



**The Syntax of DP, IP, and CP in the Language of an Egyptian Down Syndrome Individual: A Generative Approach**

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**Abstract**

Down Syndrome (DS) is a developmental disorder caused by a genetic chromosomal abnormality in the twenty-first chromosome that is characterized by poor cognitive and linguistic abilities. Several studies on the linguistic deviation in the DS population have reported deficits in the acquisition of language that persist from infancy until adulthood. However, most of the literature in this research area has been chiefly undertaken on English-speaking individuals. Hence, the current study endeavors to investigate the syntax of DP, IP, and CP in the language of an Egyptian DS individual within the theoretical framework of Generative Grammar. The rationale for selecting syntax and morphosyntax in DS for investigation is that it is one of the most affected areas by the intellectual disability caused by the syndrome. Thus, examination of the language disorder in an Arabic-speaking DS individual is expected to elucidate the linguistic characteristics of the syndrome further. The DS participant in this study came from a larger study investigating the phonological and syntactic impairments in a sample of Egyptian DS individuals. The primary objective of this study is to reveal the syntactic deviations in the participant's language and compare them to the trends reported in the literature of typical language acquisition. The research hypothesizes that the syntactic errors are constrained by the rules of Universal Grammar. The analysis reveals the presence of syntactically operant functional heads in the underlying structure despite being phonetically null on the surface structure.

**Keywords:** Down Syndrome, Syntax, language impairment, language acquisition

## **1.1. Introduction**

Down Syndrome (DS) is one of the most common causes of mild to severe intellectual disabilities characterized with an intelligence quotient IQ ranging between 30 to 70 (Elmasry et al., 2020). It is a developmental disorder arising from a genetic chromosomal abnormality in the twenty-first chromosome that occurs in roughly 1/750 live births in Egypt (Temtamy et al., 1998). The syndrome was first clinically described by the physician John Langdon Down who reported the common clinical features associated with the syndrome (Down, 1866). Individuals with DS have specific physical characteristics including upwardly slanted eyelids, depressed nasal bridge, midfacial hypoplasia, tongue protrusion, short stature in addition to occasional small malformations in the ears, hands, and feet (Epstein, 1989). They exhibit generalized cognitive inhibition impairments (Borella et al., 2013), and executive dysfunctions during infancy (Karrer et al., 1998), adolescence (Lanfranchi et al., 2010), and adulthood (Kittler, et al., 2006) which are typically accompanied by challenging linguistic impairments. (Chapman & Hesketh, 2000)

### **1.1.1. Objectives of the Study**

Using the theoretical framework of Generative Grammar, the current research aims at:

- 1) investigating the syntactic structure of DPs, IPs, and CPs in the participant's language.
- 2) comparing the linguistic features unveiled from the analysis to those reported in the literature of typical language acquisition and DS.

### **1.1.2. Research Hypotheses**

The present study is meant to verify the following hypotheses:

- 1) The syntactic errors in the structure of DPs, IPs, and CPs are licensed by UG principles.
- 2) The participant's utterances respect the basic word order of Egyptian Arabic.

### **1.1.3. Research Questions**

The present study endeavors to answer the following research questions:

- 1) What are the syntactic errors which prevail in the structure of DPs, IPs, and CPs in the language of an Egyptian individual with DS?
- 2) What are the underlying UG principles that license these syntactic errors?

## **2.1. Review of the Literature**

### **2.1.1. Review of the Theoretical Framework**

The following section provides an overview of the theoretical framework employed in the analysis of the present study. The section begins with an introduction to the theory of Generative Grammar followed by an exploration of the acquisition of language in the TD population with specific emphasis on the acquisition of functional categories (FC), which form the primary concern of this paper.

#### **2.1.1.1. Language Acquisition: Theoretical background**

There are varying assumptions underlying contemporary LA theories. The inherent complexity and infinity that characterize the nature of linguistic knowledge entail that it cannot be derived by inductive theories of learning whereby mimicry would be the driving force of language learning. The theory of Generative Grammar postulates that an internalized biologically programmed language faculty dictates the acquisition of language through a formal set of rules that direct and license the well-formedness of sentence structures and allocate structural relations to the minimal syntactic units defined as “formatives”. Based on the principles of UG, children formulate a grammar that corresponds to a small sample of well-formed sentences extracted from the “primary linguistic data” they are exposed to (Chomsky, 1965).

#### **2.1.1.2. Distinction between I-Language and E-Language**

Chomsky (1965) distinguishes between competence, i.e., The hearer-listener’s internalized knowledge of his own language and “performance”, i.e., The speaker’s actual linguistic output. According to this, children acquire language by mapping the speech stream to figure out the underlying rules of language. The term “competence” is now known as I-language (internalized linguistic ability) and “performance” has come to be known as E-language (external language output that is apprehensible and tangible and includes social and communicative features of language) (Börjars, 2021).

#### **2.1.1.3. Principles and Parameters (P&P)**

An innate schema enables children to address linguistic data to figure out the grammar of the language they are acquiring from all the other sets of potential grammars available within UG. The existence of these universals implies that all languages can be traced down to the same pattern (Chomsky, 1965). The notion of

Principles and Parameters (P&P) is a key concept in UG which holds that all languages share a formal set of universal principles and parameters encoded within the Language Faculty that operate during LA. These parameters could be either switched on or off for specific languages. Despite the parametric variation between languages that results in variations in the surface structure (SS), all languages operate on the same underlying universal common core (Börjars, 2021). If these Principles and Parameters (P&P) are inherently encoded and in operation from birth, why do children make mistakes during LA? What principles does early child language (ECL) operate on? The following section will briefly attempt to illustrate the universal parameters that dictate LA in TDC and display some of the competing assumptions regarding LA and ECL.

#### **2.1.1.4. The acquisition of Syntax in TDC**

There are substantial basics that must be accessible to children early on to acquire language. These essential principles include knowledge of formatives that form the constituent structure of language, their hierarchical organization, as well as the plain distinction between “functional” and “content” categories. Functional categories are closed classes of words that provide a grammatical function yet no semantic content such as Complementizers, Conjunctions, Determiners, and inflectional markers. FC play an indispensable role in LA as they lay the foundation for transformational operations that constitute recursion and provide structure for content words that provide semantic meaning to the sentence such as nouns, verbs, adjectives, and adverbs (Lust, 2006, pp.182-197).

Children’s early simple and complex sentences abide by the basic word order as well as the word order of adjuncts. Use of transformational operations to make variable word order licensed by constituent structure rules is evident in ECL. Recursive operations such as conjoined clauses and early forms of embedded clauses in addition to differentiation between main and subordinate clauses are accessible in ECL. However, ECL starts with holophrases whereby children convey a complete message through a single word. Telegraphic speech characterizes their early multiword utterances. Deviations from the adult model are evident in the deletion of subjects, arguments, and verbal and nominal inflections in addition to the lack of FC (2006, pp.194-198). Are these deviations licensed by UG constraints or do they

result from a pre-developmental stage of FC? The following section illustrates competing assumptions on the acquisition of FC.

### **2.1.1.5. Hypotheses of the acquisition of Functional Categories**

The following section presents some of the most relevant hypotheses of how functional categories are acquired in typically developing children and demonstrates how the three epistemological functional categories (Determiner phrase DP, Inflectional phrase IP, Complementizer phrase CP) are presumably intact during the earliest utterances.

#### **2.1.1.5.1. The Maturation Hypothesis (MH)**

Gathercole & Williams (1994) review a maturation hypothesis (MH) posed by Radford (1990) whereby a child's acquisition of grammar passes through three biologically determined stages: First, a pre-categorical stage that is characterized by one-word utterances and the absence of functional categories, Second, the Lexical Categorical Stage that is characterized by the development of a category X' that allows for any lexical category projection branching into a head and a complement or specifier. The absence of the Determiner category (D), Inflection Category (I), and Complementizer category (C) are characteristic of this stage and are assumed to develop later in a third stage. However, the hypothesis of a biological constraint on children's competence for FCs can be disconfirmed due to the crosslinguistic evidence on ECL.

