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Research Paper:

Developing a Persian Version of the Checklist of Pragmatic Behaviors and Assessing Its Psychometric Properties: A Preliminary Study

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ABSTRACT

Objective Pragmatic assessment is critical because of its effective role in social and academic success. It can provide early intervention if the evaluations are made early in childhood. In this regard, an appropriate tool is necessary for the pragmatic evaluation of preschool children in Iran. The Checklist of Pragmatic Behaviors (CPB) is an observational tool for assessing pragmatics in children aged 3-5 years. This study aims to develop a Persian version of the CPB and evaluate its psychometric properties.

Materials & Methods This is a methodological study conducted in 2018. The participants were 63 children in three age groups of 3, 4, and 5 years selected from kindergartens in Isfahan City, Iran, using a cluster sampling technique. The inclusion criteria were being 3-5 years old and Persian speaker. This study was conducted in two steps; translation and localization of the CPB to Persian and evaluating the validity and reliability of the Persian CPB. The studied variables were 25 pragmatic behaviors mentioned in the CPB. The test-retest reliability was estimated using 15 children (5 from each age group) in a 2-week interval. Scoring was based on the presence (verbal, nonverbal) or absence of the behavior. The internal consistency was estimated using the Cronbach α coefficient; discriminant validity was assessed concerning age, and criterion validity by measuring the CPB's correlation with the ages and stages questionnaire (personal-social subscale) and the behavioral problem questionnaire. Nonparametric tests were used for factor analysis and estimating inter-rater agreement and test-retest reliability. The obtained data were analyzed in SPSS 21 and AMOS applications.

Results The Persian CPB's total score significantly increased with the increase of age (P≤0.001). Factor analysis reported four factors for the Persian CPB. Criterion validity evaluation showed the moderate significant correlation of the CPB (r=0.58) with the personal-social subscale of Age and Stages Questionnaire (ASQ), and its weak negative significant correlation (r=-0.28) with the behavior problem questionnaire. A Cronbach α of 0.83 was obtained for internal consistency, and a correlation coefficient of 0.665 (P=0.007) was reported for test-retest reliability.

Conclusion The Persian version of the CPB has acceptable psychometric properties. The differences in some items of this version compared to other versions may be because of differences in culture and language.

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Extended Abstract

Introduction

Pragmatics is defined as the purposeful use of language for social purposes and interaction with other people, which requires the coordination of linguistic information with expressive movements, facial expressions, body movements, and the use of information in the physical, social, and verbal contexts. Given the importance of language and communication skills, after entering school, pragmatics plays an essential role in determining academic success and affects reading performance in the future. As a result, deficiencies in pragmatics skills lead to communication deficits and, subsequently, social and academic failures. Therefore, evaluation and identification of pragmatics deficits at an early age allows early intervention and prevents the development of related disorders and the creation of secondary problems such as educational and social problems. In other languages, a variety of tools have been developed to evaluate the pragmatics skills, including formal tests, conversation analysis tools, discourse analysis tools, checklists, and observation tools. Checklists are typically easy-to-use tools that assess a variety of aspects of pragmatism and also cover context-related features of pragmatics skills. The basis for evaluation in these checklists is observing patient's behaviors or interviewing caregivers. There are several valid and well-known checklists in English for assessing pragmatics skills, including Dewart and Summers' pragmatics profile and Bishop's Children's Communication Checklist (CCC). Given the importance of early intervention in pragmatics impairments and its context-dependent nature, observational tools are needed to assess these skills in preschool age.

Craighead's Checklist of Pragmatic Behaviors (CPB) is an observational checklist that assesses communicative intents (such as greeting and requesting for an object) and conversational devices (such as maintaining and specifying a topic) in children aged 3-5 years. This checklist specifically examines pragmatics skills and has 25 items. This protocol provides an activity for each item that, by performing that activity, the examiner can test the selected skill. This checklist is designed for English-speaking children and has been used in several studies on both groups of children with normal and impaired growth, including those with developmental, intellectual disabilities, hearing loss, and cognitive impairments [16, 17].

