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Construct validity of the Persian version of the Child Occupational Self-Assessment in children with attention-deficit/hyperactivity disorder in Iran

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Abstract

Objective: This study aimed to assess the construct validity of the Child Occupational Self-Assessment, translated to Persian that could provide occupational therapists with a tool to evaluate occupational competence and values of children in Iran.

Methods: A total of 250 children (87 girls and 163 boys) with attention deficit hyperactivity disorder aged 7.5–11 years referred from two specialised children's hospitals were included. The researchers read the questions to the children and they identified their own answers. The data were analysed based on the Rasch Rating Scale Model.

Results: Four of the items showed misfit and as a result of deleting these items the Persian version of the questionnaire has 21 items with an appropriate validity.

Conclusion: The Persian version of Child Occupational Self-Assessment can be used with new items format. It could be also useful to replace the missing question to develop the tool further.

Keywords

Assessment tools, culture, occupational therapy, Child Occupational Self-Assessment, construct validity

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Introduction

The Model of Human Occupation (MOHO) is a conceptual model that is client-centred in nature (Kielhofner, 2002) within which clients participate actively in their treatment process. The MOHO looks for the emergence of client-centred rehearsals and enters self-reporting tools in occupational therapy (Kielhofner, 2002). Using self-reporting tools in rehabilitation can be useful in two respects: recognising the client needs to set the content of intervention (Trombly & Ma, 2002) and measuring changes based on the client's report after receiving intervention to determine its efficacy (Kramer, 2011). Understanding how a child perceives feelings of competency in doing daily activity is important for therapy intervention plans because with feelings of incompetency children might be less willing to attempt challenging activities and need more support for intervention success (Kafkes, 2003; Romero, Dulce, & Kramer, 2009). Assessment tools need to be adapted in their use to different cultures (Borsa, Damásio, & Bandeira, 2012). Identifying similarities and differences in the psychometric properties

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of an assessment tool in different contexts and cultures can help further development of the tool. Through doing so, practitioners are enabled to be reflective when they use a tool about potential cultural issues that could affect clients' response to the assessment. These kinds of studies help the therapist to be more responsive to clients' culture by acknowledging the diversity that has been the emphasis of occupational therapy practice in the last few decades (Talero, Kern, et al, 2015).

Studies have shown that there are differences between children with attention-deficit/hyperactivity disorder (ADHD) and typically developing children in attention, school performance, movement function, and the amount of control needed to do activities (Hoza et al., 2004; McQuade, Hoza, Murray-Close, Waschbusch, & Owens, 2011). In some studies, researchers have mentioned that children with ADHD are performing less well in their self-care, social cognition, and communication demands than normal children. These children may have low self-esteem due to experiences of failure in implementing daily activities (Desai, 2008; Hoza et al., 2004). Owing to these difficulties, children with ADHD could benefit from occupational therapy interventions (Romero et al., 2009).

Child Occupational Self-Assessment

From self-reporting tools based on the MOHO for children, the Child Occupational Self-Assessment (COSA) was developed to recognise children's abilities and disabilities, competency levels, and activity values from different areas in their activities of daily living (ADL). COSA was developed by Kramer et al. in 2005. Several researchers reported that the COSA has good construct validity, substantive validity likewise; participant's answers were valid indicators of the values and competence in their activities (Kramer, Kielhofner, & Smith, 2010). Afterward, Kramer (2011) undertook a study to consider the social validity of the COSA on 502 children from the USA and Europe. COSA includes two scales with similar questions. One of the scales measures the child's level of competency according to their perception of their performance, known as COSA competence. The other scale measures the importance of the same matter indicated in each item from the child's perspective, known as COSA value. COSA consists of 25 items related to occupation and the experiences of persons participating in tasks (Kramer et al., 2010). Each item is measured once in relation to the child's perception of his/her competency as follows: 1 (I have a big problem doing this), 2 (I have a small problem doing this), 3 (I do this well), and 4 (I am really good at doing this). The same item is then used to measure the value scale using the following format: 1 (not really important to me), 2 (important to me), 3 (really important to me), and 4 (most important of all to me).