#### **2.1.1.5.2. The Functional Projection Hypothesis (FPH)**

In contrast to the MH, other researchers hypothesize that despite the frequent omission of FC in children's production, their knowledge of FCs exceeds what is overt in their production as they are aware of their existence and are aided in production and comprehension by them (Whitman et al., 1991, as cited in Lust, 2006, p.198). The Functional Projection Hypothesis (FPH) postulates that children's language is licensed by the rules of UG and has the same form as the corresponding adult model in the U-structure based on the assumption that they have the functional heads and their projections, yet they are phonetically null on the S-structure. For example, [CP [C e] [IP [NP e] [I e] [VP doing what there]]]? (Boser et al., 1992).

##### **2.1.1.5.2.1 The Determiner Phrase (DP)**

The parameters of UG allow DPs to be headed by null D. According to the FPH, the category D-zero is accessible to children in early stages of LA even when

it is phonetically null. Children's omission of D in ECL is thus, constrained by UG rules. Moreover, the pro-drop parameter (null subjects) evidenced in diverse languages is assumed to be children's first hypothesis about DPs. Later, they set the parameter on either +pro-drop or - pro-drop according to the specific language grammar they are acquiring. (Lust, 2006, p.201)

In Egyptian Arabic, the definite article attaches to the beginning of the noun. It is phonetically realized as /il/ yet in contexts where the noun begins in a coronal consonant, the /l/ assimilates to the initial coronal consonant by a /l/ assimilation rule. (Gadalla, 2000, p.141) Distinction between masculine and feminine nouns is shown by use of the feminine suffixes [-it] as in /ward-it il-walad/ 'the rose of the boy' when followed by a defining genitive or a pronominal suffix and the pausal form /-a(h)/ in word final position as in /ward-a/ 'a rose'. (pp.147-148) Inflection for number is indicated for both dual and plural. The dual suffix: [-een] attaches to the unmarked singular form as in /?il-bint-een/ "the-girl-dual". Egyptian Arabic distinguishes between two types of plurals: regular Sound plural that includes retaining both the feminine and masculine forms of the noun with no changes and attaching a suffix. Irregular broken plurals on the other hand contain changes in the internal structure of the noun. The plural suffix -iin is used with masculine plurals as in "muhandis-iin/ "engineers", but the suffix -aat is used for both feminine plurals as in /muhandis-aat/ "engineers-FEM and plural forms of loan words as in / tilifizyun-aat/ "televisions" (pp.151-154).

#### **2.1.1.5.2.2. The Inflectional Phrase**

IP is headed by I-zero and has a complement which consists of v-zero and complement. Inflections carry indicators of tense, aspect, and modality. They can also show person, number, and gender agreement. While the knowledge of the Formal Features necessary for the acquisition and assignment of inflection is language-specific, knowledge of the basic IP structure and its head is determined by UG. The acquisition of specific language inflection develops slowly and gradually yet it operates under UG constraints (Lust, 2006, p.202).

#### **2.1.1.5.2.2.1 The Null Auxiliary Hypothesis vs. the Optional Infinitive Stage Hypothesis**

The Optional Infinitive Stage Hypothesis suggests that finite and nonfinite forms are at first in free variation. Then, finite forms move to their correct position. However, this hypothesis has been challenged as utterances that lack auxiliaries and

overt tense inflections in child language ought not be analyzed as infinitives. They are rather finite within a phonetically Null Auxiliary Hypothesis licensed by context. despite the omission of the auxiliary in the child's language, the child is aware of its existence (Lust, 2006, p.203-205).

There are two types of verb stems in Arabic: primary ones which solely consist of a simple root and derived ones where one or two derivational affixes attach to the root. In addition, verb stems in Arabic signify two forms of aspect: perfect completed actions and imperfect incomplete actions (Gadalla, 2000, p.58). Both the simple present and progressive aspect are represented in Egyptian Arabic by a combination of the performative bi- with the imperfect stem. Thus, The verb pattern (bi-yif'al) expresses both regular and instant events in the present. The past continuous tense in Egyptian Arabic makes use of the auxiliary "kān" followed by a combination of the performative bi- with the imperfect stem. Hence, the verb pattern (kān bi-yif'al) expresses progressive and regular actions in the past. (Petrova, 2014)

#### **2.1.1.5.2.3. The Complementizer Phrase**

Despite the deletion of COMP in child language, they are continuously accessed as the general structure of the child's first complex utterances indicate that there is an underlying COMP head even when it is not overt. For example, in German child language, despite the COMP head being phonetically null, the child is aware of the CP structure of main and subordinate clauses in German. Although the child's language lacks the overt COMP head, it has an intact verb-final word order which corresponds to the presence of a subordinate clause (Lust, 2006, p.206).

#### **2.1.1.6. Inductive Areas of LA**

The acquisition of gender, case, and grammatical categories has been reported to show developmental delay in TD as they involve inductive learning of arbitrary language-specific grammars and lexicons yet formal grammatical analysis processes guide the acquisition of these areas until they are fully acquired (Lust, 2006, p.242-250).

#### **2.1.1.7. Perception, Comprehension & Production**

Clark & Hecht (1983) demonstrate that integrating what can be produced with what can be understood is undoubtedly an integral part of LA. However, there is a discrepancy in some respects between both comprehension and production. Comprehension denotes a process of apprehending and perceiving the meaning of an utterance while production deploys a process of information retrieval from

memory to produce an utterance. Production does not match comprehension as a discrepancy between what children produce and what they can comprehend has been reported in child LA. For children to understand the meaning of an utterance, they need to recognize word shapes in the acoustic forms and access previously stored word meanings to link them to each other, to conceptual categories, and to the essential knowledge they have of these categories, yet production involves recalling the appropriate intended words from memory in conjunction with the articulatory phonetic system required to produce these words.

As demonstrated above, ECL is licensed by UG principles and parameters. Despite the frequent omission of FC at the SS, children are aware of them and consult them to map the speech stream. Deviations from the adult model in ECL does not indicate the absence of FC in ECL. It rather suggests that they are phonetically null on the surface structure. ECL respects basic word order and displays an awareness of the basic rules of DP, IP, and CP. Delays in certain areas of LA in TDC only involve areas that are not innate and require inductive learning such as gender, case, grammatical categories. This paper endeavors to deploy the principles and parameters of UG to demonstrate the structure of DPs, IPs, and CPs in the language of an eighteen-year-old individual with DS.

### **3.1. Review of Related Studies**

A significant amount of literature has been conducted on language impairments among individuals with DS. The following section presents a review of the most relevant studies carried out on the subject matter of this research to demonstrate the similarities and differences between the current study and previous studies. The section summarizes studies executed on the linguistic deficiency in the DS population with specific reference to the acquisition of syntax, and morphosyntax.

#### **3.1.1. Related Studies on the acquisition of syntax and morphosyntax in DS**

Studies conducted on language comprehension in DS report a deficiency in this area. Chapman, Schwartz, & Kay-Raining Bird (1991) proclaimed that DS children and adolescents aged 5 to 20 years old compared to TD controls aged between 2 to 6 years old exhibit a less developed syntax comprehension compared to the comprehension of vocabulary. Similarly, Abbeduto et al. (2003) reported lower language comprehension skills in adolescent and young adult DS participants in comparison to two groups of MA matched controls and Fragile X syndrome. The



score of the DS group in the Test of Auditory Comprehension of Language in this study signified lower comprehension of grammatical morphemes and elaborated sentences than word classes and relations which coincides with the findings of Chapman, Schwartz, & Kay-Raining Bird (1991). Moreover, Chapman (2006) demonstrated a syndrome-specific language comprehension impairment in adolescents with DS indicated by their significantly worse performance in language comprehension tests including syntax and vocabulary comprehension compared to adolescents with cognitive impairment of unknown origin. In a study that assessed the comprehension of word categories in three groups of DS, non-specific intellectual disability, and TD, Loveall et al. (2016) found that the two groups of DS and TD participants displayed better performance in the comprehension of nouns than verbs and attributes which indicates that verbs are not as easily comprehended as nouns. The non-specific intellectual disability group exhibited better scores in nouns and verbs than attributes unlike the DS group which suggests that they have better verb comprehension than the DS group. An investigation of the growth of receptive vocabulary in two hundred and six individuals with DS aged between two years old to twenty-nine years revealed that the rate of receptive vocabulary in the DS children and adolescents was lower than the TD controls. The study also reported continuous growth of receptive vocabulary until the age of 20 then it drops (Cuskelly, Povey, & Jobling, 2016).

