BILINGUAL PUBLISHING GROUP

Forum for Linguistic Studies

https://journals.bilpubgroup.com/index.php/fls

ARTICLE

Exploring Subject Markers and Object Clitics Errors in Spoken Arabic: A Case Study of Children with and without Developmental Language Disorder

Naila Tallas-Mahajna

Al-Qasemi Academic College of Education, Special Education Department, Baqa al-Gharbiyye, Israel

ABSTRACT

This study delves into the morphosyntactic challenges faced by Palestinian Arabic-speaking children, specifically focusing on conjugational subject markers and pronominal object clitics in those with Developmental Language Disorder (DLD) compared to their typically developing language (TLD) peers. The sample comprised 54 children aged 4:6 to 6:6 years, including 30 DLD and 24 TLD individuals, who participated in a role-play game designed to elicit verb conjugations and object clitic usage. The analysis highlighted a pronounced discrepancy in morphological proficiency, where DLD children exhibited significant difficulties, particularly with second person and third-person forms, resulting in a 60% agreement accuracy compared to 99% in TLD counterparts. Qualitative and quantitative error analyses revealed a higher incidence and variety of morphosyntactic errors among DLD children, especially in subject-verb agreement and object clitic realization. These findings underscore the intricate nature of verb morphology in Arabic and its impact on children with DLD, pointing to the necessity for tailored educational and therapeutic interventions. The study advances our understanding of language acquisition in Arabic-speaking children with DLD, offering insights into the linguistic features that challenge this population and informing future research and clinical practice.

Keywords: Child language morphology; Spoken Arabic; Developmental Language Disorder; Conjugational subject markers; Pronominal object clitics

*CORRESPONDING AUTHOR:

Naila Tallas-Mahajna, Al-Qasemi Academic College of Education, Special Education Department, Baqa al-Gharbiyye, Israel;
Email: nailam1@hot-mail.com

ARTICLE INFO

Received: 16 May 2024 | Revised: 5 June 2024 | Accepted: 17 June 2024 | Published Online: 24 September 2024
DOI: https://doi.org/10.30564/fls.v6i4.6635

CITATION

Tallas-Mahajna, N., 2024. Exploring Subject Markers and Object Clitics Errors in Spoken Arabic: A Case Study of Children with and without Developmental Language Disorder. Forum for Linguistic Studies. 6(4): 140-154. DOI: https://doi.org/10.30564/fls.v6i4.6635

1. Introduction

The rich morphological structure of spoken Arabic, characterized by its complex system of verb conjugation and pronominal object clitics, offers a unique linguistic framework for investigating language acquisition. The conjugational subject markers and pronominal object clitics in Arabic are essential for conveying meaning and grammatical relationships within a sentence, making them critical for language development. This study focuses on these two morphosyntactic elements in Palestinian Arabic-speaking children, comparing those with DLD to TLD peers.

Understanding the nuances of verb morphology and object clitic usage in Arabic is essential due to its significant implications for both theoretical linguistics and applied practices, particularly in educational and clinical settings. Research in this area is extensive; however, there remains a distinct lack of focus on Arabic-speaking children, especially those with DLD. These children often exhibit developmental trajectories that deviate from typical patterns observed in more widely studied languages due to the unique morphosyntactic challenges of Arabic.

The morphological complexity of Arabic, with its rich verb inflection and dependency on cliticization for grammatical clarity, presents distinct challenges not only in language acquisition but also in the manifestation of language disorders. Studies have highlighted that Arabic-speaking children with DLD exhibit specific difficulties with verb tenses, plurality, and possessiveness, which are not as prevalent in languages with less morphological richness.

From a comparative linguistic perspective, Arabic's verb conjugation system and object clitic utilization are more elaborate than those in many Indo-European languages. This complexity offers a profound insight into the cognitive and linguistic adjustments that Arabic-speaking children must undertake, which is crucial for developing effective educational tools and therapeutic interventions tailored to this linguistic group.

Moreover, theoretical perspectives on language acquisition, such as generative grammar and usage-based theories, provide a valuable lens through which to examine the nature of morphosyntactic errors in children with DLD. These theoretical frameworks help delineate how children utilize innate linguistic capabilities alongside environmental interactions to develop language. This research is firmly grounded in such theories, aiming to systematically analyze the use of conjugational subject markers and pronominal object clitics in spoken Arabic among children with DLD. It seeks to identify specific patterns of error and difficulty that clearly distinguish DLD children from their TLD counterparts, thus broadening and deepening the knowledge base regarding morphological characteristics of Arabic-speaking DLD children.

Ultimately, this investigation is not only critical for understanding the specific linguistic challenges faced by Arabic-speaking children but also pivotal in refining linguistic theories and improving the practical approaches in clinical and educational settings tailored to these children's needs.

This study aims to fill the existing gap in the literature by systematically analyzing the use of conjugational subject markers and pronominal object clitics in spoken Arabic among children with DLD. It seeks to identify specific patterns of error and difficulty that distinguish DLD children from their TLD counterparts. By doing so, the research aims is to broaden and deepen the knowledge base regarding morphological characteristic of Arabic speaking DLD children. Previous studies have shown that when testing morphological capacity, it is worthwhile to focus on verb conjugation, which is both complex and central to this language. This investigation is especially important from an inter-language perspective in comparison with languages whose verbal morphology is less complex.

1.1 Research Questions

1. What characterizes the difficulties of children with DLD in their mastery of the conjugational subject markers?
2. What characterizes the difficulties of children with DLD in their mastery of the referential pronominal object clitic?
3. What differences emerge between the difficulties in (1) and (2)?
4. How do children in with DLD differ from children with TLD in their mastery of the conjugational subject markers?
5. How do children in with DLD differ from children with

TLD in their mastery of the referential pronominal object clitic?

2. Literature review

Literature has shown that the language of children with DLD is impaired in every tested component, although no uniformity in the level of impairment in each component may be detected. The difficulties which DLD children display in conversation, in comparison to children of their chronological age, and the elliptic answers to questions addressed to them has been well documented in the literature, as some have difficulties in pragmatics. However, it is quite possible that these problems are only secondary to their language problems (Leonard, 1998). Therefore, this review focuses on morphological components of language, which is also the focus of the current study.

2.1 Children with Developmental Language Disorder (DLD)

Children with DLD demonstrate considerable challenges in language skills, despite having normal hearing, achieving standard scores on nonverbal intelligence tests, and lacking any major neurological impairments or health issues (Bishop, 2014; Leonard, 2014). Many of these children also exhibit subtle difficulties in certain motor skills and non-linguistic cognitive functions. Consequently, some experts have proposed different designations for these children, such as primary language impairment or DLD. However, the term DLD has consistently been the predominant descriptor used for these children over the last three decades (Bishop, 2014; Leonard, 2014).