To our knowledge, there is no coherent observational tool for assessing the pragmatic behaviors of preschool Persian-speaking children. In this regard, this study aims to translate and customize the CPB for Persian-speaking children aged 3-5 years and then evaluate its validity and reliability.

Materials and Methods

This research is a methodological study with a cross-sectional design conducted in 2018. Study samples were 63 children in three age groups of 3, 4, and 5 years selected from kindergartens in Isfahan City, Iran, using the cluster sampling method. The inclusion criteria comprise being 3-5 years old and a Persian speaker. The studied variables included 25 pragmatic behaviors in the CPB. The checklist and evaluation protocols were first translated. The initial translated version was sent to 8 speech clinical therapists. According to their comments and the opinions of two speech and language pathologists who had experience in the field of pragmatism and were fluent in English, the final changes in the translation were made. According to Iranian culture, some words changed in the Persian version. The discriminant validity of the Persian version was assessed based on age. Its criterion validity was measured by calculating the correlation between the total score of the CPB and the total score of the other two tests, including the personal-social subscale of Ages and Stages Questionnaire (ASQ) and behavioral problem questionnaire since pragmatics skills are related to social skills. Then, its internal consistency was measured by calculating the Cronbach alpha coefficient. Its test-retest reliability and inter-rater reliability were also measured. To determine the adequacy of online scoring, we examined the correlation between offline and online scoring.

The informed consent forms and two ages and stages questionnaire and behavioral problem questionnaire were signed and completed by the parents in a room of kindergarten with a suitable number of tables and chairs. At the assessment session, the rater first spent a few minutes communicating with the child, and then the assessment protocol was implemented. Assessments were performed by two trained speech and language pathologists. The first activity of the peanut butter test was used to complete the CPB, and its second activity was used to perform the retest. The execution time was between 15 and 20 minutes. The scoring was done online and offline. If the child did not answer, s/he would be given a 0 score, and if answered (verbally or nonverbally), s/he was assigned a score of 1. The total score was obtained from the summing up of the given scores for each item. Fifteen participants were re-evaluated for measuring test-retest reliability.

The obtained data were analyzed in SPSS V. 21. The nonnormality of the data distribution, nonparametric Kruskal-Wallis, and Mann-Whitney tests were used to examine dis-

criminant validity. Also, the Spearman correlation test was used to check criterion validity and measure test-retest reliability and inter-rater reliability of the Persian CBP. Confirmatory factor analysis was performed in AMOS software. The Chi-square test was used to compare the scores of each item in three age groups.

Results

The participants were 63 children (33 girls, 30 boys) in three age groups of 3, 4, and 5 years. According to Table 1, in the assessment of age-based discriminant validity, the difference in total score (P=0.02) and in scores of communicative intents and conversational devices (P<0.001) was significant between the three groups such that these scores increased with the increase of age. The post hoc test results of these three scores are presented in Table 2. In comparing the score of each CBP item between the three age groups, the results showed a significant difference in the score difference of three items out of 25 items. These items were hypothesizing (P<0.007), closing conversation (P=0.01), and giving expanded answers (P=0.001).

In assessing factor validity, three of 25 items had zero variance and were excluded from factor analysis. These items were answering, attending to the speaker, and maintaining a topic. Then, exploratory factor analysis was performed, and 4 factors with a variance of 52% were identified. According to Table 3, in which the factor load of each of the checklist items is presented, the 5-factor model obtained from the exploratory factor analysis was entered into the confirmatory factor analysis. The Chi-square with a score of 0.006 (<0.05 is acceptable), CMIN with a score of 1.291 (<3 is acceptable), RMSEA with a score of 0.06 (<0.08 is acceptable), IFI with a score of 0.921 (>0.9 is acceptable), PCFI=0.682 and PNFI=0.522 (>0.5 is acceptable) showed that the 4-factor model fit the data reasonably. These factors were called "conversational skills", "information organization", "descriptive skills", and "actions".

