

December 2015

The Developmental Stages of the Acquisition of Arabic By Adult English-speaking Learners: Processability Theory and the Formulaic Language

Abdellatif Oulhaj

University of Wisconsin-Milwaukee

Follow this and additional works at: <https://dc.uwm.edu/etd>



Part of the [Linguistics Commons](#)

Recommended Citation

Oulhaj, Abdellatif, "The Developmental Stages of the Acquisition of Arabic By Adult English-speaking Learners: Processability Theory and the Formulaic Language" (2015). *Theses and Dissertations*. 1070.
<https://dc.uwm.edu/etd/1070>

This Dissertation is brought to you for free and open access by UWM Digital Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UWM Digital Commons. For more information, please contact open-access@uwm.edu.

THE DEVELOPMENTAL STAGES OF THE ACQUISITION OF
ARABIC BY ADULT ENGLISH-SPEAKING LEARNERS:
PROCESSABILITY THEORY AND THE FORMULAIC
LANGUAGE

by

Abdellatif Oulhaj

A Dissertation Submitted in
Partial Fulfillment of the
Requirements for the degree of

Doctor of Philosophy
in Linguistics

at

The University of Wisconsin-Milwaukee

December 2015

ABSTRACT

THE DEVELOPMENTAL STAGES OF THE ACQUISITION OF ARABIC BY ADULT ENGLISH-SPEAKING LEARNERS: PROCESSABILITY THEORY AND THE FORMULAIC LANGUAGE

by

Abdellatif Oulhaj

The University of Wisconsin-Milwaukee, 2015

Under the Supervision of Professor Hamid Ouali

The aim of this study is to look at the developmental stages of the acquisition of Arabic as a foreign language by adult English learners. Processability theory (Pienemann, 1998, 2005) is adopted to investigate in detail whether the acquisition development will follow the hierarchy as stated by PT. The study targeted agreement within seven grammatical structures. The structures belong to three procedural levels of the hierarchy (stages three to five).

Six adult learners participated in this study. They were tested via different tasks to elicit data either to support the predictions of PT hierarchy, or to disconfirm it. Two participants produced subject – verb agreement (stage 4) at a higher rate than N-aAdj / N-N agreement (stage 3). Before disconfirming the Prediction of PT hierarchy, the two participants took a second test to make sure the language they produced is processed and not retrieved as a formula. Students were introduced to a set of new vocabulary and were asked to tell a story based on three picture stories. By learning unfamiliar vocabulary in isolation, the two participants applied grammatical relations to combine words together. Data in test 2 showed a decrease in the acquisition rate of S – V agreement. Therefore, confirming the predictions of PT.

© Copyright by Abdellatif Oulhaj, 2015
All Rights Reserved

To my beloved parents, wife, and daughter

TABLE OF CONTENTS

LIST OF FIGURES	ix
LIST OF TABLES	x
ACKNOWLEDGMENTS	xii
1. INTRODUCTION	
1.0. Overview	1
1.1. Aim of the study	3
1.2. Rationale for the study	4
2. BACKGROUND	
2.0. Overview	7
2.1. Levelt's model of language production	8
2.2. Processability theory	10
2.3. The formulaic language	16
3. ARABIC MORPHO-SYNTAX	
3.0. Introduction	20
3.1. Categorical features of nouns and verbs	20
3.1.1. Nouns	20
3.1.2. Verbs	22
3.1.2.1. Imperfective form	23
3.1.2.2. Perfective form	23
3.1.2.3. Future form	24
3.2. Intra-phrasal agreement	25
3.2.1. Gender	25

3.2.2. Humanness	25
3.2.3. Number	26
3.2.4. Definiteness	27
3.3. Inter-phrasal agreement	30
3.3.1. The verbless sentence (N – pAdj)	30
3.3.2. The verbal sentence	31
3.3.2.1. S – V agreement	31
3.3.2.2. V – S agreement	31
3.4. Inter-clausal agreement	32
3.4.1. Purpose in MSA	33
3.4.2. Conditional in MSA	34
3.5. PT predictions in MSA	35
4. LITARATURE REVIEW	
4.0. Introduction	43
4.1. Cross-linguistic related studies	44
4.2. Studies on Arabic within pt framework	45
5. METHODOLOGY	
5.0. Introduction	48
5.1. Purpose of the sudy	49
5.2. Questions of the study	50
5.3. Hypothesis of the study	50
5.4. Participants	53
5.5. Data collection method	54

5.6. Data collection procedure	57
5.7. Coding and scoring	59
5.8. Chapter summary	66
6. RESULTS	
6.0. Introduction	67
6.1. Third year participants	68
6.2. Second year participants	93
6.3. Data collection 2	113
7. DISCUSSION	
7.0. Overview	119
7.1. Stage 3	120
7.2. Stage 4	121
7.3. Stage 5	124
7.4. Frequency and the emergence criterion	125
8. CONCLUSION	
8.0. Overview	129
8.1. General summary of the study	129
8.2. Significance of the study	131
8.2.1. The theoretical implication	131
8.2.2. The pedagogical implication	132
8.3. Suggestions for future research	133
REFERENCES	134

APPENDICES

Appendix A: Student's Questionnaire	142
Appendix B: Picture description	144
Appendix C: Sample questions for the oral interview	148
Appendix D: Story telling task	150

LIST OF FIGURES

Figure 1: Levelt (1989) model of Language production	9
Figure 2: Philip's rate of acquisition	69
Figure 3: Nora's rate of acquisition	80
Figure 4: Emily's rate of acquisition	87
Figure 5: James' rate of acquisition	94
Figure 6: Linda's rate of acquisition	100
Figure 7: Michael's rate of acquisition	106
Figure 8: Emily's updated rate of acquisition	116
Figure 9: James' updated rate of acquisition:	117
Figure 10: Emily's updated rate of acquisition:	123
Figure 11: James' updated rate of acquisition:	124
Figure 12: The processability hierarchy	129
Figure 13: The predicted hierarchy of the Arabic structures	130

LIST OF TABLES

Table 2-1: The implicational hierarchy of processing procedures	13
Table 2-2: Acquisition of inversion (Hakansson et al. 2002)	15
Table 3-1 : Number morphology on nouns	21
Table 3-2: The imperfective form of the verb in Arabic:	23
Table 3-3: The perfective form of the verb in Arabic:	23
Table 3-4: The future form of the verb in Arabic:	24
Table 3-5: The derivation of the Arabic verbal noun:	38
Table 3-6: The predicted acquisition development of the Arabic structures:	42
Table 4-1: Johnston 1995's developmental stages of L2 Spanish:	43
Table 4-2: Zhang 2005's developmental stages of L2 Chinese:	45
Table 5-1: The background of the six participants:	54
Table 5-2: N-aAdj agreement:	60
Table 5-3: Applying emergence criteria to VSO word order:	63
Table 5-4: The acquisition rate for VSO word order:	64
Table 6-1: PT predictions on the Acquisition of agreement of the Arabic structures:	68
Table 6-2: Philip's rate of acquisition of seven grammatical structures:	69
Table 6-3: Nora's rate of acquisition of seven grammatical structures:	80

Table 6-4: Emily's rate of acquisition of seven grammatical structures:	83
Table 6-5: James' rate of acquisition of seven grammatical structures:	93
Table 6-6: Linda's rate of acquisition of seven grammatical structures:	100
Table 6-7: Michael's rate of acquisition of seven grammatical structures:	107
Table 6-8: The morphological productions through stages by all learners:	114
Table 6-9: Emily's rate of acquisition (updated):	116
Table 6-10: James' rate of acquisition (updated):	118
Table 6-11: The morphological productions through stages by all learners after data 2 collection (Updated):	119

ACKNOWLEDGMENTS

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"وَمَا تَوْفِيقِي إِلَّا بِاللَّهِ عَلَيْهِ تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ" هود(88)

"And my success can only come from Allah. In Him I trust, and unto Him I look."

I would like to address my endless gratefulness to my supervisor Hamid Ouali (PhD), who was supportive and sympathetic. Without his frequent inspection, this thesis would probably take more time to be gathered.

I am also thankful to Fred Eckman (PhD) who, during my proposal defense re-outlined and re-shaped my insight of the subject matter I am working on. His insightful arguments saved me a lot of time, and kept me on the right track.

I am grateful as well to my committee members Gary Davis (PhD) for his support and linguistic feedback. And I will not forget Sandra Pucci (PhD) who helped with her comments and sympathy.

I would also like to express my thanks to my wife, Zieneb Hamdan, who provided me with her daily and endless support, and was totally engaged to make sure this thesis comes to an end.

My appreciation also goes to my friend and colleague Abdelaadim Bidaoui (PhD), who suggested the first necessary steps to take before adopting a theoretical framework.

1. INTRODUCTION

1.0 Overview:

Second language acquisition is a recent field as compared to other scientific areas. However, many theoretical perspectives have come into existence since the 1940's. Learning a second language is a basic human need since the world began to speak more than one language. Early perspectives were of the pre-twentieth century methods, which were based on Grammar-Translation. In the early 1900's Direct Methods prevailed (Bloomfield, 1919; Fries, 1927), and also the Audiolingual method with the advent of technology. As a theory, SLA was not taken seriously until the mid-century when the behaviorist camp became dominant in SLA research (Lado, 1957; Skinner 1958). The 60's and 70's were the triumph of Universal Grammar UG and Chomsky's Language Acquisition Device (Chomsky, 1968). The 80's and the 90's were dominated by information and processing models (McLaughlin, 1990; Anderson, 1992; and Pienemann, 1998), where the theory in this research belongs to. Finally, the most recent research domain in SLA is the social interactionism (Vygotsky, 1987; Snow, 1995).

The main concern of these theories is not only finding efficient ways to make learning a second language systematic and easier, but also trying to describe how learning a second language occurs. All the theories of SLA are looking at two main issues. (1) What learners know? (2) How do they learn that? In finding answers to these two questions, Pienemann 1998 introduced Processability Theory (PT).

Processability Theory is one of most recent theoretical frameworks, which claims the production of speech is developed through hierarchical procedures where the acquisition of a

higher procedure results in the acquisition of lower ones. Therefore at every stage of development learners are able to produce only those structures for which they have developed a processing ability to encode. Stages of development will be discussed in a later section.

Language production in a foreign language classroom in its early development may be described as a production of short sentences where learners struggle with phrasal morphology such as agreement. It seems that even the simplest grammatical agreement between a noun and a possessive pronoun is still problematic even though learners are able to produce full sentences. According to the stages of acquisition as outlined in Processability Theory (PT) (Pienemann, 1998, 2005), the phrase agreement should be acquired before sentence agreement and the observation stated above seems like counter evidence. PT was empirically tested against typologically distant languages such as Arabic (Alhawary, 1999; Mansouri, 2000, 2007; Husseinali, 2006; Al Shatter 2010), German (Pienemann, 1998, 2005), Scandinavian languages (Hakanson, 2001; Glahn et al, 2001), Italian and Japanese (Di Biase & Kawagushi, 2002, 2005), Chinese (Zhang, 2004;). PT's credibility in these languages makes it a powerful theory in second language development.

In my dissertation I will show counter evidence to the theory, where sentence agreement shows up before phrase agreement is very frequent in use in my data. However, I will argue these structures are formulaic and are first learned as formulae, and therefore do not constitute counter evidence to the PT order of Acquisition. This will lead us to define what formulae are, how they are characterized, and how we know whether learners are using them. Are they learned based on the assumption that every learner has a different set of formulae? Is there a way we can predict them in the case of Arabic?

1.1 Aim of the study

This study was conducted because of a few classroom observations. First, most of the students start producing full sentences in Arabic before going through all the phrase structures, and many of their sentences are produced correctly, while they still struggle with NP structures. Students seem to master the verb system as early as the first semester of Arabic, and then there is a decline in their performance as they go on to the second semester. I will argue that familiarity with contexts and forms lead to such a positive outcome in the beginning, but it turns into a negative outcome when this familiarity is lost. In other words, I will argue that the students' strong performance at the beginning is a result of their frequent use of formulaic forms.

Adopting PT as a theory of second language acquisition helps to understand the underlying representation of language development. However, I assume that formulaic expressions will, in one way or another, create some counter-evidence if not treated differently. Many studies in both FLA and SLA argued that speech production is not always processed and a large share of our daily productions is thus formulaic.

In this study I collected data to see whether learners of Arabic as a foreign language would meet the predictions of PT. The data revealed cases that seemed to be counter-evidence to PT. To investigate whether these cases indeed constitute counter evidence to PT, I collected more data from my participants who were manipulated to produce new lexical entries in new contexts. The rationale was that if the new contexts led to other counter-evidence cases, then one would conclude that PT's claims are inadequate. But if the new data conforms to PT

predictions, then we have an explanation that the counter-evidence would be of the essence. I will show that what seems like counter evidence is only due to the use of formulae in speech.

This study is certainly not the first study of Arabic within PT framework. However, it is the first to consider an extended analysis of formulae within PT. It might be the first study of its kind across all other languages under Processability Theory.

This dissertation will contribute to the plausibility of PT across languages and try to confirm its claim that languages evolve through five procedural stages. In addition, this dissertation will also contribute to the re-reading of previous studies on PT where formulas will be taken to a significant level of analysis.

1.2 Rationale for the study:

Processability Theory seems more representative of my classroom observations for two main reasons. First, PT has a psychological framework, which outlines the steps of language productions, (Levelt, 1989). Second, the theory has a linguistic background, which goes with (Levelt, 1989). This linguistic framework is Lexical Functional Grammar (LFG). The psychological and the linguistic perspectives lead to a theory of second language development that Manfred Pienemann called “Processability Theory.”

The claim of this theory is that language is acquired in five implicational stages where the processing at each stage has a prerequisite of acquiring the processes of the previous stage. Many studies cross-linguistically confirmed the plausibility of the theory. However, there were a

few that disconfirmed its predictability. What this study shares with previous ones is its analysis of data to sketch the rates of acquisition at each stage, and its discussion of the findings based on PT predictions. What is novel in this study are its reconsideration of counter-examples and the re-analysis of them to see whether they are produced as memorized chunks before we assume the inadequacy of PT.

Following this line of thought, this study has three main research questions:

- 1) How formulae were treated in SLA literature, and how did PT, in particular, treat formulaic language?
- 2) Would the interlanguage of Arabic learners show support for PT predictions?
- 3) Is there a way to predict formulaic sequences in the production of Arabic in a second language classroom environment?

This study hypothesizes that Arabic is no exception as far as PT predictions are concerned. A careful analysis of the exception cases will show their behavior as exceptions is only apparent and that their existence is due to the use of formulaic expressions.

This dissertation will proceed as outlined below. Chapter two provides a theoretical background detailing the main claims of Processability Theory; including Level's (1989) language production model. Chapter three describes the morphosyntax of the seven grammatical structures in Arabic, which are relevant in the study. Chapter four reviews the literature and discusses various studies that were conducted to test PT's claims across different languages. Chapter five presents the research design in this dissertation and describes how the data was collected and

analyzed. Chapter six presents the results of my study. Chapter seven provides the major results and chapter eight concludes everything.

2. BACKGROUND:

2.0. Overview:

Processability Theory (PT) was developed by Manfred Pienemann (1998), and is one of today's prominent theories of second language acquisition. It is a cognitive framework based on understanding the mechanisms of the learner's interlanguage (IL) and how it is developed through a few stages of acquisition. Pienemann described PT as being able to "predict developmental trajectories for any second language." (Pienemann, 2005) For instance, to acquire the English sentence as in "John eats a green apple", the learner should process the words John, eat, green, apple as lexical entries belonging to different grammatical, and functional categories. Then, the learner develops procedures to process phrasal morphosyntax like "a green apple" before he can process the inter-phrasal grammatical features like subject – verb agreement. This order of procedures is the same for all languages. "It is the aim of Processability Theory to hypothesize, on the basis of the general architecture of the language processor, a universal hierarchy of processing resources which can be related to the requirements of the specific procedural skills needed for the TL." (Pienemann, 1998)

Pienemann (1998) is the first version of PT, and it is crucial to understand the principles of the theory, as it focused mainly on the acquisition of morphosyntax. It claims that these productions are an automatic procedural knowledge, which starts from an initial state and follows five different stages of language development where the lower stages are structurally less complex than the stage that follows. PT is compatible with Levelt's (1989) model of language production, which I will discuss later in detail. There are two main points, which would

give an overview of the whole theory. First, readers of this study need to have an understanding of the language processor (Levelt, 1989). Secondly, they need to grasp the universality of the PT hierarchy of morphosyntax across languages no matter how different languages are. Within this hierarchy, language learning follows the same developmental trajectories, while variations among learners can only be seen within the same stage of language development (Bonilla, 2012; Al Shatter, 2010). The human language processor as discussed by Pienemann (1998) is based on the architecture of the language production model of Levelt (1989).

2.1. Levelt's model of language production:

In general, there are many psycholinguistic models, which account for how language is produced. The result was two opposite camps: the modular model, to which Levelt's model belongs to, and a non-modular model. Fodor 1983 made the main claim of the modular view, of language learning. He claimed that the mind (or brain) consists of autonomous systems. Each system or module works independently and has a specific function. These modules are genetically specified (Sperber, 1994, Pinker 1997), and they function as a response to a particular input source (Fodor 1983). On the other hand, the non-modular view claimed that the mind is a homogenous system, which acquires knowledge in general – including language – via experience and interactions between networks of neurons (Gasser 1990). Though the two models differ in many ways, they agreed on the fact that there are different levels of production. In the modular model, studies suggested that structures are extracted from the long-term memory in order to express a concept, (Levelt, 1989). What motivates speech is the

need to express a concept. Thus, lexical items, which are relevant to the intended concept, are retrieved from the long-term memory. Next, the necessary grammatical and syntactic rules apply to these lexical items. Then, phonological rules transfer structures to utterances.

Levelt's "L1 production model" (1989) proposed a number of unidirectional processes through which the production of language proceeds.