Recent research into the lexical skills of children with DLD has shifted its focus from nouns to verbs, recognizing the crucial role of verbs in language development (Tomasello, 1992). Unlike nouns, which are associated with objects or entities, verbs are fundamental to expressing relationships and assigning roles within sentences, highlighting their critical function in syntactic construction and grammatical progression in children (Pinker, 1989; Tomasello, 1992). Studies exploring verb acquisition reveal unique challenges for children with DLD, who often use more uninflected verb forms and show less verb diversity compared to their age-matched peers (Freudenthal et al., 2021). Research also points to variability in grammatical proficiency among children with DLD, with notable difficulties in constructing verb phrases as opposed to noun phrases (Kan & Windsor, 2010). These children's verb lexicons are limited when compared to those of both age-matched and language-age-matched peers (Rice & Oetting, 1993). For instance, Eisenberg (2004) observed that five-year-old English-speaking children with DLD used fewer verbs than two to three-year-old typically developing children. Further research supports that children with DLD utilize simpler syntactic structures in their spontaneous language and are less versatile in using varied syntactic forms, including infrequent verb switching (Thordardottir & Weismer, 2002; Marinellie, 2004; Van der Lely, 1998). A longitudinal study on the development of complex syntax in children aged three to seven years with DLD reported the emergence of complex syntactic forms only by approximately age 5.9, with persistence of omission errors until age 7:10 (Schuele & Dykes, 2005). Therefore, it is evident that children with DLD exhibit distinct patterns in their language acquisition, particularly in their handling of verbs and complex syntax.

More specifically, studies in morphology among DLD children have focused on the morphology of declensions, conjugations and morphological-syntactic structures in English and a few other languages. These studies have found difficulties in morphological indicators of verb conjugations, expressed by problems in employing appropriate verb forms with respect to person and tense, the use of relatively fewer types of verbs, as well as difficulties in syntactic complexities (Bedore & Leonard, 1998; Charest & Leonard, 2004; Leonard, 1998; Leonard et al., 1999; Windsor et al., 2000).

Abdalla and Crago (2008) explored verb inflection challenges among children aged 4-6 with Specific Language Impairment (SLI) speaking the Saudi Arabian dialect. Their research compared these children to two control groups—one matching in chronological age and the other in language age based on Mean Length of Utterance (MLU). They discovered significant difficulties in verb inflection among the SLI group, especially in conjugating third person feminine verbs, both singular and plural. The researchers attributed these difficulties to the complex interplay of gender, person, and number in third person verb forms. Further exploring verb inflection, a longitudinal study by Aljenaie (2010) in Kuwaiti Arabic noted an early acquisition of first person verbs. However, children with SLI often defaulted to third person forms,

likely because these are less marked morphologically. Additional studies in the Arabic language context focusing on children with DLD, such as those by Abdalla and Crago, 2008; Aljenaie, 2010; Abdalla et al., 2013; Fahim, 2017; Mahfoudhi and Abdalla, 2017; Qasem and Sircar, 2017; Shaalan, 2017; Tallas-Mahajna and Dromi, 2023; and Tallas-Mahajna et al., have primarily concentrated on morphological aspects without delving into morphosyntax. This gap underscores the novelty of the proposed research in addressing the acquisition of morphosyntax. Taha (2022) conducted research on verb morphology production in Palestinian Arabic (PA)-speaking children diagnosed with DLD, comparing their performance to that of typically developing (TD) peers. The study focused particularly on the accuracy and patterns of errors in tense and subject-verb agreement. The results indicated a pronounced disparity between the two groups, with the DLD children exhibiting lower accuracy in using tense and agreement correctly, particularly with present tense and feminine verb forms. However, both DLD and TD children demonstrated high accuracy in past tense verbs and third-person forms. An error analysis highlighted that DLD children often substituted complex verb forms with simpler alternatives, suggesting a pattern in their linguistic processing challenges.

2.2 Object clitic pronouns

Children omit object clitics in some languages

Research examining the production of accusative clitics in young children has revealed considerable variation across different languages, and even within the same language and age group. Studies have shown that clitic omission can persist until the ages of four or five in various languages. For instance, this phenomenon is observed in Catalan as noted by Wexler et al. (2004; 2010), European Portuguese according to Costa and Lobo (2006), French as discussed by Jakubowicz et al. (1996), Hamann, Rizzi, and Frauenfelder (1996), and Jakubowicz and Rigaut (2000). Similarly, Italian children exhibit clitic omission, a finding reported by Schaeffer (1997), and it is also a feature in Spanish as per Fujino and Sano (2002). In bilingual children who speak Spanish and Basque, this pattern is again evident, with studies by Ezeizabarrena (1996), Larrañaga (2000), and Larrañaga and Guijarro-Fuentes (2011) supporting this observation. In contrast, languages such as Greek (Tsakali & Wexler, 2004), Romanian (Babyonyshev & Marin, 2006), and possibly Spanish again (Wexler et al., 2004; Gavarró et al., 2010), studies suggest that children do not typically omit clitics from the age of two. This divergence underscores the complexity of clitic acquisition and suggests that linguistic and possibly extralinguistic factors may influence the developmental trajectories of clitic use in young children.

Children tend to place their clitics in the correct position from the onset of clitic production

In the acquisition of clitics, children often demonstrate an early mastery of placing them in the correct syntactic positions. Guasti (1993) illustrated that Italian children naturally position clitics pre-verbally in declarative sentences and post-verbally in imperative and nonfinite contexts, indicating a targeted understanding of clitic placement. This pattern of early and accurate clitic placement in contexts where proclisis (placing the clitic before the verb) is typical has also been observed in other languages. For example, Marinis (2000) found similar behavior in Greek, and Ezeizabarrena reported these trends for Spanish in 1996 and 1997. Wexler et al. (2004) noted consistent clitic placement in both Spanish and Catalan.

However, in languages where enclisis (placing the clitic after the verb) is predominantly used, such as European Portuguese and Cypriot Greek, children exhibit more errors in clitic placement. They often generalize the post-verbal position for clitics, sometimes continuing to do so beyond the age of three and a half. Duarte and Matos (2000) highlighted these placement errors in European Portuguese, and Petinou and Terzi (2002) observed similar trends in Cypriot Greek. These findings suggest that while children can learn clitic placement rules early, the specifics of their native language's syntactic structures significantly influence the accuracy and development of these skills.

Clitics in children with DLD

Bortolini et al. (2002) and Bortolini et al. (2006) explored potential clinical markers for DLD in Italian-speaking children. Their research focused on eleven preschool children with DLD, finding that these children produced target object clitics in less than 20% of obligatory contexts. This was significantly lower compared to TLD peers, with omissions being the predominant error type in elicited production.

