Original Article

Identification of High-Frequency Morphosyntactic Structures in Persian-Speaking Children Aged 4-6 Years: A Qualitative Research

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What's Known

• Prevalence of morphosyntactic deficits is relatively high in children with language disorders.
• Several studies have inquired into the morphosyntactic acquisition of children in various languages, particularly English. The results of these studies have laid the foundation for designing standardized tests to assess morphosyntactic features.

What's New

• Due to cross-linguistic syntactic differences, the findings of past studies cannot be generalized to Persian-speaking children.
• Due to the lack of standardized tests to evaluate morphosyntactic features in Iran, this study aimed to determine the most frequent morphosyntactic structures of the Persian-speaking children aged 4-6 years, to design a test for expressive morphosyntactic features.

Abstract

Background: Syntax has a high importance among linguistic parameters and the prevalence of syntax deficits is relatively high in children with language disorders. As such, independent examination of syntax in language development is of paramount importance. In this regard, Iranian language pathologists are faced with the lack of standardized tests. The present study aimed to determine the most frequent and essential morphosyntactic structures of the Persian-speaking children aged 4-6 years, as an initial step in the design of a test to assess their expressive morphosyntactic features.

Methods: The present descriptive qualitative study was designed and conducted in two phases in Tehran (Iran) during 2014-2015. The first phase involved an extensive review of the Persian grammar sources, language development texts, modeling a test called SPELT-3, and morphosyntactic analysis of samples of spontaneous speech from 30 Persian-speaking children aged 4-6 years. In this phase, 30 structures were extracted as the most frequent morphosyntactic features used by children aged 4-6 years. The second phase of the research involved directed content analysis via in-depth and semi-structured interviews with 10 specialists in the fields of linguistics, language, and speech pathology.

Results: In total, 30 morphosyntactic structures were extracted in the first phase of the study as the most frequent morphosyntactic structures of the Persian-speaking children aged 4-6 years. The overall validity of these structures was estimated at 70%.

Conclusion: Based on the results, the selected morphosyntactic structures could be the foundation for morphosyntactic assessments in Persian-speaking children aged 4-6 years.

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Keywords ● Language disorders ● Qualitative research ● Linguistics ● Interview

Introduction

Through speaking in single-word utterances and acquiring skills in grammar, children gradually gain the ability to produce and perceive indefinite new and long(er) sentences.[1] Consequently, children achieve communication capability which is one of the most important and major needs of human life. However,

for different reasons, many children face challenges in acquiring language skills and suffer from language disorders.[2] Compared with the other categories of a language; syntax deficits have a relatively high prevalence in children with language disorders.[3] Syntax has a high importance among linguistic parameters. Therefore, linguists have been concerned with the issue of investigating and describing this aspect of language, by which numerous sentences are created in every language.[4] In studies focusing on the use of syntax by children, examination of morphological/syntactic acquisition process and development is a principal theme.[5]

In a longitudinal study conducted on three children, Brown (1973) considered five stages in language development based on the mean length of utterance. Furthermore, Brown investigated the acquisition order of 14 grammatical morphemes and their frequency of utterance. According to the obtained results, the mean acquisition order of these grammatical morphemes with a criterion of 90% accuracy was as follows: present continuous tense, prepositions "on" and "in," plural forms, regular and irregular past tense, possessive morphemes, contractible and uncontractible copula verbs, definite articles, regular and irregular third person singular, and contractible and uncontractible auxiliary verbs.[6] In this regard, some longitudinal studies have evaluated the morphological and syntactic development of Persian-speaking children in Iran. It should be noted that Persian is an Indo-European language mainly spoken in Iran, Afghanistan, and Tajikistan. It is a morphologically rich language with numerous variations in the word order of a sentence. Moreover, gender and case agreement do not apply in the Persian language.[7]

In a research study, Meshkatoddini (2004) investigated and analyzed the development process and order of appearance of morphological affixes, functional words, and structural links of word groups in sentences in the speech of two Persian children during 23-42 months of age.[8] In another longitudinal study, Jalilevand (2012) explored the development process of certain features of speech and language, including morphosyntactic features in two Persian-speaking children during 12-60 months of age.[9] Morphosyntactic structures extracted from the speech samples of the children in the studies by Meshkatoddini and Jalilevand are mentioned in the results section of this article.[8,9]

To date, several studies have inquired into the morphosyntactic development process and acquisition of children in various languages, particularly English. The results of these studies have laid the foundation for designing standardized tests to assess the morphosyntactic features of children's language.[10] Unfortunately, limited research studies have been conducted to examine the morphosyntactic features of the Persian language. Due to the differences in these features among different languages, the findings of other language studies cannot be generalized and applied to the Persian language.[11] Therefore, due to the shortage of suitable tests in Iran, evaluation and clinical and research activities have been performed using informal and non-normative sundry tests. Designing standard tests with high reliability and validity is necessary to help these therapists identify the main problems of children with language disorders.