Given the high prevalence of children with ADHD worldwide and the high level of comorbidity of this disorder with learning disabilities in Iran (Esmaili et al., 2016) this population was selected to study the psychometric properties of the Persian version of COSA. The purpose of the present study was to investigate the construct validity of COSA in a group of children with ADHD in Iran in order to provide a valid tool for occupational therapists to use in practice. This article is a report of the first step analysis and the results of assessing the tool.

Methods

The present research was a cross-sectional and methodological study within which the conventional method of psychometric testing item response theory was used to validate the measurement tools. Ethical approval for this study was obtained from the University of Social Welfare and Rehabilitation Sciences Research Ethics Board (Acceptance No. IR.USWR.REC.1392.123).

Translation process

The COSA was translated into the Persian language based on the protocols of Beaton, Bombardier, Guillemin, and Ferraz (2000) as follows: (1) translating the Persian version into English was carried out by two Iranian master's degree students who were fluent in English, and an occupational therapist (forward translating); (2) the researchers (five associate professors at University of Social Welfare and Rehabilitation Sciences (USWR)) reviewed and evaluated this version; (3) the Persian version was translated into English by a professional translator at USWR; and (4) the pilot study was conducted (on 20 children with ADHD). The pilot study was undertaken to identify the most important and difficult question/s according to the children's responses, determine the response time, promote COSA and review encoded variables and their suitability for analysis, and anticipate potential problems during data collection at the final stage of the research. The results of the last step demonstrated that the response times to complete the COSA, according to age, were different and ranged between 8 and 20 min.

Rasch Rating Scale Model

The Rasch Rating Scale Model (Wright & Mok, 2000) was used to explore the construct validity and the extent to which the Persian COSA could effectively

measure occupational competence and values of children with ADHD based on their assessment. Linacre's (2002) recommendations were used to evaluate the rating scale used. Items were considered to be poor representations of the constructs of occupational competence and values when mean square fit statistic (MnSq) had values above 1.4 and were associated with a Zstd greater than positive 2.0, or exceeded the 'fit' criteria, based on fit requirements used to develop other MOHO-based assessments (Kielhofner, Mallinson, Forsyth, & Lai, 2001; Velozo, Kielhofner, & Lai, 1999). Furthermore, the theoretical representation of the constructs of occupational competence and values, as given by the relative 'measure', or linear difficulty of each item, was compared to those reported in the literature for the original English version. Evaluating the linear arrangement of item difficulty, referred to as item hierarchies, for theoretical relevance also was used to investigate the construct validity of the Persian COSA. SPSS19 and WINSTEP software were used for statistical analysis of the data.

Participants and procedure

A sample group including 250 children with ADHD (87 girls, 163 boys) in the age range of 7.5 to 11 years old (mean: 8.8 years, SD: 1 year) participated in this study. They were diagnosed as having ADHD by a specialist child psychiatrist from two specialists at the Centres of children that are the main referral centres for children with ADHD in Tehran. Participants had an Intelligence Quotient of more than 90 (according to their hospital report). The hospitals' head nurses provided flyers with information about the project, to potential participants. They were advised to contact the researcher directly if they were interested in participating in the study or had asked for further information. A formal consent form was signed by the family prior to conducting the assessment. Children were informally briefed about the task and asked if they were happy to contribute, and if they could speak and read Persian. Children with physical disabilities or resistive epilepsy that would interfere with completion of the task were excluded from this study.

COSA is designed to be read to children by the investigator and their response is recorded accordingly. Trained facilitators provided examples according to the guiding notes of the COSA to children to help them with understanding the questions.

A sample size calculated according to the Rasch advises 10 participants per item (DeMars, 2010). Table 1 illustrates the demographics regarding the participants of the study.