In contrast, the situation with Greek, a language that

features clitics but lacks participle agreement, is quite different. Typically developing children acquiring Greek generally do not omit object clitics, as reported by Tsakali and Wexler (2004). However, studies concerning Greek-speaking children with DLD show mixed results. For instance, Tsimpli (2001) observed high clitic omission rates, over 90%, while Terzi (2007) reported much lower omission rates of around 5%. Manika, Varlokosta, and Wexler (2011) revisited these varying findings and attributed the discrepancies primarily to differences in methodology and participant selection. They conducted their own elicitation experiment with seventeen Greek-speaking children with DLD (aged 4:10 to 8:1) and thirty-two control TD children, finding no significant statistical difference in clitic production between the two groups, with both groups producing clitics over 95% of the time.

This indicates that Greek-speaking children with DLD pattern similarly to their Spanish counterparts and not like those in Catalan, French, or Italian settings where clitic omission is more common. Stavrakaki and Chrysomallis (2011) further examined this by testing a bilingual French-Greek child aged 9. Their findings showed that while the child exhibited difficulties with French object clitics, their performance with Greek object clitics was flawless. They hypothesized that a truly bilingual child, unaffected by cross-linguistic influences, would perform similarly to monolingual peers in each respective language. Their prediction that a bilingual child might omit clitics in languages like Catalan, Italian, or French, but not in Greek or Spanish, was supported by the performance of the French-Greek child in their study. This suggests that linguistic environment and language-specific features play crucial roles in the clitic production abilities of children with DLD.

2.3 Spoken Arabic: state of the art

Arabic is distinguished by a phenomenon known as diglossia, a term introduced by Ferguson in 1959, which describes the significant linguistic split between Modern Standard Arabic (MSA) and the numerous spoken varieties of Arabic (VA), each distinct in vocabulary, phonology, morphology, and syntax. This linguistic divide is manifest in the dual usage of the vernacular Arabic (Āmmiyya) for daily spoken communication across all societal levels, and the formal Modern Standard Arabic (Fuṣḥa) primarily in written form and formal settings. While Arabic-speaking children acquire their local spoken dialect naturally through everyday interactions at home and within their community, the acquisition of MSA is relegated to the structured environment of the educational system.

The ubiquity of spoken Arabic in daily life, with its diverse dialects tied to specific geographical and social contexts, contrasts sharply with the formal and uniform nature of MSA. Despite the comprehensive linguistic descriptions available for MSA, the various spoken varieties of Arabic have not received equivalent attention, especially in the realm of psycholinguistic studies focusing on language development. This gap highlights a significant area of need for developmental linguistic research, particularly among Israeli Arabic-speaking preschool children, to better understand the structural intricacies and developmental trajectories of spoken Arabic dialects.

Arabic uses subject markers and object clitics as part of its verb conjugation system to indicate the subject and object of a verb within a sentence. Subject markers are affixes attached to verbs that denote the subject performing the action, whereas object clitics are attached to verbs to indicate the object receiving the action. For example:

Subject Markers:

yudun (يحضن) - "He hugs"
ʾaḥdun (أحضن) - "I hug"
tuḥdun (تحضن) - "You (masc.) hug"
tuḥdunī (تحضني) - "You (fem.) hug"
tuḥdun (تحضن) - "She hugs"

Object Clitics:

yuḥdunu (يحضنه) - "He hugs him"
ʾaḥdunu (أحضنه) - "I hug him"
ʾaḥdunik (أحضنك) - "I hug you (fem.)"
tuḥdunīni (تحضنيني) - "You (fem.) hug me"

These markers and clitics are essential in conveying who is performing the action and to whom the action is being done, respectively. Their correct usage is crucial for effective communication in Arabic.

3. Method

[1]The Northern Triangle is found here a concentration of Israeli Arab towns and villages.

3.1 Participants

The study involved 54 Palestinian Arabic-speaking children of the Northern Triangle[1] dialects (in Israel), aged between 54 months and 78 months. The group was divided into two categories: 30 children diagnosed with DLD and 24 TLD peers. The children diagnosed with DLD, comprising 23 males and 7 females, were identified in classes at a special education kindergarten located in the Haifa region. All participant children were of mid-high socioeconomic status (SES), Socioeconomic status was determined based on a SES questionnaire filled out by the kindergarten teachers. Children with TLD had no reported psychological, neurological, or learning difficulties. Children with DLD had been assessed by the National Assessment and Eligibility Committee[2], and diagnosed with DLD, yet none displayed any relevant comorbidity in other areas of development. And were confirmed to have normal hearing, scored appropriately on nonverbal intelligence tests, and exhibited no serious neurological deficits or diseases, ensuring that their language disorders were not confounded by other communicative impairments.

The control group of TLD children included 8 males and 16 females. This comparison group was essential for assessing typical language development patterns against those presented by children with DLD, allowing for a focused analysis on the specific linguistic challenges and characteristics associated with DLD within the context of Palestinian Arabic, **Table 1**.

It was found that there was a distinct difference between the number of males and females in each group ($X^2 = 10.24$, $p < 0.01$). The number of females in TLD kindergarten is clearly higher than in DLD kindergarten. **Table 2** provides details about the participants' age (in months). The TLD mean age is 66.93 months and the DLD mean age is 69 months, i.e., both types of participants belong to the same age group.

3.2 Research tools

The research assignment was a role-play game for two, played each time by the examiner and another participant. The game consists of thirty pictures of two human images each, (Armon-Lotem et al., 2015) and in every picture both humans are wearing shirts with prints of either geometric form: (1) a triangle, (2) a heart, (3) a star or (4) nothing; one of the humans on each picture is performing either action: (a) pushing, (b) hugging or (c) pulling the other one. Each of the three verbs is represented in ten of the thirty pictures, combining various possibilities of geometric forms (subject and object) and one of the three verbs, e.g., 1a2 (= "triangle is pushing heart"), 3b1 (= "star is hugging triangle"), 4c2 (= "he is pulling heart"). In each game situation, the participant child and the (female) examiner would choose to impersonate one of the three geometrical forms (triangle, heart or star) in a way that each picture (of the thirty pictures presented at a given game situation) would lead to the elicitation of utterances produced by the participant, involving a *subject* verb conjugation marker comparable to Spanish verb conjugation of 'see': *ve**o*** '**I** see', *ve**s*** '**you** see', *ve**ø*** [← zero morpheme] '**he** see**s**' and an *object* clitic pronoun me/you(f.)/him comparable to Spanish object clitics as in *mira**le*** 'look **at him**'. The Spanish system marks conjugational subjects permanently in final position and object clitics only occasionally. Arabic does both systematically, throughout all persons, tenses and moods, /ʃuftíni/ = /ʃuf/ lexical 'see' + /tí/ conjugational person marker 'you f.s.' + /ni/ object clitic 'me' = 'you (f.s.) saw me'. The following illustrations correspond to one game situation played by one participant and the female examiner, **Table 3**. The verb here is 'push', the participant impersonates the heart for and the examiner impersonated the star form:

Analysis of the results was based, for each participant, on the degree of person agreement in both morphological cat-

[2]The powers of the National Assessment and Eligibility Committee are:

- To determine the overall level of functionality and needs of the student with the disability who applies to the committee according to the assessment the student's functionality in the cognitive, academic, linguistic, emotional and social fields as well as in terms of communication, functional independence and organization.
- Discuss the student's right to receive special education services at the educational institution due to one or more disabilities that affect their functionality.
- To determine the composition of the services for a student placed in a regular education school who is entitled to special education services according to their needs.

