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Autism Spectrum Disorder vs Specific Language Impairment Comprehension for Sentences with Syntactic Movement: A Review of Findings

Hassan Mohammad Falah Bani Issa

(hassan7972@student.usm.my)

Rozaida Haji Abdul Rauf

(rozaida@usm.my)

School of Humanities (Linguistics)

Universiti Sains Malaysia (USM)

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Abstract

Sentences comprehension often present difficulty for individuals who have neurological impairment. This review explored the literature that investigated the several syntactic structure's comprehension in individuals with neurological impairment by studying syntactic movement in many structures in types of relative clauses, Wh-questions and topicalized structures in comparing with simple sentences. The comparison between literature that investigated the comprehension of the Wh-movement for individuals with autism spectrum disorder ASD in comparing with typical development TD children was discussed. Researchers have tried to compare TD children to many children who have defects that affect language comprehension and production. However, several researchers tried to focus on the language comprehension and production for ASD children who use Arabic as their native language. The principal determinant of children's language ability are grammatical errors in children with autism spectrum when addressing questions involving Wh-movement.

Key Words: Neurolinguistics, ASD language comprehension, Syntactic movement

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الملخص

غالبًا ما يكون فهم الجمل التي تحتوي على حركة في الأداة المستخدمة لتكوين السؤال صعبا للأفراد الذين يعانون من مشاكل عصبية. هذه المراجعة الأدبيات بحثت في فهم البنية النحوية لدى الأفراد المصابين بطيف التوحد من خلال دراسة القدرة النحوية في العديد من أنواع الجمل وفي أدوات السؤال والتراكيب الموضعية في المقارنة مع الجمل البسيطة. تمت المقارنة بين الأدبيات التي بحثت في فهم حركة أدوات السؤال للأفراد المصابين باضطراب طيف التوحد بالمقارنة مع الأطفال الطبيعيين ذوي النمو النموذجي. حاول الباحثون مقارنة الأطفال ذوي النمو النموذجي بالعديد من الأطفال الذين يعانون من عيوب تؤثر على فهم اللغة وإنتاجها. ومع ذلك، حاول العديد من الباحثين التركيز على فهم اللغة وإنتاجها لأطفال طيف التوحد الذين يستخدمون اللغة الانجليزية كلغة أم. توصلت النتائج إلى أن أطفال طيف التوحد لديهم عيوب في العديد من تراكيب الجمل والاسئلة التي تحتوي على تحرك في أداة السؤال، وخصوصا تلك التي تحوي أسئلة (من وأي). وجد لباحثون أن هناك تشابه في الأداء في بعض التركيب اللغوية وقد استندت هذه المراجعة على العديد من الدراسات السابقة التي دعمت هذه النتائج.

الكلمات المفتاحية: اللغويات العصبية، ضعف لغة اطفال اضطراب طيف التوحد، الحركة النحوية

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1.0 Introduction

Autism Spectrum Disorder (ASD) individuals have many levels of communication deficits, routine dependency, a high sensitivity to changes in environment and a strong emphasis on inappropriate objects (Edition, 2013; Lotfy, Azzam, Khattab, & El-Sady, 2018). (Mizejewski, Lindau-Shepard, & Pass, 2013) defines autism as a developmental disorder found in 1%–2% of newborns. They found that boys are more affected by autism spectrum disorder (ASD) than girls. According to (Vicker, 2009) children who suffer from autism have unique characteristics, including poor social communication, delay in language acquisition, and repetitive stereotyped behaviors. (Butler et al., 2016) argued that autism differs from languages disorders as it makes word acquisition or understanding what others are saying more difficult. There are several possible causes of language and speech disorders, including autism, muscle weakness and hearing loss. Speech disorder affects a person's cognition and how the person acquires language.

(Lindgren, Folstein, Tomblin, & Tager- Flusberg, 2009) indicated that autism affects people in early childhood and can influence their syntactic levels of comprehension and phonological abilities. Speech difficulties are due to impairment that may be caused by external or internal factors such as autism and brain injury. These factors impact the ability of producing sounds and understanding words. According to (Van Valin, van Valin Jr, van Valin Jr, LaPolla, & LaPolla, 1997), syntax means the

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arrangement of words. It refers to the mixture of grammar that deals with the way of arranging words together, with or without appropriate inflections to make it have meaning within the sentence. Syntactic development is defined as the ability of children to combine words and use them to make meaningful sentences. Some disorders affect children's mentality, which may influence their syntactic development. These disorders are called syntactic development impairment (SyDLI).

