



## Case Report

# Determining the Language Measurements in a Turkish-Persian Bilingual Child Suspected of Language Impairment: A Case Report



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## ABSTRACT

**Background and Objectives:** Bilingual children may be misdiagnosed with language impairment or, language impairment may not be diagnosed in these children due to postponing in diagnosing language problems after learning the second language. Determining a bilingual child's language score includes assessment in both languages. The present study aims to report the language measurement scores in a Turkish-Persian bilingual child.

**Case Presentation:** The language sample of an eight-and-a-half-year-old Turkish-Persian sequential bilingual boy with suspected language impairment was analyzed in both languages. For the syntactic domain, the measures of the mean length terminal-unit (MLTU), the number of grammatical errors per terminal-unit (NETU), the mean length of communication unit (MLCU), and for the semantic domain, the measure of a number of total words (NTW), the number of different words (NDW), and type-token ratio were used. Two variables of the age and duration of exposure to the second language were obtained. The age of exposure to the Persian language was 67 months and the duration of exposure was 33 months.

**Conclusion:** The results demonstrated that the child's performance is better in the Persian language than the Turkish in all measures except the number of grammatical NETU. This result can be justified according to the linguistic richness and duration of the child's exposure. Finally, it is suggested to pay attention to the child's language performance in each of his languages as well as his linguistic environment in diagnosing the Turkish-Persian bilingual children's language impairment.

**Keywords:** Sequential bilingualism, Language impairment, Language measures



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↑ *What is “already known” in this topic:*

*Accurate language impairment diagnosis in bilingual children is challenging due to the complexities of dual-language exposure;*

*Misdiagnosis of language impairment can occur due to overidentification (mistaking typical bilingual development for impairment) or underidentification (failing to detect actual impairment);*

*Language assessment of bilingual children requires evaluating both languages using reliable linguistic measures across syntactic and semantic domains;*

*There is a lack of standardized tools for diagnosing language impairment in Turkish-Persian children in Iran*

→ *What this article adds:*

*This study provides a detailed case report of language assessment in a Turkish-Persian bilingual boy.*

*The study highlights the importance of using syntactic (e.g., mean length of t-unit, grammatical errors) and semantic (e.g. number of different words) measures for language impairment diagnosis in bilingual children;*

*The study introduces a combined scoring approach, emphasizing the need to assess performance in both languages to avoid diagnostic errors.*

*The study underscores the necessity for culturally adapted tools for bilingual language assessment in Iran, particularly for Turkish-Persian bilingual children.*

## Introduction

**B**ilingualism is a common phenomenon worldwide, with one in every three people being bilingual. Predictions indicate that bilingualism and multilingualism will continue to rise in the foreseeable future [1]. Bilingualism is defined differently across various studies. Sequential bilinguals learn their second language later in life [2, 3]. Language impairments have a high prevalence in bilingual children [4]. According to various studies, the prevalence of language impairment is between 7% and 29% [5, 6]. Limited studies have been conducted on Iranian bilingual children, particularly Turkish-Persian bilinguals, in which the linguistic characteristics of these children have been compared to their monolingual counterparts [7-9]. However, based on the authors' literature review, no cross-linguistic study has been conducted on Iranian bilingual children.

Exposure to two languages presents an opportunity for all children, including those with primary language impairment. A bilingual individual proficient in both languages gains numerous cognitive, linguistic, and social advantages [3, 10-12]. However, bilingualism makes it difficult to diagnose language impairments in bilingual

children [13]. The diagnosis and intervention of language impairment in bilingual children is a complex and challenging issue [14-16]. Bilingual children may be misdiagnosed with language impairment due to inappropriate developmental language expectations<sup>1</sup>. On the other hand, language impairments in these children may be unrecognized and unaddressed due to delays in identifying language issues after learning a second language<sup>2</sup> [17]. Language impairments in bilingual children occur when both languages are impaired [17, 18].

Most studies conducted in the field of language diagnosis in bilingual children have referred to a combination of tools and combined scores [11, 12, 19, 20]. A combined score means the best score in each of the language sample measures [21]. Since no standard test diagnoses language impairment in Turkish-Persian bilingual children in Iran [22], in the present study, the method of language sample analysis using measurement indices, syntax, and vocabulary has been used as a reliable method in diagnosing language impairment [23, 24]. Based on the conducted studies, to perform appropriate assessment and intervention in bilingual children with language impairment, it is necessary to determine the language

1. Overidentification
2. Underidentification

characteristics of both languages in these children [11, 12]. Speech and language pathologists can choose the appropriate language to assess and treat by examining language indices in both languages of the child. This study was conducted to investigate the language profile of a Turkish-Persian bilingual child suspected of having language impairment.