Like comprehension, studies on language production in DS reveal deficits specially in syntax and morpho-syntax. Hesketh and Chapman (1998) reported more variability yet less usage of lexical and grammatical verbs in the narrative of 29 individuals with DS compared to TD controls. Such variability could be owing to the more years of language exposure and word-learning within the DS group. Despite this variety, a shortcoming in their auditory short-term memory renders them less able to employ them. However, no significant variation was reported in their syntactic complexity and types of word combinations. Moreover, The DS participants' production showed a high tendency to avoid using verbs. These findings corroborate the claim that language of DS lacks synchrony as some areas could be intact whereas others are impaired. Thordardottir et al. (2002) studied complex sentences production in adolescents with DS and found that they use complex syntax unlike the notion that the language of individuals with DS does not surpass simple syntax.

An investigation of phonological working memory, the acquisition of new morphemes, and speech perception in 8 participants with DS compared to TD controls showed they had poorer phonological working memory as well as lower performance in the test for the acquisition of new morphemes (Keller-Bell, 2000). Paterson (2000) reported an inconsistent pattern of receptive and productive vocabulary and a deficiency with syntactic structures in the performance of DS participants in the tests of knowledge of language and number. An assessment of the knowledge of binding among two groups of English and Serbo-Croatian adolescents with DS compared to TD controls unveiled a selective grammatical deficiency in assigning binding relations between the anaphor and its antecedent and showed no difficulties in binding principle B unlike the TD controls who displayed no difficulty in binding principle A (Perovic, 2004).

A study that investigated verb production in the narrative of DS individuals compared to two control groups of TD participants and participants with mixed-etiology intellectual disability revealed that there is a disparity between the quantity and the variety of verb production in the narrative of DS Participants. While the quantity of verbs produced by the DS group was significantly lower, the variety of the verbs used was relatively similar. They tended to produce less lexical verbs than the TD controls. This suggests that those with DS avoid using verbs despite having a significant diversity of verbs in their lexicon due to syntactic rather than semantic or lexical deficiencies (Loveall et al., 2018).

The review of previous studies on DS language defects reveals that the DS population display poor language comprehension skills including syntax and vocabulary. The comprehension of syntax is lower than that of vocabulary. The comprehension of grammatical morphemes and elaborated sentences is worse than word classes. The comprehension of nouns is better than that of verbs and the growth of receptive vocabulary is lower. The syndrome is characterized with a deficiency in the production of syntax and morpho-syntax and a tendency to use less lexical and grammatical verbs. The use of complex sentences and word combinations is evident in the production of the DS population. A deficiency in assigning anaphoric binding relations and the acquisition of novel morphemes has been reported.

#### **4. Sampling, Methods, and Procedures**

This research is a linguistic study that mainly addresses the syntax of an Egyptian DS individual. What specifically makes a descriptive study in this research

point predominant is that most of the previous studies have been chiefly undertaken on English-speaking individuals. Few research papers were conducted on semitic non-Indo-European language varieties like Egyptian Arabic which is a morphologically rich language. Thus, this investigation is expected to elaborate the linguistic profile of the syndrome more. Determining such linguistic deviations can help in tailoring language intervention programs that target the specific language impairment in DS. It can also help in developing focused language curriculum for the DS population in Egypt by predicting their most challenging language areas to acquire and targeting them.

### **Data Collection:**

This research deploys the following procedures to collect a representative sample of the participant's language. First, video and picture prompts from the Electronic Language Test to Measure the Development of Language Skills and Concepts (Othman & Othman, 2021) were employed to elicit the targeted oral language responses. Second, to elicit a relatively lengthy oral discourse, narration contexts were deployed. A narrative story generation task was undertaken. The subject was shown a wordless picture story and was directed to tell the story to the examiner. The duration of exposure was set to be 12 seconds and a duration of 5 seconds was given after the subject stopped talking before turning to the next page. The narrative was audio-recorded and transcribed later for the descriptive analysis. The wordless picture story used for this task was initially set to be (Mercer Mayer's Frog on His Own), a wordless picture book widely used for narrative language sampling from individuals with intellectual disabilities. However, the subject was unresponsive to this wordless picture story. Thus, it was replaced by the illustrations of (T. Albert's Hide and Seek) which was chosen because it was found to be closer to Egyptian children's experience and culture. Two narrative story retelling tasks were executed as well. The participant was shown two videos of two narrated stories and was asked to retell them after each video. The videorecorded stories used for these tasks were part of the language content section in the previously mentioned language assessment program. Finally, the whole language output produced by the subject during the experimental sessions was recorded and transcribed later for the purpose of the descriptive analysis. Moreover, a conversational language sample was obtained by engaging the participant in a conversation with the examiner that included questions about what he does at school and what he loves about it, his

favorite activities, and friends, and what he does after school. The examiner engaged with the participant by questioning and commenting during that time. The sessions took place in an empty classroom at the participant's school. Whenever the participant needed a break during the whole test duration, he was given a break at his convenience. If the participant was unwilling to respond or felt bored, the session was postponed to another day.

## 5. The Analysis

This section displays the prospective analysis of DPs, IPs, and CPs following the framework of UG. It is organized into three principal sections; The first section showcases the analysis of DPs. The second section presents an analysis of the IPs while the third section examines the properties of CPs. The analysis is an endeavor to exhibit the syntactic and morpho-syntactic properties of the participant's linguistic production in detail.

### 5.1. The Analysis of DPs

**Table (1)**

<b>Type of Deviation: Omission of the definite article</b>	
<b>Utterance</b>	<b>Adult model</b>
1. *ʔallāga æhī (answering the question where is the fridge?) *Fridge this *This is fridge.	<b>i-tallāgah ahī</b> The-fridge is this This is the fridge.
2. *nihjā fū (answering the question where is the carpenter?) Carpenter up Carpenter is up.	<b>i-nnagār fū?</b> The-carpenter up The carpenter is up.
3. *hawa sakkuh (Referring to the door being closed by the air) Air closed-it-ACC Air closed it.	<b>il- hawa sakkuh</b> The-air closed-it The air closed it.
4. *ʃabi ʃaʃī (Referring to the juice in front of the examiner) *Drink juice Drink juice	<b>iʃrabi il-ʃaʃīr</b> Drink the-juice Drink the juice

5.	*ḥuṭ tifūn (Referring to the mobile in the examiner's hand) *put mobile Put mobile down	ḥuṭi i-tilifūn Put the-mobile Put the mobile down
6.	*nū tadṣah (Referring to the lights going off) Light cut Light went off	i-nnūr ʔaṭaṣ the-light cut The light went off.
7.	*jajah laṣ fū (Answering the question where is the plane?) Plane ascend up Plane ascend up	i-ṭajjārah bi-tiṭlaṣ fū? the-plane PRES-PROG-FEM-ascend up The plane ascends.
8.	*waḥ masah? (Threatening to leave the school) Leave school Do you want me to leave school?	arawwaḥ min il-madrasah? leave from the-school Do you want me to leave the school?
9.	*wuḥt tafnah (referring to his uncle's funeral) Went funeral I went to funeral	ruḥt i-ddafnah went the-funeral I went to the funeral
10.	*ji taṣ fū (answering the question what is he doing?) remove thing see He remove thing see	bi-jiṣil il-bitāṣ ṣaṣān jiṣūf PRES-PROG-remove the-thing to see He is removing the thing to see.