Considering the importance of syntax and lack of reliable tests to exclusively evaluate this language aspect, the present study aimed to determine the most frequent and essential morphosyntactic structures of children aged 4-6 years as an initial step in designing a test to assess the morphosyntactic features of the expressive language of the Persian-speaking children aged 4-6 years.

Participants and Methods

Design

The present descriptive qualitative study utilized directed content analysis approach, which was performed in Tehran (Iran) during 2014-2015. Content analysis using a directed approach is guided by a more structured process than a conventional approach in which data are collected primarily through interviews; an open-ended question might be used, followed by targeted questions about the predetermined categories.[12]

The present study was designed and conducted in two phases:

Phase I: This phase included four steps:
1. A deductive approach was adopted to extensively review the sources of Persian grammar based on the traditional linguistic perspective to determine grammatical structures.[13-25]
2. A test called "structured photographic expressive language test-3" (SPELT-3) was modeled to determine the grammatical structures in order to design a test to assess the morphosyntactic features.[26]
3. Available literature on the morphosyntactic development of the Persian-speaking children was reviewed.[8,27,28]
4. To determine children's grammatical structures, morphosyntactic analysis of the transcribed samples of spontaneous speech

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from 30 Persian-speaking children aged 4-6 years was performed.

Finally, based on the obtained information, 30 structures were extracted as the most frequent and essential morphosyntactic structures in the speech of children aged 4-6 years (table 1, [Persian version of the table can be found here]).

In the present study, the target grammatical structures were selected based on the four criteria that have been used in the design of SPELT-3.[29] These criteria were the frequency of use in the Persian language, development, importance, and picturability within the age range of 4-6 years. The high frequency of a grammatical structure was determined based on the early appearance of that structure in the child speech and the perception of linguistic experts on the frequency of the structure. Furthermore, the importance of the criteria of each grammatical structure was determined based on the clinical significance such that when the structure was clinically significant, it was considered as a target structure (even with low frequency).

With respect to the development of criteria, the structures were classified based on their early appearance in the children before the age of four years.[8,27,28] Another criterion was the picturability of the grammatical structure with the least ambiguity, which was taken into account in selecting the target structures.

Phase II: After determining the target grammatical structures, the second phase of the study was performed using an inductive approach with directed content analysis via in-depth and semi-structured interviews with the specialists. This approach has been confirmed as a reliable method for data collection in qualitative studies.[30] The present study was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Participants

Phase I: In this phase, 30 typically developing Persian-speaking children aged 4-6 years (15 boys and 15 girls) participated. The children were randomly selected from the nursery