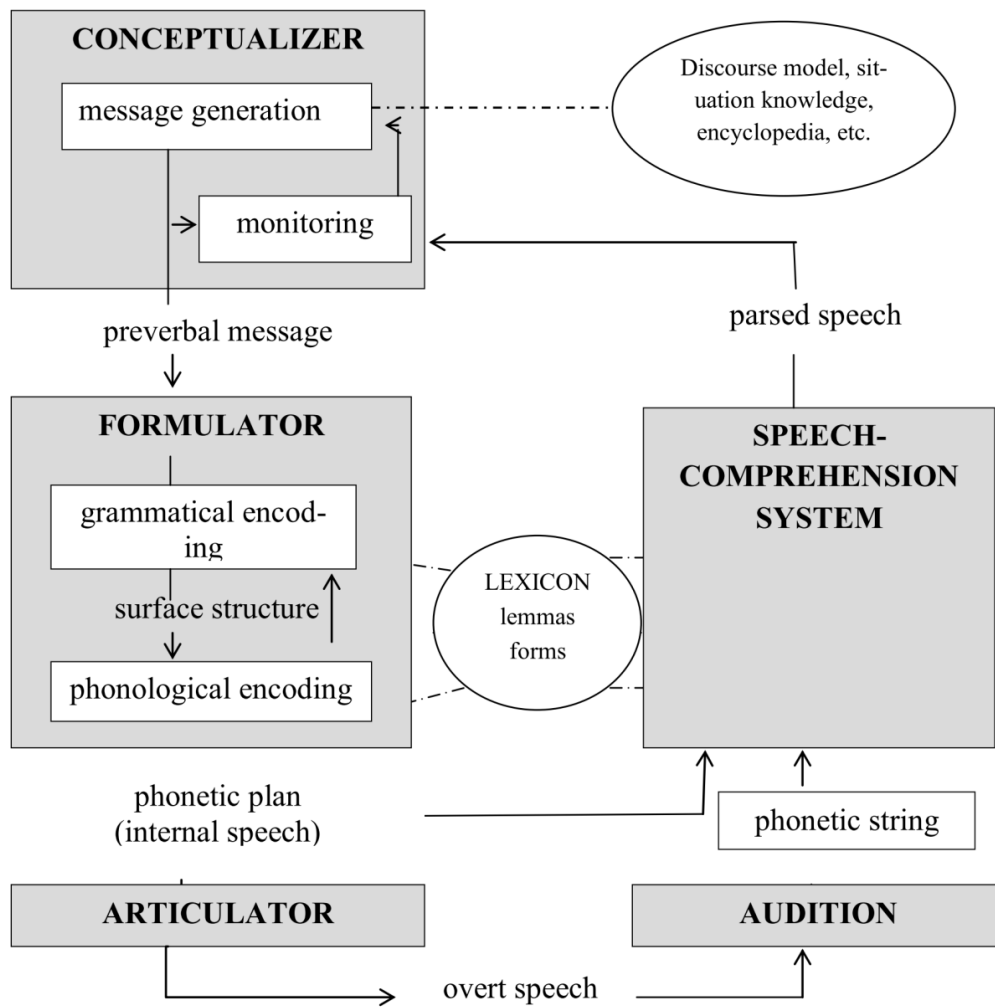


Figure 1: Levelt (1989) model of Language production

Module one: conceptualizing the message.

The memory is accessed to conceptualize a message. Then, a pre-linguistic concept is formed.

This preverbal output is considered as the input that stimulates the second module.

Module two: formulating the message.

The lexicon is accessed as a result of an existing concept. Many lexical items are activated but only the best candidates will be transformed into linguistic structures. The lexicon assigns each lexical entry with specific syntactic, morphological, and semantic procedures, before phonological rules will apply.

Module three: articulating the message.

This is considered the last step in generating speech production. It is simply the execution of the phonological rules through the physical organs of speech. Then, speech is overtly realized.

In speech production, the flow of utterances is incremental. Once an utterance is treated in the first module above, another utterance starts right away while the previous one is still treated in the following modules. Going through all these procedures make speech processing cognitively demanding except for those instances where long chunks are memorized (Wray, 2002).

2.2. Processability Theory:

Following the main claim of Levelt's model, PT is looking at the processing of the L2, which is analogous with the linguistic realization of module two "formulator" (Levelt, 1989.) There are four principles adopted in PT from Levelt (1989). First, Language processing is assumed to be

autonomous. Pienemann (1998) argued that automaticity makes the exchange of information between and within structures processed faster. He also claimed that what triggers speed is the specificity of information processing; i.e. in case of processing an NP, only the NP procedure is activated and others (like VP) are excluded. Second, language processing is incremental. Levelt (1989) stated that "... the next processor can start working on the still-incomplete output of the current processor ..." (cited in Pienemann, 1998). De Bot argued that when a concept leaves the conceptualizer to the formulator, there will be no look-back to the conceptualizer. In other words, there is no effect of the new concept on the form of the previous one because the incremental relationship is unidirectional from left to right. Third, the output is not linear. Though events occur in chronological order, talking about events does not necessarily follow a linear order. There are two types of non-linear orders mentioned in Pienemann (1998). First, in a propositional non-linear order, propositions do not occur in their natural order. In the following example (cited in Pienemann, 1998), the act of mounting occurred before the act of riding: "Before the man rode off, he mounted his horse." Second, the exchange of the grammatical information has a non-linear order. Subject-verb agreement for instance involves the storage of agreement features on the subject (person, gender, number) which are stored in the memory and re-used to produce the right grammatical features on the verb. Fourth, memory is the trigger of any processing.

Language is developed in different procedures. The procedure in which a phrase is developed is different from the sentence procedure. Besides, within the phrase level, the noun phrase procedure is different from verb phrase procedure. While NP procedure stores grammatical information like gender, number, and case, the VP procedure stores a different gender and

number morphology, in addition to person, tense, aspect, and voice. At a later developmental stage, the learner has to put the two procedures together to build a sentence procedure. For example, in “these boys”, the plural –s will be stored in the NP procedure. This grammatical information is important and needs to be checked within the NP constituents (Determiner and head). It will call for another procedure that compares the information agreement between the noun and its modifier. This procedure is referred to as feature unification by lexical-functional grammar (LFG) (Bresnan & Kaplan, 1982). The process of acquisition is claimed by Levelt (1989) to involve layers of grammatical encoding, and it is not a linear process. Processed categories and information are stored ahead of time before the production of speech. The acquisition of these procedures has a time sequence, where the NP procedure is acquired before the VP procedure. The sentence procedure is acquired later. (Pienemann 1998)

PT hierarchy:

The main prediction of PT is an implicational order of five stages where every stage has its own grammatical encoding procedures. The five stages are cited in Pienemann (1998):

1. Lemma access
2. Category procedure
3. Phrase procedure
4. Sentence procedure
5. Subordinate clause procedure

Learners can successfully produce the structures, which are accessible for processing at a certain stage. The acquisition of any grammatical structure is constrained by this hierarchy. For instance, the acquisition of the verbal sentence, which is assumed to be acquired at stage 4, entails the acquisition of the verb phrase, the noun phrase, and their inner procedures at an earlier stage. It is in the power of these predictions that Processability Theory gained credibility. The following table shows the five developmental stages and their implications. Any structure which is acquired at “time 3” (T3), for example, implies the acquisition of the structures on the left (T1 and T2).

Table 2-1: The implicational hierarchy of processing procedures:

<u>Developmental stages</u>					
Procedures	t1	t2	t3	t4	t5
Lemma access	+	-	-	-	-
Category procedure	+	+	-	-	-
Phrase procedure	+	+	+	-	-
S-procedure	+	+	+	+	-
S'-procedure	+	+	+	+	+

“t” = time, “+” = acquired, “-” = not acquired

Following these predictions, each stage has a set of structures, which are expected to emerge. Besides, the acquisition of these stages is implicational, and PT predicts a stage order from one to five. At level one, the language production is very limited to lemmas. A lemma is a structure with no inner grammatical processing. Therefore, words are lemmas as well as formulaic

expressions. Words like dog, house, eat are at the same level of processing as the following memorized chunks: “I love you.”, “How are you.” “I am fine, thanks”. No feature matching between words is processable yet.

Stage two begins when learners start joining lemmas together, two linguistic levels are involved; namely, syntax and morphology. Syntactically, word order is assumed to be the canonical SVO, where the thematic role agent is assigned to the first NP, and patient or theme to the post verbal NP, creating a one-to-one relationship between the grammatical and functional categories. Learners can produce sentences at this stage, but feature matching between the constituents is not yet acquired. Morphologically, lemmas are assigned categories. For instance, in English the plural marker on nouns is processable at this stage, since it does not require any processing or matching with other components within the phrase to which it belongs. Di Biase (2002) categorized the past tense on the verb –to in Italian as lexical for the same reason.

At stage three, learners develop an ability to categorize constituents as phrases instead of words (Pienemann, 2005). In morphology, feature matching within the components of the phrase emerges. For example, gender can be assigned to all the elements in this NP from Modern Standard Arabic (MSA):

1.
haðihi ʔal-tʕalib-a ʔal-ʒadiid-a
this.F the-student-F the-new-F
“this new student (F)”

In syntax, pre-posing or post-posing some phrases emerges without modifying the canonical word order. Adverbs, wh-words, and prepositional phrases are added. Hakansson et al. 2002

investigated the word order of German by L1 Swedish learners. Despite the fact that both languages have inversion (V2) in case of adverbial-fronting, their subjects showed three distinct stages of acquisition development as indicated by the following table:

Table 2-2: Acquisition of inversion (Hakansson et al. 2002)

L1 : Swedish	L2 : German	Interlanguage stages
V2	V2	1. SVO
* Adv SVO	* Adv SVO	2. Adv SVO
		3. Adv V SO

As shown in the above table, PT gave evidence for SVO as a basic word order in the L2 acquisition no matter how similar or different it is from L1. It is also evidence that transfer is not the factor behind the acquisition of V2 in German. Therefore, fronting without affecting the sentential word order is a procedure of stage 3. More examples are shown below.

PP – [S – V – O]	“In the house, there is a big cat.”
[S – V – O] – PP	“There is a big cat in the house.”
Wh – [S – V – O]	“When you go to work?”
[S – V – O] – wh	“You go to work when?”
Adv – [S – V – O]	“Sometimes I study at home.”
[S – V – O] – Adv	“I study at home sometimes.”

At stage four, feature matching is assigned across phrasal boundaries. For example, information on the subject is stored and then exchanged with the verb creating a subject-verb agreement. Another cross-boundary-agreement is between the subject and the predicative adjective. Syntactically, other word orders start to emerge. In the case of Arabic, VSO is dominant in narratives. Learners start showing alternative word orders at this stage. The last stage is five, where two clauses are joined together creating a kind of agreement between the main and the embedded clause.

However, not all utterances are treated as if they were processed. A look at formulaic language will shed light on another type of utterances, which if not treated as formulae, would constitute counter-examples to any theory. The following section will tackle formulae in details.

2.3. The formulaic language

Wood (2010b) identified formulaic speech units as: “multiword strings or frames which are retrieved from long term memory as if they were single words.” The multiword collections may contain: “two-word collocations, phrasal verbs, idioms, routine expressions, whole clauses, discourse markers, and frames with fillable lexical slots (wood, 2010b.)

Formulaic expressions are still a challenging issue in the study of SLA. Much of the work done on formulaic language within the last decade was devoted to test the claims of on-going theoretical frameworks (Wray 2009). These studies raised the question of what we do mean by concluding that the collected data do not support the claims of a given theory. Wray (2009) suggested that instead of just testing the claims, one should analyze in depth and look for “*new insights.*”

Nattinger & Decarrico (1992) claimed that the use of formulaic language is very frequent in language development, and any proficiency in language use might be based on a “*mastery*” of these repetitive sequences. Pawley & Syder (1983) suggested that these “... sentence-length expressions ... probably amounts, at least, to several hundreds to thousands.” These forms are “*dynamic*” and subject to change as the language learning develops (Wray, 2002)

Many studies focused on the percentage of formulaic use in the data collected, and different but significant percentages were found. Erman & Warren (2000) found up to 58% of formulaic expressions in language use. Another study by Howarth (1998) (cited in Lesniewska, 2006) claimed up to 40% of speech produced was formulaic. Conklin & Schmitt (2008) argued that the importance of formulaic use is that “... *our brains would make use of a relatively abundant resource (long-term-memory) to compensate for a relative lack in another (working memory) by storing frequently occurring formulaic sequences.*”

Many studies within PT, which dealt with formulae, did not investigate the psycholinguistic base of this phenomenon and it was only discussed on the side, though it is considered a fundamental element in the domain of SLA. However, there are many empirical studies which tackled its importance in the development of speech production (Pawley and Syder 1983; Nattinger and DeCarrico, 1992; Ellis, 1996; Wray, 1999, 2002; Wood, 2010b). Wray (2002) considers the mental lexicon as a storage of morphemic units and “formulas are favored because of the human needs to minimize the processing effort. To begin with, it is crucial to this study to ask “How do we characterize formulas?”

The first characteristic of formulas is that they are units which are phonologically coherent (Coulmas, 1997) with no internal pauses (Wray, 2002). For example, an L2 of English would produce a sentence like *"I woke up this morning at seven thirty, and read a whole article."* This learner might produce the right flap in *"thirty"* while he still produce a trill in *"forty"* for instance. He might produce this sentence with no pausing, while other sentences of the same length are produced slowly and with few pauses.

The second feature of a formula is that it may represent a structural complexity, which is higher than the learner's L2 grammatical capacity (Wray, 2002). For instance, a learner can use the Arabic pronominal negation *"I am not, she is not,"* which inflects for gender number and person before he learns subject – verb agreement.

2.

Hiya lajsa-t hunaa
she neg-3SF.perf here
"She is not here."

A third feature is that formulas are used in their fixed forms, i.e. a learner may not control agreement if the sentence structure is modified. For example: he may produce the following sentence.

3.

?ana ?a-drus fii ?al-maktaba
I 1S.Imperf-study in the-library
"I study in the library."

However, if he is manipulated to use a plural pronoun, he may produce like the following sentence.

4.

*hum ʔa-drus fii ʔal-maktaba

they 1S.Imperf-study in the-library

“They study in the library.”

Wray (2002) added some structural forms after which formulas may occur. A formula might follow a conjunction, preposition, pronoun, or an article. What is mostly crucial to this study is that formulae are circulated within a speech community (Wray, 2002). Each speech community has preference to how they express ideas. By circulation, we mean prefabricated chunks that are extracted from input without any inner processing, and are used repetitively. To summarize, thinking of a language classroom as a conventional speech community, prefabricated utterances might be dominant to decrease the processing effort. Any data analysis has to be aware of this linguistic phenomenon.

3. ARABIC MORPHO-SYNTAX

3.0. Introduction

The goal of this chapter is to provide an overview of the key morpho-syntactic properties of Arabic. This brief background will help the reader understand how the stages of acquisition are arranged, based on Processability Theory (PT). How the hypothesis is formulated and how the data are analyzed in this study. The fundamental feature of Arabic grammar discussed in this chapter is agreement. This order of discussion in the chapter will be arranged according to PT stages of acquisition. Although agreement is not established at stage two (category procedure), it is fundamental to understand categories such as nouns and verbs in MSA, and this will be discussed in section 3.1. Then, agreement within Arabic phrases will be discussed in section 3.2, and agreement within the clause will be discussed in section 3.3. Section 3.4 will be devoted to discussing inter-clausal agreement. The last section, namely 3.5 will discuss the predictions of PT based on the seven grammatical structures introduced in this chapter.

3.1. Categorical features of Nouns and Verbs

3.1.1. Nouns

Arabic is morphologically rich, and has five inflectional features, which characterize nouns. These features are *gender*, *humanness*, *definiteness*, *number*, and *case*.

3.1.1.1. Gender:

Gender is either masculine or feminine. Masculine gender is less marked whereas feminine gender is inflected with a suffix –a, with the exception of when the feminine gender is covert

as in *bint* “girl”. There are other feminine markers, but due to their scarceness, they are excluded in this study. The following are examples of masculine and feminine nouns.

5.

kitaab	sayyid	binaaj-a	sayyid-a
book.MS	gentelman.MS	building-FS	lady-FS
“book”	“gentelman”	“building”	“lady”

3.1.1.2. *Humanness:*

Humanness is a morpho-semantic feature (Ryding, 2005) where a noun either refers to human or non-human beings. This feature is very important in structuring phrasal and sentential agreement. A discussion of this feature will be introduced in the next section.

3.1.1.3. *Number:*

Arabic nouns can be marked for singularity, duality, and plurality as illustrated in the following table:

Table 3-1: Number morphology on nouns

Singular nouns	Dual nouns	Plural nouns	Plural type
sajjaar-a “car”	Sajjaar-at- ajn “two cars”	Sajjaar- aat “cars”	Regular feminine
mutarzim “translator”	mutarzim- ajn “two translators”	mutarzim- uun “translators”	Regular masculine
Kitaab “book”	Kitaab- ajn “two books”	Kutub “three books”	Irregular

3.1.1.4. Definiteness:

The definite article in Arabic is a dependent suffix as in (6), and the indefinite article is a zero morpheme, as in (7).

6.

ʔal-raʒul

the-man

“the man”

7.

raʒul

man

“a man”

Unlike English, which uses bare nouns for generic nouns, as in “I like coffee.”, the definite article is used on generic nouns in Arabic.

8.

ʔu-ħibbu al-qahwa

1S.PRS-like the-coffee

“I like coffee.”

3.1.2. Verbs

Verbs in Arabic inflect for gender, number, person, mood, and voice. In this study we will consider the first three features as they are the ones under investigation. Most dialects of

Arabic do not mark gender on plural forms. Therefore, the textbook of MSA the participants used is gender-free on plural forms. The following three subsections will sketch the verb morphology in imperfective (present), perfective (past), and the future forms.

3.1.2.1. Imperfective form

The verb in the imperfective form uses prefixes, and sometimes suffixes as shown in the following chart.

