of the school performance of Iranian students in terms of internal consistency and the reliability of the test-retest. Therefore, the SFA can be used as a research study to evaluate students in Iran.

Keywords: School Function Assessment, Test-Retest Reliability, Internal Consistency

1. Background

School function is the ability of the student to carry out important functional activities that support her or his participation in the educational and social aspects of the curriculum (1, 2). These activities are related to the non-educational areas of the school curriculum and are significantly different from the academic activities. Educational activities are essentially classroom and homework assignments that follow a specific curriculum and their main purpose is to increase student domination in content areas such as art, language, mathematics, and science (1). The functional activities include the use of school tools, such as the writing tools and books appropriately, requesting assistance when needed, having mobility in the classroom and school, the ability to manage self-care and personal needs (2). It also includes addressing the needs of individuals in an appropriate manner, interacting with peers during the learning activities, learning information, and answering the learning questions (1). Equipped with the

functional skills of the school, a student is properly able to engage in the academic activities without the need for help (2). Examining the functional abilities of children provides useful information for therapists to develop an intervention program that focuses on a child's performance in specific areas (3). Given that one of the targeted activities of a child is as a student, the functional assessments that provide information about a child's actual performance in school activities are required (4). Typically, an educational assessment occurs when the student has problems delivering the academic performance expected of him. There are many standard tests and methods for identifying student abilities and student constraints, as well as determining a student's competence in areas that lead to academic achievements, such as language and cognition (1).

For the occupational therapists working in the school system, the functional assessments take into account the true performance of children in school activities (3). Occupational therapy focuses on a range of functional areas,

including education, social participation, play, recreation, daily work, and activities (5). According to the occupational therapy practice framework of the American occupational therapy association, these needs are defined as the participation in the occupations (6). The education is defined as the activities are needed for learning and participating in the educational environment (7). Education is work: Labor or exertion; to make, construct, manufacture, form, fashion, or shape objects; to organize, plan, or evaluate services or processes of living or governing; committed occupations performed with or without financial reward (8). The role of occupational therapy in the school is to assess, intervene, set goals for the training program, collaborate, and evaluate technology aids (5). The occupational therapists use three types of childhood assessment, which include: first: diagnostic-developmental assessments, second: functional evaluations, and third: health and quality of life examinations (5). The diagnostic-developmental assessments measure child behavior and skills in relation to a student's ability and include the PDMS (Peabody developmental motor scales), BOT (Bruininks-oseretsky test of motor proficiency), and VMI (Developmental test of visual-motor integration) tools (4, 5). Functional evaluations measure the child's abilities and limitations in activities that are necessary, including school AMPS (School version of the assessment of motor and process skills), SFA (School function assessment), and SPM (Sensory processing measure) (5, 9). The SFA is a functional assessment developed by Wendy Coster and his colleagues in 1998 to measure a range of school-related functional skills that support student participation in the school's educational and social spheres. This tool is designed to facilitate planning for students with various disabilities (1). The translation and the validity of this tool have been carried out by Shojaee et al. in 2017 (10).

The assessment of the school's functions consists of three parts. First, participation: Assessment of student's participation in the six activities of the school including: regular or special education classroom, playground or recess, transportation to and from school, bathroom, the transition to and from class, and mealtime. The second part is task support or measuring the amount of help and adaptation that is currently offered when the child is involved. The two types of support are considered separately, which include adult help and adaptations (changes in the program or the student environment, such as special equipment or adaptive devices). The third aspect is activity performance, which is the assessment of a student's ability to perform specific functional activities and physical and cognitive aspects such as travel, using educational material, functional communication, and safety (4). There are three important features associated with the SFA that

demonstrate the usefulness and utility of this tool in comparison to the other measurement tools; first: the SFA is a benchmarking tool that measures the current level of student performance relative to the overall functional skill chain. Unlike the normative-reference skill tests, which have activities for a single scale, the SFA shows separate scales for each functional domain (3, 4). The individual scales provide a comprehensive view of the student's function and his special needs in the curriculum. Therefore, the results of this tool can help the joint team of specialist educators to develop specific goals and individual education programs (4). Second, the SFA was developed based on the Rush model, which means that the existing items are organized in a hierarchical manner in any scale, in a direction that indicates an increase in difficulty throughout the performance chain. According to Fisher, the hierarchical scales are used as a guide to the progression of treatment and target specific areas for intervention. Third: unlike many traditional developmental tests that are initially used for children with disabilities, the SFA standardization has uses for heterogeneous groups of students with a wide range of functional disabilities such as motor disorders, cognitive, communicative, emotional, behavioral, and sensory disorders (3, 4).