Table 1. Distribution of Research population.

		Gender	
		Female, N = 23	**Male, N = 31**
DLD- N = 30	**Number**	**7**	**23**
	% of **DLD**	23.33%	76.67%
	% of Gender	30.43%	74.19%
TLD- N = 24	**Number**	**16**	**8**
	% of **TLD**	66.7%	33.33%
	% of Gender	69.57%	25.81
X^2= 10.24, p < 0.01			

Table 2. Mean Ages of DLD and TLD groups.

	TLD/DLD	**N**	**Mean**	**Std. Deviation**
Age months	TLD	30	66.93	9.43
	DLD	24	69.00	3.68
***t(31)* = −10.35, p < 0.01**				

egories: *subject conjugation* and in *object pronominal clitic*. Qualitative error analysis examined the types of errors, and quantitative error analysis examined the quantity of errors for each type.

4. Results

To provide an error analysis of DLD children, results of TDL children must be available first. **Table 4** shows that regarding children with TLD, the findings show that subject conjugation markers displayed a 100% success rate, and with objects clitics, mastery was very high with a success rate of 98%.

However, in the DLD group, the overall degree of agreement in both morphological categories was 60%, with errors in both morphological categories.

The findings in **Table 4** present the **extent of each group's success** in percentages and raw scores, with the success percentage of children in the TLD group is 99% as opposed to 60% amongst children in the DLD group. Likewise, the average raw score of TLD children is 29.58 in contrast to 18.10 among children in the DLD group. This result demonstrates the significant difficulties that DLD children have with verb conjugations – analysis of the findings will be presented in the discussion section.

Tables 5 and 6 represent the errors of the 'Sub 1', 'Sub 2', and 'Sub 3' errors in subject agreements for first, second, and third person, respectively. Similarly, 'Obj 1', 'Obj 2', and 'Obj 3' correspond to errors in object agreements for first, second, and third person, respectively.

In **Table 5**, one can see details of the number of errors regarding objects was an average of 0.42 with a standard deviation of 0.97 in the TLD group.

In parallel, the results indicate that the DLD group made a total of 215 errors in subject conjugation at an average of 7.16 and standard deviation of 5.72. Regarding the object, the number of errors was even higher and reached 346 with an average of 11.53 and standard deviation of 7.53.

In addition, the results show that most of the errors in the object category were in the third person, followed by the second person and the smallest number of errors was made in the first person; in contrast regarding the subject conjugation, most errors were made in the second person, followed by the third person with least errors in the first person (see **Table 7**).

The results indicate a significant difference in the number of first-person subject agreement errors between TLD and DLD children. ($t = 4.89$, $p < 0.001$), the number of errors in TLD children ($M = 0.00$, $SD = 0.00$) is lower than DLD children ($M = 2.93$, $SD = 2.96$), as stated this is a significant difference.

The findings also identify a significant difference in the number of errors in **Subject agreement 2** between TLD and DLD children ($t = 7.43$, $p < 0.001$), the number of errors among TLD children ($M = 0.00$, $SD = 0.00$) is lower than

Table 3. Play-role illustration: who is pushing whom?

Illustration 1	zaqqé:tek (زقّيتك): "I pushed you"		
	zaqq	é:t	ek
	push (past tense)	1ps (subj. infl.)	2pfs (obj. clitic)
Illustration 2	zaqqé:to (زقّيته): "I pushed him"		
	zaqq	é:t	o
	push (past tense)	1ps (subj. infl.)	3pms (obj. clitic)
Illustration 3	zaqqatí:ni (زقّتيني): "You pushed me"		
	zaqq	atí:	ni
	push (past tense)	2pfs (subj. infl.)	1ps (obj. clitic)

Table 4. Success percentage for both groups TLD and DLD.

	TLD/DLD	N	Mean	Std. Deviation
Total verbs percent of correct responses	DLD	30	60%	20
	TLD	24	99%	3
Score	DLD	30	18.10	5.98
	TLD	24	29.58	0.97

DLD children (M = 3.77, SD = 2.78).

There is also a significant difference in the number of errors in **Subject agreement 3** between children defined as TLD and DLD (t = 2.93, p < 0.01), the number of errors among TLD children (M = 0.00; SD = 0.00) is lower than DLD children, but, as mentioned earlier, this is a significant difference.

The overall number of errors in **Total subject** between TLD and DLD children is significantly different (t = 6.86, p < 0.001), the number of errors among TLD children (M = 0.00, SD = 0.00) is lower than DLD children (M = 7.16, SD = 5.72).

The findings point to a significant difference between the number of errors in **Object agreement 1** between TLD and DLD children (t = 6.08, p < 0.001), the number of errors among TLD children (M = 0.0833, SD = 0.2823) is lower than DLD children (M = 3.3667, SD = 2.9418).

A significant difference is also found in the number of errors in **Object agreement 2** between TLD and DLD children (t = 8.36, p < 0.001), the number of errors among TLD children (M = 0.08, SD = 0.28) is lower than DLD children (M = 3.87, SD = 2.46).

Likewise, a significant difference was found in the number of errors in **Object agreement 3** Between TLD and DLD children (t = 6.02, p < 0.001), the number of errors among TLD children (M = 0.2500, SD = 0.8470) is lower than DLD children (M = 4.3000, SD = 3.5637).

Figure 1 (below) shows that the difference between the overall number of errors in **Total object** between TLD and DLD children is significant (t = 8.00, p < 0.001), the number of errors among TLD children (M = 0.4167, SD = 0.9743) is lower than DLD children (M = 11.5333, SD = 7.5280).