Syntax known as a set of concepts and processes governing sentence structures in each language (Foley, 2009; Solé, 2005). The word syntax also refers to the study of certain concepts and processes that arrange the sentences (Chomsky & Lightfoot, 2002). There is a controversy about the impact of autism on syntactic development, indicating that the syntactic levels of autistic individuals do not seem to be impaired in comparison with other language domains or in comparison to non-autistic peers with developmental delays (Eigsti, de Marchena, Schuh, & Kelley, 2011; Joseph, Tager- Flusberg, & Lord, 2002; Rapin & Dunn, 2003).

According to (Leekam, 2007), ASD children face a lot of difficulties in language comprehension and production. These difficulties depend on syntax, pragmatics and discourse defects that affecting on the structures of language. Many structural language impairments and comprehension defects can be found across the autistic spectrum individual's language, not only in autism individuals but also in individuals with other types of defects e.g. Asperger syndrome.

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Moreover, such impairments are typically found in ASD children rather than omnipresent disorders such as phonological impairments and specific impairments in reading comprehension. (Wolk, Edwards, & Brennan, 2016). ASD is a neurological impairment and developmental disability of unknown causes that is characterized by impaired and repetitive behaviors and deficient social communication. ASD has many characteristics embodied by problems in verbal and nonverbal communication, social interactions, and repetitive behaviors (Loucas et al., 2013). Recently, the relationship between LI and syntactic disorder has attracted the attention of several researchers e.g. (Whitehouse & Bishop, 2008) and (Brock, Sukenik, & Friedmann, 2017), many of them connected with autism disorder with these impairments directly.

1.1 Neurology and Linguistics

Neurolinguistics is the study of language and the brain and is one of the branches of neuroscience and linguistics that probes into the dimensions of the relationships between linguistics or language and human brain and language (Poeppel & Embick, 2017). Neurolinguistics divided into two major areas: language acquisition and processing and language impairment (LI). In language acquisition, some children suffering from speech difficulties might encounter problems that impact and make it worse and more challenging.

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2.0 Word Order in Jordanian Arabic

(Friedmann & Haddad-Hanna, 2014a) investigated difficulties in comprehension of different syntactic levels which are particularly difficult for these individuals. Ten structures derived from wh-movement were tested, some of them were first tested in hearing impairment research: five relative clause forms; three types of Wh-questions; and two topicalized structures compared with two simple sentences types. Experiment 1 tested subject and object relatives using a sentence–picture matching task. Experiment 2 tested subject questions and object questions using a picture selection task. Experiment 3 tested subject and object relatives using comprehension questions. Experiment 4 tested subject and object relatives and topicalized sentences using a reading and paraphrasing task. The participants were 24 orally trained Palestinian Arabic speaking individuals, 21 of them had mild to profound binaural hearing loss, and 3 had monaural hearing loss. They focused on Whereas the basic word order (in Palestinian Arabic, as in English) is subject-verb-object, other orders can be derived by movement of one of the constituents to another position in the sentence. The participants even had difficulty understanding subject relatives and subject questions. The monaurally hearing impaired performed similarly to the controls on all tasks.

The movement in the word order in these sentences may make a difficulty and complexity in the comprehension of the sentences that include the movement.

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In Arabic language, sentences and questions follows the SVO and VSO and the questions can be for subject or object by using the question words. The changing from the simple sentence to a question need a movement of the noun phrase that we need to ask about it to the beginning of the sentence and replace it by one of the question words, and this movement make complexity in understanding the questions for the ASD and SyDLI children. Children with language impairment may face some problems to understand questions that derived by Wh-movement, because in order to understand these questions, the listener need to know that there is a trace in the sentence and need to know where this trace is located.

Thus, within all ages that was tested, the researcher found that the age didn't have any effect on the language. Structures that were already acquired were acquired before the age of 9-6. These difficulties were found even though a third of the sentences in the input of Arabic-speaking children include Wh-movement.

In Jordanian Arabic language, the word order included two types in both colloquial and Standard Jordanian Arabic: VSO/SVO (Benmamoun, 1992, 1997b; Fassi Fehri, 1993; Shlonsky, 1997). According to (Jarrah, Al-Marayat, & Salem, 2020), both sentence orders exist in Jordanian Arabic and users of Jordanian Arabic can use both types of word orders to reach to the same meaning as the examples below.

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Table 1: Types of word orders in Jordanian Arabic

SVO	VSO
/ Laila aklt el-tofahh / Laila ate the apple Laila ate the apple	/Aklt Laila el- tofahh / ate Laila the apple Laila ate the apple

Both orders are possible to use in relative clauses, Wh-questions and topicalization sentences. (Benmamoun, 1997a; Botwinik, Bshara, & Armon-Lotem, 2015; Friedmann & Costa, 2011; Ouhalla, 1994) suggest that when children reach the age of 3, they can master both orders when they acquire Arabic.

2.1 Syntactic movement

Understanding sentences that include syntactic movement e.g. Wh-movement, which is a movement of a phrase to the beginning of the clause (to spec-CP, in syntactic terms) considered as a crucial language ability. Children frequently hear and read this type of sentences.