Table 3-2: The imperfective form of the verb in Arabic:

Singular	ʔa -drus	1.IMPERF.study.S	"I study"
	ta -drus	2.IMPERF.study.S	"you study" (Masculine)
	ta -drus- iin	2.IMPERF.study-F.S	"you study" (Feminine)
	ja -drus	3M.IMPERF.study.S	"He studies"
	ta -drus	3F.IMPERF.study.S	"She studies"
Plural	na -drus	1PL.IMPERF.study	"We study"
	ta -drus- uun	2.IMPERF.study-PL	"You study"
	ja -drus- uun	3.IMPERF.study-PL	"They study"

3.1.2.2. Perfective form

The verb in the imperfective form uses only suffixes as shown in the following chart.

Table 3-3: The perfective form of the verb in Arabic:

Singular	daras-tu	study-1S.PERF	"I studied"
	daras-ta	study-2SM.PERF	"you studied" (Masculine)
	daras-ti	study-2SF.PERF	"you studied" (Feminine)
	daras-a	study-3SM.PERF	"He studied"
	daras-at	study-3SF.PERF	"She studied"
Plural	daras-naa	study-1PL.PERF	"We studied"
	daras-tum	study-2PL.PERF	"You studied"
	daras-uu	study-3PL.PERF	"They studied"

3.1.2.3. Future form

The future is identical to the imperfective form with an addition of an initial sa- to denote future.

Table 3-4: The future form of the verb in Arabic:

Singular	sa-ʔa-drus	FUT-1.IMPERF.study.S	"I study"
	sa-ta-drus	FUT-2.IMPERF.study.S	"you study" (Masculine)
	sa-ta-drus-iin	FUT-2.IMPERF.study-F.S	"you study" (Feminine)
	sa-ja-drus	FUT-3M.IMPERF.study.S	"He studies"
	sa-ta-drus	FUT-3F.IMPERF.study.S	"She studies"
Plural	sa-na-drus	FUT-1PL.IMPERF.study	"We study"
	sa-ta-drus-uun	FUT-2.IMPERF.study-PL	"You study"
	sa-ja-drus-uun	FUT-3.IMPERF.study-PL	"They study"

3.2. Intra-phrasal agreement

In this section, only the noun phrase is considered and the verb phrase is not since object – verb agreement is not applicable in Arabic. In this study, two grammatical forms are under investigation; Noun – attributive adjective agreement (N – aAdj), and Noun – Noun agreement (N – N).

In Arabic the head noun and its modifier adjective agree in the five inflections discussed in the previous section; namely, gender, number, definiteness, humanness, and case. The last feature will be excluded from discussion due to its scarcity in the input. In the case of N – N agreement, definiteness is the only feature that matters. Therefore, N – N agreement is discussed only in definiteness subsection.

3.2.1. Gender:

Nouns and their attributive adjectives agree in gender, as shown in (9) below.

9.

sajjaar-a	zadiid-a
car	new-FSg

“a new car”

3.2.2. Humanness:

Humanness is a very important semantic feature in structuring phrasal and sentential agreement. This feature applies only to plural nouns, where non-human plural nouns take a feminine singular marker on the head modifiers, like adjectives, demonstratives, and personal

pronouns as shown in examples (10a-c) below. In example (10d), the adjective has full agreement with the noun because the noun is assigned the feature “human” [+Hum].

10.

a. ʔal-ʒamiʕa-aat ʔal-ʔamriiki-a
the-university.[-Hum]-PL the-American-FS
“the American universities”

b. haaḏihi ʔal-ʒamiʕa-aat
this.FS the-university. [-Hum]-FPL
“these universities”

c. hiyya ʒamiʕa-aat
3SF university. [-Hum]-FPL
“They are universities.”

d. ʔal-banaat ʔal-ʔamriiki-aat
the-girls the-American. [+Hum]-F.PL
“the American girls”

3.2.3. *Number:*

Arabic nouns and adjectives can be marked for singularity, duality, and plurality.

11.

a. sajjaar-a ʒadiid-a
car new-FSg
“a new car”

b. Sajjaar-at-ajñ ʒadiid-a-t-ajñ
car-F-DU new-F-DU
“two cars”

c. Sajjaar-aat ʒadiid-aat
car- FPL new- FPL
“new cars”

3.2.4. Definiteness:

The use of the definite article in Arabic is challenging for American learners, since the L1 and L2 differ in many aspects. A brief overview of the Arabic definite article within the nominal clauses will help the reader understand the differences and difficulties which any L2 learner of Arabic would experience. In this section the definite article with MSA NP will be sketched.

Definiteness also marks adjectives when they modify nouns.

12.

ʔal-raʒul ʔal- tʔawiil
the-man the-tall.MscSg
“the tall man.”

ʔal- is not the only definite feature in Arabic. A noun can be definite by the addition of “the genitive construct” (IDaafa)

13.

bajt al-walad
house the-boy
“the boy’s house”

A noun can also be definite by a possessive pronoun suffix.

14.

kitaab-ii

book-my

“my book”

Besides, definite noun phrase is marked for definiteness on all its constituents (15a, and 15b)

15.

a. ?al-razul ?al-tʿawiil

the-man the-tall

“The tall man”

b. ?al-razul ?al- tʿawiil ?al-ʒawʕaan

the-man the-tall the-hungry

“The tall hungry man.”

The noun and the attributive adjective (aAdj), agree in definiteness in (15a). This accordance means they belong to the same NP. It does not matter how many modifiers the head noun has as in (15b). Demonstrative pronouns as in (16) are inherently definite. Lyons (1999) made a distinction between grammatical definiteness which is marked by the use of articles, and the semantic definiteness which is implied by the semantic function of some categories as demonstratives and proper nouns (Lyon, 1999: 290). In other words, the grammatical definite article is “*a meaningless filler*” and is used if other meaningful determiners are absent. In English, the definite article is not allowed with demonstratives. In Arabic, both the definite article and the demonstrative pronouns can co-occur in the same noun phrase as in (16).

16.

haða ʔal-raʒul ʔal-tʿawiil
this the-man the-tall
“This tall man”

In contrast, the Arabic demonstratives are not allowed with indefinite noun phrase as illustrated by the ungrammaticality of (17a). Both indefinite nouns and their adjectives modifiers are unmarked for definiteness, as shown in (17b – c).

17.

a. * haða raʒul
this man
“this a man”

b. raʒul tʿawiil
man tall
“a tall man”

c. raʒul tʿawiil ʒawʿaan
man tall hungry
“a tall hungry man”

The definite noun phrase is illustrated in the following diagram.

Figure 2. NP → [Def.N + (Def.aAdj1) + (Def.aAdj2) + (Def.aAdj_n)]

To summarize, when the adjective modifying the noun is attributive, it must agree with the noun in definiteness/indefiniteness.

3.3. Inter-phrasal agreement

3.3.1. The verbless sentence (N – pAdj)

The picture is different when the adjective has a predicative function as in (18). In such cases, the predicative adjective cannot be marked for definiteness.

18.

a. ʔal-razul tʕawiil

the-man tall

“The man is tall.”

b. ʔal-razul ʔal- tʕawiil ʒawʕaan

the-man the-tall hungry

“The tall man is hungry.”

c. haða ʔal-razul ʔal- tʕawiil ʒawʕaan

this the-man the-tall hungry

“This tall man is hungry.”

The common verbless sentence, also called “nominal sentence” (NS) can be just a NP + pAdjP as illustrated in the following diagram.

Figure 3. NS → [NP [+Def] + pAdj [-Def]]

While a single definiteness marker marks the whole noun phrase in English, it marks every individual constituent of the Arabic noun phrase. Any indefinite constituent in the sequence is in fact the first constituent of the predicate. Certainly, these are different structures, which American learners will deal with as early as the first days of their acquisition.

3.3.2. The verbal sentence

In the MSA, the verb phrase has no object – verb agreement, whereas the language marks for subject – verb agreement.

3.3.2.1. S – V agreement

Word order is crucial in determining subject – verb agreement. The SVO word order requires a full agreement between the subject and the verb (gender, number, and person) in the singular and plural forms as in (19).

19.

a. ?al-bint qara?-at ?a l-kitaab
the-girl.FS read-3FSperf the-book
“The girl read the book.

b. ?al-banaat qara?-na ?a l-kitaab
the-girl.FPL read-3FPLperf the-book
“The girls read the book.

3.3.2.2. V – S agreement

In Arabic VSO, the agreement between the subject and the verb is partial (gender only) in the plural form (20 c).

20.

a. qaraʔ-at ʔal-bint ʔa l-kitaab
read-3Sfperf the-girl the-book
“The girl read the book.”

b. ʔal-bint qaraʔ-at ʔa l-kitaab
the-girl read-3Sfperf the-book
“The girl read the book.”

c. qaraʔ-at ʔal-banaat ʔa l-kitaab
read-3Sfperf the-girl.FPL the-book
“The girls read the book.”

The feminine singular feature is also assigned to the verb if the subject is non-human plural in both SVO and VSO.

21.

a. ʔal-kilaab ʔaaʕ-at
the-dog.MPL get hungry-3Sfperf
“The dogs got hungry.”

b. ʔaaʕ-at ʔal-kilaab
get hungry-3Sfperf the-dog.MPL
“The dogs got hungry.”

3.4. Inter-clausal agreement

In this section, I will discuss two types of complex sentences in MSA; namely, conditionals and sentence of purpose. These types usually have two clauses; a main clause and a subordinate

clause, which often starts with a subordinator. A subordinator in Arabic affects the grammar of the main clause. Examples are given in the following two subsections.

3.4.1. Purpose in MSA:

MSA has three subordinators to express the notion of purpose, *bisabab* “because of”, *li-* “for”, and *liʔanna* “because”.

Bisabab is followed by a noun or a verbal noun (-ing form in English).

22.

laa ʔu-ħibbu madiinat Milwaukee bisabab ʔal-ʒaw
Neg 1s.imperf-like city Milwaukee because of the-weather
“I don’t like Milwaukee because of the weather.”

li- is followed by a verbal sentence.

23.

ʔa-ʕmal fii ʔal-lajl li-aħsʕula ʕalaa ʔal-maal
1s.imperf-work in the-evening for-obtain on the-money
“I work at night to make money.”

liʔanna is followed by a nominal sentence. This subordinator changes the case on the noun from nominative to accusative. The following are two examples where example (24) has an overt noun and example (25) has a personal pronoun.

24.

ʔa-takallam ʔal-faransijja liʔanna waalidat-ii min madiinat paris
1s.imperf-speak the-french because mother-my from city Paris
“I speak French because my mother is from Paris.”

25.

ʔa-skun fii haḏa ʔal-bajt liʔanna-hu qariib min ʔal-zaamiʕa
1s.imperf-live in this.MS the-house.MS because-3MS.Acc near from the-university
“I live in this house because it is close to the university.”

In this example, the nominative pronoun “huwwa” (he) changed to an accusative suffix “-hu”.

3.4.2. Conditionals in MSA:

Conditionals are expressed by a complex sentence where the condition is set in the subordinate clause for another clause to take place. The verb in the subordinate clause is often in the perfective form. MSA uses two different subordinators to express conditions. On the one hand, *ʔiḏaa* “if” is used to express plans that are likely to happen, as in the following example:

26.

ʔiḏaa nazāḥ-tu haḏihi ʔal-sana fa-sa-ʔa-ltaḥiq bi-ʔal-zaamiʕa
if succeed-1Sperf this.SF the-year.SF then-will-1Simperf-join with-the-university
“If I succeed this year, then I will join the university.”

It is frequent to start this type of complex sentences with the subordinate clause. However, if the main clause is sentence initial, then *fa*-“then” is omitted as in this example.

27.

sa-ʔa-ltaḥiq bi-ʔal-zaamiʕa ʔiḏaa naʕaḥ-tu haḏihi ʔal-sana
will-1Sperf-join with-the-university if succeed-1Sperf this.SF the-year.SF
“I will join the university if I succeed this year.”

On the other hand, *law* “if” is another subordinator used when the condition is impossible or contrary to a known fact.

28.

law kaana bajt-ii kabiir la-ʕaaʕa-t ʔuxt-ii maʕ-ii
if be.3SMperf house-my big surely-live-3FSperf sister-my with-me
“If my house is big, my sister will surely stay with me.”

3.5. PT predictions in MSA:

“A word needs to be added to the L2 lexicon before its grammatical category can be assigned. The grammatical category of a lemma is needed before a category procedure can be called. Only if the grammatical category of the head of phrase is assigned can the phrasal procedure be called. Only if a phrasal procedure has been completed and its value is returned can Appointment Rules determine the function of the phrase. And only if the function of the phrase has been determined can it be attached to the S node and sentential information be stored in the S-holder.” (Pienemann, 1998:80)

Stage 1: Lemma Access

The early productions of learners are either single words, or a set of words (a chunk) without any grammatical processing within or between its constituents. These formulas are processed as a whole unit, where the learner does not have any access to its inner forms. The following are formulaic expressions produced by L2 Arabic students:

29.

a. ?anaa ?a-drus fii ?al-ʒamiʕa
I 1S.Imperf-study in the-university

“I study at the university.”

b. ?anaa ?a-skun fii Milwaukee
I 1S.Imperf-live in Milwaukee

“I live in Milwaukee.”

These examples are sentences where the subject agrees with the verb. However, learners at this stage are not aware of the inner agreement features and they produce the whole sentence as one unbreakable unit.

Stage 2: Category procedure

Syntax is characterized by an emergence of a canonical word order SVO. Sentences at this stage do not show any processing of grammatical matching between constituents. Arabic is morphologically rich and feature matching between components is obviously weak at stage two. In category procedure, only the lexical morphology is involved. Lexical morphemes are assumed to be processable at this stage of development. Learners, for instance, acquire plural

forms on nouns. In other words, lexical morphology assigns bound morphemes to lemmas, and is taken place without any effect from other surrounding words.

The acquisition of Arabic lexical entries is a big issue which should be given special attention because word derivation in Arabic is root-pattern based. This makes deriving lexical entries unclear at the novice and even the intermediate level (first and second year of acquisition). For instance, the acquisition of plural nouns is problematic, knowing that nouns in Arabic are marked for gender (either masculine or feminine). The majority of the masculine plural nouns are irregular (broken plural) and should be memorized. Beginners don't see any systematic root-pattern features in the acquisitions of plurals. On the other hand, the majority of feminine plural nouns are regular and marked with *-aat*. However, the exceptions happen to be very frequent in use. After investing time learning the singular forms, (an average of 200 lexical entries by the end of week eight of the first semester), learners start memorizing plural forms of these entries, (around 37% of the singular forms). The next step of memorization is the "verbal noun" (-ing/infinitive forms in English). Words like dancing, reading, etc. are irregular forms as well and are referred to by traditional Arabic grammarians as "al-maSdar" (verbal noun). These nouns are derived from specific verb forms and not from roots, and they often have abstract meanings.. The difficulty of memorizing big sets of lexical entries (especially within noun phrases) makes learners hesitant to try new plural forms they have never produced before and stick to using the singular forms. In what concerns roots, note that the following two verbs have the same root. Ziadeh and Winder (1957) provided a list of eighteen common patterns of the verbal noun which makes the derivation of infinitives and gerunds forms in Arabic quite unpredictable.

Table 3-5: The derivation of the Arabic verbal noun:

Root	Verb	Verbal noun
d r s	darasa “study”	diraasa “studying”
d r s	darrasa “teach”	tadriis “teaching”

Stage 3: Phrasal procedures

The third stage of acquisition involves more complex procedures than stage 2. At the syntactic level, topicalization, and focalization are available as a preposed XP. This additional X-phrase is occupied by adverbials, wh-words and prepositional phrases (Pienemann, 2005). Postposing an adverbial or a prepositional phrase is possible as well.

30.

a. fii ʔal-sʕabaaħ ʔanaa ʔa-drus ʔal-ʕarabijja
in the-morning I 1sImprf-study the-Arabic
“In the morning, I study Arabic.”

b. ʔanaa ʔa-drus ʔal-ʕarabijja fii ʔal-sʕabaaħ
I 1sImprf-study the-Arabic in the-morning
“I study Arabic in the morning.”

At the morphological level, grammatical information is exchanged within the phrase boundary. For instance, NP agreement is not processed at this stage. In MSA, N-aAdj agrees in number, gender, case, and definiteness. For input issues, case marking is excluded in this study. Humanness of nouns is a crucial semantic feature in dealing with non-human plural N-aAdj agreement. In singular and dual NPs, the agreement between the noun and the adjective is a full agreement in gender, number, and definiteness (31 a – b). In the plural NPs, the full

agreement only applies to human plural nouns (31 c), while it is partial in non-human NPs (31 d). Adjectives agree with non-human nouns in definiteness, while number and gender are marked for feminine singular.

31.

a. ʔal-muwadʕaf mafjuul

the-employee busy

“The employee is busy.”

b. ʔal-muwadʕaf-aan mafjuul-aan

the-employee-dual busy-dual

“The two employees are busy.”

c. ʔal-muwadʕaf-uun mafjuul-uun

the-employee-MPL busy-MPL

“The employees are busy.”

d. ʔal-kilaab mafjuula

the-dog.PL busy.SF

“The dogs are busy.”

Stage 4: Inter-phrasal procedures

At this stage, variable word orders are possible. In the verbal sentence, both SV(O), and VS(O) are possible. What makes the SVO sentences different from the canonical word order of stage 2 is that in stage 4 inter-phrasal procedures are processable. In the nominal sentence (verbless), we have two possible word orders. First, a verbless sentence can be S [+def] – predicate. The predicate can be a pAdj, PP, or an NP.

32.

a. ?al-walad tʕawiil
the-boy.SM tall.SM

“The boy is tall.”

b. ?al-walad fii ?al-bajt
The-boy in the-house

“The boy is in the house.”

c. ?al-walad sʕadiiq-ii
The-boy.MS friend-my

“The boy is my friend.”

Second, predicate – S [- def], if the subject is indefinite.

33.

a. fii ?al-bajt walad
in the-house boy

“A boy is in the house.”

b. sʕadiiq-ii walad
friend-my boy

“My friend is a boy.”

