

The Acquisition of Discourse Markers in Arabic First Language Acquisition: A Case Study of a Saudi ADHD Child

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Abstract

The present study investigated the acquisition of discourse markers as being part of complex structures by an Arab monolingual ADHD child, who is also a late talker. The selected child is the offspring of one of the researchers. The child had been observed since the age of five and four months to the age of seven (20 months); his conversations with his mother and family members were tape-recorded, and phonetically transcribed for analysis. The study has three main concerns: first, to examine and analyze systematically the acquisition of discourse markers in Arabic in ADHD children; secondly, trace the type of deviance and the number of deviant structures uttered by the child. Thus, we can see how long it takes the child to overcome the gap and acquire these structures as part of his language inventory. Results indicated that the verbal production of the child significantly exhibits fewer discourse markers which result in loosely connected utterances and less organized structures, i.e. ADHD children are more likely than other children to produce ungrammatical structures and less cohesive utterances. Moreover, the order of the acquisition of some connectives is in line with the literature of typical language development, nonetheless, the child was found late in his acquisition of these discourse markers. In addition, the analysis of the redundant deviant constructions indicated that the child's employed a number of systematic strategies (omission and/or substitution) in the formation of ungrammatical structures. It is hoped that the obtained results will contribute to the literature of first language acquisition as well as the comorbidity of ADHD and delayed language development in the affected children by providing insights into (i) how first language acquisition proceeds in an ADHD child, and (ii) how speech delay, the most common co-morbid disorder, affects normative language development of an ADHD child, by specifying and analyzing the type as well as the redundancy of deviant structures in his speech.

Key words: Language Acquisition, Discourse Markers, ADHD Child

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ADHD (Attention deficit hyperactivity disorder) rarely exists by itself and it often coexists with other disorders, such as learning difficulties and language disorders. There is a list of disorders that are likely to co-occur with ADHD. Studies have documented the persistent comorbidity of ADHD and other psychological, mental, neuro-developmental and/ or learning disorders; that is, one half to two thirds of children and adolescents who met the criteria of ADHD have at least one other disorder, and about ten percent of them have three or more disorders (Al-Hamid, 2002; Ashley 2005; Barkley, 1997; Rief, 2003).

The most common coexisting disorders are Language Disorders and/ or Speech Delay (Agin, Geng, & Nicholl, 2003; Al-Hamid, 2002; Barkley, 1997; Cantwell & Baker, 1987; Gupta & Ahmed, 2003; Hamaguchi, 2001; Kennedy et al., 1993; Lawlis, 2005; Martin, 1960; Reiff, 2004; Sousa, 2001; Sowell, 1997, 2001). Some studies of receptive and expressive language abilities in children with ADHD have revealed that DHD children were not different from normal children at the level of comprehending stories and extracting the main ideas. ADHD children, however, had more grammatical errors and less cohesive utterances than normal children at the level of verbal reproduction. Moreover, these children had difficulties in organizing their speech, and demonstrated deficits in their narrative abilities (Luo & Timler, 2008; Miniscalco, Hagberg, Kadesjo, Westerlund, & Gillberg 2007; Purvis & Tannock, 1997; Tannock, Purvis, & Schachar, 1997). Other studies on verbal IQ (VIQ), verbal comprehension (VC), and freedom from distractibility (FFD) factors in children with ADHD have reported ADHD children were considerably lower than the control group (Andreou, Agapitou, & Karapetsas, 2005). Studies of expressive language abilities in male adolescents and adults with ADHD whose ages were between (13) and (35) years old (Engelhardt & Ferreira, 2009) have revealed that people with ADHD are more likely than others to produce ungrammatical structures.

A recent cross-legged study has reported a genetic correlation between ADHD and language deficits in very young children (Quellet, Dionne, Forget-Dubois, Robaey, Viatro, Brendgen, Perusse, Tremblay, & Boivin, 2009) (Jansen, V., personal communication, March 23, 2009). ADHD children are more likely than other children to develop other behavioral disorders, such as Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), Anxiety Disorder, Depression, Obsessive Compulsive Disorder (OCD), Learning Disorders, Sleep Problems, and Tourette's Syndrome (Ashley, 2005; Rief, 2003). Additionally, ADHD children exhibit

weakness in working memory (short term memory deficits), which results in scholastic underachievement and language difficulties. Hamaguchi (2001) maintains that “most children with ADHD function as though they have auditory memory and language processing problems” (p. 179).

Speech Disorders and Language Disorders

The term speech disorders refer to “disorders of articulation and phonology (dysarthria, apraxia, and phonological disorders), fluency disorders (stuttering), and voice disorders (deviations in pitch, intensity, or voice quality” (Agin et al., 2003, p. 26). The term also includes “stuttering” and “cluttering” (Hamaguchi, 2001, pp. 62-63). First, **dysarthria** is “one of several motor speech disorders that involve impaired articulation, respiration, phonation, or prosody, as a result of paralysis, muscle weakness, or poor coordination” (Agin et al., 2003, p. 201). Second, **apraxia** refers to “inability to execute a voluntary movement because of a motor planning difficulty in the absence of any paralysis” (Agin et al., 2003, p.199). Third, a **phonological disorder** is “a disorder characterized by difficulty understanding the rules used for combining sounds to pronounce words, resulting in significant speech errors” (Hamaguchi, 2001, p. 208). Technically, the term **language disorders** is used to refer to “a heterogeneous group of children whose language behaviors are not like (nor superior to) the language behaviors of similar age peers” (Lahey, 1988, p.36). Also, the term ‘language disorders’ refers to “*receptive or expressive* abilities, or a combination of both” (Agin et al., 2003, p. 25). Accordingly, language is an umbrella term that covers two aspects of communication: the expressive level or the encoding process (difficulty in using words and structures) and the receptive level or the decoding process (difficulty in understanding words and structures), i.e. the pragmatic and/ or the semantic dimensions of communication. Down’s syndrome, Hunter’s syndrome, autism, deafness, cerebral palsy, mental retardation, visual impairment and cleft palate are examples of disorders or syndromes, where the children born with them are expected to have language disorders or impairment.

Conjunctions and conditionals in Arabic

There are many conjunctions used in non-standard Arabic to link strings of utterances together, some are considered adverbs in English:

1. /و{/ is used to connect linguistic items or structures of the same grammatical class, such as two nouns, two adjectives, or two sentences. /و{/ English equivalent is ‘and’.

- Ahmad went out and came back.

/Ξ{□μςδ Ξ{ρςΖ ωΞ ριΖι φ/

2. /Ξςω/ and /ωςλ9/ are similar to /ω{/ in terms of equal structures, but they do not imply addition, rather they imply options. The English equivalent is 'or'.

- What would you like to drink coffee or tea?

/ειΣ τι□Yβ τιΣρςβ θςηω{ ωςλ{ Σ{ι/

3. /λ9κιν/ and /βΞσ/ are used to imply contradiction and contrast, as they are used to introduces something that is opposite to what has been said; their English equivalent is 'but'.

- I like sea food but I don't like calamari.