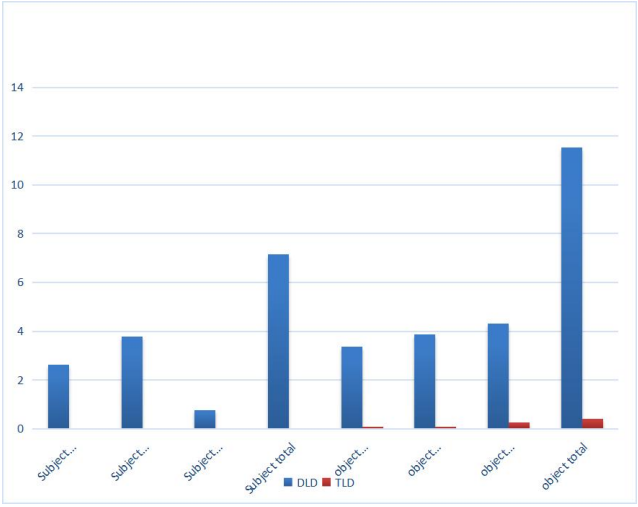

Figure 1. Means – errors in subject inflection and object clitics use of first, second and third personal pronoun – DLD and TLD groups.

Figure 1 shows the results in relation to each component of subject conjugation and object clitics agreement and

Table 5. Details of TLD errors in verb subject conjugation and object clitics.

TLD Group, N = 24							
Sub 1	Sub 2	Sub 3	Sub Total	Obj 1	Obj 2	Obj 3	Obj. Total
0	0	0	0	2	2	6	10
Mean			0				0.42
SD			0				0.97

Table 6. Details of DLD errors in verb subject conjugation and object clitics.

DLD Group, N = 30								
	Sub 1	Sub 2	Sub 3	Sub. Total	Obj 1	Obj 2	Obj 3	Obj Total
SUM	79	113	23	215	101	116	129	346
Mean				**7.16**				**11.53**
SD				**5.72**				**7.53**

the overall average of each. The results show that the average number of errors in personal pronoun usage in first, second and third person among DLD subjects is higher that matching subject inflection in all three persons in comparison to the TLD group.

5. Discussion

The aim of this research is to examine verb conjugation processes used by DLD children in comparison with their chronological TLD age group. In this study, Arabic speaking children with DLD were tested in comparison to TDL children of a similar chronological age. The results offer primary knowledge in this area and facilitates future research into language development for Arabic speaking children with DLD.

The research results show the gap between DLD and TLD groups in person agreement marking in verb inflection and in pronominal object clitics. The DLD group made a significantly higher percentage of errors in comparison to the TLD group. These results are congruent with those found by Abdalla & Crago (2008), who showed that children with a Specific Language Impairment display a high level of error in person agreement in verb conjugation, particularly in the third and second persons, which collapse into the first person. Subject agreement was more prominent in the second person. In our case, the relative morphological *complexity* of the 2p.f.s. *circumfix* /t–i/ compared to the relative morphological *simplicity* of the 2p.m.s. *prefix* /t-/ and the fact that the examiner was a female adds additional complexity to the conjugation and may thus account for the relatively high error rate in the second person in general. In addition to this complexity factor, Abdalla & Crago (2008) point out that acquisition of the first person category takes places early, and that children with a specific language impairment are likely to take longer to acquire and master more abstract characteristics as symbolized in the third person (Bedore & Leonard, 1998; Charest & Leonard, 2004; Leonard, 1998; Leonard et al., 1999; Windsor et al., 2000).

Returning to the theoretical perspectives of generative grammar and usage-based theories discussed in the introduction, our findings offer substantial evidence for their applicability to Arabic-speaking children with DLD. The systematic errors in conjugational subject markers and pronominal object clitics observed align with generative grammar's assertions about the innate grammatical structures, indicating that these structures may be particularly vulnerable in children with DLD. This supports the notion that certain aspects of linguistic knowledge are innately determined, as DLD children demonstrate specific challenges that are not merely attributable to reduced linguistic exposure.

5.1 Error analysis

- **Subject Conjugation**

In this section, we analyze the error patterns in subject conjugation and object clitics, which are framed within the generative grammar perspective that posits innate linguistic structures, possibly disrupted in DLD. Concurrently, usage-based theories provide insights into how environmental interactions influence these error patterns, suggesting paths for intervention that capitalize on increased linguistic interaction.

Table 7. Means and standard deviations of errors in both groups of children, T-Test values of differences between them:

	TLD/DLD	N	Mean	Std. Deviation	DF	t
Subject agreement 1	**DLD**	30	2.93	2.96	29	4.89***
	TLD	24	0.00	0.00		
Subject agreement 2	**DLD**	30	3.77	2.78	29	7.43***
	TLD	24	0.00	0.00		
Subject agreement 3	**DLD**	30	0.77	1.43	29	2.93**
	TLD	24	0.00	0.00		
Total Subject	**DLD**	30	7.16	5.72	29	6.86***
	TLD	24	0.00	0.00		
Object agreement 1	**DLD**	30	3.3667	2.9418	30	6.08***
	TLD	24	0.0833	0.2823		
Object agreement 2	**DLD**	30	3.87	2.46	30	8.36***
	TLD	24	0.08	0.28		
Object agreement 3	**DLD**	30	4.3000	3.5637	33	6.02***
	TLD	24	0.2500	0.8470		
Total Object	**DLD**	30	11.5333	7.5280	30	8.00***
	TLD	24	0.4167	0.9743		

** $p < 0.01$; *** $p < 0.001$.

had to impersonate another, and since the examiner was a woman, this forced test participants to resort to the second person feminine conjugation. This makes morpho-syntactic agreement more complex, and the number of errors of the test group increased. This conforms to the overall consent in the field that morphological complexity affects the pace of acquisition and age of mastering of different agreement categories (Dromi et al., 1999).

Within the subject category, despite the indication that the second person displays the highest percentage of agreement errors, one can also see that the DLD group made errors in the first-person agreement in subject conjugation, but the difference between the two groups was significant. Moreover, it was shown that the error rate in the test group was higher than in the TLD group, which made no errors when using the third person, as also reported in a study on Kuwaiti Arabic (Aljenaie, 2001). General observation of all the errors made by the DLD group showed a significant difference from the TLD group. This result represents low mastery among DLD children in relation to TLD children.

- **Employing Different Object Clitics**

The research results show significant difference between the two groups regarding pronominal object marking in general. The DLD group made more errors, with the lowest percentage of errors in the first person, mostly substitutions to 3pms, and the highest percentage in the third person, namely omission. A first explanation for this result is that similarly to what has been reported in the literature, third person is displays a high level of omissions in children with language impairments (Rice et al., 2000).

A second explanation supports Dromi et al. (1999) research results. As general morphological complexity in goal form increases, one can see morphological difficulties in children with language impairments. In cases of target forms requiring simultaneous encoding of more than one morphological distinction, a DLD speaker encounters difficulty to process the stimulus. In this research the uses of different clitics pointed to difficulties in all three persons, but the highest error rate was in the third person. Most of the errors that stood out were as follows: You (f) pushed *him*, You (f) pushed *me*; He pushed *you* (f); I pushed *you* (f). The agreement in these cases requires a number of simultaneous morphosyntactic distinctions to be made and as such, will make it more difficult for research participants to process.