In what concerns morphology, the procedure developed here is the one that can hold grammatical information between different phrases. In the verbless sentence with a pAdj, the subject NP agrees with the adjective in gender and number. The pAdj is always indefinite, as in example (32.a) above. In the nominal sentence with a PP as a predicate, the subject NP is initial if it is assigned the feature [+def], as in example (32.b), but if it is assigned [-def], then the predicate PP is left-dislocated, as in example (33.b).

Stage 5: Inter-clausal procedures

The grammatical information is matched beyond the sentence structure. It includes an exchange process between clauses. At this level, the sentence features are stored in the working memory to be matched with the features of the upcoming clause. As an example, in conditional clauses, features are matched between the main and subordinate clause, as in the following example:

34.

iðaa daras-tu fa-sa-ʔa-nzaħ

if study-1S.Perf then-will-1S.Imperf-succeed

“If I study, I will succeed.”

After introducing all these morphological and syntactic features of MSA, PT predicts the development of acquisition to follow the order shown in the following table.

Table 3-6: The predicted acquisition development of the Arabic structures:

Stage	Processing procedure	L2 processing	Morphology	Syntax
1	Word / Lemma	Words / formulas	Invariant forms	
2	Category procedure	Lexical morphemes	- Plural nouns - Dual nouns - Verbal nouns	- Canonical order SVO
3	Phrasal procedure	Intra-phrasal information exchange	- NP agreement ○ N – aAdj ○ N – N	- Adv-fronting - PP- fronting - Wh- fronting
4	S-procedure	Inter-phrasal information exchange	- S-verb agr - Verb-S agr - pAdj agreement	- VSO word order - Predicate fronting
5	Subordinate clause procedure	Main and subordinate clauses	- Conditionals - Purpose clause	

To sum up, PT predictions assume that any learners of Arabic will show the following hierarchy in their data:

N-N / aAdj < *pAdj / S-V agr / V-S agr* < *Conditional / Purpose*

Phrasal agreement < *Interphrasal agreement* < *Interclausal agreement*

4. LITERATURE REVIEW

4.0. Introduction:

Before I give a brief review of some studies done under the PT framework, I would like to point out that PT itself was the outcome of the findings of many studies, prior to 1998. PT gained credibility from previous studies (Johnston 1985, 1995, Pienemann and Mackey 1993). Pienemann 1998 tested data from Johnston 1985 who tested the order of acquisition of twelve English grammatical structures by Vietnamese and Polish adult learners. The order of acquisition of these grammatical structures is claimed by Pienemann 1998 to support the predictions of PT. Johnston 1995 is another study which Pienemann 1998 based his theory on. Johnston 1995's data showed the developmental stages of L2 Spanish. It resulted in 7 stages Pienemann will reduce to 5 later.

Table 4-1: Johnston 1995's developmental stages of L2 Spanish

	Linguistic feature	Procedure
Stage 1	Words – formulas	Learners produced monomorphemic chunks
Stage 2	Canonical word order	Learners produced SVO word order
Stage 3	Subject final	Learners produced VS and VOS
Stage 4	Sentence morphology	Learners produced: VSO + '-a' marker on 'do' when the subject is human and definite.
Stage 5	Inter-phrasal agreement	Emergence of object clitics
Stage 6	Object clitics order	Indirect object before direct object
Stage 7	Subordinate clauses	Use of subordinate clauses

However, Johnston (1985) and Pienemann (1998) were two cross-sectional studies which need to be tested longitudinally and cross-linguistically as well.

4.1. Crosslinguistic related studies

Di Biase and Kawaguchi (2002) tested empirically L2 morphology and syntax and their study supported the predictions of PT. To determine the acquisition of some grammatical structures in both Italian and Japanese, they applied a criterion of emergence. Thus a structure is considered acquired only if a subject supplies it in more than one context. This study also aimed at looking at transfer from a processing point of view. Data showed that the Australian learners of Japanese produced the correct word order SOV from the first stage of acquisition and there was no tendency to produce an English SVO. Besides, the Australian learners of Italian used pro-drop from early stages of acquisition. These findings contradict with predictions of full-transfer hypothesis which claims that learners rely on the unconscious knowledge of their L1. PT suggested that word order is not transfer-based because it is easily processed at an early stage of acquisition. Di Biase also investigated the acquisition of verb inflection (category level); number and gender agreement (phrase level), and determiner and adjective agreement between the object and the verb clitic (inter-phrasal level). The results again confirmed the predictions of PT hierarchy:

LEXICAL MORPHEME < PHRASAL MORPHEME < INTERPHRASAL MORPHEME

For more cross-linguistic evidence for the adequacy of PT, Zhang 2005, in a two-year longitudinal study, tested the development of five Mandarin Chinese grammatical morphemes, as shown in Table 3 below.

Table 4-2: Zhang 2005's developmental stages of L2 Chinese:

	Grammatical structure	Chinese morpheme	Level
1	Progressive marker	zhengzai-	lexical
2	Possessive marker	-de	lexical
3	The classifier		phrasal
4	Experiential marker	-guo	Inter-phrasal
5	Relative clause marker	-de	Inter-phrasal

Zhang investigated the order of acquisition of these morphemes and compared it to the predictions of PT, which turn out to be compatible.

Swedish is another language tested for PT predictions. Hakansson 2001 investigated the past tense marker and V2 in Swedish verb system. Subject and verb do not agree in Swedish and tense is the only feature the verb is marked for. Thus, tense on the verb will be acquired at the category level. On the other hand, V2 is only acquired at the inter-phrasal level because inter-phrasal information should be exchanged. PT predicts that past tense marking is acquired before the acquisition of V2. Hakansson findings showed a complete compatibility with PT predictions.

4.2. Studies on Arabic within PT framework

Alhawary (1999) investigated the development of morphological agreement in Arabic. The first phase of the study looked at the validity of the Teaching Hypothesis (TH) which claims that the development of the learning process is not affected by classroom instructions (Pinemann,

1998). This study targeted the verb mood marker and nouns and adjectives case markers. The main finding was that instructions did not affect the acquisition of the copula “kaana” (to be in the past) and the verbal negator “laysa”. In what concerns the developmental stages of acquisition, PT predicts the mood marker on the verb (phrase procedure) to be acquired before nominal case marker (inter-phrase procedure). Alhawary’s findings were compatible with PT predictions.

The second phase of the study looked at the acquisition of subject-verb agreement (interphrasal procedure) versus Noun-Adj agreement (phrasal procedure). The findings were contradictory to the prediction of PT as four out of the ten participants in this study produced subject – verb agreement first. Some of the weaknesses of this study are: (i) Alhawary (1999) tested only one morpheme structure at the phrase procedure which does not suffice to falsify the predictions of PT (husseinali 2006). (ii) He didn’t look at the nature of the utterances whether they are formulaic or processed structures.

Mansouri (2000) tested the adequacy of PT on Arabic morpho-syntax. His subjects were 4 Australian adult learners of Arabic as an L2. Two of them were studying Arabic for one year (novice level), and the other two were in their second year (intermediate level). Data collection was done in three different time slots within a period of 3 academic semesters. Unlike Di Biase and Kawaguchi (2002), he considered a structure to be acquired only if it is correctly produced at least five times in different contexts. If it is produced less than five times, Mansouri (2000) refers to it as an emerging structure. As far as word order is concerned, Mansouri (2000) found these developmental stages:

LEXICAL MORPHEMES < PHRASAL MORPHEME < INTERPHRASAL MORPHEME

The findings on the diagram above support the predictions made by PT. Unlike the complete consistency of syntax, the acquisition of regular plural morpheme which is considered to be acquired at the category level (stage 2) is in fact acquired after the acquisition of Noun – Adjective agreement which is predicted to be acquired at the phrase level (stage 3). However, this exceptional inconsistency does not conflict with PT predictions. Husseinali (2006) calls it a “structure skipping within a stage.” PT can only be falsified if a learner skipped a whole developmental stage. As mentioned before, the plural noun forms are not regular in most cases. Thus, there is no “one general” plural noun morpheme learners would acquire.

The most recent study was done by Al Shatter (2010) who investigated whether Arabic morpho-syntax supports the predictions of PT and whether stage procedures are acquired completely by acquiring its substructures. He tested structures belonging to four different stages:

- Lexical
- Phrasal
- Inter-phrasal
- Inter-clausal

This study finds a consistency with PT predictions with an exception of the nominal structure [Dem – (?al) – N]. He concluded that though learners can acquire a structure, they cannot acquire all its sub-structures at the same time period. He then suggested a second “hierarchy for the acquisition of substructures based on different grammatical features.”

5. METHODOLOGY

5.0. Introduction:

The purpose of this chapter is to introduce the methodology designed to collect, code and analyze data in this research. This study aims to investigate the development and emergence of some grammatical structures¹ in Arabic, based on the predictions of Pienemann's (1998) Processability Theory (PT). PT assumes that structures emerge based on a five-stage Processability hierarchy. To achieve this aim, a sample of six volunteer – participants, who are students of Arabic at the University of Wisconsin-Milwaukee, will participate in this study. Participants will take a language test² to establish their baseline knowledge of the target structures. Then, four tasks were designed to collect data: 1) an oral interview, 2) a picture description task, 3) a picture comparison task, and 4) a story-telling task.

A research design is crucial to reach some relatively adequate answers to what is a possible explanation to the order of stages of acquisition. There is a need of a method, which will help test my hypotheses and see whether formulae can affect the development of acquisition knowing that some obtained data are, in fact, memorized forms. Many former studies were criticized as being artifacts of the methodologies used in data elicitation or data analysis. For instance, Dulay and Burt (1974) tested the “natural order” of morphemes, using the bilingual syntax measure (BSM). Larsen-Freeman (1975) used the same measure and obtained similar results to those of Dulay and Burt. When Larsen-Freeman used a different measure, she

¹ The following structures will be under investigation. Three different morphological procedures will be considered. In the phrasal level, NP {(det) – N – Adj}, the construct state NP {N – N – (Adj)} will be considered. At the sentential level, Subject – verb agreement, Verb – Subject agreement predicative adjective agreement, and V – S agreement will be focused on. At the embedded clause, conditionals and purpose-clause will be targeted.

² See Appendix B.

obtained different results. Another study on the production of the English /r/ and /z/ by Japanese learners, Dickerson and Dickerson (1977) found systematic differences in the production of the two morphemes based on the task of elicitation. Ellis (1999), (cited in Geeslin and Gudmestad, 2008), listed a variety of factors which might influence subjects at the time of data elicitation. Situational context, illocutionary meaning, linguistic contexts, discourse contexts, and planning conditions are just a few factors to name. Some theoretical frameworks would favor a certain data elicitation method and research design. Therefore, designing a data elicitation method is given priority, and sketching its details will give a clear overview to the reader of this study. Four different tasks to elicit data were designed for this research.

First, in section 5.1 the purpose of this study will be discussed, and how it contributes to the field of SLA in general. Section 5.2 will introduce the research questions this study is trying to answer. Section 5.3 will state the hypotheses in details. Section 5.4 will introduce the participants in the study. Section 5.5 will discuss the methods of data collection. It will introduce the tasks and the rationale behind choosing each task. Section 5.6 will discuss the procedures followed to collect data, section 5.7 will explain how data is coded and scored, and the last section 5.8 will summarize the whole chapter.

5.1. Purpose of the study:

This study will attempt to test the validity of PT predictions on the acquisition of a set of Arabic grammatical structures, by English learners, in a classroom environment. It will also attempt to find whether there are any specific properties of Arabic that would in a way falsify the predictions of the theory. In case of counter-examples, this study will take investigations to a

further level where we can elicit utterances beyond the reach of formulaic language. In other words, participants should use the language in new contexts they have never tried before.

5.2. Questions of the study:

Q1. What are the characteristics of formulae in SLA development? Are they similar to formulae in FLA?

Q2. How were formulae treated in SLA literature? How PT, in particular, treated formulaic language?

Q3. Would Arabic L2ers interlanguage show support to PT predictions?

Q4. Does the emergence of a stage procedure overlap with the neighboring stage, or are they discrete stages of development?

5.3. Hypothesis of the study:

This research will test one hypothesis. Its aim is to test whether PT hierarchy predictions are supported by the collected data.

Hypothesis:

Speech production by Arabic L2 learners will support the speech production hierarchy as claimed by PT.

The PT hierarchy is an implicational order of five stages where every stage has its own grammatical encoding procedures. The five stages that are cited in Pienemann (1998) are the following:

Lemma access < Category procedure < Phase procedure < Sentence procedure < Subordinate clause procedure.

Therefore, Participants will show an early acquisition of grammatical categories and the canonical word order. In other words, they will produce a SVO word order without a feature matching within or between phrases.

Example:

35.

* ʔal-bint ʕinda-haa kabiir sayyaara
the-girl at-her big.m car.f
“The girl has a big car.”

The next stage, they will show feature matching within phrases as in the following example:

36.

ʔal-bint ʕinda-haa sayyaara kabiir-a
the-girl at-her car.sf big.s-f
“The girl has a big car.”

Next, grammatical feature between phrases will emerge, as well as a VSO word order, as in the example below:

37.

ʔiftara-t ʔal-bint sayyaara kabiir-a

buy-3sfPerf the-girl car.sf big.s-f

“The girl bought a big car.”

In the last stage, PT predicts that embedded clauses will be produced as in the example below:

38.

ʔiftara-t ʔal-bint sayyaara kabiir-a liʔanna-haa laa tu-ħib ʔal-sayyaara-at

ʔal-sʔayyir-a

buy-3sfPerf the-girl car.sf big.s-f because-3sf.Acc neg 3sfImper-like the-car-PLf

the-small.s-f

“The girl bought a big car because she does not like small cars.”

In the light of the literature review, I assume that the participants’ speech consists of both formulae and processable structures. In the case of formulae – besides being fast, fluent, and structurally more advanced than the learner’s level of proficiency – the learner will fail to process similar structures when the context or the morphological environment changes. For instance, if a learner produces a sentence like “That pretty girl is my cousin”, and failed to produce the phrase “(det) Adj N” in different contexts, then we can assume the above sentence is a memorized chunk. The next step would be that the learner will be put on a task to produce NPs like in:

40. The pretty woman works in a hospital.

41. This awesome girl was my classmate last year.

The task will also try to elicit producing the NP in different morphological environment like:

42. The pretty cars are expensive.”

43. I like pretty cars.

To test the hypothesis stated above, six learners of Arabic at the University of Wisconsin-Milwaukee participated in this study. Their personal background will be described in details in the next subsection.

5.4. Participants:

The objective of this study is to test the predicted stages of Processability Theory and verify whether these predictions are supported in the case of the English L2 learners of Arabic at two different levels of proficiency.

The study population consists of six ($n = 6$) voluntary and uncompensated students of Arabic at the University of Wisconsin-Milwaukee. Three of the subjects ($N = 3$) were in the third semester of Arabic (approximately 175 hours of formal instruction at the time of data collection), and the other three ($N = 3$) were in the fifth semester, (approximately 315 hours of formal instruction at the time of data collection). Pienemann (2005) stated that L1 transfer is very limited and L1 and L2 development have two different developmental trajectories. Therefore, Transfer from L1 will not be discussed in this study. However, speakers of Semitic languages (including Arabic heritage speakers) will be avoided.

The twelve learners have these criteria in common:

- None of them are native or heritage speaker of Arabic.
- None of them know any other Semitic languages.
- None of them took any Arabic class in schools other than UWM.

- All of them attended classes regularly.
- All of them produced sufficient data, using the structures under test.

The subjects will be randomly selected so that my testing will not target the best group only. Some other subjects will be on a waiting list in case a subject’s data will show any insufficiency of output. All subjects will be told that this is not a test and they do not have to come prepared.

Table 5-1: The background of the six participants:

	Name	Age	Class standing	L1	L2
1	Philip	24	Graduate	English	French
2	Nora	19	Junior	English	Spanish
3	Emily	20	Junior	English	NA
4	James	26	Senior	English	Spanish
5	Linda	20	Junior	English	Spanish, French
6	Michael	24	Junior	English, Spanish	NA

There is a questionnaire³ available for participants to fill out their contact information, name, age, gender, email, native language(s), and foreign language(s).

5.5. Data collection method:

The design also considers the nature of the second language theory being adopted and its rationale. Therefore, it is crucial to adopt the analytical model adopted by PT. The design will have two phases of linguistic treatment. The first phase is concerned with appropriate tasks to

³ A questionnaire is joined as Appendix A

elicit data (will be discussed in this section), whereas the second phase has the analytical procedure as its core concern (discussed in the following section). The data elicitation tasks used in this study are the following:

A. The language proficiency test (Screening test):

All participants will take a multiple choice test to check their linguistic exposure to the structures in this study. The test also contains two reading comprehension texts with questions to answer in full sentences. The language proficiency test duration will be relatively short (one hour), to assure that the answers are somehow spontaneous and subjects have no extra-time to verify their answers.

B. The data elicitation tests:

Data elicitation contains three different tests:

1. Picture description test⁴:

In one task, participants will be given fifteen pictures with prompt words, and will be asked to describe the pictures in two sentences or less, using the prompt words next to the pictures. The prompt words are nouns, verbs, and adjectives. In another task, participants will also be given a picture story with a verb next to each picture, and will be asked to tell the story using the prompt verbs as sentence initials.

⁴ See Appendix B

2. Picture comparison test:

In another task, participants will be given a set of slides. Each slide has two different objects. For example, a slide has a picture of a small car and a big one, and the participant has to choose what car she/he wants to possess, and gives the reason why. This is a controlled task used to force the participants to produce statements of purpose. In another task, the participants will be shown pictures with a question: “What are you going to do if you have/had this?” This is another controlled task to help them produce conditionals.

3. The oral interview test⁵ (fifteen to thirty minutes, based on the student’s level)

C. The story-telling test:

It has one task designed. Participants will be asked to tell three short stories based on three picture stories they will see. The objective of this task is to take the participants out of the familiar contexts they are exposed to.