Movement creates an addition complexity as compared to simple sentences. The verb assigns the thematic roles in every noun phrase in the sentence in each sentence. Usually the first NP assigns the agent role, and the second NP assigns the theme role. The process of thematic role assignment becomes more complex when one of these NPs moves.

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The verb assigns the thematic role to the trace that the moved NP leaves behind, and the thematic role then transferred to the NP in its new position via a chain. The listener has to know that a trace is in this phrase and where this trace is then placed to assign the correct thematical function from the verb into the trace, and attach the trace through the chain to the moving part to understand the phrase that comes from Wh-movement and to understand the role of that noun phrase that has moved into a new location. In any weakness in any of these proceedings, the thematic position in the phrase and, subsequently, the determination of the subject matter and object in that phrase are difficult to understand (Elman, 1995).

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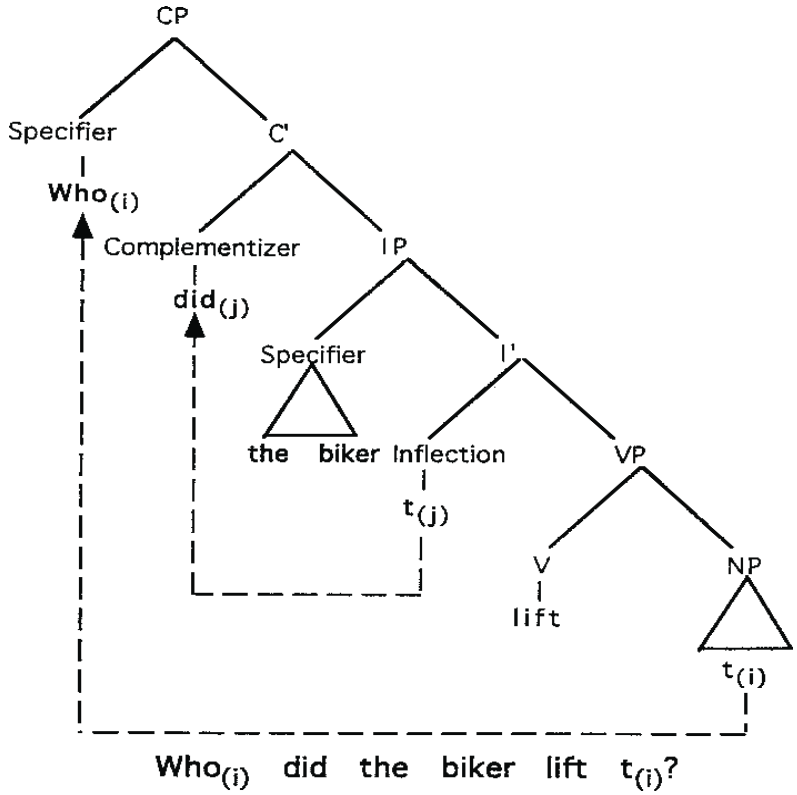

Figure 1 syntactic movement in Who question)Thompson et al., 1997(

(Levy & Friedmann, 2009) studied the syntactic intervention administered in a 12;2-year-old individual with syntactic SLI, who had difficulties in the comprehension and production of structures containing syntactic movement such as relative clauses, object questions, topicalization sentences, and sentences with verb movement. The researchers found that in populations who had difficulty in comprehending Wh-movement, they performed poorer with "which" questions. On the other hand, they performed better with "who" questions.

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Following treatment, the participant's performance on all structures with syntactic movement showed substantial improvement compared with baseline, in many of the tasks reaching the performance of the age-matched control group. Treatment of phrasal movement resulted not only in improvement in treated structures, but also in generalization to untrained structures: although phrasal movement was only treated directly for relative clauses and topicalization structures, the comprehension of object Wh-questions, which also include phrasal movement, improved as well.

(Mayberry & Lock, 2003) found that there is no age impact on the tested groups. Sentences structures that were acquired before the age of 9;6 include comprehension difficulties showed persistent in difficulty right up to the age of 21. This problem persists even though the sentences in Arabic speaking children's feedback that contain Wh-movement. The presence of such a high rate of sentences resulting from Wh-movement highlights the importance in hearing impaired individuals of becoming conscious of this disability. (Friedmann & Szterman, 2006) showed that some children who had using hearing aids before the age of eight months could understand sentences with movement-derived similar to hearing children. None of the participants in the current study had any early fittings of hearing aids. Researchers mentioned that the hearing aids may account for the poor performance of all individual participants with binaural hearing impairment. In addition to the strong output on simple sentences without Wh-movement, the difficulty in understanding these structures supports the concept of vacuous movement in

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subject questions: the difficulty in these structures can be accounted if it contains Wh-movement from the subject position (Friedmann, 2002; Friedmann, Novogrodsky, Szterman, & Preminger, 2008).