In assessing criterion validity, the mean correlation between the total score of the Persian CBP and the personal-social subscale score of the ages and stages questionnaire was obtained 0.583 (P<0.001), and it had a weak negative correlation with the behavioral problem questionnaire (r= -0.286). The Cronbach α coefficient for the internal consistency of the 25 items was obtained 0.839. The agreement between the raters was obtained 98% from the calculation of 30% of the samples in random offline scoring, and the agreement between online and offline scoring was 96%. The correlation between the score of the first test and retest was 0.665 (P=0.007), which was significant and moderate. The total score and the score of the communicative intents subscale were not significantly different between girls and boys, although the mean total score of the boys was higher

Table 1. The mean and standard deviation of the total score of the Persian CPB and its two subscales for three age groups

CPB	Mean±SD				P
	Total	3-year-old Children	4-year-old Children	5-year-old Children	
Communicative intents	10.41±2.10	9.42±2.42	9.42±2.35	11.42±0.87	0.001
Conversational devices	9.58±2.06	8.61±2.22	9.42±1.98	10.71±1.38	0.001
Total	19.85±4.05	18.04±4.39	19.38±3.96	22.14±1.93	0.02

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Table 2. Comparing the difference between three age groups in terms of the Persian CPB scores using the Mann-Whitney U test

CPB	Mean Difference		
	3 and 4 Years Age Groups	4 and 5 Years Age Groups	3 and 5 Years Age Groups
Total	0.201	0.018	0.0001
Communicative intents	0.167	0.148	0.005
Conversational devices	0.056	0.007	0.0001

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Table 3. Factor loads of the Persian Checklist of Pragmatic Behaviors (CPB)

Items	Loads	Factors
Taking turns	0.718	2
Request for information	0.686	2
Clarifying	0.493	2
Requesting clarification	0.438	2
Changing the topic	0.916	1
Volunteering to communicate	0.734	1
Request for an object	0.386	1
Request for an action	0.309	1
Predicting	0.506	1
Giving expanded answers	0.577	3
Comment on an object	0.730	3
Hypothesizing	0.530	3
Comment on an action	0.472	3
Describing an event	0.581	2
Giving reasons	0.390	2
Greeting	0.215	2
Denial	0.292	4
Making choices	0.396	4
Asking conversational questions	0.205	1
Acknowledging	0.196	3
Closing	0.387	2
Specifying a topic	0.862	1

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than that of girls. Table 4 presents the categorization of the checklist items based on participants' response patterns.

Discussion and Conclusion

Comparing the total score of the Persian CPB and the scores of its two subscales of communicative intents and conversational devices showed a significant difference in these scores between the three age groups. This result is consistent with the results of Rolph et al. in 1979 ($P \leq 0.05$) and Carrpenter et al. in 1988 ($P=0.0003$). Comparison of the total CPB score using on post hoc test showed a significant difference between 3 and 5 years age groups and between 4 and 5 years age groups, indicating that the Persian CPB had good age-based discriminant validity Persian-speaking children. The total CPB score in the three groups was significantly different, where the development of pragmatics skills was higher in the 5-year-old children. This result is consistent with the results of Rolph et al. in 1979 and Carrpenter et al. in 1988. There was a significant difference between the three age groups in the scores of the three skills of hypothesizing, closing conversation, giving expanded answers in our study, while only the skill of "giving expanded answers" was significantly different in Carrpenter et al.'s

Table 4. Categorization of the checklist items based on participants' response patterns

Items Whose Scores Differed Significantly Between the Three Age Groups	Hypothesizing, Closing, Giving Expanded Answers
Items used by over 60% of children	Request for information, Predicting, Specifying a topic, Request for information, Volunteering to communicate, Acknowledging, Request for an object, Greeting, Comment on an object, Changing the topic
Items used by over 80% of children	Denial, Describing an event, Making choices, Taking turns, Clarifying, Giving reasons, Comment on action
Items used by all children	Answering, attending to the speaker, and maintaining a topic
Items used by less than 2% of children	Asking conversational questions
Items used by fewer children as the age increased	Request for an action