1. Story-telling tasks⁶:

- a. (Naadi ?al-?awlaad) “The boys’ club”
- b. (?al-baaruka) “The wig”
- c. (?al-waraqa ?al-naqdiyya) “The money bill”

⁵ See Appendix C

⁶ See Appendix D

5.6. Data collection procedure:

This section will explain how and when data was collected. Participants will take a language proficiency test to judge their grammatical knowledge of the forms under investigation. This test will also include some non-targeted structure in the study to distract the subjects from the purpose of this research. Then, there will be two time-periods for data collection. The first data collection (Time 1, or T1) includes an oral interview, picture description task, and picture comparison task. Data will be collected during the first week of November 2013.

The interview will have two forms. First, short question – answer interview; students will answer questions about their daily activities, hobbies, interests, family and friends. Most of answers are expected to be in simple present, and the canonical word order SVO is expected to be dominant. Second, students will answer questions about what they did during summer vacation and their plans after graduation. Most of the answers are expected to be longer narrations in the past and future, and a VSO word order is predicted to appear. All T1 data were collected within 3 days period. Although interviews have shown that the elicited data are “natural speech”, Milroy and Gordon (2003) claimed that they are not really so when the interviewers are complete strangers to the interviewees. Besides, Gass and Mackey (2006) argued that naturalistic data collected from interviews show only what learners know, and disregard what learners avoid to produce. To minimize this risk, other tasks are designed to elicit specific grammatical structures from participants. The picture description is a task used to “elicit sufficient exemplars of a particular form” (Gass and Mackey, 2006). The task has pictures of objects or people with a prompt adjective, nouns, and verbs to avoid the risk of any vocabulary shortage. Participants will use these adjectives to describe people and objects in full

sentences. Gass and Mackey (2006) cited three benefits from using a prompted production. First, it encourages learners to produce the language. Second, it helps elicit particular structures of the language. Lastly, it facilitates data collection for researchers. The third task is a picture comparison. The goal behind this task is pushing participants to produce longer utterances, since they are comparing two different things.

All data will be collected in a conference room at the department of foreign languages and literature. Audacity software will be used on a personal computer, supported with a sound filter microphone.

The second data collection (Time 2 or T2) is a test 2. It will take place one week after the first data collection (second week of November, 2013). The reason behind having a week between the two tests is to avoid any increase of the proficiency level, which might be due to development realized over time. The test 2 is specific; only students who show counter-examples to the predictions of the theory will take it. The rationale behind this test is to test the counter-examples in different contexts to see whether these instances were produced either as a matter of chance, chunk, or processing.

These task-based-elicitation procedures are designed to collect speech from six adult learners of Arabic as a foreign language. The design takes in consideration the grammatical structures under investigation, and instructions will be designed in a way to elicit dense data in a short period of time. Small talks – like greetings – will not be considered because they are well-dominated by learners. All procedural instructions will be clear and in an English written form.

Data will be transcribed, organized, and coded based on the grammatical structures in question. Data transcription will exclude:

- Clauses mostly in English.
- Incomprehensible clauses.
- Repeated phrases or sentences.

5.7. Coding and scoring:

In organizing and coding the data, only tokens with the targeted forms will be considered. Each token will be judged grammatically as either correct (c), or incorrect (i). The elicited structures will be compared to the target language structures, and the agreement features (gender (G), number (N), person (P), and definiteness (D)) will be checked in another column. Each feature is going to be checked (✓) when used in an obligatory occasion, (X) when dropped in an obligatory occasion or used in a non-obligatory occasion. The token will be coded correct only when it is checked (✓) on all agreement features. Suppose a subject produced the following sentence with the wrong attributive adjective:

44.

a. *ʔal-walad ja-drus ʔal-luɣa ʕarabi
the-boy 3SM.imp-study the-language.sf Arabic.sm
“The boy studies the Arabic language.”

b. ʔu-ħib ʔal-ħaliib ʔal-baarid
1S.Imper-like the-milk.sm the-cold.sm
“I like cold milk.”

Table 5-2: N-aAdj agreement:

Token	Target form	Grammaticality	Agreement		
			G	N	D
ʔal-luɣa ʕarabi	ʔal-luɣa ʔal-ʕarabiy-a	i	X	√	X
ʔal-ħaliib ʔal-baarid	ʔal-ħaliib ʔal-baarid	c	√	√	√

(Key: I = incorrect, c = correct, G = gender, N = number, D = definiteness, X = used in non-obligatory context or dropped in obligatory context, √ = used in obligatory context)

The emergence criteria:

This study will investigate the implicational relationship between a set of morphosyntactic structures using one criterion Pienemann (1998) labelled emergence criteria. “The emergence criterion identifies the point of first emergence of a structure in an interlanguage system.” Pienemann (1998). For instance, a learner might produce the following sentential word orders:

45.

- a. ʔal-walad raʒaʕa ʔilaa ʔal-bayt
the-boy come.3SM.Perf to the-house
“The boy went back home.”

- b. haaðihi ʔal-sayyaara ɣaali-a
this.SF the-car.SF expensive.S-F
“This car is expensive.”

- c. darasa ʔal-walad-u fii ʔal-kitaab-i
study.3SM.perf the-boy-Nom in the-book-Gen
“The boy studied in the book.”

Illustrations in (45a) and (45b) are evidence of a canonical word order, while (45c) represents the emergence of a VSO word order. Pienemann 1998 stated that in order for a structure to be considered emerging, it should be used at least four times with different morphemes and contexts. Pienemann 1998 showed how for example “He goes” does not show acquisition of subject-verb agreement and should be supported by at least another three uses of the same verb with different subject-verb agreement features, and different lexical subjects. This way we can assume the productivity of the inflection rule on the verb. In other words, “goes” was not learned as a memorized lexical item.

All examples in forty-five above are instances of positive evidence in obligatory context. It is also crucial to note that negative evidence is important evidence researchers are looking for because it decides what stage the learner is at. Examples of the negative evidence are the following:

46.

*ʔal-tʃalib-u tʃawiil-a
the-student.sm-Nom tall.s-f
“The student is tall.”

47.

*ʔal-tʃalib-at-u tʃawiil
the-student.s-f-Nom tall.sm
“The student is tall.”

The emergence criterion will analyze the distribution of the target structures and the highest stage of the learner’s level will be decided upon the emergence of the highest structure of PT hierarchy in the learner’s data. In other words, if a learner showed instances of embedded

clauses, then we can assume his acquisition is in stage five. A minimum of five positive evidence of embedded clauses, if used in different contexts, will suffice to decide for the acquisition stage.

Ishigami (2009) cited two phenomena to evaluate “emergence”. First, utterances should be lexically varied. The following examples are two SVO sentences but their lexical context is the same. Therefore, the emergence criteria will not apply to both and only one will be counted towards the total number of this observed structure Det – N – aAdj.

48.

haaḏihi ʔal-sayyaara ɣaali-a
this.SF the-car.SF expensive.S-F
“This car is expensive.”

49.

haaḏihi ʔal-sayyaara ʔadiid-a
this.SF the-car.SF new.S-F
“This car is expensive.”

The second phenomenon is the emergence of obligatory versus non-obligatory contexts. For data to be sufficiently elicited, the learner’s utterances should show a rate of positive evidence greater than 50% of the total production of the target structure. Suppose a learner produced the following sentences where VSO word order is under investigation:

50.

a. darasa ʔal-walad-u fii ʔal-kitaab-i (+)
study.3SM.perf the-boy-Nom in the-book-Gen
“The boy studied in the book.”

- b. ʔal-bint-u ta-ʕmal fii bank (not targeted)
the-girl-Nom 3SFImpr-work in bank
“The girl works in a bank.”
- c. tu-ħibbu ʔal-bint-u ʔal-qahwa kaθiiran (+)
3SF-like the-girl-Nom the-coffee very much
“The girl likes coffee very much.”
- d. tu-ħibbu ʔal-bint-u ʔal-jaay kaθiiran (+)
3SF-like the-girl-Nom the-tea very much
“The girl likes tea very much.”

In analyzing these data, example (50a) and (50c) are positive evidence that state the emergence of VSO word order (Stage 4), while (50d) will not be counted since it has the same context as in (50c). Therefore, the emergence criteria is not the total number of utterances of the targeted structure, but it is the total utterances with lexical and morphological variation.

Table 5-3: Applying emergence criteria to VSO word order:

Total number of utterances	3
Emergence criteria	2

Once the emergence criteria are established, the relevancy of the grammatical procedure is the next step. A grammatical structure is acquired only if the rate of the positive evidence is greater than 80% of the emergence criteria of the structure. Suppose we are investigating the following VSO productions of a learner:

51.

a. darasa ʔal-walad-u fii ʔal-kitaab-i (+)

study.3SM.perf the-boy-Nom in the-book-Gen

“The boy studied in the book.”

b. ʔal-bint-u ta-ʕmal fii bank (not targeted)

the-girl-Nom 3SFImpr-work in bank

“The girl works in a bank.”

c. tu-ħibbu ʔal-bint-u ʔal-qahwa kaθiiran (+)

3SF-like the-girl-Nom the-coffee very much

“The girl likes coffee very much.”

d. tu-ħibbu ʔal-bint-u ʔal-jaay kaθiiran (+)

3SF-like the-girl-Nom the-tea very much

“The girl likes tea very much.”

e. *ja-lʕab-uuna ʔal-awlaad-u (-)

3M.Imperf-play-PL the-boys-Nom

“The boys are playing.”

Table 5-4: The acquisition rate for VSO word order:

Emergence criteria	3
Positive evidence	2
The structure acquisition rate	66%

If a structure is produced once, then assuming its emergence is risky. There is no evidence whether this structure was acquired, or it was due to chunking or chance. Besides, there is no clue whether the data elicitation task was successful in eliciting the desired structure. Therefore, a structure must be varied morphologically by being used with a set of different morphemes, and varied lexically by being used in a set of different contexts, to be considered processable.

Researchers within PT framework adopted different criteria to rate a structure as being emerging, acquired, or not acquired. Alhawary (1999) tested PT predictions in a longitudinal study which tested the emergence of gender agreement on demonstrative-predicates and verbal agreement. He applied a two-minimal token emergence criterion. Dyson (2009) adopted the emergence criterion as defined by Pienemann (1998); a structure is emerging when it is produced at least four times with a variety in morphology and contexts. Al Shatter (2012) investigated the relationship between PT implicational hierarchy and the formal classroom instruction. Data was collected during six different periods of time. He tested structures from four procedural stages: lexical (stage two), phrasal, (stage three), inter-phrasal (stage four), and inter-clausal (stage five). He considered a structure to be emerging if it is produced minimally three times in lexically varied contexts.

Pienemann (1998) stated that the first emergence of a structure is what counts rather than the end of acquisition. However, in this study we consider a rate 80% for a structure to be fully acquired. Therefore, two structures of the same stage that are acquired by at least 80% would reflect language processing rather than chunking.

In this study, a structure is considered acquired (+) if it is produced at least five times with different lexical entries and different morphological environment with accuracy rate of 80%. A structure is considered emerging (+/-) if it is produced at least three times with different lexical entries and different morphological environment with an accuracy rate between 50 and 79%. A structure is considered not acquired (-) if it is produced at least twice with different lexical entries and different morphological environment with an accuracy rate below 50%. A structure is considered undetermined (0) if it is produced once or was not produced at all.

5.8. Chapter summary:

My dissertation will focus on the L2 production of a set of grammatical structures in Modern Standard Arabic (MSA) by English students. Participants are six adult learners from two different levels of proficiency who will be tested via different tasks to elicit data either to support the predictions of PT hierarchy, or to disconfirm it. In case of the latter, a test 2 will take place to verify whether the counter-examples are due to chance, chunks or process. I will argue that formulae are widely used in L2 productions and their structures are unanalyzed; therefore, since learners cannot get into their inner structures, they are treated like lemmas.

6. RESULTS

6.0 Introduction

In this chapter, the results will be presented in the following sections. First, section one will present the findings of the data from participants learning Arabic at the fifth semester. Second, learners of Arabic at semester three will be individually reported at section two. Each section has three learners, and each learner will be given a subtitle. Results will be first arranged in a chart, describing the rate of acquisition of each structure, and looking at whether the PT hierarchy applies to the data or not. Then, the grammatical structures will be arranged from stage three to stage five for each participant. In section three, results of all participants will be compiled, and arranged in one chart, and analyzed.

Data analysis applies a five-minimal token emergence criterion. In other words, there should be at least five instances of use of each grammatical structure. The five counted structures must be structurally and lexically varied. For instance, Nora produced five N – N structures which meet the two criteria. In fact, Nora produced eight tokens, but three were excluded for not meeting the two variability conditions. Therefore, the quantitative analysis would be relatively effective. The chance of error varies based on the agreement features of each grammatical structure. For instance, N – N structures are assigned a definiteness agreement where the first noun is indefinite and the second may or may not be definite. Errors in this structure will be due only to a suppliance of definiteness on the first noun, or suppliance of definiteness in a non-obligatory occasion on the second noun. On the other hand, the risk of error is higher on N–aAdj, as this structure is assigned gender, number, in addition to definiteness.

PT hierarchy predicts the seven structures in hand to be acquired in the following sequence.

Table 6-1: PT predictions on the Acquisition of agreement of the Arabic structures:

	Grammatical structure	Arabic agreement features	Level
1	N – N	D	Phrasal
2	N - aAdj	G, N, D	Phrasal
3	N - pAdj	G, N, D	Inter-phrasal
4	S – V agr	G, N, P	Inter-phrasal
5	V – S agr	G, N, P	Inter-phrasal
6	Conditional		
7	Purpose		Inter-clausal

6.1 Third year participants:

Philip, Nora, and Emily are three participants who studied Arabic up to the fifth semester by the time of data collection. They spent approximately 315 hours of formal instruction at the time of data collection. They all produced enough tokens in most of the structures, except V – S agreement (only Philip showed emergence and acquisition of this structure).

A. Philip

Philip’s data, at the first glance, looks consistent with PT hierarchy. In addition, some structures are produced in large quantities compared to others. Philip is in stage 4, based on PT

predictions. Inter-clausal forms are not even emerging, and they did not meet the rate of 80% of correctness. The following chart reports Philip's progression based on PT theory.

Table 6-2: Philip's rate of acquisition of seven grammatical structures:

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	30	28	8	29	5	4
Incorrect	1	1	1	4	1	10
Total	31	29	9	33	6	14
Rate	96%	96 %	88 %	87 %	83%	28 %

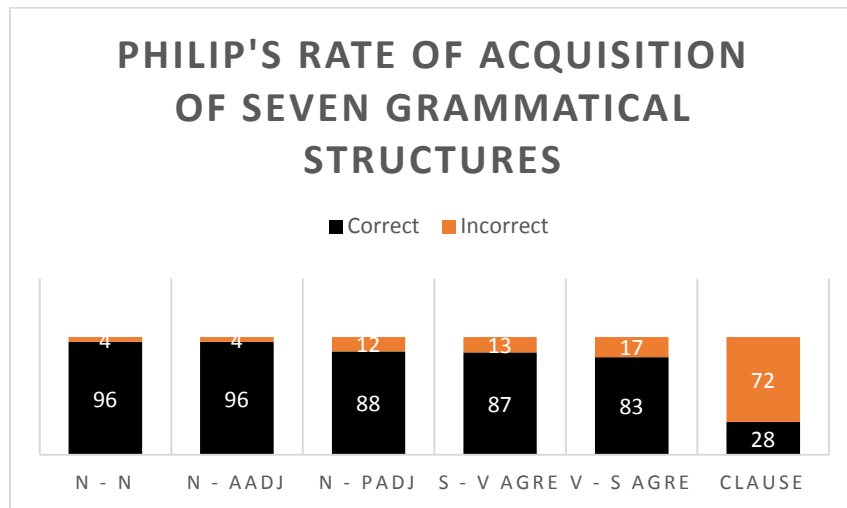


Figure 2: Philip's rate of acquisition

Stage III:

At this level, agreement features are required within the phrase structure. In this study, I will look at the acquisition of agreement of the noun phrase, which consists of either two nouns {N

– N}, or {N – aAdj}. As far as the two Arabic structures are concerned, three agreement features will be checked; namely, gender, number, and definiteness.

a. N – aAdj

Philip produced 30 of correct forms out of 31 total contexts (30/31). The number of produced tokens is sufficient. Therefore, he met the criteria discussed in chapter 5. The phrases are structurally varied, with a wide range of vocabulary use. He used different genders (52), number (53), and definiteness (54). The acquisition of these structures reached a rate of 96%

52.

a. ʔa-ʔtarii ʔal-sayyaara ʔal-sʕayyir-a (feminine)
to 1SIMP-buy the-car.FS the-small-FS
“to buy the small car”

b. aḥsan min ʔal-jawm ʔal-maadʕii (Masculine)
better from the-day.MS the- previous.MS
“better than the previous day”

53.

a. wa la-hu ḥadiqa kabiir-a (Singular)
and have.3SM garden.FS big-FS
“and he has a big garden.”

b. fii haḏihi ʔal-sʕuura ḫlaaḫat nisaaʔ ʔamriiki-jaat (Plural)
in this.FS the-picture.FS three woman.FPL American-FPL
“in this picture, three American ladies.”

54.

a. wa kaana sʿaff-ii ʔal-mufadʿdʿal (Definite)
and be.3SMPerf class.MS-my the-favorite.MS
“and it was my favorite class.”

B. la-naa kalb-aan wa ḥayawaan sʿayyir (Indefinite)
have-1PL dog-DU and pet small
“We have two dogs and a small pet.”

The only negative evidence we have from Philip was the following.

55.

* min ʔal-ʔasʿab ʔan ʔu-rattib barnaamaʔ ʔal-jawmii
from the-difficult.COM COMPL 1SIMPER-arrange schedule.MS the-daily.MS
“It is more difficult to me to arrange the daily schedule.”