Results and analysis process

The analysis process was conducted in three stages including operating the Rasch analysis on the collected data and identifying the misfit items; the second operation of the analysis deleted the misfit items and misfit participants, and stage three was conducted to match the items in the two scales. In this study, we analysed item fit and person-item map of COSA Competence and Value scales.

Stage one analysis

Test of unidimensionality. Based on Linacre (2006), if the special value of the first factor of the main factor analysis of the residual correlation matrix is low (less than 2), error values are random and the scale is unidimensional. If a specific value is greater than 2, it probably indicates the existence of a second dimension besides the main dimension obtained from the Rasch

Table 1. Demographics information.

Variable	N	%	Variable	N	%
Gender			ADHD category		
Female	87	34.8	Inattentive	191	76.4
Male	163	65.2	Hyperactive-impulsive	104	41.6
Level of education			Combined	192	76.8
Primary	84	33.6	Missing	26	10.4
Third	77	30.8			
Fourth	50	20.0	Birth order		
Fifth	39	15.6	First	161	64.4
Age			Second	63	25.2
Minimum	7.5		Third and up	20	8.0
Maximum	11		Missing	6.0	2.4
Mean	8.8				
SD	1				

SD: standard deviation; ADHD: attention-deficit hyperactivity disorder.

analysis (Pick et al., 2006). Also, if the determined variance of a measured Rasch dimension is equal to or greater than 40%, it is considered powerful, while less than 30% is average, and less than 20% would be considered poor (Linacre, 2006). Meanwhile, research findings show that special values of the first factor of the residual matrix for both competence and value scale are equal to 2.1, and the determined variance for them is 38.1 and 46.7, respectively. It can be concluded that the findings of this study support unidimensionality of the value scale but the above indexes do not support the unidimensionality of the competence scale.

Occupational competence scale. The competence scale used four grades to categorise responses (Table 2) and the results showed children used grading with scores less than other response categories. Also, according to MnSq values (<1.4), each one of the four categories of response had adequate infit and outfit.

Item results in the occupational competence scale. The fitting of occupational competence scale items in the Rasch is shown in Table 3. As seen, according to the values of the *Z* column or MnSq, 24 of 25 competence scale items had sufficient fit (infit and outfit). Item four (buy something myself) did not have an adequate fit. Therefore, this item was not suitable for measuring competence in a sample group. Item nine (get around from one place to another) also did not have suitable outfit. Of the 241 children who completed the occupational competence scorings, 57 did not meet fit requirements (22.4%).

Competence persen-item map. To study items' difficulty hierarchy and compare it with subjects' ability, we have used the person-item map (Figure 1). As seen in Figure 1, the mean of subjects' competence score is 1 standard deviation (SD) higher than that of item difficulties. Simple items that need a low value of competence to do by participants are items 2 (Dress myself), 3 (Eat my meals without any help) and 24 (Use my hands to work with things). Items that are more difficult to do were items 4 (Buy something myself), 19 (Make others understand my ideas) and 22 (Calm myself down when I am upset).

Value scale. As shown in Table 4, children used lower grading scores compared to other response categories in the value scale. Also, according to the MnSq column value (<1.4), each one of the four categories of response had sufficient infit and outfit, meaning that categories that were selected to answer items were suitable for measurement.

Table 3. Persian occupational competence item measures and fit statistics.

