


Psychometric Properties of Children Participation Assessment Scale-Parent Version (CPAS-P) in Iranian Children with Autism Spectrum Disorder

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ABSTRACT

Background & Objective: Children with Autism Spectrum Disorder (ASD) have limitation in everyday activities due to the nature of their disorder. Participation means involvement in life situations. The aim of this study was to evaluate psychometric properties of “the Children Participation Assessment Scale-Parent Version” (CPAS-P) in activities outside of school in Iranian children with ASD.

Materials & Methods: The sample consisted of 55 parents of 6-12 years old children with ASD who selected with convenience sampling. For assessing the convergent validity of CPAS-P and Vinland Adaptive Behavior Scale (VABS), the spearman's correlation coefficient test was used. The internal consistency and test-retest reliability were determined by using the Cronbach's alpha and the intraclass correlation coefficient (ICC), respectively.

Results: The mean age of children was 7.62 years. Cronbach's alpha was obtained 0.91 to 0.94, which indicates the proper internal consistency and ICC was 0.90 to 0.95, which indicates the acceptable test-retest reliability. Finally, significant correlations were reported between CPAS-P and VABS tests in related subscales.

Conclusion: Increasing independence in doing daily activities of children with ASD is a concern for rehabilitation professions such as occupational therapists. Valid and reliable instruments are necessary for documenting treatment that should culturally adapted among Iranian children. According to the result of this study, CPAS-P has good psychometric properties for clinical practice and research.

Keywords: Child, Autistic Disorder, Behavior Rating Scale, Occupational Therapy



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Introduction

Autism spectrum disorders (ASD) is one of the most common neurodevelopmental disorders in children (1). With the advancement in diagnosis of mental disorders, it seems that ASD prevalence is more than before. Current research reports high prevalence of this disorder (2, 3). So that, the prevalence of ASD increased to 1 in 68 children in 2010 (4). Prevalence of ASD in other countries indicate that 1 percent of the population is affected by ASD (5, 6). The prevalence of this disorder in Iranian children aged 5 years is reported to be 26.6 per 10,000 (6). The ratio of boys to girls was 4/5;1 (5). According to the new edition of the "Diagnostic and statistical manual of mental disorder-fifth edition" (DSM-5), ASD is characterized by limited social function, Restricted and repetitive behaviors and interests (1). Wide diversity of symptoms in this group of children can impact on occupational performance and participation. Occupation is groups of activities and task of routine life that meaning by individuals and culture; and participation is engagement in occupation in real situation (7).

According to the Occupational Therapy Practice Framework (OTPF), “participation in occupations is a

vital part of human development and life experience, by which it acquires skills and competencies and finds meaning and purpose in life” (p.625) (7). According to the International Classification of Functioning, Disability and Health (ICF), participation is defined as “involvement in life situation that occurs in the environment of life, work and play of the person” (p.640) (8, 9). The nature of ASD and its underlying causes can limit the children during activity participation of these children in daily occupations (10).

In recent years, the focus of studies on participation has been limited to physical disabilities (11, 12); however, participation in daily activities is restricted in other disability, too. Puspongoro *et al.* (2016) concluded that children with ASD were more and more difficult to cope with social functions such as interpersonal communication, play and leisure, as well as adaptive skills (13). Dehghan *et al.* in 2015 reported that the Sensory Processing Disorders in children with ASD was associated with anxiety, aggression and hyperactivity (14). Hillton *et al.* (2007) showed limited social participation in children with ASD (15). According to the

mentioned studies, it can be concluded that the main symptoms in ASD can be barriers to active participation. On the other hand, the diversity and content of the issues that people learn, perform and participate in real life activities can be influenced by the social context and cultural expectations (9, 16-20).