Philip produced this aAdj – N form “barnaamaʔ ʔal-jawmii” (*the daily schedule) with an indefinite noun and a definite adjective. In this example, the adjective carries a definiteness feature which the head noun did not assign. A native-like utterance will sound like “ʔal-barnaamaʔ ʔal-jawmii” (the daily schedule) or “barnaamaʔ-ii ʔal-jawmii” (My daily schedule).

b. N – N

Philip produced another rate of 96% of acquisition of the construct state (N – N), where within a phrase, a noun modifies another noun in a relation of a possessed (first noun), with a possessor (second noun). The possessed noun is always indefinite while the possessor may or

may not be definite. 28/29 utterances were produced, with a structural variation. Some forms of (N – N) are definite while others are indefinite (56 a-b). The collected data also showed singular and plural productions of this form (57 a-b).

56.

a. lajsa l-ii rafiiq yurfa (Indefinite)
 neg to-me mate room
 “I don’t have a roommate.”

b. nu-jaahidu-h fii nihaajat ʔal-ʔusbuuʕ (definite)
 1PL-watch-it in end the-week
 “We watch it on the week-end.”

57.

a. kaana ʕind-ii sʕaf ʔal-muusiiqaa (singular)
 be.3SM.Perf at.me class the-music
 “I had a music class.”

b. ʔu-qaabil ʔatʕfaal ʕamm-ii (Plural)
 1S.Imperf-meet kid.MPL uncle.my
 “I meet with my cousins.”

The only error that was collected in this structure was the following:

58.

*ʔal-qadʕaaʔ ʔal-sʕajf fii wisconsin
 The-spend.Grđ the-summer in Wisconsin
 “spending summer in Wisconsin”

In addition, one token was excluded from analysis because it contains an English word.

59.

ʔaflaam ʔakshen
 movie.MPL action
 “action movies”

Stage IV:

At this stage, agreement features are checked between phrases. At this level, I focused on three forms; namely, the predicative adjective (pAdj) and subject-verb agreement (S-V agre), and (V-S agre). Participants produced many verbal agreement tokens, but only those with overt subjects are included in the analysis.

c. N – pAdj

Philip only produced nine tokens using this form. 8/9 were correct forms, and made a rate of 88% of acquisition. Most of the forms of pAdj are in the singular forms. However, both masculine and feminine are used (60 a-b), and subjects are lexically varied from common nouns, to pronouns (61 a-b).

60.

a. ʔal-ʒaw	ħaar	(Masculine)
the-weather hot		
“The weather is hot.”		

b. ʔal-waalid-a	ħanuun-a	maʒa	tʕifli-haa	(Feminine)
the-parent-FS affectionate-FS with kid.MS-her				
“The mother is affectionate with her son.”				

61.

- a. wa huwa saʕiid (Pronoun)
and he happy.MS
“And he is happy.”

- b. wa ʕulmu-h lajsa ʒayyid (noun)
and dream-POSS.3SM neg.3SM good
“And his dream wasn’t good.”

The negative evidence, which Philip produced, is a token in the plural form

62.

- * Wa hum lajsa ʒayyid la-h
and they neg.3SM good to-him
“And they are not good for him.”

d. S – V agreement

Philip produced 54 verb forms but only 33 verbs have overt subject. The rationale behind including overt subject only is that we are investigating agreement between phrases which belong to the same sentence, while pro-drop entails looking at an antecedent from a previous sentence or clause. 29/33 of correct forms were produced with a rate of 87% of acquisition. Different genders (1), numbers (2) were used.

63.

- a. ʔab-ii ja-ʕmal fii masʕnaʕ (Masculine)
father-my 3SM.Imper-work in plant
“My father works in a plant.”

b. ʔal-waalid-a ta-qraʔ qisʕa (Feminine)
the-parent-FS 3FS-read story
“The mother is reading a story.”

64.

a. wa bintu-haa tu-saaʕidu-haa (Singular)
and girl-her 3SF-help-her
“And her daughter is helping her.”

b. wa hum ja-skun-uun fii nafs ʔal-bajt (Plural)
and they 3M.Imperf-live-PL in same the-house
“And they live in the same house.”

There are four instances of errors in Philip’s production of this structure. Two tokens have a gender mismatch (1), and two tokens have a number mismatch (2)

65.

a. *ʔal marʔa ja-ʕsil ʔal-bajt
the woman 3MS.Imperf-clean the-house
“The woman is cleaning the house.”

b. *ʔumm-ii ja-bqaa fii ʔal-bajt
mother-my 3SM.Imper-stay in the-house
“My mother stays at home.”

66.

a. *ʔal-tʕullaab ju-ħibbu-hu
the-student.MPL 3MS-like-him
“Students like him.”

- b. *liʔanna-nii na-ʕmal xilaala ʔal-ʔusbuuʕ
 because-I 1PL.Imperf-work during the-week
 “... because I work during the week.”

e. V – S agreement

There were only six productions of this type of agreement where 5/6 were correct forms. The five correct forms were all in singular forms in both masculine and feminine gender, and used in a variety of lexical contexts.

67.

- a. ja-lbasu ʔal-raʒul bantʕaluun kabiir
 3SM-wear the-man pants big
 “The man is wearing big pants.”

- b. ta-ʔtarii sara daqiiq-an
 3SF.Imperf Sarah flour-Acc
 “Sarah is buying flour.”

The negative evidence Philip produced was in the dual form. He produced a V – S – O with a full agreement between the verb and the subject where only partial agreement applies.

68.

- * Wa ja-ʔkul-aa sam wa sara ʔal-pankajk
 and 3M.Imperf-eat-DU Sam and Sarah the-pancake
 “And Sam and Sarah are eating the pancake.”

A native-like utterance will look like (69) where the subject and the verb agree in gender and not in number.

69.

Wa ja-ʔkul sam wa sara ʔal-pankajk
and 3MS.Imperf-eat Sam and Sarah the-pancake
“And Sam and Sarah are eating the pancake.”

Stage V:

f. Interclausal

At this level, learners are expected to process agreement between clauses. Two types of interclausal agreement are tested in these data. Priority was given to both “the conditional” and the statement of “purpose”, due to their frequency in input. Philip produced 4/14 of the correct forms with a rate of 28% of acquisition. The ten erroneous illustrations didn’t show grammatical agreement in the subordinate clause.

As far as conditionals are concerned, Arabic has two conditional particles (if). “ʔiðaa” is used to denote future plans. Therefore, the verb in the subordinate clause is in the future tense preceded by “fa-” (then). “law” is another particle, and is used when the context is in the past. Therefore, the verb in the subordinate clause is in the past tense preceded by “la-” (then). Philip produced both “ʔiðaa” and “law” but in all the 8 tokens, the verbs are all in the present tense, instead of the future or past tense. “fa-” was produced with “law” instead of “la-” (70a), and not produced at all in its obligatory occasion with “ʔiðaa”(70b).

70.

a. *law kun-tu fii madiinat las vigan fa-ʔanaa ʔu-ʔaahidu ʔafla muusiiqii-a
if be-1SImperf in city Las Vegas then-I 1S.Imperf-see party.SF musical-SF
“If I am in Las Vegas, I will see a musical.”

b. * ʔiðaa kaana ʔind-ii haðihi ʔal-ʔahaada ʔa-ʔsʔul ʔalaa waðʔiifa
if be.3S.Imperf at-me this.FS the-diploma.FS 1S.Imperf-obtain on job
“If I have this diploma, I will get a job.”

Philip also produced 6 sentences of purpose. There are three particles of purpose in MSA. “liʔanna” (because), is always followed by a nominal sentence. “li-” (to) is followed either followed by a verb of an –ing form. “bisabab” (because of) is followed by a noun phrase. Philip’s productions have contexts where only “liʔanna” is used. If “liʔanna” is followed by a personal pronoun, then the pronoun is used in the accusative form; therefore, it becomes a dependent clitic, as in example (71 a-b).

71.

a. * liʔanna ʔanaa
because I
“Because I”

b. liʔanna-nii
because-I
“because I”

Philip used the pronoun when it should not be used.

72.

* huwa saʕiid liʔanna-hu la-hu hadijja
he happy because-he to-him gift
“He is happy because he got a gift.”

He also used liʔanna-nii (because I) when he meant (because)

73.

* nu-jaahidu-hu fii nihaajat ʔal-ʔusbuuʕ liʔanna-nii na-ʕmal xilaala ʔal-ʔusbuuʕ
1PL.Imperf-watch-it in end the-week because-I 1PL-work during the-week
“We watch it on the week-end because we work during the week.”

At stage 5, Philip produced only four correct forms out of 14. Therefore, he did not meet the 80% rate of acquisition. Philip, based on PT hierarchy is not stage 5 yet, because with a rate of 28%, the interclausal agreement is not emerging yet.

B. Nora

Nora’s data, also, looks consistent with PT hierarchy. She produced some structures in sufficient quantities to test the PT claim. Although Nora did not produce any V – S agreement, she is in stage 4, based on PT predictions. Inter-clausal forms are not emerging, and they reached only a 16% rate of correct productions. The following chart reports Nora’s progression based on PT theory.

Table 6-3: Nora's rate of acquisition of seven grammatical structures:

	N - aAdj	N - N	N - pAdj	S - V agre	V - S agre	Clausal agre
Correct	14	5	10	21	0	2
Incorrect	1	0	0	1	0	10
Total	15	5	10	22	0	12
Rate	93%	100%	100%	95%	-	16%

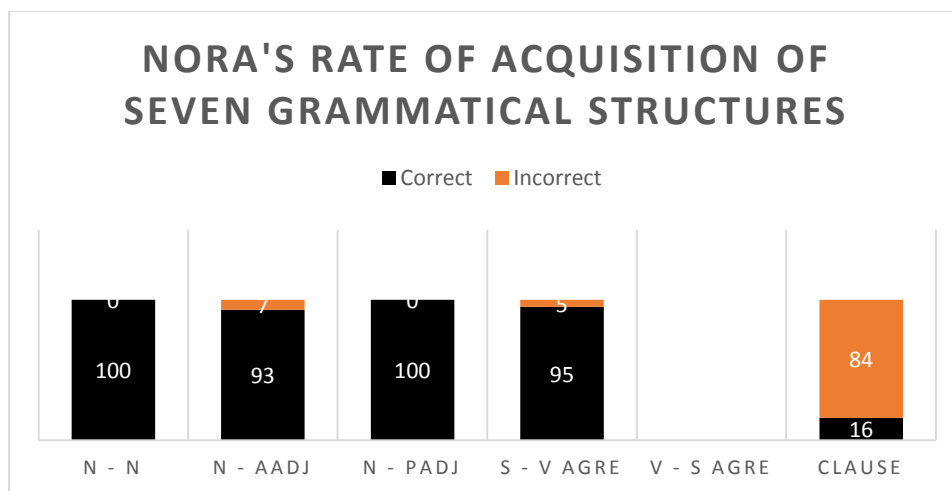


Figure 3: Nora's rate of acquisition

Stage III:

a. **N - aAdj**

Nora produced 14 of correct forms out of 15 total contexts (14/15). The number of produced tokens is sufficient. Therefore, she met the criteria that the phrases are varied structurally and lexically. She used different genders (74), number (75), and definiteness (75-76). The acquisition of these structures reached a rate of 93%

assigned a feminine singular feature because the noun is non-human plural. A native-like utterance will sound like the following:

77.

ʔu-ħib ʔal-ʔimtiħaan-aat ʔal-sahl-a
1S.Imperf-like the-exam.M-FPL the-easy.FS
“I like easy exams.”

b. N – N

Nora produced only five tokens, which are the minimum required number to take a form in consideration. However, she produced 5 out of 5 of correct forms, with a rate of 100% of acquisition.

78.

a. qabla sʕaf ʔal-ħarabijja
before class the-Arabic
“before the Arabic class”

b. fa-ʔa-ðhabu ʔilaa madiinat Chicago
then-1S.Imperf-go to city Chicago
“Then I go to Chicago city.”

c. N – pAdj

Nora produced 10/10 of correct forms of this type of sentences, with a rate of 100%. All the tokens were in the singular form. However, masculine (79a) and feminine (79b) are used , in addition to non-human subjects as in (79c).

79.

- a. ḡal-walad ḡadʿbaan fii ḡal-sʿabaaḥ
the-boy.MS angry.MS in the-morning
“The boy is angry in the morning.”
- b. ḡal-ḡum ḥanuun-a
the-mother.FS affectionate-FS
“The mother is affectionate.”
- c. ḡal-jaw fii ḡal-jaman ḥaar wa muḡmis
the-weather.MS in the-Yemen hot.MS and sunny.MS
“The weather in Yemen is hot and sunny.”

d. **S – V agreement**

Nora produced 21/22 tokens with an overt subject and a finite verb. Subject- verb agreement is a stage 4 processing, and it was acquired at a rate of 95%. She met the requirement of lexical and structural variety as well.

80.

- a. ḡomar saaḡada-haa (masculine singular)
Omar help.3SM.Perf-her
“Omar helped her.”
- b. ḡal-ḡum ta-qraḡ ḡal-qisʿa min ḡal-kitaab (feminine singular)
the-mother.FS 3FS.Imperf-read the-story from the-book
“The mother read the story from the book.”
- c. ḡal-ḡawlaad kaan-uu ḡasʿḥaab fii tʿufuulati-him (Plural)
the-kid.MPL be.3M-PL friend.MPL in childhood-their
“The kids were friends in their childhood.”

The only error in this structure was in the gender of the following sentence.

81.

*Sumajja ʕamila pankeik
Sumaya.F work.3MS.Perf pancake
“Sumaya made a pancake.”

Nora produced this S – v agreement “Sumajja ʕamila” (*Sumaya made) with a gender mismatch. A native-like speaker will produce the following:

82.

Sumajja ʕamila-t pankeik
Sumaya.F work-3FS.Perf pancake
“Sumaya made a pancake.”

e. V – S agreement

There was no evidence of V – S agreement in Nora’s data, though one of the tasks was to tell story using verb initial sentences.

f. Interclausal

Nora produced 1/7 of correct forms of purpose, and 1/5 of conditional with a total rate of acquisition of 16%. All errors without exception were at the subordinate clause.

83.

ʔu-ħib ʔu-saafir ʔilaa new York liʔanna ʔakθar ʔahl-ii hunaak
1S.Imperf-like 1S.Imperf-travel to New York because more family-my there
“I like to travel to New York because the majority of my relatives are there.”

84.

* ገል-ታይት ገል-ሳጎህር ገላክሰን ከገንኳን ከሆነ ገላሻል ከ-ከሰጠላ

The-house the-small better because he easy to-cleaning

“The small house is better than the big house because it is easy to clean.”

Nora used “ከገንኳን” (because) followed by a subject pronoun “ከሆነ”. An object pronoun should be used instead, like in the following:

85.

ገል-ታይት ገል-ሳጎህር ገላክሰን ከገንኳን-ከሆነ ገላሻል ከ-ከሰጠላ

The-house the-small better because-he easy to-cleaning

“The small house is better than the big house because it is easy to clean.”

In the following example, Nora used conditional in the past with “law” (if). In the subordinate clause she used a verb in the imperfective form.

86.

* law kun-tu ገላ-ሰክን ከገንኳን ገላ-ገሰሰክ ከገንኳን ትላወድላ

if be.1SPerf 1S.Imperf-live in the-city 1S.Imperf-reside in building.FS tall.FS

“If I live in the city, I will reside in a high building.”

The verb on the subordinate clause should be in the past, and preceded by “la-” (then). The correct form is shown in the example below.

87.

law kun-tu ገላ-ሰክን ከገንኳን ከገንኳን ገላ-ገሰሰክ ከገንኳን ትላወድላ

if be.1SPerf 1S.Imperf-live in the-city then-reside-1S.perf in building.FS tall.FS

“If I live in the city, I will reside in a high building.”

At stage 5, Nora produced only 2 correct forms out of 12. Therefore, she did not meet the requirement of 80% rate of acquisition. Nora, based on PT hierarchy is not stage 5 yet, because with a rate of 16%, the interclausal agreement is not emerging yet.

C. Emily

Emily's data looks interesting because the S – V agreement rate is higher than the rate of the phrasal agreement. Besides, within stage 4, the S – V agreement is acquired by 100% while N – pAdj is not acquired yet.

Table 6-4: Emily's rate of acquisition of seven grammatical structures:

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	14	8	5	17	0	4
Incorrect	2	1	2	0	2	7
Total	16	9	7	17	2	11
Rate	87 %	88 %	71 %	100 %	0%	36 %

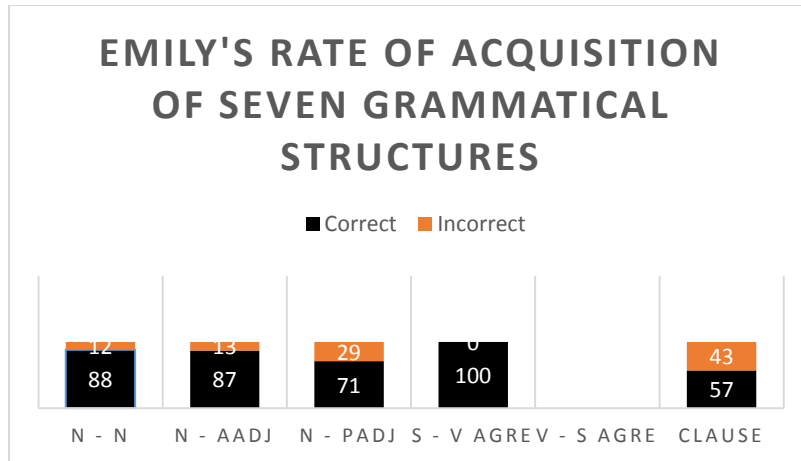


Figure 4: Emily's rate of acquisition

a. N – aAdj

Emily produced 14 of correct forms out of 16 total contexts (14/16). The number of produced tokens is sufficient, and varied lexically and structurally. The acquisition of these structures reached a rate of 87%.

88.

a. ʕinda-hu tʕufuula saʕiid-a
 at-him childhood.FS happy-FS
 “He has a happy childhood.”

b. ʔu-ʕaahid kurat ʔal-qadam ʔal-ʔamriikii-a
 1S.Imperf-watch ball.FS the-foot the-American-SF
 “I watch American football.”

c. ʔa-ʕraʔ fii kutub kaθiir-a
 1S.Imperf-read in book.MPL a lot-FS
 “I read a lot of books.”