/Ξ{□Yβ Ξ{λΞκιλ Ξ{λς□ρι λ9κιν μ{Ξ{□Yβ Ξςλ□{β{ρ/

/Ξ{□Yβ Ξ{λΞκιλ Ξ{λς□ρι βςσ μ{Ξ{□Yβ Ξςλ□{β{ρ/

4. Both /ιΔ{/ and /λςω/ express conditionals and counterfactual states; the former is prospective whereas the latter is both retrospective prospective in nature. Their English equivalent is conditional 'if'.

- If you sleep early, you will get up early

/ιΔ{ τςν{μ βςδρι τςθυ:μ βςδρι/

- If you had gone to bed earlier, you would have got up earlier.

/λςω νYμςτ βςδρι κ{ν θYμςτ βςδρι/

5. /φςΣ{ν/ is a causal conjunction used to introduce a reason; its English equivalents are 'because' and 'so'.

- Because you did not do your home work, there are no sweets.

/φςΣ{ν μ{σςωειτ Ξςλω{Ζιβ μ{φι □{λ{ω{/

6. /κςμ9ν/ is an adverb used to add a new piece of information to what has been said, and its English equivalent is 'also'.

- Ahmad also does not want to go.

/Ξ{□μςδ κςμ9ν μ{φιβ{ φιρυ:□/

7. /βςφδειν/ is a temporal adverb used to link utterances, and its nearest English equivalents are 'then' and 'later'. It is also used as a causal connective to mean 'so'.

8. /θςβΞλ/ and /βςφΞδ/ are two prepositions used to link stretches of utterances; their English equivalents are 'before' and 'after'.

- Do not drink water before or after meals.

/λέτισης βραζί μετά την ποντίκια και πριν από την ποντίκια/

9. /Ξλι/ is a relative pronoun used to introduce relative clauses; it stands for ‘*who*’, ‘*which*’, ‘*that*’ and ‘*whose*’ in English. Also, it can be used as an adverbial of place, i.e. (where).

- Did you buy the book which he recommended?

/Τι Σετίρειτε ξελκίτε; Ξλι θελώ να φάω σήμερα/

10. /Λξμ/ is an adverbial conjunctive used to introduce adverbial clauses of time. Its English equivalent is ‘*when*’.

- I was happy when I saw her.

/Φιριθετ λξμ; ΣΥφετη; Η;/

11. /μξιλ μ/ is an adverbial conjunctive used to introduce adverbial clauses of place. Its English equivalent is ‘*where*’.

- I see you at the coffee shop where we met the last time.

/Τι Συ:φετ φιλ θεηω; μξιλ μξτθ; βξλν; θεβιλ κιδ;/

Methodology

Participants

The participant of the study is a male Saudi child who was diagnosed at the age of four with ADHD and speech delay by pediatric neurologists at Portland hospital, London. The child’s IQ, hearing and vision tests were found to be normal when evaluated. The overall evaluation did not report any abnormalities in the receptive skills or non-verbal contact. The child is a monolingual native speaker of Arabic, and he has been receiving classes in Arabic and English simultaneously for two years and two months at kindergarten and then at primary school. But he received no medications and no classes in speech therapy as late talkers usually catch up with their peers without professional intervention. The participants in the study are the child’s parents, elder sister, and the house maid.

Method

The child was being observed from the age of five and four months to the age of seven (20 months); his spontaneous conversations with his mother, father, sister, and the maid, both indoors and outdoors, were tape-recorded, transcribed and then coded for analysis. Everything the child said and everything said to him during these conversations was tape-recorded; the child’s utterances, slips of the tongue, and interruptions were analyzed and investigated in terms

of the development of complex structures and the emergence of discourse markers. The concept of MLU (Mean Length of Utterances) proposed by Brown (1973) was not adopted in the study as it was avoided in studies of children language acquisition conducted in Arabic (see Aftat, 1982). The time devoted to collect the data comprises 20 months (600/615 Days); which were divided into three individual stages separated by two intervals, during which the researchers intended not to collect data in order to detect the emergence of new negative structures, and specify their types in the speech of the subject. The three stages and the two intervals are organized as follows:

- **Stage I (120 Days)**

From the age of (5:4) to the age of (5:8)

- **First Interval (120 Days)**

From the age of (5:8) to the age of (6:0)

- **Stage II (120 Days)**

From the age of (6:0) to the age of (6:4)

- **Second Interval (120 Days)**

From the age of (6:4) to the age of (6:8)

- **Stage III (120 Days)**

From the age of (6:8) to the age of (7:0)

Data Collection

The data was collected from the tape-recorded conversations between the child and his family members. The data had been collected since the child was five years and four months, and it continued until the child was seven years old. The data consisted mainly of spontaneous speech, but it did not include elicited speech. Thus, we are able to observe a variety of strategies the child manipulated on two levels: the expressive level as well as the receptive level. Furthermore, the data brings out various aspects of the implicit linguistic knowledge which the child had or had not yet acquired when the study was over.

Data Analysis

The subject's collected utterances are analyzed in terms of the development of conjunctions and relative clauses. The analysis is concerned with the emergence, development, and frequency of inter-clausal connectives as well as relative pronouns as they emerged in the child's spontaneous

speech. Moreover, the analysis also covers the child's ungrammatical structures where conjunctions are either dropped or substituted.

Stage I

Obviously, the child started to insert conjunctions and relative pronouns within his utterances to connect clauses and control the flow of information in his speech. In stage (I), the most frequently occurring conjunction is the causal /φζΣ{v/ 'because' which occurred in the child speech (7 times). The causal /φζΣ{v/ 'because' was produced as /ʒζΣ{v/, as it was hard for the child to produce the initial pharyngeal sound /φ/. The child used the causal marker appropriately in his speech to refer to himself as well as others. Also, he used it to express reasons prospectively as well as retrospectively, for example:

We should hold the robe so we don't fall down on the ground.

/λ{ζιμ νισζθ ≈λ□ζβ≈λ ≈Σ{v μζντφι□ φι: ≈λʒζφ≈δ

, and

Mom... say thank you because I taught him the voice.

/μ{μ{ θYλι:λι ΣYκιςν Σ{v ʒζλζμτY ≈σO:τ/

The next connective marker is the additive /κζμ9v/ 'also' (5 times). The additive /κζμ9v/ was used mainly to combine linguistic units of equal grammatical status, such as nouns or prepositional phrases. One can see that the child tended to use the additive /κζμ9v/ instead of the classical conjunction 'and', which did not yet appear in the speech of the child:

Take *Ishwana* [Rishwana, the nanny] also me.

/ΞYδι tΣω{v{ κζμ9v ≈v{/

Then comes the temporal connective /βζφδειν/ 'then' (4 times), which is used in the child's utterances to express two different types of relations: addition and causation. The child used the temporal /βζφδειν/ as the classical additive conjunction /ω{/ 'and', i.e. to combine clauses in his speech. For example:

Coan leks of a camel [corn flakes]...got a camel picture...and also the trees on it...then...then on top, there are sweet *coan leks* [corn flakes]...its color is yellow.