Inconsistent use of the definite article was detected as it was frequently omitted in contexts where the referent noun had already been established thus, use of the definite article was required. The table showcases contexts where the participant omits the definite article. Although this elision does not match the adult model, it is licenced by UG parameters that allow a phonetically null D. Hence, the UR of the previous data follows the same pattern as this example:

[<sub>DP</sub> [<sub>D</sub> Ø] [<sub>NP</sub> [<sub>N</sub> hawa]] [<sub>VP</sub> sakkuh]. → Adult model: [<sub>DP</sub> [<sub>D</sub> il] [<sub>NP</sub> [<sub>N</sub> hawa]] [<sub>VP</sub> sakkuh].

Table (2)

Type of Deviation: number and gender marking in DPs	
Utterance	Correct form
1. *tūssī tasarah Chair-MASC broken-FEM	Kursī maksūr Chair-MASC broken-MASC A broken chair
2. *tūssī ibīrah Chair-MASC big-FEM	Kursī kibīr Chair-MASC big-MASC A big chair
3. *tū šīr Ball-FEM small-MASC	<b>Kūrah</b> šuyajjarah Ball-FEM small-FEM A small ball
4. *dih šuhjja dih kibi (comparing a short girl and a tall one) *this-FEM small-MASC	Dih šuyajjarah lāken dih kibīrah This-FEM small-FEM but this-FEM big-FEM This is small but this is big.
5. *wāhtah tānj (referring to “kubbājah” (cup) One-FEM second-MASC	wāhdah tānjah one-FEM second-FEM another one
6. *ahuh il-bit (referring to a group of girls studying) *this-SG the-girl-SG	ahum il-banāt this-Pl. the-girls Those are the girls.
7. *wurūn (referring to a picture of many trousers) *trousers-SG	banṭālūnāt trousers-pl. trousers
8. *Dih šuhia (referring to a group of small chairs) *this-SG small-SG	<b>dūl</b> šuyajjar-īn those small-pl. Those are small.
9. *tūlah (referring to two balls) *ball-SG	kūrt-īn ball-dual two balls
10. *talam (referring to a picture of two pens)	ṭalam-īn Pen-dual

	*pen-SG	Two pens
11.	*tussi itnīn (referring to a picture of many chairs) *chair-SG two	kursjj-īn chair-two two chairs

Investigating the structure of DPs shows that the participant's utterances respect the basic word order of heads and modifiers in Egyptian Arabic where the adjective follows the head noun. However, overlapping feminine gender agreement with the masculine one is evident as shown in the above table. As shown, the participant's utterances lack both plural and dual number indicators. The data also shows overlapped use of feminine grammatical gender. However, the utterances respect adjunction word order.

## 5.2. The Analysis of IPs

Table (3)

Type of Deviation: past tense and progressive markers		
Utterance	Adult model	
1. *ilwalā ilṣā bitūrah w tasā ilbī The-boy play with-the-ball and broke the-egg-ACC. *The boy play with the ball and broke the egg.	(ilwalā <b>kān bi-ji-</b> lṣab bi-kūrah w kasar ilbīd.) the-boy was PROG-play-3SG with-the-ball and broke the-eggs-ACC. The boy was playing with the ball and broke the eggs.	
2. *dih tiṣajjā samat (retelling a story of a boy who was crying over the fish he caught) *this-FEM cry fish-ACC. *this cry fish	(hinā ilwalad <b>kān bi-ji-</b> ṣajjat ṣalā isamakah) Here the-boy was 3PROG-MASC-cry over the-fish-ACC. Here the boy was crying over the fish.	
3. *sūf jisūf (retelling a story of a girl who was watching the eggs) *see 3PROG-MASC-see *see is seeing	(il-bint <b>kānit</b> bitṣūf il-bīd) The-girl was 3PROG-FEM-see the-eggs. The girl was seeing the eggs.	
4. *jisūf il-bitāṣah asrha (describing the picture of a girl watching the eggs and a boy breaking them)	(il-bint <b>kānit</b> bi-t-ṣūf il-bitāṣah wi il-walad kasarha.)	

	*3PROG-MASC-see the-thing broke-it *see the thing broke it	The-girl was 3PROG-FEM-see the-thing and the-boy broke-it. The girl was seeing the thing and the boy broke it.
5.	*tū niz taḥt. Fū niz taḥt. (Answering the question where was the ball hidden?) *ball went-3SG-MASC. up and pro-drop went-3SG-MASC. *Ball went down. Up went down	(Ilkūrah nizlit taḥt. <b>kānit</b> fū? wi nizlit taḥt.) The-ball went-3SG-FEM. pro-drop was up and pro-drop went-3SG-FEM. The ball went down. It was up and went down.
6.	*sahabah (referring to the feminine word “ilūṭah” (the cat) *hid-MASC He hid	(istaxabbit) Hid-FEM She hid
7.	*alaṣ-uh (referring to a girl who finished eating a banana) *Finished-MASC-it-MASC He finished it.	(xallaṣit-ha) Finish-FEM-it-FEM She finished it.
8.	*taliah (referring to a girl who ate a banana) *Ate-MASC-it He ate it	(kalit-ha) Ate-FEM-it-FEM She ate it

Utterances that express the past tense are intact, yet gender may be overlapped as follows: Despite having some phonetic deformations, all the utterances in the above table display overt past tense forms as in the verbs: kasar (the past tense of ji-ksar), nizil (the past tense of ji-nzel), xallaṣ (the past tense of ji-xallaṣ), istaxaba (the past tense of ji-staxabba), and kal (the past tense of jā-kul). The only exceptions are the verbs that are supposed to be preceded by the past auxiliary verb kān-MASC and kānit-FEM which are persistently omitted in all the above utterances. These main verbs seemingly show a shift in either the tense or mood. However, a closer investigation of these utterances proves otherwise. The following analyses illustrate the US these utterances.



1. On the SS, the utterance “ilʕā” (2IMP-play) seemingly corresponds to the imperative mood as if the participant overlapped the third person with the second person yet this is not true. The US of this utterance is “kān bi-ji-ʕab”. It underwent an elision process licensed by the Null Auxiliary Hypothesis that rendered the AUX verb “kān” null. Further elision was applied due to a length constraint that rendered the progressive morphemes” bi-ji” elided as well.
2. On the SS, the utterance “tiʕajjā” corresponds to either the second person singular present tense (2PRES-SG-cry) or an overlap of gender from masculine “3PRES-MASC-ji-ʕajjat” to feminine “3PRES-FEM-tiʕajjāt. By consulting the US of the utterance, “kān bi-ji- ʕajjat”, it shows that neither of these assumptions is correct. Like the previous example, both the AUX verb and the progressive morphemes were omitted. The stem “ʕajjat” underwent metathesis, a phonological process that shifted the /t/ to the beginning of the utterance.
3. Utterances 3 and 4 strongly corroborate the previous analyses as follows: “sūf jisūf” disconfirms the second person imperative assumption as it can be noted that the participant’s initial attempt to pronounce “kānit bitʕūf” was “2IMP-SG-sūf” which was corrected to “jisūf” which clarifies that the intended structure is the progressive past not the imperative. This also verifies that the structures of these utterances are operating under the assumption of a phonetically null auxiliary realized as: [IP [I ∅][VP [jisūf]].

**Table (4)**

<b>Type of Deviation: Present tense and progressive markers</b>	
<b>Utterance</b>	<b>Adult model</b>
1. *jikli (describing a picture of a boy and a girl running) *PRES-MASC-run-SG He runs.	( <b>humma bijigr-ū</b> ) They are-PRES-run-Pl. They are running.
2. *dih jākul dih la? (referring to a picture of a group of boys eating and another of others not eating) *this-SG eat-SG this-SG no	( <b>dūl bi-jāklū dūl la?</b> ) Those PROG-PRES-eat-Pl. those no Those are eating those are not.