Two tokens showed instances of error in Emily's data. In the first example, the adjective "yariib" (weird) was not assigned a definite article, knowing that within the noun phrase, nouns and adjectives accord in definiteness.

89. * ʔal-walad ju-ħib ʔal-ʔakl yariib
the-boy.MS 3MS.Imperf-like the-food.MS weird.MS
"The boy likes weird food."

In the second example, Emily over-generalized a rule. A feminine, singular adjective modifies feminine, or non-human plural nouns. In the following example, Emily applies the rule to even human feminine plural nouns.

90.
* ʔal-banaat ʔamriikii-a ju-ħib-uun malaabis
the-girl.FPL American-FS 3M.Imperf-like.PL cloth.MPL
"The American girls like clothes."

A native-like speaker would produce the same sentence as:

91.
ʔal-banaat ʔamriikii-aat ju-ħib-uun malaabis
the-girl.FPL American-FPL 3M.Imperf-like.PL cloth.MPL
"The American girls like clothes."

b. N – N

Emily produced a rate of 88% of acquisition of the construct state (N – N). 8/9 utterances were produced.

92.

a. Waalid-at ʔal-bint ta-taħaddaθ ʔilaj-haa
parent-FS the-girl.FS 3FS.Imperf-talk to-her

“The girl’s mother is talking to her.”

b. ʔu-riid zamiil-at yurfat-ii ta-kuun latʕiif-a
1S.Imperf-want mate-FS room.FS 3SF.Imperf-be kind-FS

“I want my roommate to be kind.”

The negative evidence is the following, where Emily used a definite article where it is not assigned by N – N rule.

93.

* fii ʔal-nihaajat ʔal-ʔusbuuʕ ʔa-ʕmal
in the-end the-week 1S.Imperf-work

“I work on weekends.”

The correct form will look as the example below states.

94.

fii nihaajat ʔal-ʔusbuuʕ ʔa-ʕmal
in end the-week 1S.Imperf-work

“I work on weekends.”

c. N – pAdj

Emily only produced seven tokens using this form. 5/7 were correct forms, and made a rate of 71% of acquisition. Most of the forms of pAdj are in the singular forms. However, both masculine (95a) and feminine (95b) are used. Definiteness features varied from the definite article to possessive pronouns.

95.

a. ʔal-sʕaf sʕaʕb ʒiddan
the-class.MS hard.MS very
“The class is very hard.”

b. wa ʒaqqat-ii sʕayyir-a
and apartment.FS-my small-FS
“and my apartment is small.”

On both examples with errors, Emily produced 2 sentences with gender mismatch as in the sentence below.

96.

* ʒaqqat-ii qariib min starbaks
apartment.FS-my near.MS from Starbucks
“My apartment is close to Starbucks.”

d. S – V agreement

Emily produced 35 verb forms but only 17 verbs have overt subject. . 17/17 of correct forms were produced with a rate of 100% of acquisition. Different genders, numbers, and persons were used.

97.

a. ʔax-ii ja-skun maʕa ʔasʕdiqaaʔi-h
brother.MS-my 3SM.Imperf-live with friend.MPL-his
“My brother lives with his friends.”

b. ʔal-bint tu-saaʕid walid-at-ii
the-girl.FS 3FS.Imperf-help parent-FS-my
“The girl is helping my mother.”

c. ?al-?awlaad laa ja-?rif-uun ?al-?isaab
the-kid.MPL neg 3M.Imperf-know-PL the-math
“The kids don’t know math.”

e. V – S agreement

There were only two productions of this type of agreement. Which is considered insufficient to be analyzed. A minimum of five tokens is required. Besides, both tokens were incorrect forms. In the both examples, the verb must agree with the subject in gender.

98.

a. * ja-?tarii mari wa zuun daqiiq
3MS.Imperf-buy Mary and John flour
“Mary and John are buying flour.”

b. * ja-?mal mari wa zuun pankeik
3MS.Imperf.work Mary and John pancake
“Mary and John are making a pancake.”

f. Interclausal

Emily produced 4/11 of the correct forms with a rate of 36% of acquisition.

99.

?al-bint tu-?hib ?al-kitaab li?anna-hu mufiid
the-girl.FS 3FS.Imperf-like the-book.MS because-it interesting.MS
“The girl likes the book because it is interesting.”

The seven erroneous illustrations did not show grammatical agreement either in the subordinate clause or on both clauses.

In the following example, Emily used the objective pronoun where it should not be used.

100.

* ḡal-ḡaw fii ḡal-mayrib ḥaar liḡanna-hu fii-h ḡal-sʿaḥraaḡ
the-weather.MS in the-Morocco hot.MS because-he in-he the-desert
“In Morocco, the weather is hot in the desert.”

A native-like utterance would be the following:

101.

ḡal-ḡaw fii ḡal-mayrib ḥaar liḡanna fii-h ḡal-sʿaḥraaḡ
the-weather.MS in the-Morocco hot.MS because in-he the-desert
“In Morocco, the weather is hot in the desert.”

As far as conditionals are concerned, Emily produced “ḡiḏaa” (if) with “ḡind-ii” (I have) where the past tense “kaana ḡind-ii” (I had) is required. On the main clause, the verb should be used in the imperfective preceded by “fa-sa” (then-Future).

102.

* ḡiḏaa ḡind-ii maal kaḑiir fa-ḡa-ḡarii malaabis ḡadiid-a
if at-me money.MS a lot.MS then-1S.Imperf-buy cloth.MPL new.FS
“If I have money, I will buy ew clothes.”

The following sentence illustrates how a correct form would look like.

103.

ḡiḏaa kaana ḡind-ii maal kaḑiir fa-sa-ḡa-ḡarii malaabis ḡadiid-a
if be.Perf at-me money.MS a lot.MS then-Fut-1S-buy cloth.MPL new.FS
“If I have money, I will buy new clothes.”

Stage 5 is not emerging yet in Emily’s data. On the other hand, stage 4 is problematic. Emily produced one structure with a 100% rate while the second form is not acquired yet, and a third one was not sufficiently supplied. Based on PT claim, it is hard to decide whether Emily is stage 3 or 4.

6.2. Second year participants

A. James

James’s data, at the first glance, does not seem consistent with PT hierarchy. Except for N – aAdj, all the other structures are produced less than 10 times in lexical and structural variety. Besides, it is not clear what stage is James on. James also produced one instance of V – S agreement which does not suffice to tell whether its correct suppliance was due to chance or processing. The following chart reports James’s progression based on PT theory.

Table 6-5: James’ rate of acquisition of seven grammatical structures:

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	16	8	8	10	0	3
Incorrect	6	1	6	2	1	8
Total	22	9	14	12	1	11
Rate	60%	88%	57%	83%	-	27%

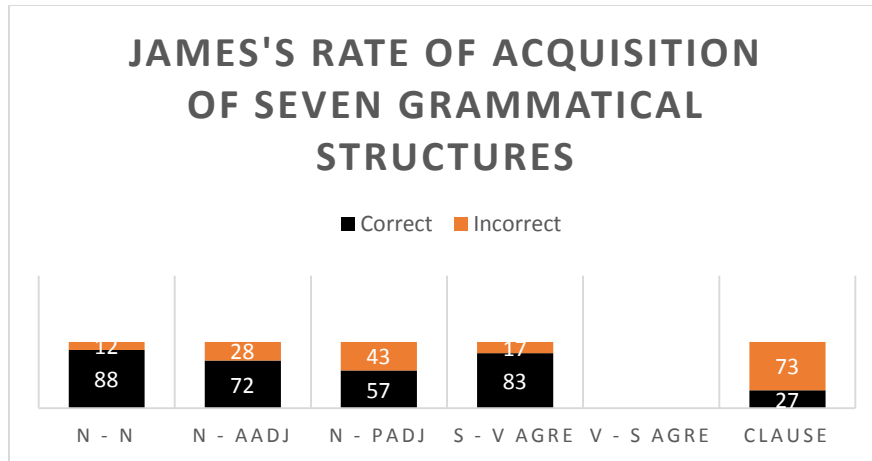


Figure 5: James' rate of acquisition

a. N – aAdj

James produced 16 of correct forms out of 22 total contexts (16/22). The number of produced tokens is sufficient. The phrases are structurally varied. He used different genders (104 a-b), number (104 b-c), and definiteness (104 a-c). The acquisition of these structures reached a rate of 60%. This structure is considered emerging.

104.

a. ?anaa ?ind-ii ?usra kabiir-a

I to-me family.FS big-FS

“I have a big family.”

b. ?u-riid ?a-?id ?amal fii balad ?aaxar

1S.Imperf-want 1S.Imperf-find job.MS in country-MS other.MS

“I want to find a job in another country.”

c. ?inda-naa banaat ?amriikij-aat

at-us girl.FPL American-FPL

“We have American girls.”

105.

* Wa ʔu-ħib ʔal-bajt kabiir

and 1S.Imperf-like the-house.MS big.MS

“And I like the big house.”

James produced this aAdj – N form “ʔal-bajt kabiir” (*the big house) with an indefinite adjective and a definite noun. In this example, the adjective does not carry a definiteness feature which the head noun assigns. A native-like utterance will sound like “ʔal-bajt ʔal-kabiir” (the big house). For the next example below a feminine gender marker is missing the adjective “kabiir”.

106.

* razul maʕa hadijja kabiir

Man.MS with gift.FS big.MS

“a man with a big gift”

107.

* ʔaħjaanan ʔal-ʔasʕdiqaaʔ lajsa naas ʔajjid

Sometimes the-friend.MPL neg.3MS.perf people.MPL good.MS

“Friends sometimes are not good people.”

b. N – N

James produced a rate of 88% of acquisition of the construct state (N – N). 8/9 utterances were produced, with lexical variation. All forms of (N – N) are definite while others are indefinite. The collected data also showed singular and plural productions of this form.

108.

a. Walid-ii ja-ʕmal fii maktab ʔal-qubuul
Parent.MS-my 3MS.Imperf.work in office.MS the-admission.MS
“My father works in the office of admission.”

b. wa ʔal-ʔaan lajsa ʕind-ii sʕufuuf ʔal-muusiiqaa
and the-now neg at-me class.MPL the-music.FS
“And now I don’t have music classes.”

The incorrect form of N – N agreement is the following. James modified the first noun with a possessive pronoun where that position is not assigned definiteness.

109.

* fii ʔal-sʕabaah ʕind-ii sʕaf-ii ʔal-ʔispaani-a
in the-morning at-me class.MS-my the-spanish-FS
“In the morning I have a class of Spanish.”

c. N – pAdj

James produced 14 tokens using this form. 8/14 were correct forms, and made a rate of 57% of acquisition. Based on this rate, this form is emerging and not acquired yet. Most of the forms of pAdj are in the singular forms. However, both masculine and feminine are used , and subjects are lexically varied from common nouns, to pronouns.

110.

a. ʔal-ʒaw ʕaar ʒiddan fii ʔal-sʕajf
the-weather.MS hot.MS very in the-summer.MS
“The weather is very hot in the summer.”

b. Wa hum saʕiid-uun ziddan fii tʕufuulati-him
and they happy-MPL very in childhood.FS-their
“And they are happy in their childhood.”

One type of mistakes in this form is gender mismatch as in the following illustration. The adjective “ḥanuun-a” should be used instead of the masculine adjective “ḥanuun”

111.

* wa hija ḥanuun ziddan maʕa waladi-haa
and she affectionate very with son.MS-her
“And she is very affectionate with her son.”

A common error in James production is the insertion of a subject pronoun between the subject and the predicative adjective as in the following example.

112.

* bajt-ii huwa kabiir wa zamiil
house.MS-my he big-MS wa pretty.MS
“My house is big and pretty.”

d. S – V agreement

James produced only 12 verb with overt subjects. . 10/12 of correct forms were produced with a rate of 83% of acquisition. Different genders, numbers, and persons were used.

113.

a. Walid-ii ja-ʕmal fii maktab ʔal-qubuul
Parent.MS-my 3MS.Imperf.work in office.MS the-admission.MS
“My father works in the office of admission.”

b. Wa bintu-haa tu-saaʕid waalid-at-haa
and daughter.FS-her 3FS.Imperf-help parent-FS-her
“And her daughter is helping her.”

c. wa hum ju-ʕaahid-uun ʔal-tilifiziun
and they 3M.Imperf-watch-PL the-television
“And they are watching TV.”

The following example shows a gender feature mismatch between the subject and the verb.

James used a masculine gender on the verb instead of feminine.

114.

* Wa hija ja-quul qisʕa fii ʔal-lajl
and she 3MS.Imperf-say story-FS in the-night
“And she is telling her a story at night.”

In the next example, James used a first person singular “ʔa-” on the verb where he should use a third person “ja-”. Besides, he used a final “-h” on the verb instead of the number feature “-uun”

115.

* ʔal-bint wa ʔal-raʕul ʔa-ʕtarii-h daqiiq
the-girl.FS and the-man.MS 1S.Imperf-buy-it flour
“The girl and the man bought flour.”

e. V – S agreement

There was no evidence of V – S agreement in James’s data, though one of the tasks was to tell story using verb initial sentences.

f. Interclausal

James produced 3/11 of the correct forms with a rate of 27% of acquisition. The eight erroneous illustrations didn't show grammatical agreement in the subordinate clause. The two following examples are correct forms James produced at this level.

116.

a. ʔal-razul ɣadʕbaan ziddan liʔanna-hu laa ju-mkinu-hu ja-naam
the-man.MS angry.MS very because-he neg 3MS.Imperf-can-him 3MS.Imperf-sleep
“The man is very angry, because he cannot sleep.”

b. sʕaʕb ʔaʕjaanan liʔanna balada-naa ja-xtalif kaθiiran
hard sometimes because country-our 3SM.Imperf-differ a lot
“It is hard sometimes, because our country differs a lot.”

The most common error James produced was producing a pronoun after “liʔanna” when it is not needed.

117.

* ʔu-ħib ʔal-sajjaara ʔal-sʕayir-a liʔanna-nii ʕind-ii sajjaara spur
1S.Imperf-like the-car.FS the-small-SF because-I at-me car-FS sport
“I like the small car because I have a sports car.”

B. Linda

Linda's data, at the first glance, looks consistent with PT hierarchy. None of the upper stages is acquired or even is emerging since stage 3 is not emerging yet. The data shows that Linda is still struggling with word order, which is a stage 2 procedure.

Table 6-6: Linda's rate of acquisition of seven grammatical structures:

	N - aAdj	N - N	N - pAdj	S - V agre	V - S agre	Clausal agre
Correct	6	3	1	10	0	0
Incorrect	6	4	4	10	0	5
Total	12	7	5	20	0	5
Rate	50%	42 %	20 %	50 %	-	0 %

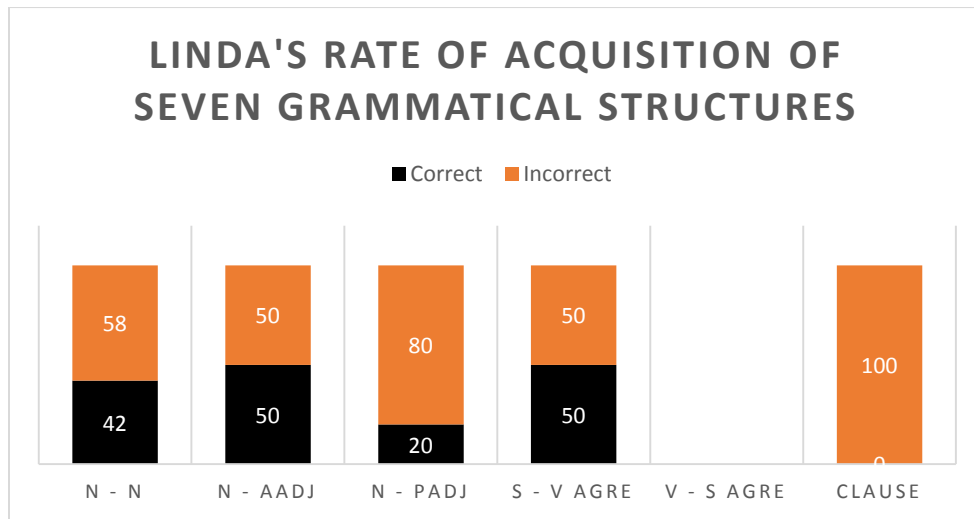


Figure 6: Linda's rate of acquisition

a. N - aAdj

Linda produced 6 of correct forms out of 12 total contexts (6/12), with a rate of 50% of acquisition. The number of produced tokens is sufficient. The following sentence is an instance of Linda's correct examples.

118.

fii ʔal-ʔurfa walad ʔad^ʕbaan
in the-family.FS boy.MS angry.MS

“In the family there is an angry boy.”

However, in most cases, she used masculine adjectives with feminine nouns, as in example (2) where she also switched the NP’s word order. In addition, generic nouns in Arabic are, by default, definite.

119.

* ʔu-ħib kabiir madiina
1S.Imperf-like big.MS city.FS

“I like the big city.”

A native speaker would produce the following sentence:

120.

ʔu-ħib ʔal-madiina ʔal-kabiir-a
1S.Imperf-like the-city.FS the-big-FS

“I like the big city.”

Likewise, the following example shows a wrong N – Adj word order, and an adjective is assigned a definite article though the head noun is indefinite.

121.

* ʔa-ʕmal ʔal-kabiir ʔarika
1S.Imperf-work the-big.MS company

“I work in a big company.”

b. N – N

Linda produced only a rate of 42% of acquisition of the construct state (N – N). 3/7 utterances were produced. All forms of (N – N) are definite. The collected data also showed feminine singular and masculine singular productions of this form, as illustrated in the following examples.

122.

- a. ʔanaa ʔa-drus fii ʔaamiʕat Milwaukee
I 1S.Imperf-study in university Milwaukee
“I study at the university of Wisconsin-Milwaukee.”

- b. fasʕl ʔal-ʔingliizij-a
class.MS the-English-FS
“the English class”

In the two examples below, Linda produced N – N structures with definite articles on both nouns. Only the second noun might be assigned a definiteness as her examples above show.