5.2 Subtypes of morphological errors in both categories

The following chart (**Figure 2***)* displays the division of error types in both subject and object error categories. In the subject category, omission equals unconjugated verbs, and this type of error represents 5% of the total conjugational subject errors. The remaining subject errors are substitu-

5.2 Subtypes of morphological errors in both categories

The following chart (**Figure 2***)* displays the division of error types in both subject and object error categories. In the subject category, omission equals unconjugated verbs, and this type of error represents 5% of the total conjugational subject errors. The remaining subject errors are substitutions. In the category of object clitics, omission is much more frequent in our corpus, and its rate resembles much that of substitution.

Figure 2. Percentage of subtypes of errors in subject inflection and object clitics among DLD group.

5.3 Error subtypes and rates in conjugational subject

Morphological complexity, on the one hand, and input salience, on the other hand, may account for the gradual frequency of errors. In conjugational subject errors, although the entire conjugation is morphologically more complex than subject marker assignment, unconjugated verbs are much less frequent than subject assignment errors (→ 3pms), i.e., only 5% versus 95%. In this case, complexity would trigger a higher error rate. The verb morphology of Arabic is characterized as nonconcatenative templatic, i.e. it changes affixes and internal vowels within the conjugation pattern between components of the consonantal root, and therefore should constitute a relatively high level of processing difficulty. Its salience in the language input during early year of acquisition, however, makes it more propitious for high mastery than more marginal morphological categories, such as object clitics. Refraining from conjugating a verb is therefore the rarest type of errors within conjugational subject errors.

5.4 Error subtypes and rates in object clitics

Errors in object clitics, both omission and substitution (→ 3pms), characterize the DLD group much more than in conjugational subjects. Although morphological complexity of clitics is lower than that of nonconcatenative templatic verb morphology, it is also less salient in the early year input and is therefore less available for infants' generalizations and categorizations within the acquisition processes. In the absence of finalized generalization and categorization, the category of object clitics is more liable for errors, as demonstrated by our corpus (**Table 6**). As for the error subtypes, since object clitics are much less salient in early year input, they are more liable for complete omission. Omission and substitution (→ 3pms) of object clitics in our corpus display almost equal rates: 48% and 52%. Indeed, no intransitive verb takes an object (clitic or otherwise) and even transitive verbs take objects either in the form of nouns or as clitics. This means that verb forms without object clitics are quite frequent in speech. What this means for acquisition is that object clitics are less prominent in early year input. It follows that omission of clitics is a more frequent error in the process of acquisition. Our data confirms this by 48% omission errors of the entire object clitic errors versus only 5% of "omission" in the conjugational subject category.

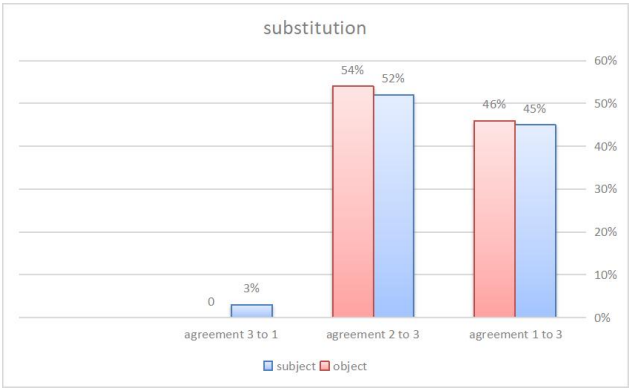

Figure 3. Percentage of subtype substitution of errors in subject inflection and object clitics use of personal pronoun among DLD group.

5.5 Third person preference in substitution

All object clitic errors are either omissions or substitution in substitutions (→ 3pms). Within the subtype substitution, the results show that substitution the first person to third

person is 46% and the second person to third person is 54%. In subject inflection the result show that the substitution of first person to third person is 45% and the second person to third person is 52% (see **Figure 3**) . The common denominator for both subtypes constitutes the omission of any consonantal weight. Indeed, spoken Arabic marks third the person masculine objects in by vowels only: generally, an unstressed /o/ vowel, e.g., /ʃúfto/ 'I saw him' or, in particular phonological environments, a stressed /i:/ when following a final unstressed front vowel, e.g., /ʃuftí/ 'you (f.s.) saw him'. Since other object clitics include consonants, i.e., 1ps /ni/ (/ʃúftni/ 'you (m.s.) saw me'), 2pms /ak/ (/ʃúftni/ 'I saw you' [m.s.]), 2pfs /ek/ (/ʃúftni/ 'I saw you' [f.s.]), their substitution for /o/ reduces the total phonological weight and, although probably harder to perceive, are thus easier in production.

The same consideration applies to subject marker substitutions (→ 3pms). In the subject category too, the third person m.s. is the least marked, and is therefore the ideal target person for morphological substitution.

Lighter phonological weight corresponds to unmarked morphological categories, which usually constitute the default categories for substitution in cases of incomplete mastery of language. This is indeed the situation of the DLD children who participated in this research project.

5.6 Enhancing clinical implications and educational outcomes for Arabic-speaking children with DLD

In response to our findings, we propose comprehensive strategies to improve interventions and outcomes for Arabic-speaking children with DLD. Firstly, targeted early intervention programs should focus on the specific challenges these children face with verb conjugation and object clitics, utilizing interactive tools and digital applications for engaging learning experiences. Educator and clinician training must be enhanced to include specific modules on Arabic morphosyntax to improve both diagnostic accuracy and intervention effectiveness. Additionally, involving parents through resource kits that include home-based activities can reinforce therapeutic interventions and promote language development. The development of standardized assessment tools tailored to the linguistic intricacies of Arabic will enable more accurate diagnoses and better tracking of intervention outcomes. Finally, these initiatives should be supported by policy recommendations advocating for early language development screenings in educational settings to identify and support at-risk children promptly. These combined efforts are aimed at creating a supportive ecosystem that addresses the unique linguistic needs of Arabic-speaking children with DLD.

6. Conclusions

Our research suggests that a deeper exploration of Palestinian Arabic is essential, as the current theoretical frameworks need refinement to better cater to this dialect's unique characteristics. The findings call for an extension of generative grammar models to incorporate the nuances of Palestinian Arabic, and they also suggest enhancements to usage-based approaches by considering the socio-linguistic contexts these children navigate. This tailored approach is crucial not only for advancing our theoretical understanding of DLD but also for developing practical clinical tools that are linguistically and culturally appropriate for Arabic speakers.