Due to the lack of an appropriate assessment tool for occupational therapists in Iran that can assess the performance of the school and the actual performance of students, the purpose of this study is to assess the reliability of the Persian version of the SFA in students without disabilities aged 6 to 12 years with an examination of the internal consistency and reliability of the test-retest of this tool, to use this tool to evaluate the performance of Iranian students in clinical and research fields.

2. Methods

In this research, after approval of the research project by the local Ethics Committee of Iran University of Medical Sciences and receipt of the code of ethics, a copy of it was presented along with an introduction to the department of education. After obtaining the necessary permissions, the letter of introduction was sent to the relevant school administrators. With their consent, the school attendees who met the entry criteria were randomly selected. After the required explanations regarding the purpose of the study, consent was obtained from the parents and with the consent of the teachers at the initial session of the parent's demographic information.

The participants in this study were primary school teachers in Tehran, who were selected by convenience sampling method, and their students, who were selected by a

simple random sampling method. The criteria for inclusion for students were: first, age 6 to 12 years; second, neurological failures and muscular disorders that result in motor injury such as cerebral palsy and muscular dystrophy (according to the parents and the information provided in the public questionnaire); third, the absence of childhood psychiatric disorders such as autism, Asperger, hyperactivity, and severe intelligence disabilities such as Down syndrome. The inclusion criteria for the teachers were at least 10 years of work experience. This study was conducted in the form of a research project and ethical considerations were exercised to prevent the participants from being harmed. For this purpose, informed consent was obtained from the parents of the students. If the teachers and parents were not willing to continue for any reason, there was no obstacle to quitting the study.

Demographic questionnaire: At the beginning of the study, the first pages of the school function assessment, which included the student's demographic information, were completed by the respondent. This questionnaire was used to collect information about the age, sex, level of education and the status of employment of the parents and information about other items.

The SFA, The tool consists of 320 items (26 scale), each item being measured using a scale of 4 scores (part one related to the participation of 6 scores) and should be scored by one person (teacher, supervisor, occupational therapist, physiotherapist, speech therapist) who had observed and monitored the participation and work of the child in at least several settings. The individual scales are completed in 10 minutes, but the completion of the entire tool takes about 2 hours.

In the present study, the test-retest reliability and the internal consistency of the Persian version of the SFA were examined. To measure the internal consistency in the first step, the 150 tests were completed by teachers. Two weeks after the completion of the test, the 40 tests were completed by the teachers.

The SPSS software (version 21) was used to analyze the data. In order to test the reliability of the test-retest, the intraclass correlation coefficient (ICC) was used and the internal consistency of Cronbach's alpha was measured.

3. Results

In this study, the 150 normal students who were 6 to 12 years old were studied and of them, 78 (52%) were boys and 72 (48%) were girls. The age range of the population was 6 to 12 years old with an average age of 9 years and 5 months and a standard deviation of 20. The descriptive statistics are presented in [Table 1](#).

Table 1. Demographic Characteristics of the Students

Variable	Frequency	Percent
Sex		
Boy	78	52
Girl	72	48
Academic grade		
First	25	16.7
Second	24	16
Third	23	15.3
Fourth	27	18
Fifth	26	17.3
Sixth	25	16.7

3.1. Test-Retest

To examine the reliability of the test-retest, the ICC was used. The results are reported in [Table 2](#). According to the review results, all items have a score of above 0.85.

3.2. Internal Consistency

The Cronbach's alpha coefficient was used to assess the internal consistency of the questionnaire. The sample size was 150 for checking the internal consistency of the questionnaire. The Cronbach's alpha coefficient for the present study has been categorized by item breakdown in [Table 3](#) and compared with the alpha value of the original version of the tool, as listed in [Table 4](#). Comparing the scores of the original version with the previous study, it can be concluded that compared to the original version, which uses different samples such as cerebral palsy, autism, deafness and mentally retarded and normal, a slight difference indicates a very good level of internal consistency between the items of study performed on normal children.

4. Discussion

The present study was conducted in two parts; the review of the reliability of the test-retest and the internal consistency of the Persian version of the SFA.