2.2 Wh-Movement in Jordanian Arabic

The movement known as the mechanism that related to language building that takes place in every language, that used to convert simple sentences to questions.

The difficulty in the comprehension in questions with Wh-movement, alongside the good performance on simple sentences without Wh-movement, supports the idea of the difficulty in these structures can be accounted for if they include Wh-movement from subject position (Friedmann et al., 2008) (Friedmann, 2002). The consistent deficit across Wh questions, points in a different direction: because all questions are derived by Wh movement. Specific deficit in sentences derived by Wh-movement.

In Jordanian Arabic, movement used to make questions by replacing the noun phrase with one of the question words (see examples below).

Table 2 English examples on movement

Who Subject Question	 Who ____ is drawing the girl?

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Which Subject Question	 Which girl ____ draws the mother?
Who Object Question	 Who is the girl drawing ____?
Which Object Question	 Which girl is the mother drawing ____?

Table 3 Arabic examples on movement

Who Subject Question	 /Meen ____Ely Am Yrsm Elbent? /
Which Subject Question	 / Ayaha Elbnt Ely Am Trsm Elmama ____? /
Who Object Question	 /Meen ____Ely Am Trsmha Elbnt? /
Which Object Question	 / Ayaha Elbnt Ely Am Trsmha Elmama ____? /

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Ahmad saw his friend

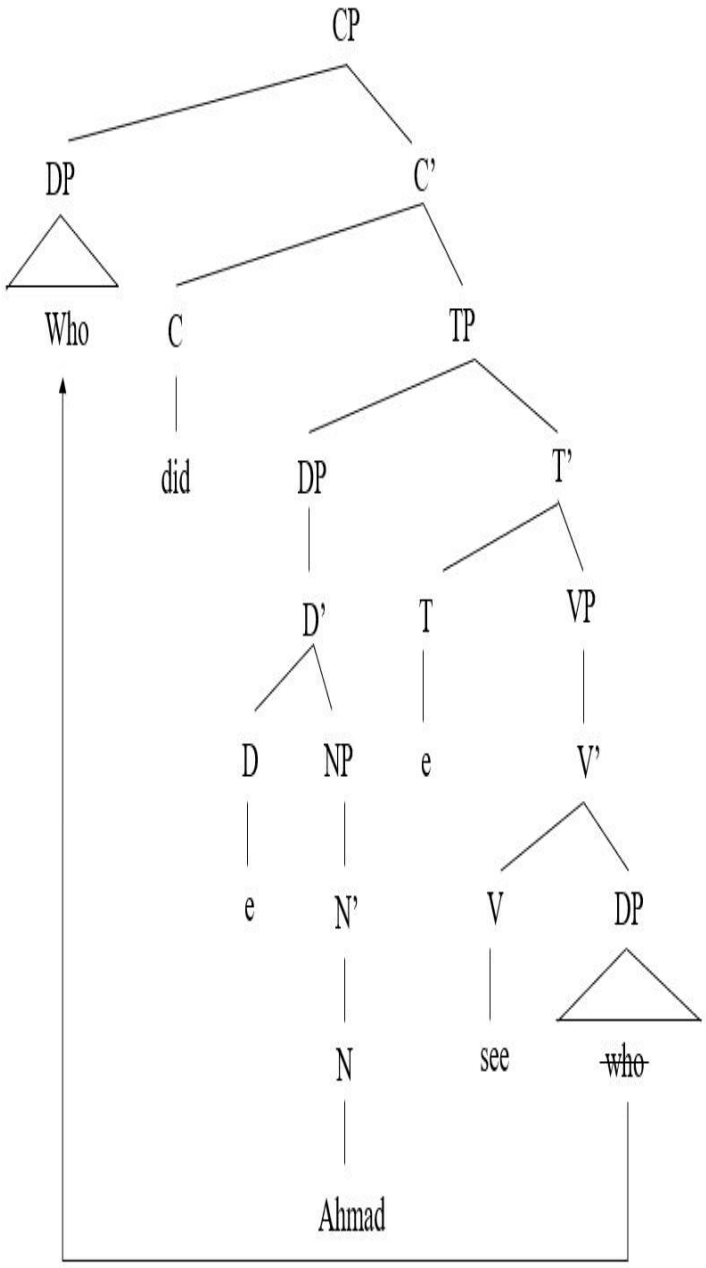

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Figure 2 the movement for the NP and replace it by Wh word in English

3.0 ASD, SyDLI and TD individual's language comprehension

Many past studies have found that understanding and producing sentences that included syntactic movement sounds to be difficult for ASD and SyDLI individuals who use English or Hebrew language as their native language. (De Villiers, De Villiers, & Hoban, 1994; Friedmann & Szterman, 2011; Geers & Moog, 1978; Power & Quigley, 1973; Quigley, Wilbur, & Montanelli, 1974) sentences involving syntactic movement were found to be affected in individuals with hearing impairment who were not acquiring during the critical time for acquiring first language syntax (Calderon & Greenberg, 2003; Mayberry & Lock, 2003; Szterman & Friedmann, 2003; Yoshinaga-Itano & Apuzzo, 1998).