3.	<p>*taša ʔākū (describing a picture of a girl peeling a banana to eat it)          *3PRES-peel PRES-SG-eat          She peels I eat.</p>	<p>(bi-tʔaʃar il-mūzah ʃaʃān t-ākulha)          Is-PROG-FEM-peel the-banana because          FEM-eat-it          She is peeling the banana to eat it.</p>
4.	<p>*iʃrab (referring to a picture of a group of boys drinking)          *drink-SG          He drinks</p>	<p>(biʃiʃrab-ū)          PROG-PRES-drink-pl.          They are drinking.</p>
5.	<p>*dih ʔākū mūs dih ʔana          (describing a picture of a girl eating a banana and a boy sleeping)          *this-FEM eat bananas this sleep</p>	<p>(dih bi-t-ākul mūz wi dah bi-j-nām)          This-FEM is-PROG-FEM-eat banana          and this-MASC is-PROG-MASC-sleep          This girl is eating a banana and this boy is sleeping.</p>
6.	<p>*dih wāku dih infuxha          (describing a picture of a girl eating and a boy blowing a balloon)          *This-FEM PRES-eat and this-FEM PROG-PRES-blow-it-ACC-FEM</p>	<p>(dih bi-t-ākul wi dah bi-ji-nfux-ha)          This-FEM 3PROG-PRES-FEM-eat and          this-MASC PROG-PRES-blow-it-ACC-FEM          This girl is eating, and this boy is blowing it.</p>

Investigation of the present tense shows a phonetically null present tense AUX “bi- “ and frequent omission of the progressive aspect “j-“ with substitutions of plural number agreement with the singular one. Although phonological deformations characterize the above utterances, they express the present tense. The present tense auxiliary “bi-“ is phonetically absent, but it is syntactically operant. This assumption can be verified by the US of “jikli” and “jākul” and “taša” which attest that their structures operate under a null present tense auxiliary “bi- “ and the substitution of the plural agreement indicator -ū with the masculine singular one.

This structure can be expressed as follows:

[<sub>TP</sub> [<sub>T</sub> ∅] [<sub>VP</sub> jikl-i]] → Adult model: [<sub>TP</sub> [<sub>T</sub> bi-] [<sub>VP</sub> jigr-ū]].

[<sub>TP</sub> [<sub>T</sub> ∅] [<sub>VP</sub> jākul]] → Adult model: [<sub>TP</sub> [<sub>T</sub> bi-] [<sub>VP</sub> jākl-ū]].

The US of the verb “taṣa” confirms the same assumption as only the AUX -bi was omitted yet the structure shows awareness of its existence.

[TP [T ∅] [VP taṣa]] → Adult model: [TP [T bi-] [VP tʔaṣar]].

Given this evidence, it follows that the US of (iḡrab- infuxha) is not imperative mood. Similarly, (ʔākū- wāku- ʔana) do not have a shift from the third person singular to the first-person singular subject despite their surface structures that seem to show otherwise.

1. The US of “iḡrab” is “biḡiḡrab-ū”. The omission of the present tense AUX “bi-“, the deletion of the progressive aspect, and the substitution of the plural marker with the singular one render the structure as follows:

[TP [T ∅] [VP iḡrab]] → Adult model: [TP [T bi-] [VP jiḡrab]]

2. “infuxha” is licensed by a null AUX and omission of the progressive aspect.

[TP [T ∅] [VP infuxha]] → Adult model: [TP [T bi-] [VP ji-nfux-ha]]

3. The SS of “ʔākū”/ “wāku” seems to indicate a shift from the third-person singular subject “t-ākul” to the first-person singular subject “ʔākul” yet the US shows that the structure is licensed by a null AUX and elision of the feminine progressive marker (-t)

[TP [T ∅] [VP wākū]] → Adult model: [TP [T bi-] [VP t-ākul]]

### 5.3. The Analysis of CPs

Table (5)

Type of Deviation: Deletion of coordinating conjunctions		
	Utterance	Adult model
1.	*dih wāku dih infuxha (describing a picture of a girl eating and a boy blowing a balloon) *this eat this blow-it	(dih bi-tākul wi dah bi-ji-nfux-ha) This PROG-FEM-eat and this PROG-MASC-blow-it This is eating and this is blowing it.
2.	*tawī ṣib tuluh ṣab ṣagalah balṣab ṣadīd īkri (answering the question “why do you like your school?”) *a lot love all play bike play iron run	(ʔawī, baḡib kuluh balṣab b-ilṣagalah wi balṣab ḡadīd wi bagri)

		<p>A lot PROG-love all PROG-play with-the-bike and PROG-play iron and PROG-run</p> <p>A lot! I love all. I play with the bike, and I play iron and I run.</p>
3.	<p>*ḥuṭ tifūn īgri (asking the examiner to put down the mobile phone and run with him)</p> <p>*put mobile run</p>	<p>(ḥuṭi i-tilifūn wi igri)</p> <p>2IMP-put-FEM the-mobile and run</p> <p>Put the mobile and run.</p>
4.	<p>*jisūf il-bitāṣah asrha (describing the picture of a girl watching the eggs and a boy breaking them)</p> <p>*see the-thing broke-it</p>	<p>(il-bint kānit bi-t-ṣūf il-bitāṣah wi il-walad kasrha)</p> <p>The-girl was PROG-see the-thing and the-boy broke-it</p> <p>The girl was watching the thing and the boy broke it.</p>
5.	<p>*dih ʔākū mūs dih ʔana (describing a picture of a girl eating a banana and a boy sleeping)</p> <p>*this-FEM eat bananas this sleep</p>	<p>(dih bi-t-ākul mūz wi dah bi-j-nām)</p> <p>This-FEM is-PROG-FEM-eat banana and this-MASC is-PROG-MASC-sleep</p> <p>This girl is eating a banana and this boy is sleeping.</p>
6.	<p>*hatl l-umuh l-abūk (describing a picture of a story where a girl threatens to tell her father and mother about her brother's naughty behaviour)</p> <p>*will-say to-mother-his to-father-your</p>	<p>(Hatʔul l-umuh wi l-abūh)</p> <p>Will-tell to-mother-his and to-father-his</p> <p>She will tell his mother and his father.</p>
7.	<p>*smā dih smā dih smī (answering the question “where do we wear a watch?” and trying to say “this is right, and this is left”)</p> <p>*left this left this right</p>	<p>(dih ṣimāl wi dih jimīn)</p> <p>This left and this right</p> <p>This is left and this is right.</p>

8.	*bit walad (answering the question what are you going to act in the play) *girl boy	(bit <b>wi</b> walad) Girl and boy Girl and boy
9.	*Ṣarūsah Ṣarīs (answering the question “what did you see in the wedding?”) *bride groom	(Ṣarūsah <b>wi</b> Ṣarīs) Bride and groom Bride and groom
10.	*dih ṣuhjja dih kibi (comparing a short girl to a tall one) *this small this big	(dih ṣuḃajjarah <b>lāken</b> dih kibīrah) This small-FEM but this big-FEM This is small but this is big.

Conjunctions, by definition, are words that join phrases together on an equal bar-level. Recurring deletion of conjunctions was observed in the subject’s linguistic production. The previous examples include deletion of the conjunction “wī (and) and lāken (but). Despite conjunctions being phonetically null in the utterances shown in the previous table, the participant is aware of their existence. This can be evidenced in the adherence to conjoining elements of the same category.  $XP \rightarrow XP \text{ conj. } XP$

1.  $CP \rightarrow CP \text{ conj. } CP$  as in:

[<sub>CP</sub> [<sub>CP</sub> dih wāku] [<sub>conj.</sub> Ø] [<sub>CP</sub> dih infuxha]] → Adult model: [<sub>CP</sub> [<sub>CP</sub> dih wāku] [<sub>conj.</sub> wi] [<sub>CP</sub> dih infuxha]]

2.  $DP \rightarrow DP \text{ conj. } DP$  as in:

[<sub>DP</sub> [<sub>DP</sub> Ṣarūsah] [<sub>conj.</sub> Ø] [<sub>DP</sub> Ṣarīs]] → [<sub>DP</sub> [<sub>DP</sub> Ṣarūsah] [<sub>conj.</sub> wi] [<sub>DP</sub> Ṣarīs]]