## Case Description

An 8.5-year-old, a sequential Turkish-Persian bilingual and a second-grade student in an elementary school was brought to the clinic by his parents with concerns about his short sentence length of utterance. First, based on the results of the Persian version of the Alberta language and development questionnaire, which has been validated and standardized for Persian-Turkish children [22], the language development of this case was investigated. In this study, the clinical judgment of two Turkish-Persian speech and language pathologists with a minimum of 3 years of experience was considered the gold standard for diagnosing language impairment, and the diagnosis of language impairment in this child was confirmed. According to the parents' report in this questionnaire, the child began forming sentences at the age of 4 years and was exposed to the second language (Persian) at the age of 5 years and 7 months, with duration of 33 months. The richness of the child's Persian and Turkish languages was assessed using the Persian version of the informal Alberta language environment questionnaire (ALEQ) [22]. Given the lack of appropriate and standardized diagnostic tools for Persian-Turkish children, a set of the aforementioned questionnaires was standardized to assess language impairment in Persian-Turkish bilingual children.

To obtain a language sample from this child, the images of the language sample analysis test, including story images, such as "the elephant and the horse" and "the rabbit and the tortoise," were used. This test is designed to evaluate the macro and micro-structures of narrative

skills in typically developing children aged 5 to 10 years [25]. The child first narrated the story images in Turkish and then in Persian, and the child's voice was recorded. It is essential to note that informed consent was obtained from the parents before the study began.

In the analysis of the child's language sample, three linguistic measures were used to assess the semantic domain, the number of total words (NTW), number of different words (NDW), and type-token ratio. The syntactic domain was evaluated using three linguistic measures, mean length of T-units (MLTU), number of grammatical errors per T-unit (NETU), and mean length of communication units (MLCU).

The NDW measure is a reliable indicator to assess the semantic domain and serves as a clinical marker for distinguishing typically developing children from those with language impairments [26, 27]. The MLTU measure has been identified as a good clinical marker to detect language impairment in Spanish-English bilingual children, and since the MLTU and NETU measures effectively reflect syntactic complexity in agglutinative languages, such as Turkish [19], they were utilized in this study.

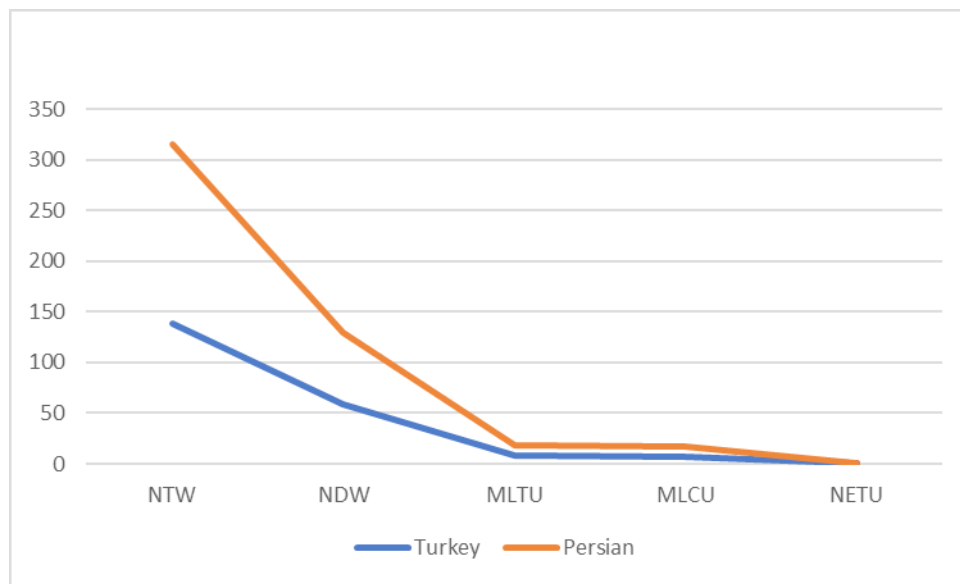
## Discussion

The present study was conducted to analyze and compare the language characteristics of Turkish-Persian bilingual children in both languages, introduce a combined score and target both languages to assess and treat. The ALEQ results showed that the richness of the child's Persian and Turkish languages is close to each other (Persian=0.32, Turkish=0.35). In the analysis of the language sample, it was found that the child's language feature scores in all studied language measures are higher in Persian than in Turkish. Furthermore, the analysis of grammatical errors revealed the omission of the object marker in both languages. Table 1 and Figure 1 show the child's scores on the linguistic measures.

**Table 1.** The child's scores of language measures in both languages

Language Measure	Persian	Turkey	Best Score
NTW	178	138	178
NDW	71	59	71
MLTU	10.7	8.1	10.7
MLCU	9.03	7.58	9.03
NETU	0.3	0.13	0.13

Abbreviations: NTW: Number of total words; NDW: Number of different words; MLTU: Mean length of T-units; MLCU: Mean length of communication units; NETU: Number of grammatical errors per T-unit.