(Friedmann & Haddad-Hanna, 2014b) examined if individuals with hearing impairment still understand certain sentences in the absence of adequate early exposure to language. The researchers examined this issue for hearing impaired adolescents and adults who use Palestinian Arabic as their native language. They focused on sentences that contained the Wh-movement, which is a movement of a word to the beginning of the clause (in syntactic terms, to spec-CP). Whereas the basic word order (in Palestinian Arabic as in English) is subject-verb-object, other orders can be obtained in

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the sentence by transferring one of the phrases to a different location. Researchers suggested that hearing impaired children who use Hebrew or Palestinian Arabic have substantial difficulties in object relatives and which object questions. The finding was that not only object-relatives but also object questions caused difficulty suggests that it is the Wh-movement, rather than the embedding in relative clauses, which is the source of the comprehension impairments.

According to (Witecy & Penke, 2017), ASD children showed more difficult in accusative language more than SyDLI children who used English and French languages. It is more important to highlight where children find difficulties to improve the teaching aids that used by speech therapist and pathologists in autism centers.

(Wittke, Mastergeorge, Ozonoff, Rogers, & Naigles, 2017) investigated the language performance for ASD children, in order to find the linguistic ability in these individuals as well as to search for the presence of different subgroups in ASD. This study argued in the benefit of using spontaneous language to measure both the lexical and grammatical skills for ASD children. In the other hand, the researchers demonstrated that there are multiple subgroups of ASD children, which vary based on both linguistic and cognitive abilities.

(Terzi, Marinis, & Francis, 2016) studied the syntactic levels included syntax, pragmatics and prosody in ASD children. The researchers aimed to decide whether ASD participants will face same difficulties in understanding

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and generating pronominal object relatives. They also investigated impairments that participants would encounter depending on the syntactic source, regardless of whether the result of difficulties at the syntax interface with discourse or prosody. The researchers administered tasks of comparison and production using picture selection task to evaluate the comprehension depending on two conditions: clitics in simple clitics and in clitics left dislocation structures. The researchers found similarity in doing several errors between ASD participants and TD participants that involved the appropriate use of clitics. On the other hand, they found a lack of sensitivity to the context, and a small number of errors involved reversal, TD participants showed an equal number of using clitics in contrast to sensitivity of context and reversals. The researcher showed that the participant's responses in who, what, and whom were questions were correct, but the answer was not appropriate for the context in focus.

(Brock et al., 2017) examined why certain autistic people perform poorly on the English version of the homograph-reading task while others do not. By exploring the effect of autism on the heterophonic homograph, they found that ASD participants had some issues in using right word in the right place. They tried to decide whether the variance was predicted or reliable by developed a Hebrew-language homograph-reading test. Until making the main test, they used several tests to gather the battery of participants' language and reading ability. They found that ASD children's success in the homograph-reading task is evidence for autism disorder. Many participants had some problems in reading the heterophonic homographs.

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(Sukenik & Friedmann, 2018) studied if the individuals with autism have a developmental syntactic impairment, DLI by comparing the performance of 18 individuals with Autism Spectrum Disorder (ASD) aged 9;0–18;0 years with that of 93 individuals with Syntactic-Developmental Language Impairment (SyDLI) aged 8;8–14;6 (and with 166 typically-developing children aged 5;2–18;1). The researchers used three syntactic tests assessing the comprehension and production of syntactic structures that are known to be sensitive to syntactic impairment: elicitation of subject and object relative clauses, reading and paraphrasing of object relatives, and repetition of complex syntactic structures including Wh questions, relative clauses, topicalized sentences, sentences with verb movement, sentences with A-movement, and embedded sentences. found a good relationship between ASD and DLI in many levels in the tasks that they used as getting the overall rate of correct performance on the syntactic tasks is similar for the children with ASD and those with SyDLI.

(Friedmann & Ronit Szterman, 2010) explored the way the lack of exposure affects syntax, and specifically, the comprehension of sentences derived by Wh-movement. The researchers tested the comprehension of subject- and object-relatives and of which and who subject- and object-Wh-questions in Hebrew-and Palestinian Arabic-speaking orally trained school-aged children with hearing impairment. showed that Hebrew or Palestinian Arabic children who suffer from hearing and speech impairments showed difficulty in comprehending “which” questions.