**Table (6)**

<b>Type of Deviation:</b> Deletion of the complementizer		
	<b>Utterance</b>	<b>Adult model</b>
1.	*waḥ ḍabak (threatening to hit his friend when they leave school) *leave hit-you	( <b>lamma</b> ni-rawwaḥ, ha-ḍrabak) When we-leave, will-1PRES-PROG-hit-you. When we leave, I will hit you.
2.	*il-Ṣaṣ jid, tuxrug tafnah (speaking of his mother who will go out to attend his uncle’s funeral when Ṣaṣr call to prayer is due)	( <b>lamma</b> il-Ṣaṣr jiddan, ha-tuxrug turūḥ i-dafnah) When the-Asr PROG-call, will-3PRES-FEM-exit go the funeral

	<p>*the-Asr PROG-call, she-exit funeral</p> <p>*The Asr prayer calls, she go out funeral</p>	<p>When Asr prayer calls, she will go out to go to the funeral.</p>
3.	<p>*nū tadʕah, ha-twalaʕ (trying to say when the lights go off, we light the candle)</p> <p>*light cut, will-light</p>	<p>(<b>lamma</b> i-nnūr jiʔtaʕ, ha-n-walaʕ i-ʕʕamʕah)</p> <p>When the-light PROG-cut, will-1PRES-Plu.-light the-candle</p> <p>When the light go out, we will light the candle.</p>
4.	<p>*saḥmah (answering the question why he didn't come to school yesterday)</p> <p>Crowdedness</p>	<p>(<b>ʕaʕān</b> kān fi zaḥmah)</p> <p>Because was there crowdedness</p> <p>Because it was busy.</p>
5.	<p>*taʕa ʔākū (describing a picture of a girl peeling a banana to eat it)</p> <p>*3PRES-peel PRES-SG-eat</p> <p>She peels I eat.</p>	<p>(bi-tʔaʕar il-mūzah <b>ʕaʕān</b> t-ākulha)</p> <p>Is-PROG-FEM-peel the-banana because FEM-eat-it</p> <p>She is peeling the banana to eat it.</p>
6.	<p>*ʕi taʕ ʕū (answering the question what is he doing?)</p> <p>*Remove thing see</p>	<p>(bi-jiʕil il-bitāʕ <b>ʕaʕān</b> jiʕūf)</p> <p>PRES-PROG-remove the-thing to see</p> <p>He is removing the thing to see.</p>
7.	<p>*ātlā kidah silah (describing a picture of a girl attaching beads in a string while imitating the action with his hands)</p> <p>*do this necklace</p>	<p>(bi-tiʕmil kidah <b>ʕaʕān</b> tiʕmil silsilah)</p> <p>PROG-FEM-do this because FEM-do necklace</p> <p>She is doing this to make a necklace.</p>
8.	<p>*iʕ ʕāf bā ʕilwah (answering the question why do you comb your hair)</p> <p>*not know be beautiful</p>	<p>(Miʕ ʕārif, <b>ʕaʕān</b> ābʔa ḥilw)</p> <p>Not know because be beautiful</p> <p>I don't know to be beautiful.</p>
9.	<p>*madasah (answering the question why he didn't go to his uncle's funeral yesterday)</p>	<p>(<b>ʕaʕān</b> kunt fi il-madrasah)</p> <p>Because I-was in the-school</p> <p>Because I was in the school.</p>

	*school	
10.	*faxha faʔa (describing a picture of a boy blowing the balloon until it exploded) Blew-it exploded	(il-walad nafax il-bālūnah <b>liḥad mā</b> farʔaʕit) The-boy blew the-balloon until exploded-it The boy blew the balloon until it exploded.
11.	*mit ha-rawwaḥ waʔti bidat (threatening to leave the school, if the examiner keeps insisting that he takes a breakfast break) *stand will-leave now really	( <b>law</b> umt, ha-rawwaḥ dilwaʔti bigad) If I-stand, I-will-leave now seriously. If I get up, I will leave now seriously.

Complementizers are functional categories that are used to embed one clause inside another. An evident deficiency in the use of complementizers can be noted in the subject’s overall linguistic production as deletion of the complementizers “ʕafān”(because), “lamma” (when), “law” (if), and “liḥad mā” (until) significantly prevailed in contexts that required the use of these complementizers. Despite the omission of subordinating conjunctions in the participant’s utterances, awareness of their existence can be noted in the structure of the complex sentences in the previous table which reveals an underlying COMP despite being phonetically null.

Example: CP → C TP as in [CP [COMP. Ø] [TP ɖabak [CP [COMP. Ø] [TP waḥ]]]]

Adult model: CP → C TP as in [CP [COMP. Ø] [TP ha-ɖrabak [CP [COMP. lamma] [TP ni-rawwaḥ]]]]

## 6. Findings and Results

The analysis of the structure of DPs, IPs, and CPs in the language of an 18-year-old DS male shows that the basic FCs and morphemes are often prone to omission. This is consistent with the syntactic and morphosyntactic language defect characteristic of DS manifested in the elision of FCs, impaired acquisition of grammatical morphemes, and the scarce use of grammatical verbs. (Hesketh and Chapman, 1998)

The deviations in the structure of DPs included omission of the determiner and overlapping number and gender marking yet the analysis shows that the structure of DPs respects adjunction word order. The omission of determiners is licensed by the parameters of UG that allow for null determiners. Moreover, the structure of DPs shows substitution of the feminine gender agreement with the masculine one and a deficiency in the use of plural and dual marking and agreement within the DPs. Grammatical gender and number marking are areas of LA which require inductive learning. Hence, they show developmental delay.

Although phonetic distortions characterize the participant's utterances, the investigation of the structure of IPs reveals intact overt past tense forms except in the contexts of the progressive past where the past tense AUX "kān/ kānit" and the progressive morpheme "bi-ji" were omitted. Despite this omission, the USs of these utterances strongly confirm that they operate under a null AUX hypothesis. Furthermore, the analysis excludes the assumption of a shift from the past tense form to the second person imperative mood that appears on the SS. The same findings can be confirmed from the investigation of the present tense forms which were also found to operate under a phonetically null present tense AUX "-ji-" and a null progressive morpheme "bi-". The analysis of the US of the structure of the present tense disconfirms the apparent shift to the second person imperative revealed on the SS once more. The analysis of IPs also reveals substitution of the feminine gender agreement indicator with the masculine one. A similar substitution is evident within plural number indicators that were substituted with the singular one.

The investigation of the structure of CPs tackled both coordinated and subordinated clauses. The analysis of the two types of CPs reveals an underlying COMP despite being phonetically null. This can be evidenced through adhering to conjoining CPs on an equal bar level where the COMP is phonetically absent yet syntactically operant. Likewise, the analysis of subordinated CPs discloses an underlying null COMP that licenses the embedding of one clause within another. These intact complex sentence structures are consistent with Thordardottir et al. (2002) who reported use of complex syntactic structures in the language of DS individuals.

## **7. Conclusion**



In conclusion, this research has mainly demonstrated the structure of the three main FCs from a Generative approach. The analysis of DPs, IPs, and CPs in the present study coincides with the FPH which posits that LA errors are licensed by UG rules. Despite the omission of the functional heads on the SS, they are syntactically operant on the US. The structures of IPs correspond to the null AUX hypothesis proposed by Boser et al. (1992). A discrepancy between comprehension and production can be noted in the structures where the participant is aware of the functional heads and their projections despite being phonetically null in production. Inductive areas of language such as specific language gender and number morphemes show developmental delay. The current paper proposed a syntactic analysis of the structure of DPs, IPs, and CPs in the language of an individual with DS. Further research ought to compare the findings within larger samples of the Egyptian DS population.