/κO:v≈λεκσ Z{μ≈λ φι:λY σΡYψ{τυ: Z{μ≈λ κ{μ{v ≈ΣΖAι φO:θθη φO:θθη τYθʒYδ ʒλει/
/βζʒδειν βζʒδειν φO:θθη κO:v≈λεκσ □ιλυ: λυ:νυ: ʒ{σφει/

Also, /βς ϕδετν/ is used appropriately as a temporal ‘*then*’ and a causal ‘*so*’ connective in one utterance, whichever fits into its basic meanings. This combination of two different usages shows that the child learned two different functions for one connective:

Then you sail like this, not hit the wall so it breaks down, it breaks.

/ βςΞδειν τισυ:θι κιδΞ λΞ τιτσδξμ φιλΖξδΥφ βςΞδειν τιτ□ξφΞβ/

The adverbial connective /θζβΞλ/ ‘*before*’ appeared (twice) in the child’s speech, and was pronounced as /βζθΞλ/, whereas /βζϕΞδ/ ‘*after*’ did not appear at this stage. The child properly used /θζβΞλ/ ‘*before*’ to express an earlier event in questions as well as affirmative complex sentences:

Mom what’s on Dubai [channel] before this film?

/μ{μ{ φ{ δΥβει βζθΞλ η{δ{ΞλφιλΞμ ειΣ φιΖι/

There are some connectives that started to emerge in this stage: the additive /ω{/ ‘*and*’ and the relative pronoun /Ξλι/ ‘*who*’ and their development was characterized by inconsistent occurrence. The conjunction /ω{/ occurred only once (1 time) at this stage, and it was missing (4 times), whereas the general relative pronoun /Ξλι/ occurred (4 times), and was missing (5 times), and substituted (3 times). As for the coordinating conjunction /ω{/, the child tended initially to juxtapose the units to be combined, i.e. without inserting a conjunction:

I don’t want to say...it’s ok. [singing]. Huh...I like the restaurant of Nonaz [Mc Donald’s]...
Pizza Hut...two

/μ9Ξβ9Ξθυ:λ /μζΞλειΣ/Ξ9Ξv9Ξ□Yβ μζτΞμΞθ vYvζvζ πι:ζ9ηYτΞτνειν/

Then, the child used the conjunction /ω{/, and inserted it properly between the items to be combined in his speech, however, it was used only once at this stage:

He can beat *antaboot* [octopus] and *shak* [shark].

/φιθδξφι φYδYβΞλΞζντΡ{βυ:τΡΞλ θιΣ/

Nonetheless, the child reproduced loosely connected linguistic units by merely juxtaposing them, and omitting the coordinating conjunction once again:

Hit me [?]scratched me.

/δζβΞνιΞζμζΞνι/

In the same way, the early pattern of the produced relative clauses is characterized by the lack of relativizers; the clauses are simply juxtaposed, resulting in a loose connection between them.

Accordingly, the child's early relative clauses are characterized by either lacking the proper relative pronoun (*who*, *which*, *that*, and *whose*):

The men [?] sleeping in their homes have a mom?

/ΞλΞ{Ζ9λ [?] φΞν{μν: φι: βειτΞηΥμ ΞνδΞηΥμ ΞΥμ/

, or substituting it with the closest lexical item [he = who]:

My friend [he] took *Smaio* [Smily] said knew *Pidaa Pooh* [Winnie the Pooh]

/σ{□βι ηΥω{ΞΞδ σΞμ{φν: φιθν:λ ΞΞφφ βιδ{βν:/

Later, the child produced utterances including a relative pronoun, and he continued to produce similar clauses in an increasing manner:

Mom.... the teacher is shouting at the kids who are not naughty?

/μ{μ{ΞλΞβΞλ{ τι□{σιμΞλΞβΞλ{Ξλι: μΞφισξω: Σξθ{ωΞ/

Nevertheless, the child did not fully master the production of relative clauses as he continued to produce relative clauses lacking relative pronouns. The inconsistent occurrence of relative clauses persisted at this stage:

I helped him all children [?] do not hear their voices.

/Ξσ{Ξιδ κΥλΞλΞ{φ{λ [?] μ{φισμΞν: ΞΞ σΟ:τ/

The findings of the early development of the produced relative clauses do not comply with the observations of Slobin and Welsh (1973) in the sense that the relative clauses produced at stage (I) show no preference to either the subject or the object of the main clauses to which they are attached. The child produced twelve relative clauses, only four of which are with relativizers.

There are six attached to the subject and six are attached to the object of the main clause (see Slobin & Welsh, 1973).

Unlike the former constructions, there are some connectives and constructions which are analyzable in terms of their absence at the level of performance as they are not observable in the speech of the child. It seems, however, that having acquired the concepts underlying some specific constructions (addition, condition, and temporal) does not guarantee the full mastery of these structures. That is, the child is still processing these constructions which are proceeding to the level of performance.

The child produced complex structures which meaning is conditional (7 times), however the conditional markers /ιΔ{/ 'if' (*for the present tense*) and /λξω/ 'if' (*past & present tenses*) are missing indicating that the child was aware of the concept of condition. The conditional

structures the child produced are all hypothetical, but syntactically lacking the conditional marker 'if'. Also, all the produced conditional structures at this level were in the question form, and some may involve modals, such as 'may'.

This [scooter] may I take it to school, [?] you buy it for me?

/δι μΥκιν ≡ΞΥδξη ≡ μξδ{σ≡τι / [?] ιντι τιΣτ≡λιλι ηιφ≡/

, and

A boy ...boy will be punished ... [?] crosses the red light?

/φιτΞ{θξβ ωξλ≡δ ωξλ≡δ [?] θξτΡξΞ ≡λΞιΣ9φξ{/

Similarly, the temporal /λξμ9/ 'when' and the additives /Ξξω/ and /ωξλ9/ 'or' are missing in the structures of the child, but the structures themselves indicate that the child grasped the concepts underlying them. On one hand, the utterances involving temporal /λξμ9/ are not hypothetical as they refer to events that had already taken place, for example:

She's told me before [?] she wears a band, her head hurts.

/Ξξω≡λ θ9λ≡τλι: [?] τιλ≡βξσ τΡΟ:θ τιΞξωφι ρ9σξη9/

, and

[?] He went to *Adakheel* [Aldakheel Mall] found what? Saw what clothes?

[?] Ξξω≡λ φ{□ Ξιν≡δ ≡δξ□τ:λ λ{θ{ Σ{φ ειη/

Also, there are the utterances involving the additives /Ξξω/ and /ωξλ9/

Huh...huh is the story of the animals ours [?] not ours?

/9η 9η / θισξτ ≡λ□Ο:v≡v{τ □ξθ≡τν9 [?] μυ: □ξθ≡τν9/

, and

Mom... the skin is harder [?] the nails?