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study. Regarding the skill "taking turns", the results of the present study were in line with the studies by Blain-Brière et al. in 2014 and Rahgozar et al. in 2009. This skill was present in most children aged >3 years. Regarding the skills of answering, attending to the speaker, and maintaining a topic, the results were consistent with Fangman's study in 1982, in which all participants acquired these three skills. However, in Rolph et al.'s research, only the skill of maintaining a topic was acquired by all participants. The level of maintaining a topic depends on the type of task and the presented topic. Greeting and request for information skills were acquired by more than 60% of the children, while in Carrpenter et al.'s study, these skills differed significantly between the three age groups. The discrepancy in the results can indicate the differences in the age of acquisition and how to use pragmatics skills, which are influenced by culture and language. In different cultures, there are different expectations of children during their communication, and many communication norms are varied in different cultures. This difference in expectations and norms can lead to differences in children's communicative methods and even differences in the development of pragmatics skills. For example, in Korean culture, greeting the elder is a very important behavior and is considered disrespectful not doing it. Persian-speaking people use politer words during greeting compared to English-speaking people because they think this can prevent communication problems. For making requests, Persians request less directly than Americans and Canadians. As a result, children's pragmatics skills are developed according to the communication norms of each culture.

In Rolph et al.'s study, the results of factor analysis of the pragmatics checklist included three factors [17], while there were 4 factors for the pragmatics checklist in our research. The loading of some factors was less than 0.5 (minimum acceptable value). However, since this study was a preliminary study and the sample size was small compared to the number of variables, there was a need to examine variables with higher sample size, and, therefore, we refused to remove variables whose factor load value was less than 0.5. The Persian CPB showed a moderate correlation with ASQ and had acceptable criterion validity. That is, with the improvement of pragmatics skills in children, their social skills improve. The Persian CPB showed a weak negative correlation with the behavioral problem questionnaire. With the improvement of pragmatics skills in children, their behavioral problems became reduced a little. The reason for this result could be that the behavioral problem questionnaire assesses many destructive behaviors in children.

Moreover, since the behavioral problem questionnaire was designed for parents in kindergartens, parents were biased in completing it due to fear of labeling their children. Another reason can be that behavioral problems may increase over time. The Persian CPB had a high internal consistency, which indicates that this checklist measures a single structure (pragmatics behaviors). The test-retest reliability assessment of the Persian CPB showed a moderate correlation between the scores, indicating its acceptable test-retest reliability. The high agreement between online and offline scoring of the Persian CPB indicated the adequacy of online scoring without offline scoring in implementing this checklist.

The Persian CPB has acceptable validity and reliability. However, to decide whether this checklist can be used as a screening tool for Persian-speaking children, we need further studies with larger sample sizes. Some results of the present study differed from the results of previous studies, which may be due to differences in language and culture, which are the critical factors in the development of cognitive pragmatics skills. Because of the fundamental differences in language and culture, the age of acquisition, and the way of using pragmatics skills in the Persian language are different from those in the English language. Based on

the cultural differences, a child may use some behaviors less or not at all.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of the Isfahan University of Medical Sciences (Code: 1397.045). The participated child's parents completed an informed. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

Conceptualization and supervision: Mahbubeh Nakhshab, Parisa Rezaei and Faezeh Koohestani; Methodology: Faezeh Koohestani, Mahbubeh Nakhshab; Investigation, writing – original draft, and writing – review & editing: All authors; Data collection: Faezeh Koohestani and Mahbubeh Nakhshab; Data analysis: Mahbubeh Nakhshab and Faezeh Koohestani.

Conflict of interest

The authors declared no conflict of interest.

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