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The main results indicated that hearing impaired children speaking Hebrew or Palestinian Arabic have a significant difficulty in the comprehension of object relatives and object (which) questions. The finding that not only object relatives but also object questions caused difficulty indicates that it is the Wh-movement, rather than the embedding in relative clauses that is the source of the deficit in comprehension. This is consistent with our previous findings that showed that object topicalized sentences, which include Wh-movement but no embedding, were also difficult for Hebrew-speaking and Palestinian Arabic speaking children with hearing impairment.

(Avrutin, 2000; De Vincenzi, Arduino, Ciccarelli, & Job, 1999; Friedmann, Belletti, & Rizzi, 2009; Friedmann & Novogrodsky, 2011; Levy & Friedmann, 2009) Choose to test what is the most difficult type to understand in "which" questions rather than "who" questions, because in many populations who have difficulties with wh-movement, which questions reflect comprehension difficulties, whereas the performance on who questions is better. This process presents the short movement in who questions more than the movement in which questions. Also, researchers found that subject questions present simpler than object questions.

3.1 Comprehension as a cognitive ability

According to (Bishop, 2014), comprehension requires a number of different sub-skills, ranging from the ability to differentiate between speech patterns, recognizing language , reading complex phrases, verbal reasoning, recalling sequences of words, knowing what another person's purposes are in making

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an utterance, and so on. Deciding which language skills to consider when defining disorders is not a trivial issue. There is no consensus in this area, although it is generally agreed that it is important to use tests with good psychometric properties and to use a battery that samples a range of expressive and receptive language functions, avoiding verbal IQ tests that tend to evaluate acquired knowledge and reasoning instead of language functions.

(Nation, Clarke, & Snowling, 2002) investigated cognitive ability in children with impaired comprehension of reading with a view to assessing the relationship between general cognitive skill and difficulties in reading comprehension. In this study, the researcher sample 25 poorly comprehended individuals and 24 control adolescents, balanced for chronological age for ability to read words. The researcher used General Conceptual Ability (GCA) to test the comprehension and that was evaluated using the British Ability Scales to study the performance of good and poor comprehensions on different subscales was compared and linked to the underlying reading precision, reading comprehension and number skills. Bad comprehensions had a general tendency to obtain lower scores on verbal tasks than on nonverbal and spatial tasks. Although the weak comprehensions scored significantly below the control kids for most subtests, the majority got GCA scores within the normal range. For these kids, reading understanding was significantly below the levels predicted by GCA. A subset of poor comprehensions with below average GCA revealed a

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consistent profile in which comprehension was not unexpectedly poor, but rather a remarkably good reading accuracy.

4.0 Conclusion and recommendation

Previous studies have shown that the principal determinant of children's language ability are grammatical errors in children with autism spectrum when addressing questions involving Wh-movement. To research and evaluate children's awareness of these problems, information about how to handle these types of issues is built and a framework that helps children's autism vocabulary be improved. Researchers found that there are many language variations between autistic children and disabled children and between normal children. Several studies concentrated on and established these variations in many languages and dialects. The analysis of Arabic (The Jordan dialect) is significant because it includes certain arrangements in the construction of phrases not found in the English or French language. The literature indicates that academic study on the disparity in recognizing issues containing Wh-movement for children with autism-spectrum who using Arabic Jordanian has not been performed.

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4.1 Recommendation

1. It's necessary for the linguistics researchers to add more information about Jordanian ASD children language and their defects in the comprehension and production.

2. It's recommended to acknowledge about the importance of understanding these types of comprehension sentences impairments that derived by Wh-movement.

3. It's recommended to investigate the comprehension impairment in Jordanian Arabic language for children who have a mental defect as Autism Spectrum Disorder and Syntactic Language Impairments.

4. To check the importance of understanding the language defects in children with mental defects on the improving the teaching aids that used to diagnose them.

5. It's recommended to build information about how to handle comprehension and production defects.

6. It's recommended to build a framework that helps children with autism to improve their vocabulary.

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References

Avrutin, S. (2000). Comprehension of discourse-linked and non-discourse-linked questions by children and Broca's aphasics *Language and the brain* (pp. 295-313): Elsevier.

Benmamoun, E. (1992). *Structural conditions on agreement.* Paper presented at the Proceedings of NELS.

Benmamoun, E. (1997a). Agreement in Arabic and the PF interface. *Proceedings of WCCFL. XV*, 33-46 .

Benmamoun, E. (1997b). Licensing of negative polarity items in Moroccan Arabic. *Natural Language & Linguistic Theory, 15*(2), 263-287 .

Bishop, D. V. (2014). *Uncommon Understanding (Classic Edition): Development and disorders of language comprehension in children*: Psychology Press.

Botwinik, I., Bshara, R., & Armon-Lotem, S. (2015). Children's production of relative clauses in Palestinian Arabic: Unique errors and their movement account. *Lingua, 156*, 40-56 .