/μ{μ{ ≡λΖιλ≡δ Ξξθωξ≡ [?] ≡λΞδ{φι:ρ/

There are some conjunctions that do not appear at this stage, such as the contrast conjunction /λ9κιν/ 'but' and the adverbial conjunctive of place /μξ□ιλ μ{/ 'where'. The child, however, learned referring to the entity of space using different appropriate demonstratives, such as /η{δ{/}, /η{δι/, and /δι/ (this/feminine & masculine); adverbs of place /φειν/, /ηιν{/}, and /κΥλμξκ{ν/ (where, here, everywhere); prepositions of place /φι/ 'in', etc. Besides, he learned many names of places, such as (kitchen, bathroom, house, school, class room, London, Malaysia, Jeddah, street, swimming pool).

Stage II

In stage (II), the most frequently occurring connectives are the coordinating conjunction /ω{/ ‘and’ and the relative pronoun /Ξλι/ ‘who/which’ (28 times each). In the first place, the conjunction /ω{/ ‘and’ was fully mastered at this stage; the child perfectly learned to produce the coordinating conjunction ‘and’ in his utterances. It should be noted that the use of this conjunction was confined to the combination of nouns and pronouns as no verbs are combined at this stage:

Mom ...buy me a parrot and a cat.

/μ{ μ{ ΞΣτζλιλι βζΓβΞβν ωΞ θιτΡζΞ σΡζθι:ρ{/

In the second place, the relative pronoun /Ξλι/ ‘who/which’ is used to introduce relative clauses; (20) clauses are attached to the object, while (8) clauses are attached to the object of the main clause. This finding supports the claim that children’s initial relative clauses are attached to the object rather than the subject of the main clause (see Slobin & Welsh, 1973). Besides, the child no longer produced primitive relative clauses lacking the proper relativizer /Ξλι/.

What’s the name of that which is stronger than the bee?

/ ειΣ ισμΥ Ξλι:Ξθως{ μΞν ΞνζΞλζΞ /

, and

Do you like the pussy cat which is hairless?

/τι□Yβι ΞλβYσικ{τ Ξλι ν{δρ{ θιΣρζτη{/

More importantly, the child expanded the use of the relative pronoun /Ξλι/ to refer to place, i.e. as an adverb of place ‘where’, which started to emerge in his utterances:

The discovery corner... where my friends were playing

/ρYκν ΞλικτιΣ{φ Ξλι {σΡ□{βι λιΞβυ: φι:/

The child was still developing the use of relative pronouns in his reference to refer to entities of place. For instance, there are two relative clauses in which the adverb ‘where’ was missing. It should be noted also that the absence of ‘where’ in the Arabic sentences makes a difference, whereas its absence in the corresponding English one is accepted:

There’s someone in the shop [?] we went to yesterday

/φι ω{□ιδ μιν ΞλμΞ□ζλ [?] φY□ν{ {μΞσ/

Moreover, the child produced multiple noun clauses headed with different relativizers, such as ‘*where*’, ‘*why*’, ‘*who*’, and ‘*what*’:

‘where’

Should I tell you where they go?

/≈θΥλικ φειν φιρY□υ:/

‘that clause’

The teacher told me that I’m terrific!!

/≈λΞζβλ9 τιθΥλι Ξζν{ μYντ{ζ/

‘why’

Should I tell you why she said terrific?

/≈θΥλικ λειΣ θ9λ≈τλι μYντ{ζ/

‘who’

Shall I tell you who broke the video of the tape?

/≈θΥλικ μι:v Ξζρζβ ≈λφιδιφυ: □ζθ ≈Σζρι:τΡ □ζθ≈ν{/

and ‘*what*’:

Mom... shall I tell you what I want?

/≈θΥλικ ειΣ φινζφσι/

In addition, the child learned forming adverbial clauses to express timely coincidence, but the adverbial marker /λζμ9/ ‘*when*’ was missing in his adverbial clauses. Producing temporal constructions is remarkable in the course of language development, indicating that the child learned connecting utterances in terms of time and coincidence. The utterances (3) produced at this stage lack the temporal conjunction /λζμ9/. For example:

[?] I grow up, what would you buy for me?

/[?] Ξζκβζρ ειΣ τιΣτζρυ:λι/

, and

I’ll have much fun [?] I sleep there

/ΞζμβζσΡιτΡ [?] Ξζν{μ φινδζηYμ/

Then comes the conjunctions /Ξζω/ and /ωζλ9/ (15), which were mastered at this stage. The child proceeded from juxtaposing options to inserting the conjunctions /Ξζω/ and /ωζλ9/

whenever required. Moreover, the child expanded this connective to express further meanings, such as the negated /ωςλ9 λςζ/ ‘or not’ and the optional /ωςλ9 φειν/ ‘or where’, respectively:

Do you know what the wasp looks like? [pause] or not?

/τιζΞφι ΣζκΞλ Ξδζβυ:ρζΞ / ωςλ{ λςζ/

, and

Here or where?

/ηιν{ ωςλ9 φειν/

The production of different types of conjunctions, such as the additive /κζμ{ν/ ‘also’ (6 times), the temporal /βζ φδειν/ ‘then’ (13 times), and the causal /φζΣ{ν/ ‘because’ (9 times) continued at this stage. The child’s speech displayed more cohesive ties via the inclusion of the temporal /βζ φδειν/ ‘then’ and /ω{/ ‘and’ in his stories. For example:

Because he [the boy in the story] didn’t lie... didn’t lie, then his dad gave him a present, he liked it and played with it all the time [pause] like this!!

/φζΣ{ν μ9κιδιβ μ9κιδιβ βζΞδειν Ιζβυ:η ΙζΣτΞρ{λυ: ηζδιφ9 ΙζνβΞσΡζτΡ φ:η9 ωΞφιλ φζβ φ:η9 τΡυ:λ ΞλωζΞτ/

Like stage (I), the child continued to produce conditional structures (6 times) but without the conditional marker /ιΔ{/ or /λζω/ ‘if’:

Mom...in school...someone... [?] someone ... makes another one cry in school, the teacher will shout at him loudly.

/μ{μ{ [?] ως□δ9 ω{□ιδ ω{□ιδ Ξζλ{ ω9□ιδ φιβκι φιλμζδζσ{ ΞλΞζβλ{ ΞΞΞ{σΡμΥ βιθΥ{/

In addition, the child learned to produce combined complex structures, such as a conditional structure without a conditional marker. Also, he learned producing shorter structures by means of conjunctions:

Mom...mom... [?] we say sorry to God, in the hell fire, would He forgive us or not?

/μ{μ{ μ{μ{ ρζβΞν{ θΥλν{λυ: Ι{σιφ φιν{ρ φΞσ{μι□ν{ ωςλ{ λςζ/

There are two new connectives that emerged at this stage: the conjunction /λ9κιν/ ‘but’ and the adverb /□ζτ{/ ‘even’. For the first time the child learned to express opposition in his utterances (twice), though its usage was limited and primitive. That is, it was not used in complex constructions:

I want like this but big!!

/β{ ζζφΥ βΞσ κζβι:ρ/

Similarly, the child learned to express surprise in his speech (4 times). The emergence of the adverb ‘even’ /□ζτ{/ indicates the ongoing growth taking place in the child’s language system; that is, the child learned to cut his utterances short by making use of new connectives:
Even the baby is just a little?