Item	Item measure	SE	Outfit		Infit		Corr.
			MnSq	Zstd	MnSq	Zstd	
9	0.33	0.07	1.17	2.0	1.36	3.1	0.32
4	0.55	0.06	1.19	2.5	1.24	2.4	0.33
24	−0.75	0.11	1.16	1.0	1.00	0.1	0.35
8	−0.3	0.09	1.05	0.4	1.15	1.0	0.33
13	0.18	0.07	1.13	1.5	1.03	0.3	0.42
19	0.44	0.07	1.06	0.8	1.12	1.2	0.42
2	−0.83	0.12	1.11	0.7	1.01	0.1	0.29
18	−0.21	0.08	1.02	0.2	1.09	0.6	0.37
7	0.14	0.07	1.06	0.7	1.08	0.7	0.38
11	0.35	0.07	0.91	−1.1	1.07	0.7	0.48
5	0.18	0.07	1.03	0.4	1.06	0.6	0.38
15	−0.29	0.09	1.05	0.4	0.97	−0.2	0.36
23	0.09	0.07	1.03	0.4	0.98	−0.1	0.39
22	0.45	0.07	1.02	0.3	0.96	−0.4	0.46
6	0.21	0.07	1.00	0.1	0.93	−0.6	0.44
3	−0.76	0.11	1.00	0.0	0.85	−0.7	0.32
17	−0.13	0.08	0.97	−0.2	0.98	−0.1	0.42
1	−0.44	0.09	0.81	−1.5	0.97	−0.1	0.28
25	0.17	0.07	0.89	−1.3	0.96	−0.3	0.42
16	0.15	0.07	0.96	−0.4	0.91	−0.7	0.45
20	0.21	0.07	0.96	−0.5	0.90	−0.8	0.47
12	−0.12	0.08	0.96	−0.4	0.92	−0.5	0.42
14	0.13	0.07	0.93	−0.8	0.91	−0.8	0.44
10	−0.01	0.08	0.91	−0.9	0.88	−0.9	0.44
21	0.26	0.07	0.88	−1.4	0.83	−1.6	0.52

Note: Items with higher measures are more difficult for children to indicate high competence on. Items with lower measures are easier for children to indicate high competence on. SE: standard error; MnSq: mean square fit statistic; Zstd: standardised mean square; Corr.: point-serial correlation coefficient.

Table 2. Persian occupational performance competence rating scale function.

Competency category response	Observed content %	Obsvd avrge	Sample exp	Infit MNSQ	Outfit MNSQ
Big problem	9	0.27	0.22	1.05	1.10
A little problem	11	0.43	0.45	0.97	0.94
It's ok	23	0.73	0.76	0.95	0.91
Really good	57	1.18	1.17	1.00	1.00

Obsvd avrge: observed mean; exp: expectation mean; infit: information-weighted fit statistic; MNSQ: mean square.

Item results in the value scale. In the value scale, 23 out of 25 items had suitable fitting (infit and outfit). Items 4 (Buy something myself) and 9 (Get around from one place to another) did not have suitable fitting (Table 5).

MnSq values for both items were <1.4 and for both the infit and outfit value indexes Z was >2; therefore, these two items were not appropriate for measuring value in sample groups. Items 5 (Get my chores done) and 13 (Do things with my friends) also did not have a suitable outfit. Of the 239 children who completed the occupational value scorings, 55 did not meet fit requirements (23%).