**Figure 1.** Comparison of child's language measures in languages

Our criterion for each language measure was the child's best score in that specific measure. The best score is defined as the highest score in either of the child's two languages. Therefore, the best score for one language measure may be from the child's Turkish, while for another measure, it can be from their Persian. This is why it is emphasized that a combined score should be considered when analyzing the language samples of bilingual children [11, 12, 19, 20]. In Iran, only one study conducted by Fekar et al has examined the language characteristics of Turkish-Persian bilingual children in both languages. Their results indicated that parent-reported indices and language measures can have diagnostic utility in identifying bilingual children with language impairment [28].

Table 1 presents the child's scores on the linguistic measures as well as their best score for each measure.

Based on Table 1, the child's performance in all language measures studied was better in Persian than in Turkish, except for NETU. However, the scores for the Turkish and Persian measures were close. The duration of exposure to the first language can be a reasonable explanation for this finding [29], with the child having 33 months of exposure to Persian. Another explanation can be the similarity in the Turkish-Persian linguistic features [22]. Table 2 presents the child's grammatical errors.

Based on Table 2 and the analysis of the language sample and types of errors, it appears that the area of syntax is affected more than the area of semantics. Additionally, the two errors of "omission of the object marker" and "subject-verb agreement error in person" were observed in both children's languages. According

**Table 2.** Child's grammatical errors

Type of Error	Example
Omission of the object marker	[bax'di tʃæf'mæ'læ] (Turkish) / [tʃe kæsi ændo:x'te ru:j de'ræxt] (Persian)
Subject-verb agreement error in person	[at o hava'pima:nu fi:lers'ti:r go'tusen] (Turkish) / [æsb o fi:l fækr mi:'kærd] (Persian)
Incorrect pronoun usage	[gæl'se hava'pima:sin tʃi'χa:disin] (Turkish)
Omission of the clitic	[mɔ:'mɔn fi:l] instead [mɔ:'mɔn-e fi:l] (Persian)
Omission of the object	[tʃe kæsi ændo:x'te ru:j de'ræxt] (Persian)
Incomplete verb expression	[χær'gu:f xɔ:'ne qæʃæŋk sɔ:] (Persian)

to the qualitative judgments of the speech and language pathologist, the Turkish-Persian bilingual child has no difficulties in higher cognitive skills, such as theory of mind, reasoning, and problem-solving; however, syntactic issues were observed in reading comprehension, such as subject-verb agreement errors, and challenges in the domain of spelling. Therefore, a specific diagnosis of language impairment is likely for this child. The ALEQ results also confirm this issue. Supporting this claim, research results indicated that for accurate diagnosis and assessment of language impairment in bilingual children, the child must have at least two years of exposure to the second language [29]. Otherwise, inappropriate developmental linguistic expectations may lead to misdiagnosis. Thus, when diagnosing language impairment in bilingual children, therapists should consider the type of bilingualism, the duration of exposure to the second language, the linguistic characteristics of the child's languages, and specific clinical markers of language impairment in the child's language [29].

Given that syntactic errors, as indicated by the NETU measure, were observed in both languages, the likelihood of a language impairment diagnosis increases. In this case, if the syntactic errors were only present in Persian, it could be attributed to the child's limited exposure to that language. Therefore, assessment and treatment for the subject of the study were conducted in both languages, and the effectiveness of the treatment was observable from the perspectives of both parents and the therapist. However, due to the child's inability to attend follow-up sessions, the treatment outcomes were not monitored or documented. It can be concluded that diagnosing language impairment in Turkish-Persian bilingual children is challenging due to the lack of clarity in clinical markers, the unavailability of normative data, and the presence of uncontrolled variables, such as the age of exposure and duration of exposure. Consequently, it is recommended that clinical decision-making for the assessment and treatment of language impairment in bilingual children be based on the analysis of language samples in both languages as well as parent-reported questionnaires.

In conclusion, it is essential to note that the limitations of the present study include the lack of standardized diagnostic tools for Turkish-Persian children and the unavailability of similar studies. It is suggested that future research should focus on examining normative linguistic data in typically developing Turkish-Persian bilingual children for a more accurate diagnosis of language impairment.

## Ethical Considerations

### Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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The paper was extracted from a research project of Gelavizh Karimi Javan.

### Authors' contributions

Conceptualization: Gelavizh Karimi Javan and Amir-salar Tozihi; Methodology: Gelavizh Karimi Javan, Amir-salar Tozihi and Mahsa Mehdizadeh Behtash; Writing and final approval: All Authors.

### Conflict of interest

The authors declared no conflict of interest.

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