Future research should focus on expanding the sample size to ensure the generalizability of the findings across different Arabic-speaking populations with DLD. Additionally, there is a clear need for developing diagnostic tools that are linguistically and culturally appropriate for use in clinical settings.

In conclusion, while this research has contributed valuable preliminary insights into the typical and disorder acquisition of language among Palestinian Arabic-speaking children, it also highlights the vast potential for further studies. Such research is crucial not only for building a more comprehensive understanding of DLD across different languages but also for addressing the specific linguistic intricacies of Arabic, contributing to both theoretical knowledge and clinical practice.

Author Contributions

Naila Tallas-Mahajna was responsible for the study's conceptualization, methodology design, data collection, analysis, and manuscript writing. As the sole author, she carried out all aspects of the research and writing process, including the literature review, data interpretation, and final approval of the manuscript for submission.

Conflict of Interest

The Author declares that there is no conflict of interest.

Funding

This research received no external funding.

Acknowledgments

The author would like to thank Prof. Sharon Armon-Lotem for her valuable support and contributions, specifically for her guidance and counseling in providing materials used for the experiments.

References

Abdalla, F., Aljenaie, K., Mahfoudhi, A., 2013. Plural noun inflection in Kuwaiti Arabic-speaking children with and without Specific Language Impairment. Journal of Child Language. 40, 139–168. DOI: https://doi.org/10.1017/S0305000912000499.

Abdalla, F., Crago, M., 2008. Verb morphology deficits in Arabic-speaking children with specific language impairment. Applied Psycholinguistics. 29, 315–340. DOI: https://doi.org/10.1017/S0142716408-080156.

Aljenaie, K., 2001. The emergence of tense and agreement in Kuwaiti Arabic children. [PhD Thesis]. Reading: Reading University.

Aljenaie, K., 2010. Verbal inflection in the acquisition of Kuwaiti Arabic. Journal of Child Language. 37(4), 841–863. DOI: https://doi.org/10.1017/-S0305000909990031.

Armon-Lotem, S., de Jong, J., Meir, N., 2015. Assessing multilingual children. Bristol: Multilingual Matters. DOI: https://doi.org/10.21832/978178-3093137.

Babyonyshev, M., Marin, S., 2006. Ac- quisition of Romanian pronominal clitics. In: Gavarró, A., Lleó, C. (Eds.). Catalan Journal of Linguistics. 5, 17–44. DOI: https://doi.org/10.5565/rev/catjl.71.

Bedore, L.M., Leonard, L.B., 1998. Specific Language Impairment and Grammatical Morphology: A Discriminant Function Analysis. Journal of Speech Language and Hearing Research. 41, 1185–1192. DOI: https://doi.org/10.1044/jslhr.4105.-1185.

Bishop, D.V.M., 2014. Ten questions about terminology for children with unexplained language problems. International Journal of Language and Communication Disorders. 49, 381–415. DOI: https://doi.org /10.1111/1460-6984.12101.

Bortolini, U., Arfé, B., Caselli, M.C., et al., 2006. Clinical markers for specific language impairment in Italian: the contribution of clitics and non-word repetition. International Journal of Language and Communication Disorders. 6, 695–712. DOI: https://-doi.org/10.1080/13682820600570831.

Bortolini, U., Caselli, M.C., Deevy, P., et al., 2002. Specific language impairment in Italian: first steps in the search of a clinical marker. International Journal of Language and Communication Disorders. 37, 77–93. DOI: https://doi.org/-10.1080/13682820110116758.

Charest, M.J., Leonard, L.B., 2004. Predicting Tense: Finit Verb Morphology and Subjects Pronouns in Speech of Typically Developing Children and Children with Specific Language Impairment. Journal of child Langouge. 31(1), 231–246. DOI: https://doi.-org/10.1017/S0305000903005877.

Costa, J., Lobo, M., 2006. A aquisição de clíticos em PE: omissão de clíticos ou objecto nulo. XXI Encontro Nacional da APL. Textos Seleccionados. 285–293.

Dromi, E., Leonard, L.B., Adam, G., et al., 1999. Verb agreement morphology in Hebrew speaking children with specific language impairment. Journal of Speech and Hearing Research. 42, 1414–1431. https://doi.-org/10.1044/jslhr.4206.1414.

Duarte, I., Matos, G., 2000. Romance clitics and the minimalist program. In: Costa, J. (Ed.). Portuguese syntax: New comparative studies. New York: Oxford University Press. pp. 116–142. Available online: http://hdl.handle.net/10451/43757 (accessed on 18 March 2024).

Eisenberg, S., 2004. Production of infini- tives by 5-year-old children with language-impairment on an elicitation task. First Language. 24(3), 305–321. DOI: https://doi.org/10.1177/0142723704045679.

Ezeizabarrena, M.-J., 1996. Adquisi- ción de la morfología verbal en euskera y castellano por niños bilingües [Bilingual children's acquisition of Basque and Spanish verb morphology]. Bilbao: University of the Basque Country dissertation.

Ezeizabarrena, M.-J., 1997. Morfe- mas de concordancia con el sujeto y los objetos en el castellano infantile [Subject and verb agreement morphemes in early Spanish]. In: Pérez-Leroux, A.T., Glass, W.R. (Eds.). Contemporary perspectives on the acquisition of Spanish. Somerville, MA: Cascadilla Press. pp. 21–36.

Fahim, D., 2017. Verb Morphology in Egyptian Arabic Developmental Language Impairment. Arab Journal of Applied Linguistics. 2, 49–73. Available online: https://arjals.com/ajal/article/view/105 (accessed on 18 March 2024).

Freudenthal, D., Ramscar, M., Leonard, L.B., et al., 2021. Simulating the acquisition of verb inflection in typically developing children and children with developmental language disorder in English and Spanish. Cognitive Science. 45(3), e12945. DOI: https://doi.org/10.1111/cogs.12945.

Fujino, H., Sano, T., 2002. Aspects of the null object phenomenon in child Spanish. In: Pérez-Leroux, A.T., Liceras, J.M. (Eds.). The acquisition of Spanish morphosyntax. Dordrecht: Kluwer. pp. 67–88.

Gavarró, A., Torrens, V., Wexler, K., 2010. Object clitic omission: two language types. Language Acquisition. 17(4), 192–219. https://doi.org/10.1080/10489223.2010.509262.

Guasti, M.T., 1993. Verb syntax in Italian child grammar: Finite and nonfinite verbs. Language acquisition. 3(1), 1–40. https://doi.org/10.1207/s15327817la0301_1.

Hamann, C., Rizzi, L., Frauenfelder, U.H., 1996. On the acquisition of the pronominal system in French. In: Clahsen, H. (Ed.). Generative perspectives on language acquisition. Amsterdam: John Benjamins. pp. 309–334.