The purpose of all therapies and rehabilitation in ASD is appropriate participation in real life; additionally, the comprehensive assessment is base of the successful treatment. So that, preparing an assessment tool can help clinician that focus on problems of children with ASD in participation in all areas of occupations at home, school, and community, in accordance with native culture and social expectations. Therefore, the study aims to evaluate the psychometric properties of CPAS-P in Iranian children with ASD. Children with ASD, due to their disorder nature, have a greater constraint on their participation in the environment than their peers (13, 21, 22). Therefore, occupational therapists for improving their position in the health system, also to achieve the most appropriate intervention for each individual with ASD need a scale with good psychometric properties to assess their interventions' outcome. In other words, occupational therapists use their science to interact with the environment and conditions in order to their occupation-based interventions. Currently, there are tools to measure children's participation, Among the tools which, assess the children participation is: Children Assessment of Participation and Enjoyment (CAPE), Pediatric Activity Card Sort (PACS), Children Participation Questioner (CPQ), Life-Habit (Life-H). Those Available tools, despite their advantages, have limitations (23, 24). This would reveal the necessity of a tool with less constraint. In other words, the studies clearly state that all developed tools are influenced by the social and cultural factors of each society and that their applicability in other societies may be accompanied by limitations (25). Studies show that the motivation and experience of participation in activities can be influenced by the cultural and social factors of children (26, 27). Each of these sub-tests can be used separately. Therefore, having a tool that fits any culture and society seems important. Investigating the participation of children with ASD due to the importance of their participation in ADL requires their own dedicated tools. CPAS-P is a tool which developed in 2016 for assessing the participation of 6 to 12 years Old Iranian children. This tool is provided in both child and parent versions. In this research the parent version has been used. All the areas of occupations presented in the OTPF (Activity Daily of Living (ADL), Instrumental Activity Daily of Living (IADL), Play, Leisure, Social participation, Education, Work, and Sleep / Rest) are covered in this tool (20). On the other hand, studies in recent years point to the importance of the issue of the cultural and social appropriateness of each research and experiment as an important and contemplative point (9, 16). CPAS-P is the only tool built in Iran and assesses the participation of children based on Iranian culture. This issue itself is considered as the point of strength of this scale (13).

Materials and Methods

Participants

In this descriptive study, 55 parents of children with ASD were included. Parents of children in this study did not have any psychology problems; also, they were literate. Children of this group of parents were 6-12 years old. ASD children selected from rehabilitation centers, ordinary schools, special schools and special schools for children with ASD. The inclusion criteria of this study were as follows; diagnosis of ASD spectrum disorder based on the DSM-5 by a psychiatrist, obtaining a minimum score of 50 in "ASD Spectrum Screening Questionnaire" (ASSQ), lack of vision, hearing and motor problems, and finally, collaboration of parents or any caregiver who had supervised the child for at least 8 months. The exclusion criteria of this study were failure of parents to complete the questionnaires despite initial satisfaction.

Outcome Measurement

Children Participation Assessment Scale in Activities Outside of School-Parent Version (CPAS-P)

Children Participation Assessment Scale in Activities outside of school was designed for children aged 6 to 12 years old in Parent and Child version (CPAS-P, CPAS-C). This scale assesses child participation in activities outside-of-school in two important life situations (home and community) (20). In this study the CPAS-P has been studied. A pilot study conducted during the development of the scale, indicates that the CPAS-P is appropriate for the age range of 6-12 years. OTPF-3 was used in the design, and development of this tool (20). OTPF is a classification system for occupations and activities, all of the areas of occupations presented in the OTPF (Activity Daily of Living (ADL), Instrumental Activity Daily of Living (IADL), Play, Leisure, Social participation, Education, Work, and Sleep / Rest) are covered in this tool (20). Therefore, this tool evaluates the 8 areas of occupations (ADL, IADL, Play, Leisure, Social participation, Education, Work, and Sleep / Rest). This tool can be used as a descriptive and evaluative tool in studies on healthy children and children with disabilities. The number of items in this tool is 71 items that are in the form of eight areas of occupations: ADL (such as bathing), IADL (such as the use of audio and video equipment), Play (such as computer games), Leisure (such as watching TV), Social Participation (such as attending to a friend's birthday party), Education (such as participating in sports classes), Work (such as doing paid work) And sleep / rest (like relaxation time detection). For each activity that the child performs, the parents should report the frequency; enjoyment, with whom and the parent satisfaction domains of activities. So that CPAS-P has 5 dimensions, 1) doing or not doing an activity that takes 0 for not doing and 1 for doing an activity. 2) The frequency of an activity that the scores, ranges from 1 (once in the last 4 months) to 6 (every day). 3) Performing an activity with whom, that the range is from 1 (alone) to 5 (with others). 4) The level of enjoyment of the activity, which the

range is from 1 (at all) to 5 (high interest); and 5) the parent satisfaction which the score ranges from 1 (dissatisfaction) to 4 (high satisfaction). This scale is a kind of self-report scale which takes 30 to 45 minutes to complete it and this tool has acceptable psychometric properties in normal Iranian children (20).

Vineland Adaptive Behavioral Scale (VABS)

This tool assesses the adaptive behaviors of children in: communication domains, ADL & IADLs skills, socialization, and motor skills. This test is a suitable test for people under the age of 1-18 years. In this study, the items which are related to the age 6 to 12 years old were evaluated. This tool with Intraclass Correlation Coefficient (ICC=0.98) has acceptable reliability in Iran (28).