/Ξζτ{Ξλβειβι ΣΞωφ{ βΞσ/

The child also expanded this newly acquired adverb /□ζτ{/ ‘even’ to express further meanings, such as addition:

Child: do you like the smell of garlic?

/τΞ□Yβι φι□ζτΞτυ:μ/

Mother: no

/λζΞ/

Child: neither do I!

/Ξζτ{Ξv{/

Stage III

In stage (III), the most frequent conjunction is the additive /ω{/ ‘and’ (63 times), which highly increased in this stage to exceed other connectives. Unlike the preceding stages, the child learned to insert the additive ‘and’ in his simple and complex utterances. That is, the child not only used the additive /ω{/ ‘and’ to combine two or more names and verbs, but also he used it in combination with other connectives. Unlike English, the additive /ω{/ ‘and’ should be inserted between the added lexical items and not precede the last one. For example

I look better than Yazeed, and Jumana, and their little sister, and Faisal, Tala and Saud.

/Σζκλι Ξ{□σζν μιν φ{ζι:δ ωΞ ZYμ{ν{ ωΞ ΞYΞτζηYμ Ξ{σΡ{Γι:ρ{ ωΞ φεισΡζλ ωΞ τ{λ{ ωΞ σY φυ:δ/

, and

And I also learned this

/ωΞ κζμ{ν Ξζτ φζλζμτ η{δ{/

The next dominant conjunction is the generalized form /{μ/ ‘if’ (24 times). The child overgeneralized this form to substitute both conditional forms /ιΔ{/ and /λζω/ to mean ‘if’. On

one hand, the child was still developing conditionals, but unlike stage (II), he started to insert the conditional marker in most of his conditional structures.

Ah...today am [if] I do my homework, can I go to *Tala* and *Saud* [cousins] and sleep over with them?

/η { ≈λφΟ:μ {μ θιδιρτ ≈□ιλ ω{Ζβ{τι {ρυ:□ φινδξηΥμ/

Similar to stage (II), the child's conditional structures became longer and more complex as they involved further complex constructions. Also, most of the developing produced conditional structures are future predictive and only one is in the past:

Am [if] I had been in this room where there were the clothes, I would have looked for it and found it, but I did not!!

/Ξιλ διλ ΓΥροφ/ Ξιλ φι:η/ μξλ/ βισ κΥντ/ Ξιλ φι:η/ βισ μδΞιλ/

But the child continued to produce conditional structures without a conditional marker (4 times), for example:

Mom [?] finish my food, can I go to the study room?

On the other hand, the child also used the new form /{μ/ as the temporal conjunction /λζμ9/ to express coincidence; unlike stage (II) the child no longer produced temporal constructions lacking the conjunction. The child used the form /{μ/ to express two different functions: coincidence and condition, which reflects the ongoing development taking place in his language system:

[to another child on the phone] am [when] I was KG one, you were not in school because I'm now grade one , you are KG2. am [if] you are grade one, I'll be grade two.

/ {ν{ Ιμ κΥνΞτ ρξωδΡ{ κΥνΞτ ιντ{ μξνξκ δΞιλ μξδρξσ{ ρξΣ{ν {ν{ δξ□ι:v {ν{ σΡιρτ
{υ:λ{ ιντ{ ρξωδΡ{ / {μ κΥνΞτ ιντ{ δξ□ι:v {υ:λ{ {ν{ ≈σΡιρτ τ{νιρφ{}/

An interesting finding from the analysis of conditionals at this stage is that the child learned to express the concept of wishing in the sense that he regretted that something was not as it should have been. He did not use the term / $\approx\zeta\mu\zeta\nu$ / 'I wish', rather he used the expression /φ{ρειτ/ 'if' to refer to his point:

If Azzam [a cousin] too were with us!

/φερειτ φεζί μ κεμίν φεκυ:ν με φίν{/

, and

Am [if] I had been in this room where there were the clothes, I would have looked for it and found it, but I did not!! If I had entered, I'd have got it

/Ξμ κΥντετ δΞιλΓΥρφΞ λι φιη μξλβισ κΥντετ ΞζΞδΥιρ ωζΖιβζη βζσ μδΞΞζλΞτ φρειτζνι δΞΞζλΞτ φζΣν Ζιβζη/

The next frequent connective is the relative pronoun / $\approx\lambda i$ / ‘who/that’ (21 times). Similar to stages (I) and (II), most of the child’s relative clauses are attached to the object of the main clause (13), and the remaining are attached to the subject of the main clause (8). The utterances including the relative pronoun / $\approx\lambda i$ / ‘who/which’ increased at this stage reflecting the child’s developing ability to produce further longer and more complex utterances:

What is this animal which looks like the teddy bear whose color is white and black?

/ειΣ η{δ{ Σ{λ□{φ{ω{ν υλι ζηφ Σ{δζβδυ:β υλι λΟ:vY Σ{βφζδR ωΣ{σωτδ/

The next frequent connectives are the temporal /βζρδειν/ ‘then’, (17 times), the contradictory /βζσ/ ‘but’ (17 times), the causal /σρζΣ{ν/ ‘because’ (16 times), and the additive /κζμ{ν/ ‘also’ (12 times). On one hand, the temporal /βζρδειν/ ‘then’ and the additive /κζμ{ν/ ‘also’ continued to appear in the child’s speech with no mentioned development. On the other hand, the conjunction /βζσ/ ‘but’ was used more frequently in this stage than in the preceding stages. It was used in combination with other conjunctions, such as the conditional /{μ/ and the negative marker /μ{/ ‘not’. Furthermore, the coordinating conjunction /βζσ/ ‘but’ was used correctly to combine clauses into complex constructions, such as condition, comparison and negation.

Can I tell you something, but am [if] I tell you, will you shout at me?

/≈μ ≈ν { ≈θ ≈θΥλικ Σξι β≈σ ≈μ θΥλ≈τςλικ τΞΡμι:νι:/

, and

But I'm smarter than him!!

/βζς {ν{ {δκ{ μινγ/

Similarly, the causal / $\wp\zeta\Sigma\{v$ / continued to be used at this stage in addition to its synonymous expression /μιν κΥτΥρ/ ‘because of’ (once), which was used to express both, retrospective causation and exaggeration:

Mom... do you know what I called Lulu [his aunt]? Kuala for she sleeps too much

/μ{μ{ Σ{ρφ{ εισ σξμειτ λυ:λυ: / κω{λ{ μιν κΥτΥρ μΞτν{μ/

There are some connectives that were acquired before, such as /βς φδειν/ 'so' (once), /θςβΞλ/ 'before' (twice), and /Σ{ω/ 'or' (5 times) which continued to appear in the child's speech with no considerable change in terms of use, as they had been learned earlier. There are five new connectives that appeared in the child's speech for the first time, i.e. in stage (III): /λζμ{/ 'when' (4 times), /βς φΞδ/ 'after' (3 times), /ιλ{μ{/ 'until', (2 times) /κςΣςν/ 'as if' (4 times), and /μ{σΡ{ρ/ 'no longer' (1 time).