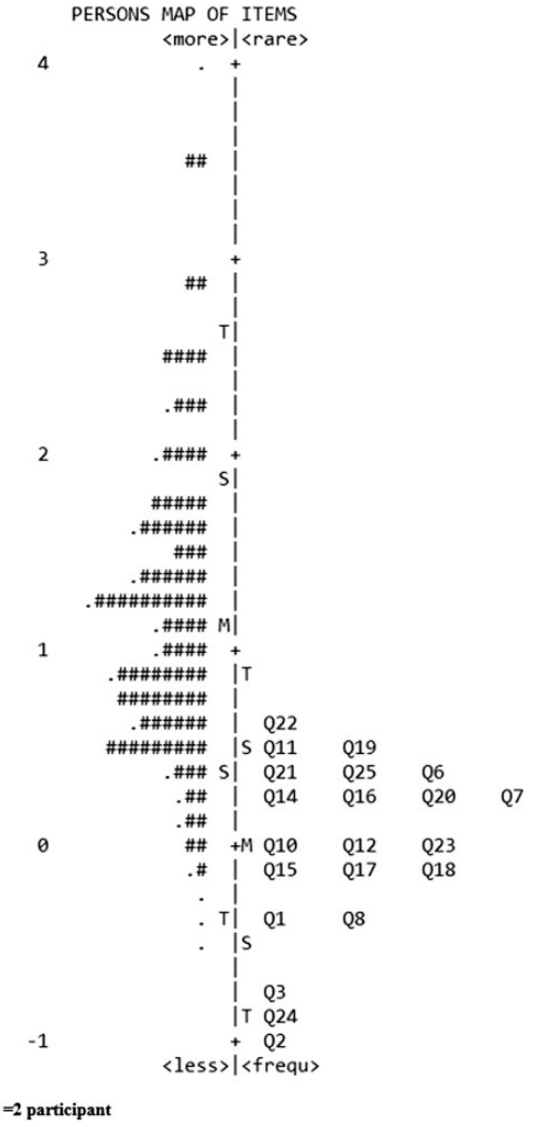

Figure 1. Competence person-item map.

Value item-person map. The mean of the subjects' value score was 1 SD higher than the difficulty mean

Table 5. Persian occupational performance values item measures and fit statistics.

Item	Item measure	SE	Outfit MnSq	Outfit Zstd	Infit MnSq	Infit Zstd	Corr.
9	0.70	0.07	1.31	3.9	1.35	3.5	0.42
5	0.06	0.07	1.09	1.1	1.32	2.5	0.45
4	0.61	0.07	1.19	2.5	1.25	2.5	0.41
13	0.35	0.07	1.16	2.0	1.24	2.2	0.48
23	0.14	0.07	1.12	1.5	1.06	0.6	0.49
11	−0.03	0.07	0.89	−1.2	1.10	0.8	0.49
6	0.14	0.07	1.08	1.0	1.04	0.4	0.49
17	−0.43	0.09	1.07	0.6	1.02	0.2	0.44
20	0.01	0.07	1.04	0.5	1.06	0.5	0.48
2	−0.21	0.08	0.91	−0.9	1.06	0.5	0.45
3	−0.31	0.08	1.05	0.5	0.97	−0.2	0.46
21	0.05	0.07	1.03	0.4	0.98	−0.1	0.47
14	0.37	0.07	1.02	0.3	1.01	0.2	0.53
12	−0.10	0.08	1.00	0.0	1.02	0.2	0.48
16	−0.21	0.08	1.00	0.1	1.01	0.2	0.49
7	−0.06	0.07	0.99	−0.1	0.95	−0.3	0.46
22	0.36	0.07	0.96	−0.5	0.93	−0.7	0.51
8	−0.44	0.09	0.94	−0.5	0.95	−0.3	0.47
25	−0.04	0.07	0.87	−1.4	0.94	−0.5	0.53
1	−0.22	0.08	0.86	−1.4	0.93	−0.5	0.47
19	0.28	0.07	0.92	−1.0	0.88	−1.1	0.53
10	0.04	0.07	0.89	−1.3	0.84	−1.4	0.52
24	0.35	0.08	0.89	−1.0	0.85	−1.0	0.50
15	−0.51	0.09	0.84	−1.4	0.76	−1.5	0.48
18	−0.20	0.08	0.82	−2.0	0.82	−1.3	0.49

Note: Items with higher measures are less likely to be perceived as important. Items with lower measures are more likely to be perceived as important. Item exceed fit criteria: MnSq ≥1.4 associated with Zstd ≥2.0. MnSq: mean square fit statistic; Zstd: standardised mean square; Corr.: point-serial correlation coefficient; SE: standard error.

Table 4. Persian occupational performance value rating scale function.