Table 1: Most frequent morphosyntactic structures in Persian-speaking children aged 4-6 years	
1. Declarative sentences: e.g., maman hær ruz qæzæ dorost mikonæd (Mother cooks every day).	16. Verb inflection (Tense, mood, aspect): e.g., maman daræd zærfha ra mishuræd (Mother has been washing the dishes).
2. Question–word interrogative sentences: e.g., koja miravi? (Where are you going?).	17. Negation: e.g., ?u qæza nemikhoræd (He doesn't eat).
3. Conditional sentences: e.g., ægær be gaz dast bezani, dæstat misuzæd (If you touch the gas, your hand burns).	18. Passive verbs: e.g., hmeye qæzaha khorde shode ?æst. (All food is eaten).
4. Yes–no interrogative structures: e.g.kolah mikhahi? (Do you want hat).	19. Bound subjects: e.g., mæn næqqashi mikeshæm (I am drawing).
5. Imperative phrases: e.g., dær ra bebænd (Close the door)	20. Causal verbs: e.g., maman bæche ra khaband (Mother put to sleep the baby).
6. Exclamations: e.g., cheqædr ?ærusæket khoshkel ?æst! (How beautiful your doll!)	21. Plural particles: e.g., dokhtær ketabhayæsh ra jam kærd (The girl gathered her books).
7. Effect conjunctions: e.g., chon dir ?amædi, pæs behet jayzeh nemidæm (Because you are late, so I'm not going to reward you).	22. Personal pronouns (disjunctive and connected): e.g., kife to ?æst/?ærusækæm ra bede (Bag is yours/Give my doll).
8. Causal conjunctions: e.g., pesær naqqashi nemikeshæd, chon medad nædaræd (The boy doesn't draw, because he doesn't have pencil.).	23. Reflexive pronouns: e.g., ?u khodæsh ra dær ?ayneh mibinæd (She looks at herself in the mirror).
9. Correlative conjunctions: e.g., in pærænde ba ?inke khurus ?æst, væli dom nædard (Although this bird is the cock, but it doesn't have the tail).	24. Intensive pronouns: e.g., ?anha hæmdigær ra bæqæl kærdænd (They hugged each other).
10. Coordinating: e.g., kolah væ mashin (Hat and machine).	25. Demonstrative pronouns: e.g., ?in tup ra mikhahæm (I want this ball).
11. Subject relative clauses: e.g., pesæri ke bæstæni daræd, khoshhal ?æst (The boy that has the ice cream is happy).	26. Verbal clitics: e.g., ma balaye derækhtim (we are the top tree).
12. Adverb relative clauses: e.g., ?adæmha væqti mæriz mishævænd, doctor miravænd (When people are sick, they refer to doctor).	27. Prepositions: e.g., ?u ?æz dustæsh medad gereft (He took a pencil from his friend).
13. Complement relative clauses: e.g., mamanæsh miguyæd boro dæsthayæt ra beshur (His mother says that go wash your hands.).	28. Particle rā: e.g., ?u daræd zærfha ra mishuræd (He has been washing his hands).
14. Copulas: e.g., pedær kheili khæsteh ?æst (Father is very tired.).	29. Comparative adjective: e.g., tupe ?abi kuchektær ?æst (Blue ball is smaller).
15. Genitive case: e.g., kife khanum siah ?æst (Woman's bag is black).	30. Superlative adjective: e.g., bozorgtærin tup ?abi ?æst (Biggest ball is red).

schools in the middle-class areas of Tehran. The inclusion criteria were normal language and speech development and being healthy at the time of research; determined based on children's medical records, examiner's observations, parents and teachers' anecdotes. The exclusion criteria were the presence of any language disorders or speech problems, such as phonological disorders and stutter.

Phase II: In the second phase of the qualitative study, no specific rule to determine an appropriate sample size was applied. The researchers continued sampling until data saturation. Saturation occurs when additional participants do not result in further perspectives or information.[31] The specialists, including six linguistic experts and four speech and language pathologists were selected via purposive sampling. The inclusion criteria for the specialists were having a minimum of two indicators of experience in clinical practice, and education and research in the field of syntactic and morphological development in children.[32] The exclusion criteria included having none or only one of the above-mentioned indicators of inclusion criteria.

Data Collection

Phase I: Data collection was done through an extensive review of the Persian language grammar sources, language development texts, modeling a test called SPELT-3, and morphosyntactic analysis of samples of spontaneous speech from 30 Persian-speaking children aged 4-6 years for a minimum of 20 minutes. In this phase, 30 structures were selected as the most frequent morphosyntactic features used by children aged 4-6 years

Phase II: Data collection was performed using open-ended questions based on the predetermined morphosyntactic structures. In this process, the specialists were asked to state their perception regarding each of the determined structures for the Persian-speaking children aged 4-6 years. If necessary, some structures would be eliminated, added, or modified based on the statements of the specialists. The average duration of interviews was 50 minutes.

The content of each interview was immediately transcribed and the transcriptions were reviewed several times by the researchers in order to acquire a general perception of the comments of the experts. At first, initial codes were extracted from interview contents and classified based on the pre-determined morphosyntactic structures. Then, the data were assimilated. To apply the comments to the pre-determined morphosyntactic structures, the

structures would be further analyzed if approved by 70% (or more) of the experts. Otherwise, the structure would be eliminated from the study. Furthermore, the same modification was applied if 30% (or more) of the experts did not approve a structure or believed that a structure should be added to the target features.[33]