First, the conjunction /λζμ{/ 'when' appeared only in stage (III); the child used the form /μ/ to express two different functions: coincidence 'when' and condition 'if', which reflects the ongoing development taking place in the child's cognition and language system. It has been found in studies of English second language acquisition that the temporal conjunction 'when' can play the role conditional conjunction some time (see Noor, 1999)

:

[to another child on the phone] am [when] I was KG one, you were not in school because I'm now grade one , you are KG2. am [if] you are grade one, I'll be grade two.

/ν{ μ κΥνΞτ ρξωδΡ{ κΥνΞτ ιντ{ μξνςκ δΞιλ μδρξσ{ φξΣ{ν {ν{ δξΞι:ν {ν{ σΡιρτ {ν:λ{ ιντ{ ρξωδΡ{ / μ κΥνΞτ ιντ{ δξΞι:ν {ν:λ{ {ν{ ΞσΡι:ρ τ{νιφ{/

Second, the conjunction /βς φΞδ/ 'after' occurred for the first time in the speech of the child at this stage, and its emergence took place after that of /θςβΞλ/ 'before' which occurred in stage (II).

Third, the child learned the conjunction /ιλ9μ9/ 'till' or 'until' to express time more accurately, which reflects development in abstract thinking. One can see that the child only in stage (III), i.e. between the ages (6:8) and (7:0) was able to use a specific conjunction 'until' and an adverb 'when' to express coincidence and time sequences which are extremely abstract concepts:

There was a boy...you know what...he'd been crying today until the first hour... until the driver came in.

/ΣινΞδξν{ ωξλΞδ Σ{ρφ{ ει ιλ{μ{ ΞλΞισΡ{ ΞλΣυ:λ{ ιλ{μ{ Z9 Ξσξω{γ ωβιφιβκι/

Fourth, the child learned /κεζν/ ‘as if’ to express a suggestion that something could have been true though it was not. That is, the child became able to express in his own terms an actual state along with its hypothetical opposition, with which he associated himself:

As if she [his sister] she did not like me...as if she did not like me; a million times she did not like me!!

/κεζν{η{ μετΞYβζνι κεζνη{ μετΞYβζνι / μιλφΟ:v μετΞYβζνι /
, and

Today As if I had Aids!! [the child was very sick]

/ΞελφωΟ:μ κεζνι Z{νι μερξδΡ Ιζλειδζ/

Finally, the child added the expression /μ{σΡιρτ/ ‘no longer’ to his repertoire of vocabulary, to express a state of change. Producing such expression is indicative of the child’s being aware of his developing verbal and phonological abilities:

Child: I no longer say *motatoes* [tomatoes]

/μ{σΡιρΞτΞθυ:λ βζτΡ{τΡιμ/

Mother: what do you say now?

/ειΣ σΡιρΞτΞθυ:λ/

Child: I can say tomatoes!!

/σΡιρΞτΞθυ:λ τΡζμ{τΡιμ/

Mother: bravo!!

Results

It is interesting to notice that in the development of conjunctions and relative pronouns, the development of some connectives in the child’s spontaneous speech was associated with inconsistency; these connectives are /ω{/ ‘and’, /Ξεω/ and /ωξλ9/ ‘or’, /ιΔ{/ and /λξω/ ‘if’, /λξμ9/ ‘when’, and /Ξλι/ ‘that’. In other words, these connectives sometimes appeared in the speech of the child, and other times they disappeared; such inconsistent development is due to the issue of incomplete mastery (see Table 1). Later, these connectives started to appear gradually and consistently in the child’s speech reflecting the ongoing process of acquisition. Furthermore, the occurrence of some of these connectives, namely ‘or’ and ‘who/that’ increased in stage (II) and decreased in stage (III) (see Table 1). This curve in the process of acquisitions can be accounted for in the light of the following observation: once a connective is being

acquired, i.e. not completely mastered, it tends to be overgeneralized by the child in order to get confirmed. As soon as the connective is completely mastered, its production decreases as further connectives and complex structures start to take over in the process of acquisition (see Figures 1 & 2).

On the other hand, the acquisition of the conditional 'if' and the temporal 'when' did not show this curve as they continued to be used in stage (III) in an increasing manner. This finding can be accounted for as these two connectives are still in the process of acquisition, and have not yet been fully mastered by the child. It is also interesting to notice that the child's early conditionals were prospective in nature, which is consistent with studies of typical language development in children (see Bowerman, 1986; Reilly, 1986). Similarly, the late occurrence of the conditional 'if' in the speech of the child and its incomplete mastery by the age of seven are in some respect consistent with the literature of typical acquisition of conditionals in normal children (see Bowerman, 1986; Reilly, 1986; Clark, 2003). It can be concluded then that ADHD children's mastery of the complex structures of their mother tongue, such as conditionals, continues after the age of seven, and it may not be complete until the age of ten, which is consistent with the literature of normal children (Aftat, 1982; Chomsky, 1969; Clark, 2003; Omar, 1973; Steinberg et al., 2001).

Table 1

Inconsistent Frequency of some Conjunctions and Relativizers

Connectives	Stage I	Stage II	Stage III	Total
And /ənd/	Used: 1 Missing: 4	Used: 28 Missing: 0	Used: 63 Missing: 1	Used: 92 Missing: 5
Or /ɔːr/ /oːr/	Used: 0 Missing: 4	Used: 11 Missing: 4	Used: 5 Missing: 1	Used : 16 Missing: 9
If /ɪf/ /ɪf/	Used: 0 Missing: 7	Used: 0 Missing: 6	Used: 24 Missing: 4	Used: 24 Missing: 17
When /hɛn/	Used: 0 Missing: 2	Used: 0 Missing: 3	Used: 4 Missing: 0	Used: 4 Missing: 5
Who, which, & that /hʊ/ /hɛtʃ/ /hæt/	Used: 4 Missing: 8	Used: 28 Missing: 2	Used: 21 Missing: 5	Used: 53 Missing: 15
				Used: 189 (78.75 %) Missing: 51 (21.25 %) Total: 240