Value category response	Observed content%	Obsvd avrge	Sample exp	Infit MNSQ	Outfit MNSQ
Not really important	11	0.08	−0.02	1.12	1.20
important	15	0.25	0.35	0.87	0.89
Really important	22	0.70	0.71	0.94	0.86
Most important of all	53	1.14	1.13	0.98	0.99

Obsvd avrge: observed mean; exp: expectation mean; infit: information-weighted fit statistic; MNSQ: mean square.

items (Figure 2). This indicates that the average of subjects' ability was 1 SD higher than the value the items measure. From the participants' point of view, activities that were simple to do had higher values; therefore, items 15 (Follow classroom rules), 17 (Get my homework done), and 8 (Take care of my things) have maximum values. Also, items that are difficult to do, 9 (Get around from one place to another) and 4 (Buy something myself), had minimum values.

Stage two analysis

In this stage, the misfit items and persons were removed from the scale in several stages of operating Rasch analysis and the results changes as follows.

Test of unidimensionality. The second stage of the analysis identified that the special value of the first factor of the residual matrix for occupational competence scale is 1.8 and for occupational values scale 1.9. The determined variance for them is 45.9% for occupational competence scale and 48.7% for occupational value scale. Thus, it can be concluded that the findings of the second stage analysis support unidimensionality of the occupational competence and value scale.

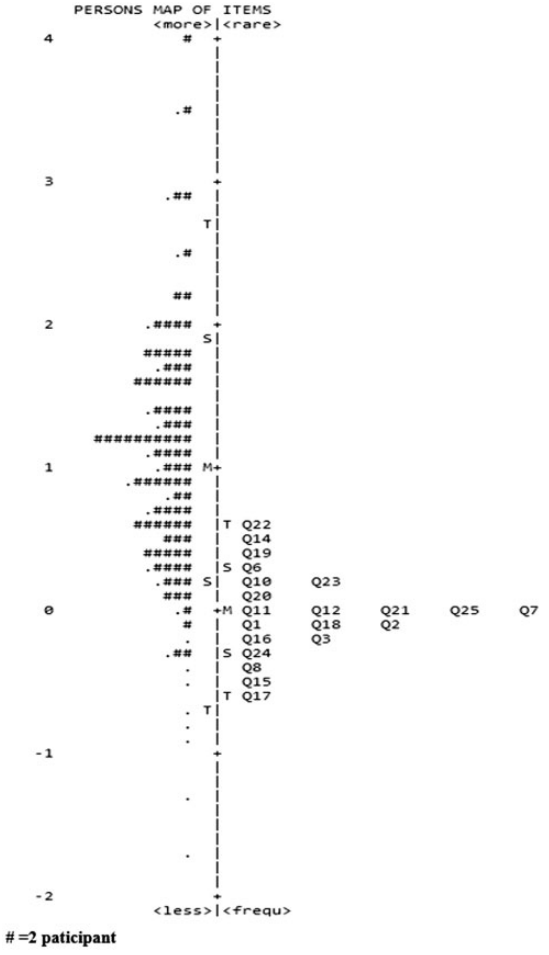

Figure 2. Values person-item map.

Occupational competency scale. Thirty-six participants and two items 4 and 9 were removed from the data and the results of the analysis showed that the competence scale with this modification has sufficient fitness to be used to measure occupational competence. The item reliability changed to 95% and person reliability to 70%.

Value scale. By removing the four items that were shown to be misfits: 3, 4, 9 and 13 and 37 participants from the data, the stage two analyses were conducted, and the findings are as follows: The item reliability changed to 92% and person reliability to 82%. This means the occupational value scale by removing four items has sufficient fitness to measure occupational value.

Stage three of the analysis

As the occupational competence scale with 23 and the occupational value scale with 21 items showed fitness to the Rasch model, there was a need to make a decision as to how the two part of the COSA could be applied in parallel in order to be able to identify the gap between the two. With this logic, questions 5 and 13 were also removed from the competence scale and the process of analysis was conducted again to ensure that removing these questions would not jeopardise the quality of the occupational competence scale. The results identified that the occupational competence scale kept the properties. No change in unidimensionality was forced. The results of the item and person reliability had no negative effect on the overall validity and reliability of the scale.