Results

Phase I: The review of Persian grammar sources revealed the following morphosyntactic features used by Persian-speaking individuals:[13-25]
1. Different sentence types in terms of sense and mood (question-word interrogative, imperative, exclamations, yes-no questions, declarative, and conditional sentences)
2. Different sentence types in terms of verb use (verbal, copular, and non-verbal phrases)
3. Different sentence types in terms of structure (simple or compound)
4. Different sentence types in terms of grammatical structure (grammatical or ungrammatical)
5. Different types of short sentences (noun clauses and elliptical sentences)
6. Main, subordinate, and coordinate clauses
7. Function words (conjunctions, prepositions, ezāfe construction, particle *rā*)
8. Relative clauses (subject, object, adverb, and complement)
9. Verb inflection (tense, person, number, aspect, mood, negation, passive, and active forms)
10. Noun inflection (number and definiteness)
11. Pronouns (personal, reflexive, intensive, demonstrative, interrogative, exclamatory, and indefinite pronouns)
12. Structural verb functions (simple, compound, and affix verbs)
13. Adjectives, appositions, and discriminants as nominal dependents
14. Adverbs
15. Clitics
16. Possessions (ezāfe structure or genitive case, clitics, and expression māle)
17. Functions of copular, auxiliary, transitive, and intransitive verbs
18. Causal structures
19. Objects
20. Regular and irregular past tense
21. Plural particles

After reviewing the Persian grammar sources, language development texts were considered as the reference to determine the morphosyntactic structures exploited by children aged 4-6 years.[8,27,28] In addition, morphosyntactic analysis was conducted to

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assess the spontaneous speech samples of children within the same age group. These structures included question-word interrogative sentences, declarative sentences, exclamations, conditional sentences, imperative phrases, yes-no interrogative structures, main, subordinate and coordinate sentences, noun clauses (short sentences), direct and indirect speech, verb structures (simple, compound and affix verbs), negation, copulas, passive and active senses, causal structures, regular and irregular past tense, pronouns (personal, reflexive, demonstrative, interrogative, exclamatory, and indefinite), adverbs and adjectives, definiteness, verbal clitics, bound subjects, particles (prepositions and conjunctions), possessive structures, ezāfe structure or genitive case, plural particles, verb tense, mood, and aspect.[8,9]

Since the proper examination of all these morphosyntactic structures in one test was time-consuming and it is not possible to illustrate all the features, the target morphosyntactic structures were selected for the Persian-speaking children aged 4-6 years based on the pre-determined criteria of frequency, development, importance, and picturability as the main references for each structure. The selected morphosyntactic structures are presented in table 1.

Phase II: In this phase, the contents of interview transcriptions were analyzed in order to apply the comments of the specialists. According to the obtained results, a number of experts believed that some structures should be added to the target morphosyntactic structures, including noun clauses (one specialist), definiteness (two specialists), and absolute adjectives (one specialist). However, due to the limited number of specialists and lack of the approval criterion of 30% for these structures, they could not be added to the pre-determined features. Furthermore, two of the specialists believed that the passive verb tense and superlative adjectives should be eliminated from further evaluation. However, due to the limited number of these experts and lack of the mentioned criterion, these morphosyntactic structures were not eliminated from the study.

Considering their high frequency and importance in the speech of Persian-speaking children aged 4-6 years, the following structures were confirmed by all specialists as the most significant morphosyntactic structures. These structures were sentence types (declarative, question-word interrogative, conditional, yes-no questions, imperative, exclamations), conjunctions (cause and effect, correlative, coordinating), relative clauses (subject, adverbial, complement), copulas, genitive case, verb inflections (negation, bound subjects and

tense, mood, aspect), pronouns (personal, reflexive, intensive, demonstrative), verbal clitics, prepositions, objective case, plural particles, adjective inflection (comparative), and causal structures. Finally, based on the interviews, no changes were applied to the target morphosyntactic structures.

Discussion

In the present study, the researchers attempted to review the available grammar sources in order to obtain a theoretical framework regarding Persian morphology and syntax.[13-25] This was done by modeling a test known as "SPELT-3,"[26] to review language development texts and morphosyntactic analysis of the spontaneous speech samples of children to determine the most frequent and essential morphosyntactic structures in the speech of children aged 4-6 years.[8,27,28]

To select the target morphosyntactic structures of Persian language, we applied the four criteria of the SPELT-3 (frequency, development, importance, and picturability).[26] The early appearance of morphosyntactic structures before the age of four years was identified to adapt the developmental criterion. In this phase, a comparison of the morphosyntactic structures obtained from the sources of Persian grammar[13-25] and language development texts[8,27,28] revealed that almost all key morphosyntactic features are formed in children before the age of four years. Therefore, these structures could be effectually applied in designing instruments for the assessment of the morphosyntactic structures in the speech of children aged 4-6 years. Moreover, the reported morphosyntactic structures by Brown, before the age of four years, were among the Persian-speaking structures that appeared before this age.[6]