Brock, J., Sukenik, N., & Friedmann, N. (2017). Individual differences in autistic children's homograph reading: Evidence from Hebrew. *Autism & developmental language impairments, 2*, 2396 .941517714945

Butler, M. G., Lee, J., Cox, D. M., Manzardo, A. M., Gold, J.-A., Miller, J. L., . . . Driscoll, D. J. (2016). Growth charts for Prader-Willi

syndrome during growth hormone treatment. *Clinical pediatrics*, *55*(10), 957-974 .

Calderon, R., & Greenberg, M. (2003). Social and emotional development of deaf children. *Oxford handbook of deaf studies, language, and education, 1*, 177 .

Chomsky, N., & Lightfoot, D. W. (2002). *Syntactic structures*: Walter de Gruyter.

De Villiers, J., De Villiers, P & ،.Hoban, E. (1994). The central problem of functional categories in the English syntax of oral deaf children. *Constraints on language acquisition: Studies of atypical children*, 9-47 .

De Vincenzi, M., Arduino, L., Ciccarelli, L., & Job, R. (1999). Parsing strategies in children comprehension of interrogative sentences .

Edition, F. (2013). Diagnostic and statistical manual of mental disorders. *Am Psychiatric Assoc* .

Eigsti, I.-M., de Marchena, A. B., Schuh, J. M., & Kelley, E. (2011). Language acquisition in autism spectrum disorders: A developmental review. *Research in Autism Spectrum Disorders*, *5*(2), 681-691 .

Elman, J. L. (1995). Language as a dynamical system. *Mind as motion: Explorations in the dynamics of cognition*, 195-223 .

Fassi Fehri, A .(1993) .Issues in the structure of Arabic clauses and words (Vol. 29). *Studies in natural language and linguistic theory* .

Foley, W. A. (2009). *Functional syntax and universal grammar*: Cambridge University Press.

Friedmann, N. (2002). Question production in agrammatism: The tree pruning hypothesis. *Brain and language*, *80*(2), 160-187 .

Friedmann, N., Belletti, A., & Rizzi, L. (2009). Relativized relatives: Types of intervention in the acquisition of A-bar dependencies. *Lingua*, *119*(1), 67-88 .

Friedmann, N., & Costa, J. (2011). Acquisition of SV and VS order in hebrew, European Portuguese, palestinian Arabic, and Spanish. *Language Acquisition*, *18*(1), 1-38 .

Friedmann, N., & Haddad-Hanna, M. (2014a). The comprehension of sentences derived by syntactic movement in Palestinian Arabic speakers with hearing impairment. *Applied psycholinguistics*, *35*(3), 473-513 .

Friedmann, N., & Haddad-Hanna, M. (2014b). The comprehension of sentences derived by syntactic movement in Palestinian Arabic speakers with hearing impairment .*Applied psycholinguistics*, *35*(3), 473 .

Friedmann, N., & Novogrodsky, R. (2011). Which questions are most difficult to understand?: The comprehension of Wh questions in three subtypes of SLI. *Lingua*, *121*(3), 367-382 .

Friedmann, N., Novogrodsky, R., Szterman, R., & Preminger, O. (2008). Resumptive pronouns as a last resort when movement is impaired: Relative clauses in hearing impairment. *Current issues in generative Hebrew linguistics*, *7*(393), 267-290 .

Friedmann, N., & Ronit Szterman, M. (2010). The comprehension of relative clauses and Wh questions in Hebrew and Palestinian Arabic hearing impairment .

Friedmann, N., & Szterman, R. (2006). Syntactic movement in orally trained children with hearing impairment. *Journal of Deaf Studies and Deaf Education* .75-56 ،(1)11 ،

Friedmann, N., & Szterman, R. (2011). The comprehension and production of Wh-questions in deaf and hard-of-hearing children. *Journal of Deaf Studies and Deaf Education*, *16*(2), 212-235 .

Geers, A. E., & Moog, J. S. (1978). Syntactic maturity of spontaneous speech and elicited imitations of hearing-impaired children. *Journal of Speech and Hearing Disorders*, *43*(3), 380-391 .

Jarrah, M., Al-Marayat, S., & Salem, E. (2020). The discourse use of ʔilʔa: n'now'in Jordanian Arabic. *SKASE Journal of Theoretical Linguistics*, *17* .(1)

Joseph, R. M., Tager- Flusberg, H., & Lord, C. (2002). Cognitive profiles and social- communicative functioning in children with autism spectrum disorder. *Journal of child Psychology and Psychiatry*, *43*(6), 807-821 .

Leekam ،S. (2007). Language comprehension difficulties in children with autism spectrum disorders. *Children's comprehension problems in oral and written language: A cognitive perspective*, 104-127 .