Discussion

Based on the results of this analysis, we found that most items have the appropriate infit and outfit values. In the competency and value scales, items 4 (Buy something myself) and 9 (Get around from one place to another) do not fit with the data and do not measure the studied construct in the present sample. These findings are similar to the results of the study conducted by Keller and Kielhofner (2005). The finding of a feasibility study conducted by Nobakht and Yazdani in Iran among children age 9–10 with no diagnosis also showed that children indicated that responding to these items was confusing due to different meanings that could be interpreted from the item (Nobakht & Yazdani, 2016). According to qualitative exploration and interviews with children in the above

study, it was mentioned that their parents would not allow them to buy things themselves or go around with friends alone. This seemed to be a cultural point of consideration as to whether children understand the item's reference to their capacity or to their family's practices.

The findings of a study done by Asteljoki and Pulli (2006) indicated that the idea conveyed by the item (Buying something myself) could be interpreted in many different ways. In her study, item 4 is often modified to convey the meaning meant by the developer. With item 9 (Get around from one place to another), the aim is also to capture movement in or access to the environment. In her study, Asteljoki modified this item to something that allowed children to think about a variety of environments (Asteljoki & Pulli, 2006). However, the researchers in this study did not modify the items in the research. On the occupational value scale, items 5 (Get my chores done) and 13 (Do things with my friends) also were not fit. The misfit of both of these items could be explained by cultural values. Generally, Iranian families place a strong emphasis on their children's academic performance. Education as a mean to achieve success is highly valued in Iranian culture (Yazdani, Roberts, Yazdani, & Rassafiani, 2016). Having a child with some kind of difficulties and being under pressure by others in the community seems to be more significant than what could be done in private such as doing personal chores. Also, due to the stigma of having a diagnosis of any sort could mean that children are kept within the family where they can be protected and avoid bullying from others. This could be a potential explanation that being with friends is not necessarily valued by family and therefore the child is raised within the family values. In the current context of Iran, even children with no diagnosis would not be easily allowed to spend time with a friend outside of the school environment as families are concern about their children's safety. Sturgess, Rodger, and Ozanne in their review of the self-assessment tools for young children identified the potential issues around communicating the questions to children of a young age. One person read and explained COSA Persian to children participating in this study to ensure consistency. However, due to differences in children's cognitive capacity and level of engagement with the task, there were inevitable differences in conveying the message. The original COSA provides a guideline about the way the items can be explained to children and the researcher in this study kept the guideline in mind when reading and explaining the questions to children (Sturgess, Rodger, & Ozanne, 2002).

Other findings of this study are related to evaluating fitting the frequency of response to items on the four-category scale. The percentage of responses to the two categories on the scale of competency, 'I do this well' (9%) and 'I have a little problem doing this' (11%), and the two categories of the scale of value 'It is not really important to me' (11%) or 'It is important to me' (15%) indicate that the frequency response of these categories was much lower than the other categories. This finding is consistent with the findings of Keller and Kielhofner (2005) and Kramer et al. (2010) but could be explained in different ways. One explanation could be because of the type of sample group, namely, ADHD. These children may often wish to demonstrate their ability as being higher than it really is to maintain their self-esteem, and satisfy adults (Hoza et al., 2004). Children may be sensitive to others' views about them, and therefore, may try to extend their capabilities and values. Children may score themselves more highly to avoid parents' dissatisfaction with their performance.