It is noteworthy that the results obtained from the comparison of Persian morphosyntactic structures[13-25] and language development texts were consistent with the findings of similar studies. For instance, it has been suggested that the linguistic system of a child acquires similar features to those of the adults surrounding him/her by the age of five years.[34] Other researchers believe that children become proficient at essential morphosyntactic structures by the age of four years.[5,10] Other studies focusing on the syntax of children have used the transformational model to evaluate this language aspect, indicating that almost all the main syntactic structures used by adults could be exploited by children aged two years and 10 months.[5] From the age of two

years and 10 months to seven years and one month, the number of children who could apply these syntactic structures increases steadily. However, most of these syntactic structures are frequently used since an early age on a regular basis.[35]

In the present study, after determining the morphosyntactic features of children aged four years and below, we investigated three other criteria (high frequency, importance, and picturability) in order to select the target structures. The importance of a criterion was based on theoretical aspects, perceptions of the experts, analysis with SPELT-3,[26] and errors of children with language disorders. For instance, previous investigations indicated that despite the low frequency of use, some structures (e.g. passive and causal structures) were considered to be important and, therefore, selected as target due to their complexity and problematic nature for children with language disorders.

In the second phase, all pre-determined morphosyntactic structures in the interviews were approved by 10 experts, in accordance with the four main criteria. Thus, none of the selected morphosyntactic structures were eliminated from further analysis. Considering that in the Persian language, similar to English, almost all morphosyntactic structures are formed before the age of four years[10,35] and since target morphosyntactic structures were determined, we compared the selected morphosyntactic structures of the Persian language with those of the SPELT-3.

According to the results, with the exception of two cases, all morphosyntactic structures of the SPELT-3 were available on the checklist of the selected morphosyntactic structures in Persian. The two exceptions were negative WH-questions (e.g. Why don't you help?) and negative infinitive phrases (e.g. I do not want to play).[26] These sentences are also used in the Persian language. However, these features were not considered as target structures in the present study since they did not meet the four main criteria. Target morphosyntactic structures were matched with the structures of Northwestern syntax screening test (NSST)[36] and the test for examining expressive morphology (TEEM).[29]

The present study had several limitations. Since a few developmental studies had been conducted on Persian children, we also used the samples of spontaneous speech of the Persian-speaking children aged 4-6 years to determine the grammatical structures of children. In addition, there was no standardized test for evaluating the morphosyntactic features of the

expressive language in the Persian language. Thus, it was used from a test called "SPELT-3" as a model.

Conclusion

In total, 30 morphosyntactic structures were selected as significant and high-frequency features in the speech of children aged 4-6 years. The selection of these morphosyntactic structures was performed based on the four criteria of frequency of use in Persian, development, importance, and picturability. The selected target structures were approved by 10 experts in terms of the mentioned criteria by interviews and none of the selected morphosyntactic structures were eliminated from the study. Considering the lack of reliable tests to evaluate the morphosyntactic features of speech in Persian-speaking children, the selected morphosyntactic structures in this study could lay the foundation for designing expressive morphosyntactic tests in Persian-speaking children aged 4-6 years.

Acknowledgment

References

1. Brock A, Rankin C. Communication, language and literacy from birth to five. UK: Sage; 2008.
2. Haresabadi F, Ebadi A, Shirazi TS, Dastjerdi Kazemi M. Design and validation of a Photographic Expressive Persian Grammar Test for children aged 4–6 years. Child Language Teaching and Therapy. 2016;32:193-204. doi: 10.1177/0265659015595445.
3. Angell CA. Language development and disorders: A case study approach. Massachusetts: Jones and Bartlett Publishers; 2009.
4. Marinis T. On the nature and cause of specific language impairment: A view from sentence processing and infant research. Lingua. 2011;121:463-75. doi: 10.1016/j.lingua.2010.10.010.
5. Hoff E. Language Development. 5 ed. USA: Jon-David Hague; 2013.
6. Brown R. A first language: The early stages. Cambridge: Harvard University Press; 1973.
7. Bakhtiar M, Nilipour R, Weekes BS.

Predictors of timed picture naming in Persian. Behav Res Methods. 2013;45:834-41. doi: 10.3758/s13428-012-0298-6. PubMed PMID: 23292568.