**List of Abbreviations**

- DS Down Syndrome
- IQ Intelligence Quotient
- TD Typically Developing
- IPD Inconsistent Phonological Disorder
- SLI Specific Language Impairment
- WS William Syndrome
- MA Mental Age
- FC Functional Categories
- ECL Early Child Language
- MH Maturation Hypothesis
- FPH Functional Projection Hypothesis
- IP Inflectional Phrase
- FF Formal Feature
- US Underlying Structure
- SS Surface Structure

**List of Phonetic Transliteration Symbols:**

ε	/ʔ/
ı	/ā/

ب	/b/ /p/
ت	/t/
ث	/θ/
ج	/g/, /ʒ/, /dʒ/
ح	/ħ/
خ	/χ/
د	/d/
ذ	/ð/
ر	/r/
ز	/z/
س	/s/
ش	/ʃ/
ص	/ʂ/
ض	/ɖ/
ط	/t̤/
ظ	/ʔH/, /Z/
ع	/ʕ/
غ	/ɣ/
ف	/f/
ق	/q/
ك	/k/
ل	/l/
م	/m/
ن	/n/
ه	/h/
و	/w/ / ū / /o:/
ى	/y/ / ī / ee/
اَ	/a/ /ā/
اُ	/u/ /o/
اِ	/i/ /e/

## References

- Boser, K. i., Lust, B., Santelmann, L., & Whitman, J. (1992). The Syntax of CP and V-2 in Early Child German (ECG) The Strong Continuity Hypothesis. *North East Linguistics Society*, 22(1). Retrieved from <https://scholarworks.umass.edu/nels/vol22/iss1/5>
- Gathercole, V. M., & Williams, K. (1994). A. Radford, Syntactic theory and the acquisition of English syntax: the nature of early child grammars of English. Oxford: Basil Blackwell, 1990. Pp. vii + 311.1. *Journal of Child Language*, 2(21), 489-500. doi:10.1017/S0305000900009375
- Hick, R. F., Botting, N., & Conti-Ramsden, G. (2005). Short-term Memory and Vocabulary Development in Children with Down Syndrome and Children with Specific Language Impairment. *Developmental Medicine & Child Neurology*, 47, pp. 532–538. doi:10.1017/S0012162205001040
- Abbeduto, L., Murphy, M. M., Cawthon, S. W., Richmond, E. K., Weissman, M. D., Karadottir, S., & O'Brien, A. (2003, May). Receptive Language Skills of Adolescents and Young Adults With Down or Fragile X Syndrome. *American Journal on Mental Retardation*, 108(3), pp. 149-160. doi:10.1352/0895-8017(2003)1082.0.CO;2
- Abbeduto, L., Murphy, M. M., Richmond, E. K., Amman, A., Beth, P., Weissman, M. D., . . . Karadottir, S. (2006, May). Collaboration in Referential Communication: Comparison of Youth With Down Syndrome or Fragile X Syndrome. *American Journal on Mental Retardation*, 111(3), pp. 170-183. doi:10.1352/0895-8017(2006)111[170:CIRCCO]2.0.CO;2
- Ashbya, S. A., Channell, M. M., & Abbeduto, L. (2017, October 13). Inferential Language Use by Youth With Down Syndrome During Narration. *Research in Developmental Disabilities*, 71, pp. 98-108. doi:<http://dx.doi.org/10.1016/j.ridd.2017.10.002>
- Ball, S. L., Holland, A. J., Treppner, P., Watson, P. C., & Huppert, F. A. (2008, March). Executive Dysfunction and Its Association with Personality and Behaviour Changes in the Development of Alzheimer's Disease in Adults with Down Syndrome and Mild to Moderate Learning Disabilities. *the*

*British Journal of Clinical Psychology*, 47(1), pp. 1-29.  
doi:<https://doi.org/10.1348/014466507X230967>

Börjars, K. (2021). Description and Theory. In B. Aarts, A. McMahon, & L. Hinrichs (Eds.), *The Handbook of English Linguistics* (Second ed., pp. 7-28). Wiley Blackwell. doi:ISBN 9781119540571

Bull , M. J., & Committee on Genetics. (2011, August). Health Supervision for Children With Down Syndrome. *Pediatrics*, 128(2), pp. 393-406.  
doi:<https://doi.org/10.1542/peds.2011-1605>

Caban-Holt, A., Head, E., & Schmitt, F. (2015). *Rosenberg's Molecular and Genetic Basis of Neurological and Psychiatric Disease (Fifth Edition)*. Lexington, Kentucky, USA: Elsevier Inc. . doi:10.1016/B978-0-12-410529-4.00015-2

Channell, M. M. (2020, May 8). Cross-Sectional Trajectories of Mental State Language Development in Children With Down Syndrome. *American Journal of Speech-Language Pathology*, 29(2), pp. 760–775.  
doi:[https://doi.org/10.1044/2020\\_AJSLP-19-00035](https://doi.org/10.1044/2020_AJSLP-19-00035)

Chapman, R. (2006). Language Learning in Down Syndrome: The Speech and Language Profile Compared to Adolescents with Cognitive Impairment of Unknown Origin. *Down Syndrome Research and Practice*, 10(2), pp. 61-66.  
doi:10.3104/reports.306

Chapman, R. S., & Hesketh, L. J. (2000). Behavioral Phenotype of Individuals with Down Syndrome. *Development Disabilities Research Reviews*, 6, pp. 84-95. doi:10.1002/1098-2779(2000)6:23.0.co;2-p

Chapman, R. S., Schwartz, S. E., & Kay-Raining Bird, E. (1991, October). Language skills of Children and Adolescents with Down Syndrome: I. Comprehension. *Journal of Speech and Hearing Research*, 34(5), pp. 1106-1120. doi:<https://doi.org/10.1044/jshr.3405.1106>

- Chapman, R., & Hesketh, L. (2001). Language, Cognition, and Short-term Memory in Individuals with Down Syndrome. *Down Syndrome Research and Practice*, 7(1), pp. 1-7. doi:10.3104/reviews.108
- Chomsky, N. (1965). *Aspects of the Theory of Syntax* (5th ed.). The MIT Press. Retrieved from <http://www.jstor.org/stable/j.ctt17kk81z>
- Clark, E. V., & Hecht, B. F. (1983). Comprehension, Production, and Language Acquisition. *Annual Review of Psychology*, 34(1), pp. 325-349. doi:10.1146/annurev.ps.34.020183.001545
- Cuskelly, M., Povey, J., & Jobling, A. (2016, June). Trajectories of Development of Receptive Vocabulary in Individuals With Down Syndrome. *Journal of Policy and Practice in Intellectual Disabilities*, 13(2), pp. 111-119. doi:doi:10.1111/jppi.12151
- Dodd, B., & Thompson, L. (2001, August). Speech Disorder in Children with Down's Syndrome. *Journal of Intellectual Disability Research*, 45(4), pp. 308-316. doi:10.1046/j.1365-2788.2001.00327.x
- Down, J. L. (1866, November 1). Observations on an Ethnic Classification of Idiots. *Heredity* 21, pp. 695–697. doi:<https://doi.org/10.1038/hdy.1966.69>
- Elmasry, H. M., Aladawy, M. A.-e., & Abd-elhamid, M. M. (2020, October). Prevalence and Risk Factors of Intellectual Disabilities in Children. *The Egyptian Journal of Hospital Medicine*, 81(1), pp. 1307-1317. doi:10.12816/ejhm.2020.112407
- Epstein, C. J. (1989). Down Syndrome. In *Abnormal States of Brain and Mind (Readings from the Encyclopedia of Neuroscience)* (p. 43). Birkhäuser Boston, Inc. doi:[https://doi.org/10.1007/978-1-4899-6768-8\\_18](https://doi.org/10.1007/978-1-4899-6768-8_18)
- Gadalla, H. A. (2000). *Comparative Morphology of Standard and Egyptian Arabic*. Lincom Europa. Retrieved August 20, 2023, from [https://www.researchgate.net/publication/369884455\\_Comparative\\_Morphology\\_of\\_Standard\\_and\\_Egyptian\\_Arabic](https://www.researchgate.net/publication/369884455_Comparative_Morphology_of_Standard_and_Egyptian_Arabic)