Jakubowicz, C., Müller, N., Kang, O.- K., et al., 1996. On the acquisition of the pronominal system in French and German. In: Stringfellow, A., Cahana-Amitay, D., Hughes, E. (Eds.). Proceedings of the 20th annual Boston University Conference on Language Development [BUCLD 20]. Somerville, MA: Cascadilla Press. pp. 374–385.

Jakubowicz, C., Rigaut, C., 2000. L'acquisition des clitiques nominatifs et des clitiques objets en Français [The acquisition of nominative and object clitics in French]. The Canadian Journal of Linguistics. 45, 119–158. DOI: https://doi.org/10.1017/S0008413100017631.

Kan, P.F., Windsor, J., 2010. Word learning in children with primary language impairment: A meta-analysis. Journal of Speech, Language, and Hearing Research. 53(3), 739–756. DOI: https://doi.org/10.1044/1092-4388(2009/08-0248).

Larrañaga, M.P., 2000. Ergative Sprachen, akkusative Sprachen. Der Erwerb des Kasus bei bilingualen Kindern [Ergative languages, accusative languages: The acquisition of case in bilingual children]. Frankfurt am Main: Vervuert.

Larrañaga, M.P., Guijarro-Fuentes, P., 2011. Clitics in L1 bilingual acquisition. First Language. 31(4), 1–25. DOI: https://doi.org/10.1177/0142723711403878.

Leonard, B.L., 1998. Children with specific language impairment. Cambridge, MA: MIT press.

Leonard, L.B., Miller, C., Gerber, E., 1999. Grammatical morphology and the lexicon in children with specific language impairment. Journal of speech, language, and hearing research. 42(3), 678–689. DOI: https://doi.org/10.1044/jslhr.4203.678.

Leonard, L.B., 2014. Specific language impairment across languages. Child development perspectives, 8(1), 1–5. DOI: https://doi.org/10.1111/cdep.12053.

Mahfoudhi, A., Abdalla, F., 2017. Lan- guage development and impairment in Arabic-speaking children: Introduction to the special issue. Arab Journal of Applied Linguistics. 2(1), 1–11.

Manika, S., Varlokosta, S., Wexler, K., 2011. The lack of omission of clitics in Greek children with SLI: an experimental study. In: Danis, N., Mesh, K., Sung, H., (Eds.). Proceedings of the 35th Boston University Conference on Language Development. Somerville: Cascadilla Press. pp. 427–439.

Marinellie, S.A., 2004. Complex syntax used by school-age children with specific language impairment (SLI) in child–adult conversation. Journal of Communication Disorders. 37(6), 517–533. DOI: https://doi.org/10.1016/j.jcomdis.2004.03.005.

Marinis, T., 2000. The acquisition of clitic objects in Modern Greek: Single clitics, clitic dou- bling, clitic left dislocation. ZAS Working Papers 15. pp. 259–281. DOI: https://doi.org/10.21248/zaspil.15.2000.32.

Petinou, K., Terzi, A., 2002. Clitic misplacement in normally developing and language impaired Cypriot-Greek speaking children. Language Acquisition. 10, 1–28.

Pinker, S., 1989. Learnabiltiy and cognition. The acquisition of argument structure. Cambridge, MA: MIT Press.

Qasem, F., Sircar, S., 2017. Imperative as root infinitive analogue in Yemeni Ibbi Arabic: Two case studies. Arab Journal of Applied Linguistics. 2(1), 1–19. Available online: https://mail.arjals.com/ajal/ar ticle/-view/104 (accessed on 18 March 2024).

Rice, M.L., Oetting, J.B., 1993. Morphological deficits of children with SLI: Evaluation of number marking and agreement. Journal of Speech, Language, and Hearing Research. 36(6), 1249–1257. DOI: https://doi.org/10.1044/jshr.3606.1249.

Rice, M.L., Wexler, K., Marquis, J., et al., 2000. Acquisition of irregular past tense by children with specific language impairment. Journal of speech, language, and hearing research. 43(5), 1126–1144. https://doi.org/10.1044/jslhr.4305.1126.

Saiegh-Haddad, E., Spolsky, B., 2014. Acquiring literacy in a diglossic context: Problems and prospects. Handbook of Arabic literacy: Insights and perspectives. 225–240. DOI: https://doi.org/10.1007/-978-94-017-8545-7_10.

Schuele, C.M., Dykes, J.C., 2005. Complex syntax acquisition: A longitudinal case study of a child

with specific language impairment. Clinical Linguistics & Phonetics. 19(4), 295–318. DOI: https://-doi.org/10.1080/02699200410001703709.

Shaalan, S., 2017. Reliability and Validity of Four Arabic Language Tests: A comparison of performance of Qatari School-aged children with and without language impairment. Arab Journal of Applied Linguistics. 2(1), 20–48.

Stavrakaki, S., Chrysomallis, M.-A., 2011. Subject-verb agreement, object clitics and whquestions in bilingual French-Greek SLI: the case study of a French-Greek-speaking child with SLI. Clinical Linguistics and Phonetics. 25(5), 339–67. DOI: https://doi.org/-10.3109/02699206.2010.538954.

Terzi, A., 2007. Achimedes I Corpus (Prepositions in Normal, Early and Impaired Language). Patras: TEI.

Thordardottir, E., Weismer, S.E., 2002. Content mazes and filled pauses in the spontaneous speech of schoolage children with specific language impairment. Brain and Cognition. 48, 587–592.

Tomasello, M., 1992. First verbs: A study of early grammatical development. Cambridge, UK: Cambridge University Press.

Tsakali, V., Wexler, K., 2004. Why children omit clitics in some languages but not in others: new evidence from Greek. LOT Occasional Series. 3, 493–504.

Tsimpli, I.M., 2001. LF-Interpretability and Language Development: A Study of Verbal and Nominal Features in Greek Normally Developing and SLI Children. Brain and Language. 77(3), 432–432. DOI: https://doi.org/10.1006/brln.2000.2413.

Van der Lely, H.K., 1998. SLI in children: Movement, economy, and deficits in the computational-syntactic system. Language acquisition. 7(2–4), 161–192. DOI: https://doi.org/10.1207/s153278-17la0702-4_4.

Wexler, K., Gavarró, A., Torrens, V., 2004. Feature checking and object clitic omission in child Spanish and Catalan. In: Bennema, R.B., Hollebrandse, B., Kampers-Manhe, B., et al. (Eds.). Romance Language and Linguistic Theories. Amsterdam/Philadelphia: John Benjamins. pp. 253–270.

Windsor, J., Scott, C.M., Street, C.K., 2000. Verb and Nouns Morphology in Spoken and Written Language of Children with Language Learning Disabilities. Journal of Speech and Hearing Research. 43, 1322–1336. DOI: https://doi.org/10.1044/jslhr.4306.-1322.