8. Meshkatodini M. Investigating the development of inflectional affixes and connective structures in developmental articulation of children. J Linguist. 2004;19:10-26. Persian.

9. Jalilevand N. Speech and language developement in farsivspeaking children. Tehran: Danjeh; 2012. Persian.

10. Ervin SM, Miller WR. Language development. In: Stevenson HW, Kagan JC, Spiker CC, Henry NB, Richey HG. Child psychology: The sixty-second yearbook of the National Society for the Study of Education, Part 1. Chicago: University of Chicago Press; 1963. p.108-43.

11. Shipley KG, McAfee JG. Assessment in speech-language pathology: A resource manual. Canada: Nelson Education; 2015.

12. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res. 2005;15:1277-88. doi: 10.1177/1049732305276687. PubMed PMID: 16204405.

13. Givi HA, Anvari H. Persian grammar 1. 4th ed. Tehran: Fatemi Publication; 2012. Persian.

14. Anvari H, Givi HA. Persian grammar 2. 4th ed. Tehran: Fatemi Publication; 2012. Persian.

15. Miremadi A. Persian syntax based on Government and Binding Theory. 7th ed. Tehran: SAMT; 2010. Persian.

16. Meshkatoddini M. Persian Grammar (Based on Transformational Theory). 2th ed. Mashhd: Ferdowsi University of Mashhad; 2003. Persian.

17. Yousef S, Torabi H. Basic Persian: A grammar and workbook. 1th ed. New York: Routledge; 2013.

18. Khanlari P. Persian grammar. 24 ed. Tehran: Toos Publication; 2014. Persian.

19. Elwell-Sutton LP. Elementary Persian Grammar. England: Cambridge University Press; 1963.

20. Windfuhr GL. Persian grammar: History and state of its study. Walter de Gruyter: Mouton; 1979.

21. Mace J. Persian Grammar: For reference and revision. 2th ed. New York: Taylor & Francis; 2015.

22. Mahootian S. Persian. New York: Routledge; 2002.

23. Perry JR. A Tajik Persian Reference Grammar. Leiden-Boston: Brill; 2005.

24. Kent RG, Emeneau MB, Cammann S. Old Persian, Grammar, Texts, Lexicon: American Oriental Series. USA: Literary Licensing, LLC; 2011.

25. Jones SW. A Grammar of the Persian Language. Massachusetts: HardPress; 2013.

26. Dawson J, Stout C, Eyer J, Tattersall P, Fonkalsrud J, Croley K. Structured photographic expressive language test-III manual. Twombley Rd., DeKalb, IL: Janelle Publications; 2003.

27. Jalilevand N, Ebrahimipour M. Pronoun acquisition in Farsi-speaking children from 12 to 36 months. Journal of Child Language Acquisition and Development. 2013;1:1-9.

28. Jalilevand N, Ebrahimipur M, Purqarib J. Mean length of utterance and grammatical morphemes in speech of two Farsi-speaking children. Bimonthly Audiology-Tehran University of Medical Sciences. 2012;21:96-108.

29. Perona K, Plante E, Vance R. Diagnostic accuracy of the structured photographic expressive language test: third edition (SPELT-3). Lang Speech Hear Serv Sch. 2005;36:103-15. PubMed PMID: 15981706.

30. Polit-O'Hara D, Beck CT. Essentials of nursing research: Methods, appraisal, and utilization. 6th ed. Philadelphia: Lippincott Williams& Wilkins; 2006.

31. Higginbottom G, Liamputtong P. Participatory Qualitative Research Methodologies in Health. UK: Sage; 2015.

32. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. Res Nurs Health. 2007;30:459-67. doi: 10.1002/nur.20199. PubMed PMID: 17654487.

33. Plichta SB, Kelvin EA, Munro BH. Munro's statistical methods for health care research. Wolters Kluwer Health: Lippincott Williams & Wilkins; 2012.

34. Golpour L, Nilipour R, Roshan B. A comparison between morphological and syntactic features of 4 to 5 years old in education severe to profound hearing impaired and normal children. Bimonthly Audiology-Tehran University of Medical Sciences. 2006;15:23-9. Persian.

35. Menyuk P. A preliminary evaluation of grammatical capacity in children. J Verbal Learning Verbal Behav. 1963;2:429-39. doi: 10.1016/s0022-5371(63)80044-4.

36. Paul PV. Language and deafness. Burlington: Jones & Bartlett Learning; 2009.