Levy, H., & Friedmann, N. (2009). Treatment of syntactic movement in syntactic SLI: A case study. *First language*, *29*(1), 15-49 .

Lindgren, K. A., Folstein, S. E., Tomblin, J. B., & Tager- Flusberg, H. (2009). Language and reading abilities of children with autism spectrum disorders and specific language impairment and their first-degree relatives. *Autism Research, 2*(1), 22-38 .

Lotfy, O. M., Azzam, A. A., Khattab, A. N., & El-Sady, S. R. (2018). Syntactic Profile in Children with Autism Spectrum Disorders (ASD). *The Egyptian Journal of Hospital Medicine, 73*(1), 5783-578 .7

Loucas, T., Riches, N., Baird, G., Pickles, A., Simonoff, E., Chandler, S., & Charman, T. (2013). Spoken word recognition in adolescents with autism spectrum disorders and specific language impairment. *Applied psycholinguistics, 34*(2), 301-322 .

Mayberry, R. I., & Lock, E. (2003). Age constraints on first versus second language acquisition: Evidence for linguistic plasticity and epigenesis. *Brain and language, 87*(3), 369-384 .

Mizejewski, G. J., Lindau-Shepard, B., & Pass, K. A. (2013). Newborn screening for autism: in search of candidate biomarkers. *Biomarkers in medicine, 7*(2), 247-260 .

Nation, K., Clarke, P., & Snowling, M. J. (2002). General cognitive ability in children with reading comprehension difficulties. *British journal of educational psychology, 72*(4), 549-560 .

Ouhalla, J. (1994). Verb movement and word order in Arabic. *Verb movement* .

Poeppel, D., & Embick, D. (2017). Defining the relation between linguistics and neuroscience *Twenty-first century psycholinguistics* (pp. 103-118): Routledge.

Power, D. J., & Quigley, S. P. (1973). Deaf children's acquisition of the passive voice. *Journal of Speech and Hearing Research, 16*(1), 5-11 .

Quigley, S. P., Wilbur, R. B., & Montanelli, D. S. (1974). Question formation in the language of deaf students. *Journal of Speech and Hearing Research, 17*(4), 699-713 .

Rapin, I., & Dunn, M. (2003). Update on the language disorders of individuals on the autistic spectrum. *Brain and development, 25*(3), 166-172 .

Shlonsky, U. (1997). *Clause structure and word order in Hebrew and Arabic: An essay in comparative Semitic syntax*: Oxford University Press.

Solé, R. (2005). Syntax for free? *Nature, 434*(7031), 289-289 .

Sukenik, N., & Friedmann, N. (2018). ASD Is Not DLI: individuals with autism and individuals with syntactic DLI show similar performance level in syntactic tasks, but different error patterns. *Frontiers in psychology, 9*, 279 .

Szterman, R., & Friedmann, N. (2003). The deficit in comprehension of movement-derived sentences in children with hearing impairment. *Lir'ot et Hakolot, 2*, 20-29 .

Terzi, A., Marinis, T., & Francis, K. (2016). The interface of syntax with pragmatics and prosody in children with autism spectrum disorders. *Journal of autism and developmental disorders, 46*(8), 2692-2706 .

Thompson, C .K., Shapiro, L. P., Ballard, K. J., Jacobs, B. J., Schneider, S. S., & Tait, M. E. (1997). Training and generalized production of wh- and NP-movement structures in agrammatic aphasia. *Journal of Speech, Language, and Hearing Research, 40*(2), 228-244 .

Van Valin, R. D., van Valin Jr, R. D., van Valin Jr, R. D., LaPolla, R. J., & LaPolla, R. J. (1997). *Syntax: Structure, meaning, and function*: Cambridge University Press.

Vicker, B. (2009). Social communication and language characteristics associated with high functioning, verbal children and adults with autism spectrum disorder .

Whitehouse, A. J., & Bishop, D. V. (2008). Cerebral dominance for language function in adults with specific language impairment or autism. *Brain, 131*(12), 3193-3200 .

Witecy, B & ،.Penke, M. (2017). Language comprehension in children, adolescents, and adults with Down syndrome. *Research in Developmental Disabilities, 62*, 184-196 .

Wittke, K., Mastergeorge, A. M., Ozonoff, S., Rogers, S. J., & Naigles, L. R. (2017). Grammatical language impairment in autism spectrum disorder: Exploring language phenotypes beyond standardized testing. *Frontiers in psychology, 8*, 532 .

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Wolk, L., Edwards, M. L., & Brennan, C. (2016). Phonological difficulties in children with autism: An overview. *Speech ،Language and Hearing, 19*(2), 121-129 .

Yoshinaga-Itano, C., & Apuzzo, M.-r. L. (1998). The development of deaf and hard of hearing children identified early through the high-risk registry. *American Annals of the Deaf*, 416-424 .