The translation and the validity of this tool have been carried out by Shojae et al. the results of face validity showed that all the terms were clear and simple, and all the terms except one were higher than 1.5 in the impact score. The content validity results showed that five item's score was lower than the acceptable score which is 0.7. Their final results indicate the appropriate content and formality of this tool (10).

Table 2. Intraclass Correlation Coefficient

Item	ICC
Participation	0.98
Task supports (physical activity)	
Assistance	0.96
Adaptation	0.96
Task supports (cognitive/behavioral)	
Assistance	0.98
Adaptation	0.99
Travel	0.98
Maintaining and changing positions	0.98
Recreational movement	0.97
Manipulation with movement	0.98
Using materials	0.99
Setup and cleanup	0.91
Eating and drinking	0.98
Hygiene	0.99
Clothing management	0.97
Up/down stairs	0.99
Written work	0.98
Computer and equipment Use	0.99
Functional communication	0.98
Memory and Understanding	0.85
Following social convention	0.98
Compliance with adult directive and school rules	0.99
Task behavior/completion	0.99
Positive interaction	0.98
Behavior regulation	0.99
Safety	0.98
Personal care awareness	0.98

Table 3. Cronbach's Alpha Coefficient

Item	Cronbach's Alpha
Participation	0.99
Task supports (physical activity)	
Assistance	0.98
Adaptation	0.98
Task supports (cognitive/behavioral)	
Assistance	0.99
Adaptation	0.99
Travel	0.99
Maintaining and changing positions	0.99
Recreational movement	0.98
Manipulation with movement	0.99
Using materials	0.99
Setup and cleanup	0.84
Eating and drinking	0.99
Hygiene	0.99
Clothing management	0.98
Up/down stairs	0.99
Written work	0.99
Computer and equipment use	0.99
Functional communication	0.99
Memory and Understanding	0.87
Following social convention	0.99
Compliance with adult directive and school rules	0.99
Task behavior/completion	0.99
Positive interaction	0.99
Behavior regulation	0.99
Safety	0.99
Personal care awareness	0.99

The reliability of this tool was tested by Rahimzadegan et al. in 2017. On children with physical disability 80 students aged 6 - 12 years old were evaluated and SFA was completed by parents and teachers of students. The Cronbach's alpha was excellent for different parts of this tool ($0.90 < \alpha < 0.98$) and test-retest reliability for the subtest of this awareness tool has been ($0.87 < ICC < 0.98$) reported (11).

4.1. Test-Retest Reliability

The test-retest reliability of this tool was good. This result is almost in line with the results of studies conducted in other countries on this tool. For example, in the initial

version of the questionnaire, the test-retest reliability was ($0.82 - 0.98$) (1). In the Chinese version of this questionnaire, the test-retest reliability was ($0.87 - 0.98$) (12). The test-retest reliability of the Taiwanese version of the questionnaire was also reported at an appropriate level of ($0.87 - 0.98$) (3). The test-retest correlation coefficient, which indicates the reliability of the test, is ($0.85 < ICC < 0.99$) for the present study.

4.2. Internal Consistency

The results of the internal consistency analysis in this study indicate that the Cronbach's alpha value is highly desirable. In this case, the results are in line with the studies

Table 4. Cronbach's Alpha Coefficient

Item	Initial Cronbach's Alpha
Participation	0.92
Task supports (physical activity)	
Assistance	0.95
Adaptation	0.96
Task supports (cognitive/behavioral)	
Assistance	0.94
Adaptation	0.95
Travel	0.98
Maintaining and changing positions	0.96
Recreational movement	0.96
Manipulation with movement	0.95
Using materials	0.98
Setup and cleanup	0.97
Eating and drinking	0.97
Hygiene	0.97
Clothing management	0.97
Up/down stairs	0.98
Written work	0.97
Computer and equipment use	0.93
Functional communication	0.97
Memory and understanding	0.95
Following social convention	0.96
Compliance with adult directive and school rules	0.95
Task behavior/completion	0.96
Positive interaction	0.98
Behavior regulation	0.95
Safety	0.96
Personal care awareness	0.97

on the other versions of this tool. For example, the SFA tool, as well as several other studies of Rash analysis, were used and the degree of internal consistency of the instrument in the desired range 0.82 - 0.98 was reported (3). In the Chinese version of the questionnaire, the Cronbach's alpha coefficient of the questionnaire was reported to range from 0.94 - 0.98, which is desirable (12). In the Taiwanese version, this coefficient has been reported to be 0.94 - 0.98 (3). The Cronbach's alpha coefficient was excellent for different parts of this tool ($0.84 < \alpha < 0.99$).