The person-item map strategy was applied to obtain the hierarchy of item difficulty for both competency and value scale. The results indicate that the mean ability of the sample group compared with the average difficulty of items in each of the two scales is nearly 1 SD higher, meaning that the questions are very easy for children. The level of the weakest participant was higher than the easiest item (the floor effect) and there is no item where the difficulty level is higher than the ability level of subjects (ceiling effect). This is different from the study of Keller and Kielhofner (2005), where the difference was about 1 SD higher. This could be potentially due to the differences in the sample diagnosis, where children with ADHD may have higher abilities compared to children with a diagnosis of autism, expressive language delay, attention-deficit disorder, cerebral palsy, spina bifida and intellectual disabilities included in the sample studied by Keller and Kielhofner (2005). Most importantly, the cognitive capacity level of participants in the two studies could be different because of the type of disability.

The hierarchy of item difficulty in the competence scale revealed that the easiest items were the items associated with basic ADL (self-care), personal involvement in school activities (such as dressing, eating, doing homework, following class rules, care of equipment, use of hands). However, in the study by Kramer et al., basic ADL and working with families were reported to be the easier activities (Kramer et al., 2010). Similarly, in the studies by Romero et al., items related to gross motor activities, communication skills, and personal care, and in Keller and Kielhofner's (2005) study, a selection of tasks and work with families were considered the easiest (Romero et al., 2009).

The hardest items were associated with communication and social activities, while in the Keller, Kramer, and Romero studies, items that include responsibility

and continuous efforts were reported as the hardest activities. This could relate to some family styles of parenting and values in the current Iranian context that do not favour children shopping alone. However, it is harder to justify the difficulty level of the item (Calming yourself) as it seems children can interpret this in a variety of ways.

Participants also commented on things such as family participation and decision-making having moderate difficulty; while these two items were among the easiest activities and items related to personal tasks (care of instruments and timing), they had average difficulty in Keller's study. In Romero's study of children with ADHD, activities that require cognitive mechanisms such as sustained attention, working memory, and motivation were identified as the most difficult items. These items included 'keep working on something even when it gets hard,' 'finish what I am doing without getting tired too soon,' 'make others understand my ideas' and 'follow classroom rules' (Keller & Kielhofner, 2005; Romero et al., 2009).

In this study, the results of the hierarchy of item difficulty in the value scale indicated that items concerning the basic activities of daily personal tasks such as personal hygiene, care of equipment, and using hands had lower degrees of difficulty than items that included communication and social activities such as conveying opinions to others, and working with friends and classmates. In other words, it appears that communication and social activities for Iranian children with ADHD are more important to them (Talero, Kern, et al, 2015). This result is consistent with studies indicating that children with hyperactivity are faced with more problems with peer relations and their violations and aggression, and that this often makes their peers have a negative view of them (Desai, 2008; Hoza et al., 2004). Also in Keller and Kramer's study, the hardest items on the value scale received the highest level of importance (Keller & Kielhofner, 2005; Kramer et al., 2010). But the items that received the highest values in Romero's study were related to individual tasks and managing time to do things of interest. A difference was seen between hard work and valuable work (Romero et al., 2009).

In the current study, reviewing the fit of subjects with the Rasch showed that the percentage of participants that did not fit in both scales was higher than in previous studies (Desai, 2008; Keller & Kielhofner, 2005; Kramer et al., 2010). Two reasons may play a role in this difference including the difficulty level of items for the Iranian children and/or non-compliance activities in Iranian culture that are not valuable for children.

Based on the findings obtained in this study, it can be said that the most difficult area for children with ADHD is communication and social activities; these activities also have a high value for them.

Few limitations of the study need to be taken into consideration in the interpretation of the findings. This study was the first to investigate the use of psychometric properties of the Persian version of a tool to evaluate the competence and value of children's occupation; therefore, it was not possible to take advantage of other tools to assess psychometric properties, such as convergent validity. The sample size of the study was small, hence, it was not sufficient to analyse different types of ADHD separately.

Conclusion

The findings of this study indicate that the Persian version of COSA with 21 items has suitable construct validity in cases of attention-deficit disorder or hyperactivity in Iran. However, interpretation of the tool in both research and practice needs to be made with caution.

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