- Hernandez, D., & Fisher, E. M. (1996, September 1). Down Syndrome Genetics: Unravelling a Multifactorial Disorder. *Human Molecular Genetics*, 5(Supplement\_1), pp. 1411–1416.  
doi:[https://doi.org/10.1093/hmg/5.Supplement\\_1.1411](https://doi.org/10.1093/hmg/5.Supplement_1.1411)
- Hesketh, L. J., & Chapman, R. S. (1998). Verb Use by Individuals With Down Syndrome. *American Journal on Mental Retardation*, 103(3), pp. 288-304.  
doi:[https://doi.org/10.1352/0895-8017\(1998\)103<0288:VUBIWD>2.0.CO;2](https://doi.org/10.1352/0895-8017(1998)103<0288:VUBIWD>2.0.CO;2)
- Karamanou, M., Kanavakis, E., Mavrou, A., Petridou, E., & Androustos, G. (2012). Jérôme Lejeune (1926-1994): father of modern genetics. *Acta Med Hist Adriat*, 10(2), pp. 311-316. doi:PMID: 23560757
- Karrer, J. H., Karrer, R., Bloom, D., Chaney, L., & Davis, R. (1998). Event-related Brain Potentials During an Extended Visual Recognition Memory Task Depict Delayed Development of Cerebral Inhibitory Processes Among 6-month-old Infants with Down Syndrome. *International Journal of Psychophysiology*, 29(2), pp. 167-200. doi:[https://doi.org/10.1016/S0167-8760\(98\)00015-4](https://doi.org/10.1016/S0167-8760(98)00015-4)
- Keller-Bell, Y. (2000). *Linguistic Processing in Children with Down Syndrome*. Ohio: Bell & Howell Information and Learning Company.
- Kuhn, D. (2012). The Development of Causal Reasoning. *Wiley Interdisciplinary Reviews: Cognitive Science.*, 2, 327-335.  
doi:<https://doi.org/10.1002/wcs.1160>
- Lanfranchi, S., Jerman, O., Dal Pont, E., Alberti, A., & Vianello, R. (2010, March 20). Executive Function in Adolescents with Down Syndrome. *Journal of Intellectual Disability Research*, 54(4), pp. 308-319. doi:  
<https://doi.org/10.1111/j.1365-2788.2010.01262.x>
- Loveall, S. J., Channell, M. M., Abbeduto, L., & Conners, F. A. (2018, November 27). Verb Production by Individuals with Down Syndrome During Narration. *Research in Developmental Disabilities*, 85(2019), pp. 82-91.  
doi:<https://doi.org/10.1016/j.ridd.2018.11.007>

- Loveall, S. J., Channell, M. M., Phillips, B., Abbeduto, L., & Conners, F. A. (2016, April 13). Receptive Vocabulary Analysis in Down Syndrome. *Research in Developmental Disabilities*, 55(2016), pp. 161–172. doi:<http://dx.doi.org/10.1016/j.ridd.2016.03.018>
- Lust, B. (2006). *Child Language: Acquisition and Growth*. New York: Cambridge University Press. doi:10.1017/CBO9780511803413
- Marcell, M. M., & Cohen, S. (1992). Hearing Abilities of Down Syndrome and Other Mentally Handicapped Adolescents. *Research in Developmental Disabilities*, 31(6), pp. 533-551. doi:[https://doi.org/10.1016/0891-4222\(92\)90048-B](https://doi.org/10.1016/0891-4222(92)90048-B)
- Miolo, G., Chapman, R. S., & Sindberg, H. A. (2005, February 1). Sentence Comprehension in Adolescents With Down Syndrome and Typically Developing Children. *Journal of Speech, Language, and Hearing Research*, 48(1), pp. 172-188. doi:[https://doi.org/10.1044/1092-4388\(2005/013\)](https://doi.org/10.1044/1092-4388(2005/013))
- Othman, J. M., & Othman, J. M. (2021). Ixtibār al-luḡah alilktrūnī li-qijās Taṭawwur al-Mahārāt wa-al-Mafāhīm al-Luḡawijah (Electronic Language Test to Measure the Development of Language Skills and Concepts). Egypt: Luttas Edutech.
- Paterson, S. (2000). *The Development of Language and Number Understanding in William's Syndrome and Down's Syndrome: Evidence from the Infant and Mature Phenotypes*. London: ProQuest LLC (2016).
- Paterson, S. J., Girelli, L., Butterworth, B., & Karmiloff-Smith, A. (2006). Are numerical impairments syndrome specific? Evidence from Williams syndrome and Down's Syndrome. *Journal of Child Psychology and Psychiatry*, 47(2), pp. 190-204. doi:10.1111/j.1469-7610.2005.01460.x
- Perovic, A. (2004). *Knowledge of Binding in Down Syndrome: Evidence from English and Serbo-Croatian*. London: ProQuest LLC.
- Petrova, Y. (2014). The Compound Tense Forms in Egyptian Arabic. *Romano-Arabica: 'āmmiyya and Fuṣḥā in Linguistics and Literature*(14), 263-276.

- Ruff, H. A. (1980). The Development of Perception and Recognition of Objects. *Child Development*, 51(4), 981-992. doi:<https://doi.org/10.2307/1129536>
- Temtamy, S. A., Abdel Meguid, N., Mazen, I., Ismail, S. R., Kassem, N. S., & Bassiouni, R. (1998, February 19). A Genetic Epidemiological Study of Malformations at Birth in Egypt. *Eastern Mediterranean Health Journal*, 4(2), pp. 252-259. Retrieved March 6, 2021, from [http://applications.emro.who.int/emhj/0402/emhj\\_1998\\_4\\_2\\_252\\_259.pdf](http://applications.emro.who.int/emhj/0402/emhj_1998_4_2_252_259.pdf)
- Thordardottir, E. T., Chapman, R. C., & Wagner, L. (2002). Complex Sentence Production by Adolescents with Down Syndrome. *Applied Psycholinguistics*, 23(2), 163-183. doi:10.1017.S0142716402002011
- Vulchanova, M., Vulchanov, V., Fritz, I., & Milburn, E. (2019). Language and perception: Introduction to the Special Issue “Speakers and Listeners in the Visual World”. *Journal of Cultural Cognitive Science*, 3(11), 103-112. doi:10.1007/s41809-019-00047-z
- Westerveld, M. (2011). Sampling and analysis of children’s spontaneous language From research to practice. *ACQuiring Knowledge in Speech, Language and Hearing*, 13(2).



## التركيب النحوي للمركب الإسمي والمركب الفعلي والجملة الكاملة في لغة فرد من ذوي

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### المستخلص:

متلازمة داون هي اضطراب نمائي ناجم عن خلل جيني في الكروموسوم الحادي والعشرين يتسم بضعف القدرات المعرفية واللغوية. أشارت العديد من الدراسات حول الانحراف اللغوي لدى ذوي متلازمة داون إلي وجود قصور في اكتساب اللغة يستمر منذ الطفولة حتى مرحلة البلوغ غير أن معظم الدراسات في هذا المجال البحثي أجريت بشكل رئيسي على الأفراد الناطقين باللغة الإنجليزية. ومن هنا، تسعى الدراسة الحالية إلى دراسة بناء التراكيب النحوية للمركب الإسمي والمركب الفعلي والجملة الكاملة في لغة مصري من ذوي متلازمة داون ضمن الإطار النظري للنحو التوليدي. الأساس المنطقي لاختيار بناء الجملة والتركيب النحوي لدي متلازمة داون للدراسة هو أنها واحدة من أكثر الجوانب تأثراً بالإعاقة الذهنية الناجمة عن المتلازمة. وبالتالي، من المتوقع أن تفضي دراسة القصور اللغوي لدى فرد متلازمة داون المصري إلى توضيح السمات اللغوية للمتلازمة بشكل أكبر. جاء المشاركون في هذا البحث ضمن دراسة أكبر لبحث الاختلالات الصوتية والنحوية في عينة من ذوي متلازمة داون المصريين. الهدف الأساسي من هذه الدراسة هو الكشف عن الانحرافات النحوية في لغة المشاركين في الدراسة ومقارنتها بما ورد في أدبيات الإكتساب الطبيعي للغة. يفترض البحث أن الأخطاء النحوية مقيدة بقواعد النحو التوليدي وقد كشف التحليل عن وجود رؤوس عاملة نحويًا في البنية العميقة على الرغم من كونها فارغة صوتيًا على البنية السطحية. الكلمات المفتاحية: متلازمة داون، النحو، قصور لغوي، اكتساب اللغة