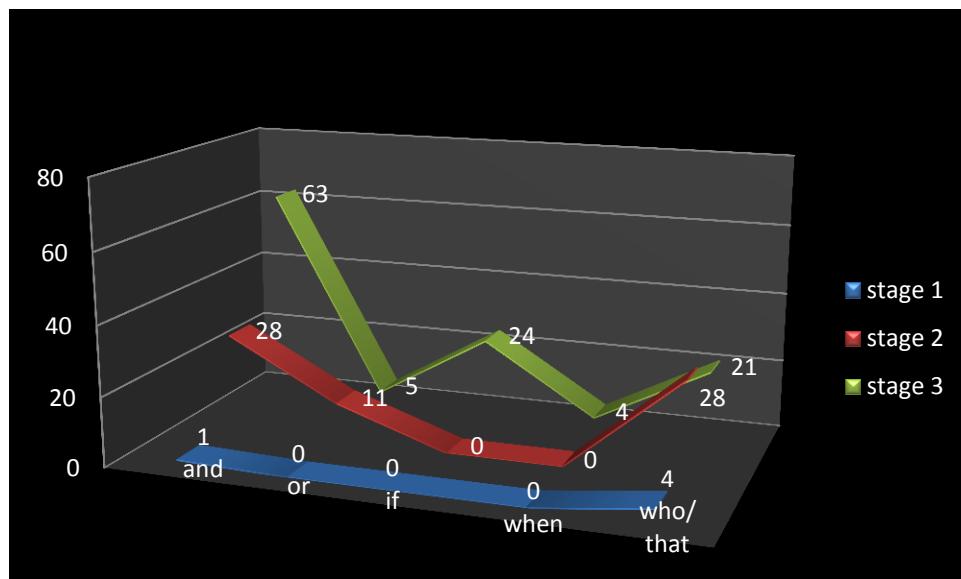


Figure 1. Inconsistency in the Development of some Used Connectives

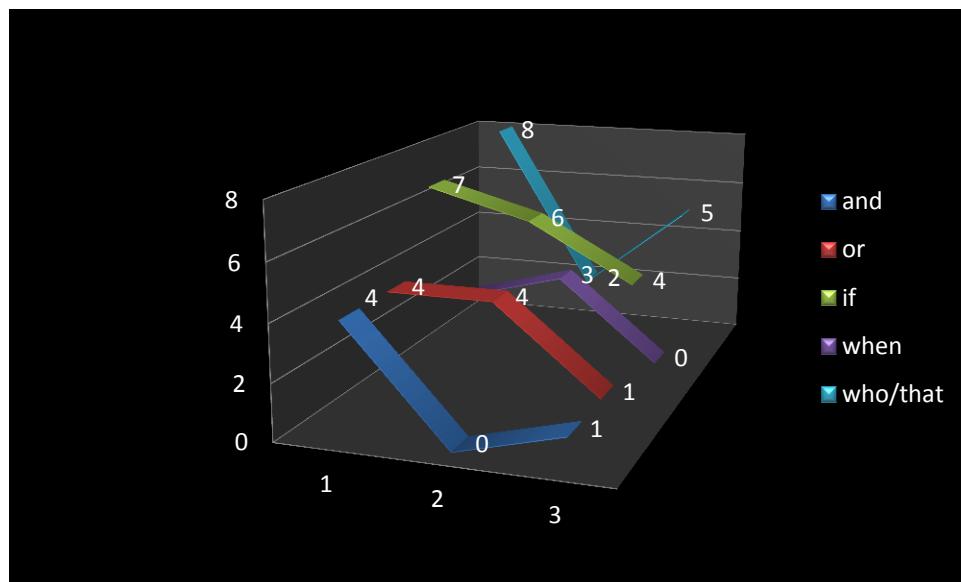


Figure 2. Inconsistency in the Development of some Missing Connectives

According to the analysis of the frequency of the inconsistent connectives, the additive '*and*' is the most frequent one (92 times), which increased throughout the study. This result indicates that as the child grew up, his language system developed and he learned to insert more cohesive ties in his speech. The relative pronoun '*who/that*' comes next (53 times) which reflects the child's growing interest to produce more relative clauses, i.e. to provide further information on specific entities in his speech. It was also found that the child's early relative clauses, in stage (I), showed no preference to either the subject or the object of the main clauses

to which they are attached, whereas the child's relative clauses in stages (II) and (III) showed preference to the object of the main clauses. This result is in line with the observations of Slobin and Welsh (1973) regarding the development of relative clauses in the speech of normal children. The next connective is the conditional 'if' (24 times), which is considered one of the latest connectives that children learn to produce as it involves syntactic as well as semantic complexity. Then comes the conjunction 'or' (16 times), followed by 'when' (times 4).

It is worth noting that producing conditional structures where the conditional marker 'if' and the temporal 'when' were missing in stages (I & II) was prior to the occurrence of these markers in the speech of the child, which is consistent with the literature of child language development in English, German, Italian, and Turkish (Clancy et al., 1976). The juxtaposition of conditional and temporal clauses implies that the concepts underlying them are acquired in advance of the actual emergence of these markers in the speech of late talkers. Moreover, the simultaneous emergence of both 'if' and 'when' in stage (III) after the emergence of the causal 'because' is also in line with the literature of typical language development (Clancy et al., 1976).

According to the analysis of the frequency of the consistent connectives, the causal 'because' and the temporal 'then' are the most frequent one (32 times, each), followed by the additive 'also' (23 times), which reflects the child's being interested in causal and temporal relations (see Figure 3). It should be pointed that the frequent use of 'because' in the child's utterances is inconsistent with Silva (1984) who reported the rare use of 'because clauses' in the speech of school age children, i.e. whose ages were between (7:0) and (11:0). The connective 'but' (19 times) comes next which reflects the child's being linguistically able to express the concepts of opposition and contradiction. Then comes the connectives 'before' and 'as if' (4 times, each), 'so' and 'after' (3 times, each). Finally, come 'until' (2 times), and 'no longer' (1 time). To sum up, the development of these connectives in the child's speech reflects the ongoing development taking place in the child's cognitive, and, thus, linguistic abilities. The increasing number of these connectives throughout the study is indicative of child's developing linguistic abilities, i.e. as he grew older; his utterances became more cohesive than before (see Tables 1 and 2).

Table 2

Consistent Frequency of some Conjunctions

Connectives	Stage I	Stage II	Stage III	Total
Because /ɒzʌv/	7	9	16	32

Then	/βς φδειν/	2	13	17	32
Also	/κςμ{ν/	5	6	12	23
So	/βς φδειν/	2	-	1	3
But	/βςσ/ and /λγκιν/	-	2	17	19
Before	/θςβ≈λ/	2	-	2	4
After	/βς φ≈δ/	-	-	3	3
Until	/ιλ{μ{/	-	-	2	2
As if	/κςζςν/	-	-	4	4
No longer	/μ{σΡ{ρ/	-	-	1	1
Total				123	