4.3. Limitations of the Study

School function assessment examines the physical and the cognitive behavioral tasks in three parts and 320 items despite being a comprehensive test, Lots of SFA items have certain limitations for this study. Teachers needed a lot of time to complete the questionnaire so the process of the study was elongated and lasted for about 15 months.

4.4. Conclusion

Regarding the importance of school functioning in supporting the student's participation in the educational and social aspects of the curriculum, the lack of a suitable assessment tool in Iran that can be used to assess the effectiveness of the treatment methods is a significant issue for occupational therapists. Adding to the problem are the structural and functional differences, including environmental, cultural and educational issues. Given this situation, the SFA tool can be considered an appropriate tool for examining the motivation and guidance for interventions for normal students. This test has different sections, each of which addresses different aspects of school performance, and has a good validity and reliability, as ascertained by the present study. So, the outcome measure is evaluated separately from each item. This study can be done on more diverse populations with a different diagnosis of physical and mental disabilities.

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References

1. Coster W, Deeney T, Haltiwanger J, Halley S. *School Function Assessment User's Manual*. 1998. p.1-7.
2. Daunhauer LA, Fidler DJ, Will E. School function in students with Down syndrome. *Am J Occup Ther*. 2014;**68**(2):167-76. doi: [10.5014/ajot.2014.009274](https://doi.org/10.5014/ajot.2014.009274). [PubMed: [24581403](https://pubmed.ncbi.nlm.nih.gov/24581403/)].
3. Hwang JL, Nochajski SM, Linn RT, Wu YW. The development of the School Function Assessment Chinese version for cross-cultural use in Taiwan. *Occup Ther Int*. 2004;**11**(1):26-39. doi: [10.1002/oti.195](https://doi.org/10.1002/oti.195). [PubMed: [15118769](https://pubmed.ncbi.nlm.nih.gov/15118769/)].
4. Hwang JL, Davies PL, Taylor MP, Gavin WJ. Validation of school function assessment with elementary school children. *OJTR (Thorofare NJ)*. 2016;**22**(2):48-58. doi: [10.1177/1539449202200202](https://doi.org/10.1177/1539449202200202).
5. Bazyk S, Case-Smith J. School-Based Occupational Therapy. In: Falk K, editor. *Occupational Therapy for Children*. sixth ed. 2010. 713 p.
6. Pashmdarfard M, Amini M, Hassani Mehraban A. Participation of Iranian Cerebral Palsy Children in Life Areas: A Systematic Review Article. *Iran J Child Neurol*. 2017;**11**(1):1-12. [PubMed: [28277550](https://pubmed.ncbi.nlm.nih.gov/28277550/)].
7. Labaf S, Shamsoddini A, Hollisaz MT, Sobhani V, Shakibae A. Effects of Neurodevelopmental Therapy on Gross Motor Function in Children with Cerebral Palsy. *Iran J Child Neurol*. 2015;**9**(2):36-41. [PubMed: [26221161](https://pubmed.ncbi.nlm.nih.gov/26221161/)].

8. American Occupational Therapy Association . Occupational therapy practice framework: Domain and process, 3rd edition. *Am J Occup Therapy*. 2014;**48**:3-48.
9. Katherine B. Purposes Processes and Methods of Evaluation. In: Falk K, editor. *Occupational Therapy for Children*. sixth ed. 2010. 193 p.
10. Shojaee M, Alizadeh Zarei M, Hasani Mehraban A. Translation, face and content validity of the persian version of school function assessment. *Middle East J Rehabil Health Stud*. 2017;**4**(4). doi: [10.5812/mejrh.14594](https://doi.org/10.5812/mejrh.14594).
11. Rahimzadegan H, Alizadeh Zareai M, Amini M, Ghorbani Kouhbanani N, Shojaai A. Psychometric properties of the Persian version of school function assessment (SFA) in 6 to 12-year-old children with physical disabilities. *Middle East J Rehabil Health Stud*. 2017;**In Press**(In Press). doi: [10.5812/mejrh.61744](https://doi.org/10.5812/mejrh.61744).
12. Hwang JL. The reliability and validity of the school function assessment—chinese version. *OJTR (Thorofare NJ)*. 2016;**25**(2):44-54. doi: [10.1177/153944920502500202](https://doi.org/10.1177/153944920502500202).