Procedure

Initially, the code of ethics (IR.IUMS.FMD.REC 1396.9411355006) was received from the Ethics Committee of Iran University of Medical Sciences. Available samples were selected from rehabilitation centers, ordinary schools, special schools and special schools for children with ASD. The purpose of this study was described for the parents of children with ASD who refer to these centers. In order to make parents more collaborative, a commitment was made to hold educational classes aimed at increasing the parental involvement of these children. The educational content of these classes provided simple sensory instructions to improve the sensory status of children, held in groups of five in three sessions per hour. After obtaining the consent form from each parent, the initial evaluations to select the samples were carried out. Demographic questionnaire, VABS and CPAS-P were provided to the

parents of children for completion. After completing the tests by parents, the mentioned educational classes were held. For assessing the test-retest reliability of CPAS-P in children with ASD two weeks after the initial test was performed the 55 of the same parents of children with ASD completed the tests again.

Statistical Analysis

Statistical analysis was performed using SPSS 21 (IBM Inc. Chicago, IL, USA). ICC was used to measure the test-retest reliability, Cronbach's alpha, to measure the internal consistency of the CPAS-P, and for converging validity the Spearman test was used.

Results

The mean age of children was 7.62 years (SD=1.64). 63.6% of the parents of children with ASD were housewives and 36.4% of them were employed.

Internal Consistency of CPAS-P

Based on the result from the Cronbach's alpha, the levels of scores are follows. Up to 0.9 is (excellent), 0.7-0.9 is (good), 0.6-0.7 is (acceptable), 0.5-0.6 is (weak), and finally lower than 0.5 is non-Acceptable (26-28). The results of the Cronbach's alpha coefficient for the dimensions of participation (frequency, with whom, level of enjoyment, and parental satisfaction) and for areas of occupations are reported in (Table 1). On the other hand, for the test-retest reliability of the CPAS-P, the Intraclass Correlation Coefficient (ICC) was used. In ICC, scores above 0.75 indicate excellent reliability and high scores of 0.70 represent acceptable reliability. Also, the scores between (0.60 -0.75) have good reliability and the scores (0.40-0.59) are weak (29, 30) (Table 2).

Table 1. The internal consistency of the participation dimensions for each areas of occupations (N= 55)

		Diversity	Frequency	With Whom	Enjoyment	Parent Satisfaction
Total Measure	Cranach's alpha	0.92	0.93	0.91	0.94	0.94
Activity of Daily Living	Cranach's alpha	0.88	0.86	0.80	0.89	0.89
Instrumental Activity of Daily Living	Cranach's alpha	0.76	0.76	0.73	0.79	0.78
Play	Cranach's alpha	0.64	0.68	0.65	0.71	0.70
Leisure	Cranach's alpha	0.74	0.73	0.75	0.80	0.81
Social Participation	Cranach's alpha	0.68	0.71	0.62	0.71	0.68
Education	Cranach's alpha	0.56	0.58	0.50	0.60	0.60
Sleep/Rest	Cranach's alpha	0.70	0.65	0.66	0.67	0.68

Table 2. Test-retest Reliability of the participation dimensions for each areas of occupations (N= 55)

		Diversity	Frequency	With whom	Enjoyment	Parent Satisfaction
Activity of Daily Living	ICC	0.95	0.92	0.90	0.92	0.94
Instrumental Activity of Daily Living	ICC	0.95	0.97	0.95	0.97	0.81
Play	ICC	0.97	0.98	0.95	0.93	0.93
Leisure	ICC	0.71	0.94	0.93	0.96	0.90
Social Participation	ICC	0.93	0.91	0.95	0.95	0.93
Education	ICC	0.96	0.97	0.96	0.95	0.96
Work	ICC	0.79	0.87	0.93	0.84	0.87
Sleep/Rest	ICC	0.85	0.86	0.80	0.90	0.91

Convergent Validity of the CPAS-P

According to the definition of convergent validity, the correlation value of a questionnaire is validated by other tests, which measure the same structure. In Iran, VABS seems to be the only valid tool that has some of the areas of CPAS-P. To assess the correlation between CPAS-P domains (frequency, with whom, the level of enjoyment and parent satisfaction) and VABS (ADL &

IADL, communication, socialization and motor skills) the Spearman correlation coefficient test was used. The correlation between the domains of CPAS-P and VABS which is presented in Table 3, the results shows that the correlation between the two domains of ADL and socialization in both scales is significant. However, there is no significant relationship between the other domains of two tests.

Table 3. Spearman correlations between the CPAS-P measures (diversity, frequency, with whom, enjoyment, and parent satisfaction) And the VABS subscales (ADL, communication, socialization, and motor skills) of children without developmental disabilities (N:50)

CPAS-P \ VABS	ADL	Socialization	Communication
ADL	0.48**	0.51**	0.39**
Social participation	0.17	0.26*	0.30*

* $P < 0.05$; ** $P < 0.001$.