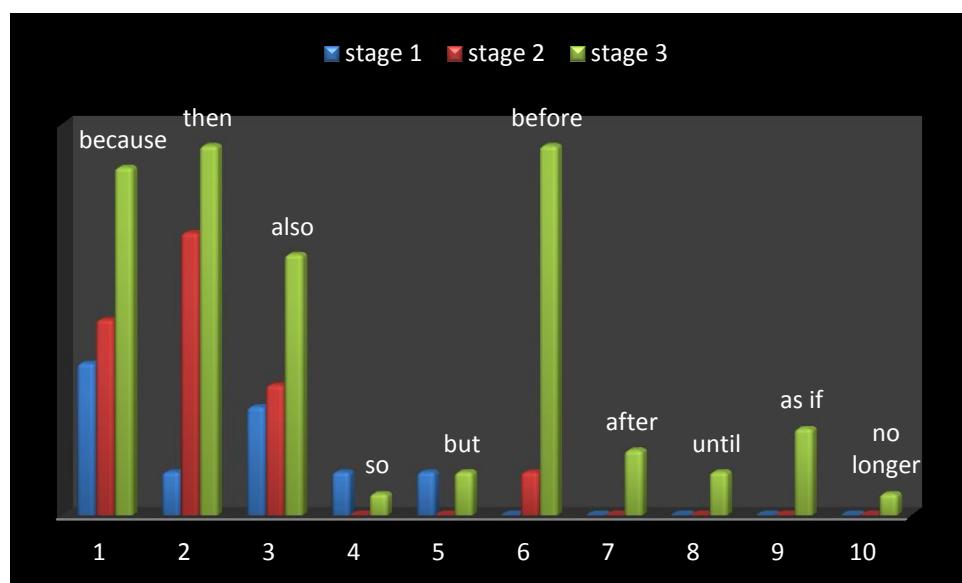


Figure 3. Consistency in the Development of some Connectives

According to the analysis of the data in terms of the order of acquisition, one can see that the age of the development of some connectives, namely '*and*', does not support the observations of Bloom et al. (1980), who state that the conjunction '*and*' is considered the earliest conjunction to appear in the speech of young children, i.e. by the age of (2:2), whereas the child in the study started to produce the conjunction '*and*' at the age of five (5:4), and he continued to produce juxtaposed utterances, i.e. lacking the conjunction '*and*' between the ages (6:4) and (6:8). This

finding is not in line with literature cited regarding typical language development (Clancy, 1976; Clark, 1970, 1973, 2003; Ingram, 1975, 1989; Limber, 1973). In other words, juxtaposition or loosely connected utterances are usually associated with young children's speech (2:0 to 3:0), and children whose ages are five and above use more cohesive ties in their utterances.

Furthermore, the age at which other connectives begin to emerge in the speech of the ADHD child is not in line with the observations of Clark (1970, 1973, 2003), Ingram (1975, 1989), and Limber (1973). This result provides further insight into first language acquisition in ADHD children; these children are usually late talkers (Agin et Al., 2003; Al-Hamid, 2002; Gupta & Ahmed, 2003; Hamaguchi, 2001; Kennedy et al., 1993; Martin, 1960; Reif, 2004). In addition, their utterances display fewer discourse markers and more ungrammatical structures than normal children. This finding is consistent with studies of the correlation between ADHD and language abilities in the affected children (Cantwell & Baker, 1987; Engelhardt & Frreira, 2009; Gupta & Ahmed, 2003; Luo & Timler, 2008; Miniscalco et al., 2007; Purvis & Tannock, 1997; Tannock et al., 1997).

On the other hand, the order of the acquisition of some connectives is in line with the literature of normal language development. For example, the connectives '*because*' and '*then*' appeared in the speech of the child before '*but*'. Moreover, the connective '*but*' appeared in the speech of the child before the connectives '*after*', '*until*', and '*as if*'. This finding is consistent with the literature of the typical development of discourse markers in children's speech (see Bloom et al., 1980; Clark, 1970, 1973). Likewise, the acquisition of the conjunction '*before*' preceded that of '*after*', and this finding is in line with the observations of Clark (1971) in terms of typical language development in children.

Strategies of Deviance in the Use of Conjunctions and the Formation of Conditionals

According to the analysis of the child's utterances in terms of grammaticality, the child used two of the strategies of deviance involved in the formation of his complex structures: omission and substitution (see Table 3). One can see that the child's utterances in stages (I) and (II), i.e. between the ages (5:4) and (6:4), are for the most part juxtaposed, lacking many conjunctions and relative pronouns. Nonetheless, the child's utterances in stage (III), i.e. between the ages (6:8) and (7:0), displayed more cohesive ties than the preceding stages. The overall analysis of the child's use of discourse markers in his spontaneous speech indicated that the cohesive utterances rated (71.15 %) vs. the less cohesive ones (28.84 %), which supports the

findings of studies on expressive language abilities in ADHD children. The verbal production of ADHD children is characterized by using fewer cohesive ties which results in loose connections between the components of their utterances. These children displayed deficits in their abilities to organize their speech (Cantwell & Baker, 1987; Gupta & Ahmed, 2003; Engelhardt & Freireira, 2009; Luo & Timler, 2008; Miniscalco et al., 2007; Purvis & Tannock, 1997; Tannock et al., 1997). It should be added that it was easy for the child's mother, father and sister to make up for the missing conjunction as they were used to the child's way of talking. Nonetheless, it was not easy for other listeners to make out the missing conjunction of certain discourse markers, and, thus, it was hard for them to follow the speech of the child.

Table 3

Strategies of Deviance in the Use of Conjunctions and Formation of Conditionals

	Stage I	Stage II	Stage III	Total and Rate
Omission				
And	4	-	1	
Or	4	4	1	312/51
If	7	6	4	16.34 %
When	2	3	0	
Who/that	8	2	5	
Substitution				
And → 'also'	5	6	-	312/39
if → 'am'	-	-	24	12.5 %
When → 'am'	-	-	4	
Cohesive utterances				312/222
				71.15 %
Less cohesive utterances				312/90
				28.84

Discussion and Implications

3.1 Regarding the acquisition of conditionals, the ADHD child at the age of seven cannot be said to have mastered the formation of conditional.

3.2 The acquisition of some discourse markers, such as 'or' and 'who' proceeded through two different stages; overuse, and, then, underuse. Initially, incomplete mastery of new

forms was associated with the child's overuse of these forms as he was trying to reinforce using them in his speech (stage II). Eventually, full mastery is associated with underuse; the child tended to use the new form less as new forms are taking over in the course of acquisition (stage III).

3.3 The connective '*also*' not only appeared in the child's speech (5;4) before that of '*and*' (5;11), but it was also used instead of the late occurring '*and*', which typically appears in children's speech at the ages of three and four. For an inattentive ADHD child, it seems easier to recognize the sound cluster of the additive '*also*' /kɔːləʊ/ and link it to addition than the sound cluster of '*and*' /ənd/. More easily contextually identifiable clusters in terms of sound are easily acquired by ADHD children (see Steinberg et al, 2001).

3.4 According to the analysis of the child's deviant constructions produced throughout the study, the child followed systematic strategies in the production of his ungrammatical constructions: omission, omission and/or substitution, and other strategies. Accordingly, most of the errors in the child's complex structures were syntactic, i.e. resulting from the omission and/or substitution of certain grammatical forms within these structures. It can be concluded then that ADHD children are more likely than other children to produce ungrammatical structures and less cohesive utterances. As a result, their speech was somehow confusing for their listeners and was not easy to follow.

3.5 More importantly, deviance in all types of complex structures was decreasing throughout the study and it never persisted or increased in any type of structure, which indicates that late talking children eventually catch up with their peers even without intervention.

3.6 There is a correlation between late talking and children with ADHD; speech production problems and not comprehension problems are very common in ADHD children. Accordingly, we need to raise awareness regarding the issue that delay in any component of language development: phonology, syntax, semantics, and pragmatics, at both levels reception and production should not be neglected by the child's teachers and parents.

3.7 ADHD children are similar to normal children in the sense that they continue to learn a great deal about the grammatical constructions of their native languages (e.g. complex constructions) after the age of five; this finding supports the observations of other researchers in normative first language acquisition (Aftat, 1982; Chomsky, 1969; Omar, 1973).

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