Discussion

The purpose of this study was to assess the psychometric properties of the (CPAS-P) in 6-12 year old Children with ASD. Participation is one of the main consequences of rehabilitation interventions. Therefore, evaluation of the psychometric properties of the CPAS-P in 6-12 year old Children with ASD were considered essential. The Cronbach's alpha coefficient for this test, (0.5-0.94) indicates a weak to excellent internal-consistency of the scale. In a study by Amini *et al.* In 2017, the psychometric properties of CPAS-P among the 703 of the parents of normal children were evaluated that the acceptable alpha coefficient was reported to be consistent with the results of this study (31). The number of samples in this study was 55 parents of children with ASD. Studies show that the alpha coefficient can be influenced by factors such as the number of samples and the number of items in each area. In fact, the more samples are, the higher the alpha coefficient, and vice versa. In simpler terms, sometimes the high number of samples may show the

alpha coefficient in a false form (32-34). Therefore, the desirability of Cronbach's alpha coefficient, despite the samples, is less than that of Amini *et al.* can be a sign of the reliability of this test in children with ASD (32). This may improve the clinical utility of this test among occupational therapists in treating with children with ASD. On the other hand, studies show that the higher the number of items in each area, the higher the alpha coefficient (35). The lowest Cronbach's alpha that reported in this study is for the sub-test of education, which may be due to the low number of items in this area. Also, in a study by Mohammadi *et al.* in 2017, the parents of 30 healthy children and 30 children with cancer were evaluated by CPAS-P. The Cronbach's alpha which obtained from this study was excellent (0.97-0.99) (35). The results of this study are also consistent with the results of this study.

The reliability of a scale can indicate the strength and can lead to its clinical utility. A factor that can be effective in increasing the test-retest reliability of a

questionnaire is to observe the same conditions in both sessions of that test. This important issue was considered in this study. The test-retest reliability was performed on 55 parents of children with ASD at intervals of two weeks. The scores were reported by intraclass correlation coefficient (ICC), which was (0.71-0.98). The reported ICC indicates the test-retest reliability of the test is acceptable to excellent. The study of Amini *et al.*, Which was conducted in 2017 on 31 healthy children by CPAS-P, reported ICC (0.79-0.94) (20), which is consistent with the results of this study. On the other hand, in a study by Mohammadi and *et al.* in 2017 on children with cancer, the reliability of this test was performed on 30 parents of children with cancer. The ICC was reported (0.60-0.91) (35), which is consistent with the results of this study. The correlation between the items of CPAS-P and VABS was evaluated. The correlation between two items of ADL and socialization in both tests were significant. However, there was no significant relationship between the other items in two tests.

The finding of the present study is consistent with Amini and *et al.* (2017) study that evaluated the correlation between the two tests. The results showed a weak to moderate correlation between the two test areas. They made their findings so that despite the fact that there is a significant relationship between the two tests, but this correlation is not strong. Perhaps the reason for this is that VABS is not an appropriate tool for examining correlation with participation scales. On the other hand, the lack of strong correlation between the items of VABS and CPAS- P may be because of the fact that CPAS-P assesses the participation of children more in detail and in different areas of occupations. Therefore, it seems to be a comprehensive and appropriate assessment of participation in all areas of occupations.

There were limitations in this study. For example, there was limited access to parents of ASD children. The high number of questions (71 items) of CPAS-P and the time limit seemed to discourage the families of children with ASD from participating in this research. Many parents did not cooperate; they were afraid that their child would be harmed. But this problem solved by gathering data from different places and parents were convinced that these are safe. Also, Sampling is done in a metropolis; it should be cautious to use in small cities. It is suggested that sampling in small cities should also be considered. It is suggested to improve results, use real cards and images to illustrate activities.

Conclusion

The main goal of occupational therapists is to promote the participation of children with any disabilities in areas of occupations. To achieve this, they need adjustments and modifications in the environment and, objects around their authorities. Whatever tools are appropriate to the culture covers all the important areas of daily occupation; it will be

suitable for many therapists in clinical practice. It seems that CPAS-P will be effective in the clinical practice of occupational therapists, and will cover all the mentioned points. This instrument is based on OTPF that is a classification system for occupations; it evaluates eight areas of ADL, IADL, Play, leisure, Social Participation, Education, Work, Sleep/ Rest. This tool can be used as a descriptive and evaluative scale for studies on 6-12 years old children with ASD.

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Conflict of Interest

Authors declare no conflict of interests.

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