123.

- a. * ʔu-ħib ʔal-waaʒib ʔal-ʕarabij-a
1S.Imperf-like the-homework.MS the-Arabic-FS
“I like Arabic homework.”

- b. * ʔanaa fii ʔal-wilaayat wafinton
I in the-state.FS Washington
“I am in the state of Washington.”

c. N – pAdj

Linda only produced five tokens using this form. 1/5 were correct forms, and made a rate of 20% of acquisition. The only correct utterance is the following:

124.

wa ʔal-bantʔaluun kabiir
and the-pants.MS big.MS
“And the pants are big.”

Linda produced masculine noun subjects with feminine predicative adjectives, and feminine noun subjects with masculine predicative adjectives as shown in the examples below.

125.

a. * haðaa ʔal-bajt kabiir-a
this.MS the-house.MS big.MS
“This house is big.”

b. * mama ʔanuun maʔa ʔal-walad
mother.my.FS affectionate with the-boy.MS
“Mom is affectionate with the boy.”

d. S – V agreement

Linda produced 10/20 of correct forms, with a rate of 50% of acquisition. The following two examples show some subject – verb agreement in Linda’s speech.

126.

a. wa hija tu-ħib ʔal-zaamiʔa
and she 3SF.Imperf-like the-university-FS
“And she likes the university.”

b. ʔanaa ʔa-skun fii madiinat Milwaukee
I 1S.Imperf-live in city.FS Milwaukee
“I live in the city of Milwaukee.”

On the other hand, she didn't use the correct person clitic on the verb as in examples (127a -b).

127.

a. * raʒul ʔu-ħib ʔal-bantʔaluun
man.MS 1S.Imperf-like the-pants.MS
“The man likes the pants.”

b. * bint wa walad na-qraʔ
girl.FS and boy.MS 1PL.Imperf-read
“The girl and the boy are reading.”

Or, she left the verb in the infinite form without attributing any inflection to it.

128.

* bint saaʕad maama
girl.FS help.3MS.Imperf mother.my
“The girl helped my mother.”

e. V – S agreement

There was no evidence of V – S agreement in Linda's data, though one of the tasks was to tell a story using verb initial sentences.

f. Interclausal

Linda produced 0/5 of the correct forms with a rate of 0% of acquisition. All the erroneous illustrations did not show grammatical agreement on both the matrix and the subordinate clause. There was no instance for conditionals in her collected data. All the five tokens are

statements of purpose. In the following token, she used one single noun in the subordinate clause instead of a nominal sentence.

129.

* ʔanaa saafar ʔilaa ʔal-ʔurdun liʔanna tʔaalib-a
I travel.3SM.Perf to the-Jordan because student.FS
“I traveled to Jordan because I am a student.”

A native speaker’s utterance would be the following:

130.

ʔanaa saafar-tu ʔilaa ʔal-ʔurdun liʔanna-ni tʔaalib-a
I travel.1S.Perf to the-Jordan because-I student.FS
“I traveled to Jordan because I am a student.”

The following example also showed a wrong-ordered NP after “liʔanna” though this latter assigns a nominal sentence at this position.

131.

* ʔanaa ʔu-ħib ʔal-kabiir-a ʔusra liʔanna kaθiir bint wa ʔawlaad
I 1S.Imperf-like the-big-FS family.FS because a lot girl.FS and boy.MPL
“I like the big family because it has a lot of girls and boys.”

In the following illustration, she used “bisabab” (because of) which is followed by a noun phrase. She produced a verbal sentence instead.

132.

* laa ʔu-ħib bisabab laa ʔa-drus-ii qabl ʔal-ʔimtiħaan
neg 1S.Imperf-like because of neg 1S.Imperf-study-2FS before the-exam.MS
“I don’t like it because I don’t study for the exam.”

C. Michael

Michael's data, at the first glance, look consistent with PT hierarchy. Rates of acquisition seem decreasing as they go up in stage. However, S – V agreement acquisition rate is higher than others at the phrase level. The following chart reports Michael's progression based on PT theory.

Table 6-7: Michael's rate of acquisition of seven grammatical structures:

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	7	2	3	9	0	2
Incorrect	17	9	0	16	0	10
Total	24	11	3	25	0	12
Rate	29%	18%	-	36%	-	16%

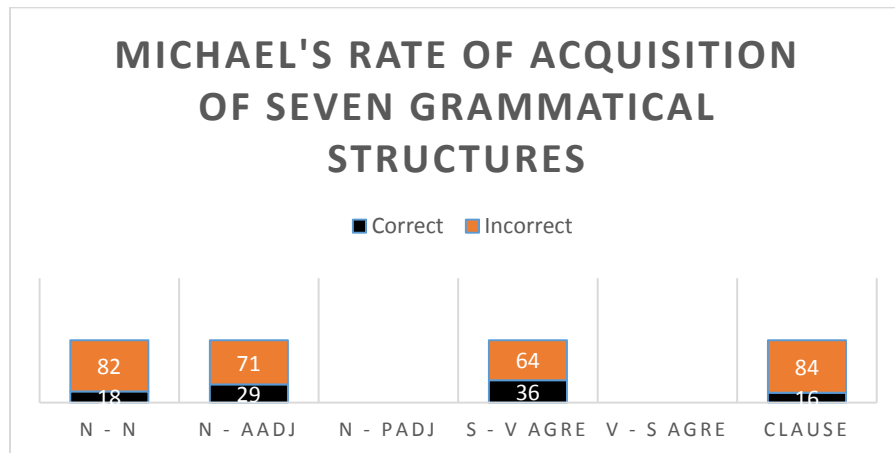


Figure 7: Michael's rate of acquisition

a. N – aAdj

N – aAdj is a basic structure at the phrase level. However, after almost three semester, Michael only produced 7 of correct forms out of 24 total contexts (7/24). The number of produced tokens is sufficient. Therefore, Michael met the criteria discussed in chapter 5. The phrases are structurally varied, with a wide range of vocabulary use. The acquisition of this structure is a rate of 29%. The following tokens are among the correct ones Michael produced.

133.

a. ?anaa ?a-drus ?al-ʕulum ?al-sijaasij-a
I 1S.Imperf-study the-science.MPL the-political-FS
“I study political science.”

b. ?anaa ?a-axud kitaab kabiir
I 1s.Imperf-take book.MS big.MS
“I take a big book.”

Two main errors were found in Michael’s data. First, he often assign the definite article “?al-“ to nouns while the adjective is indefinite. As in the following examples.

134.

a. * ?a-qraa ?al-kitaab mufiid
1S.Imperf-read the-book.MS interesting.MS
“I am reading an interesting book.”

b. * ?anaa ?u-riid ?al-sajjaara kabiir-a
I 1S.Imperf-want the-car.FS big-FS
“I want a big car.”

Second, he has word order issues within the N – aAdj forms. There are many tokens in his data where the adjective is a premodifier like in the following sentence.

135.

* ʔal-bant t^ɕ aluun ʔal-kabiir ʔal-razul
The-pants.MS the-big.MS the-man.MS
“The man’s big pants.”

b. N – N

Michael produced a rate of 18% of acquisition of the construct state (N – N). 2/11 utterances were produced, with a structural variation. All forms of (N – N) are definite. The collected data also showed singular and plural productions of this form.

136.

ʔanaa ʔa-skun fii madiinat Milwaukee
I 1S.Imperf.live in city.FS Milwaukee
“I live in the city of Milwaukee.”

However, it seems like Michael developed a pattern where he assign the definite article to the first word in a N – Adj combination, even if he mistakenly switch the word order like in the following illustration.

137.

* ʔa-drus maʕa kajtliin fii ʔal-ʕarabij-a s^ɕufuuf
1S.Imperf-study with Kaitlin in the-Arabic.FS class.MPL
“I study with Kaitlin in the Arabic classes.”

Here are some more examples where the first constituent of an NP is definite in Michael productions.

138.

a. * hiya ta-drus ʔal-zaamiʕa Madison
she 3SF.Imperf-study the-university.FS Madison
“She studies at the university of Madison.”

b. * hiya ta-ʕmal ʔal-funduq ʔal-matʕaar
she 3SF.Imperf-work the-hotel.MS the-airport.MS
“She works at the airport hotel.”

c. N – pAdj

Michael only produced 3 tokens using this form where all of them were correct. The number of tokens he supplied was not enough to take this form in consideration. However, one can assume Michael produced the three of them correctly because he always assign the definite article to the first constituent only which happens to be the same rule for N – pAdj.

139.

a. haaða ʔal-jaab saʕiid
this.MS the-guy.MS happy.MS
“This guy is happy.”

b. ʔanaa taʕbaan min ʔal-zaamiʕa
I tired.MS from the-university.FS
“I am tired of the university.”

140.

* ?al-usra ?anuun
the-family.FS affectionate.MS
“The family is affectionate.”

d. S – V agreement

Michael produced 25 verb forms with overt subject. Nine out of twenty five of correct forms were produced with a rate of 36% of acquisition. The following are two correct forms of S – V agreement in Michael’s data.

141.

a. ?anaa ?a-drus ?al-?ulum ?al-sijjaasij-a
I 1S.Imperf-study the-science.MPL the-political-FS
“I am studying political science.”

b. hijja ta-?mal ?al-funduq ?al-mat’aar
she 3SF.Imperf-work the-hotel.MS the-airport.MS
“She works at the airport hotel.”

On the other hand, Michael used a wrong number and person on the verb.

142.

* ?ax ma?a ?uxti-h ?a-?ra? ?al-kitaab mufiid
brother.MS with sister.FS-his 1S.Imperf-read the-book.MS interesting.MS
“The brother and his sister are reading an interesting book.”

A native speaker’s utterance would be the following:

143.

ʔal-ʔax maʕa ʔuxti-h ja-qraʔ-uun kitaab mufiid
The-brother.MS with sister.FS-his 3.Imperf-read-PL book.MS interesting.MS

“The brother and his sister are reading an interesting book.”

Most of the verbs were used with zero morphemes. Therefore, no agreement was set between the subject and the verb at all. The following three examples are extracts from Michael’s utterances.

144.

a. * ʔanaa ʔuyl miθl ʔal-bint
 I work.MS like the-girl.FS

“I work like a girl.”

b. * ʔal-bint saaʕad ʔal-waalidat
 the-girl.FS help-ϕ the-mother.FS

“The girl is helping her mother.”

c. * ʔanaa ʔu-riid zuur madiinat vegas
 I 1S.Imperf-want ϕ-visit city.FS Vegas

“I want to visit the city of Vegas.”

e. V – S agreement

There was no evidence of V – S agreement in Michael’s data, though one of the tasks was to tell a story using verb initial sentences.

f. Interclausal

Michael produced 2/12 of the correct forms with a rate of 16% of acquisition. The ten erroneous illustrations didn't show grammatical agreement in the subordinate clause, and all of them were statements of purpose. There were no instances of conditionals in Michael's data. The following is one of the correct forms he produced.

145.

laa ʔu-saafir kaθiiran ʔal-jawm bisabab ʔal-zaamiʕa wa ʔal-ʕamal
neg 1S.Imperf-travel a lot the-day because of the-university.FS and the-
work.MS

"I don't travel today because of the university and work."

It seems that Michael overused "bisabab" (because of) out of its obligatory occasions. In many tokens he used it instead of "liaʔnna" (because) as in the following examples.

146.

a. * ʔanaa ʔu-riid ʔal-sajjaara kabiir-a bisabab ʔanaa ʔa-skun fii
Wisconsin
I 1S.Imperf-want the-car.FS big.FS because of I 1S.Imperf-live in
Wisconsin."

"I want the big car because I live in Wisconsin."

b. * ʔanaa ʔu-riid zuur madiinat vegas bisabab ʔu-ʕaahid ʔal-
kunsiiirt muusiiqa
I 1S.Imperf-want ϕ-visit city.FS Vegas because of 1S.Imperf-watch the-
concert.MS music.FS

"I want to visit Las Vegas because I want to see a musical concert."

Michael also used the pronoun "liaʔnna" (because) when it should not be used.

147.

* ገሁ-ገላላክል ገላ-ቲቪዥን ለገላ ገላላ ተገላላ ለገላ ገላ-ገላላ
 1S.Imperf-watch the-television.MS because I tired.MS from the-university.FS
 “I watch TV because I am tired from the university.”

Table 6-8: The morphological productions through stages by all learners:

Participant	N – N	N – aAdj	N – pAdj	S – V agre	V – S agre	Clause
Philip	28/29 +	30/31 +	8/9 +	29/33 +	5/6 +	4/14 -
Nora	5/5 +	14/15 +	10/10 +	21/22 +	0/0 -	2/12 -
Emily	8/9 +	14/16 +	5/7 -/+	17/17 +	0/2 -	4/11 -
James	8/9 +	16/22 -/+	8/14 -	10/12 +	0/1 -	3/11 -
Linda	3/7 -	6/12 -	1/5 -	10/20 -	0/0 -	0/5 -
Michael	2/11 -	7/24 -	3/3 -	9/25 -	0/0 -	2/12 -

6.3. Data collection 2:

Two participants in the first data collection showed some counter-examples in their data. Emily produced S – V agreement, a stage 4 level, with a rate of 100%, which is higher than the acquisition rate of both stage 3 level, N – N (88%), and N – aAdj (87%). In addition, N – pAdj which belongs to level four was only emerging at a rate of 71%. Likewise, James produced S – V agreement with a rate of 83% while N – aAdj is still emerging at 60% of correct forms. Since both participants showed a higher rate in the production of S – V agreement, the second data collection will focus only on the acquisition of this form using a story-telling task. Participants will be exposed to a set of new verbs and nouns to tell three picture stories. The rationale behind this new task is to create an environment where the two participants will avoid using formulae because of the novelty of words and contexts. Both participants used less verbal sentences than before, with many pauses in their speech production. This data collection is investigating what would be the rate of acquisition of S – V agreement with unfamiliar speech.

1. Emily:

Emily took another test one week after the first data collection. We assume that if the rate is again higher than the 88% (the rate for N – aAdj in the first data), then the second data will disconfirm the PT predictions. In case the acquisition rate is lower than 88%, then we can assume that the 100% in data 1 was reached due to the use of formulae.

Emily produced 8/11 of correct S – V agreement. This leads to a rate of acquisition of 72%. With such a rate, the subject verb agreement will be considered emerging, and not acquired. The following sentences are the three errors Emily made.

148.

a. *ʔal-walad-aan laa ja-statʔiiʕ ʔan ja-ðhab-uun ʔilaa ʔal-ʔardʕ
 the-boy-DU neg 3SM-can that 3-go-PL to the-earth
 “The boys could not climb down to the ground.”

b. *fii ʔal-baadija ʔal-naas ja-ʒlis fii ʔal-tʕabiiʕa
 in the-countryside.FS the-people.MPL 3MS.Imperf-sit in the-nature
 “In the countryside, people spend time outside.”

c. *huwa laa ju-riid ʔan ta-qusʕa jaʕra-h
 he neg 3MS.Imperf-want that 3FS.Imperf-cut hair.MS-his
 “He doesn’t want to have his hair cut.”

Table 6-9: Emily's rate of acquisition (updated):

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	14	8	5	8	0	4
Incorrect	2	1	2	3	2	7
Total	16	9	7	11	2	11
Rate	87 %	88 %	71 %	72 %	0%	57 %

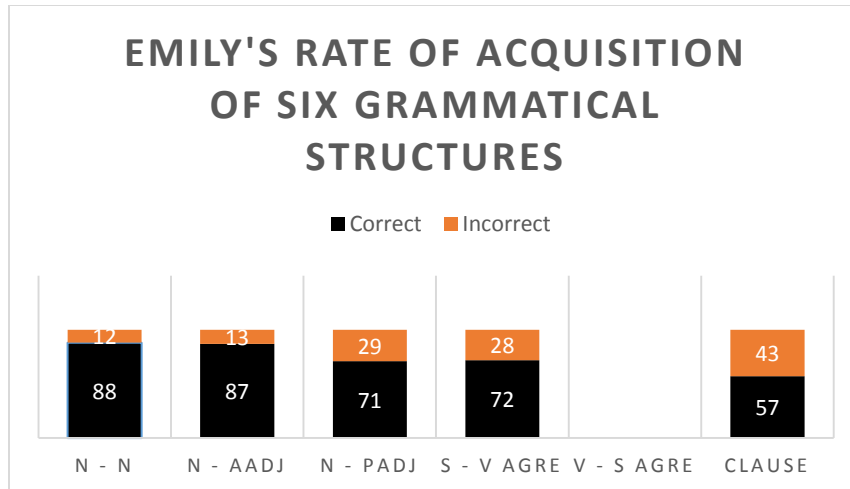


Figure 8: Emily's updated rate of acquisition:

2. James:

James also took the same test Emily took 11 days after the first data collection. We assume that if the rate is again higher than the 80% (the minimum rate for acquisition), then the second data will disconfirm the PT predictions. In case the acquisition rate is lower than 80%, then we can assume that the 83% in data 1 was reached due to the use of formulae.

James produced 4/8 of correct S – V agreement. This leads to a rate of acquisition of 50%. With such a rate, the subject verb agreement will be considered not acquired , and not even emerging. The following sentences are some errors James made.

149.

- a. * hiya ja-ħsʕul ʔal-diinaar
 she 3MS.Imperf-obtain the-dinar
 “He got money.”
- b. * ʔanaa qusʕ ʔal-jaʕr
 I ϕ.cut the hair
 “I had my hair cut.”

c. * ʔal-bint ʔaaf ʔal-naadi
 the-girl.FS see.3MS.Perf the-club.MS
 “The girl saw the club.”

d. * ʔal-bint kitaaba ʔal-naadii ʔadiid
 the-girl.FS write.GRD the-club.MS new.MS
 “The girl wrote the new club.”

Table 6-10: James’ rate of acquisition (updated):

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	16	8	8	4	0	3
Incorrect	6	1	6	4	1	8
Total	22	9	14	8	1	11
Rate	60%	88%	57%	50%	-	27%

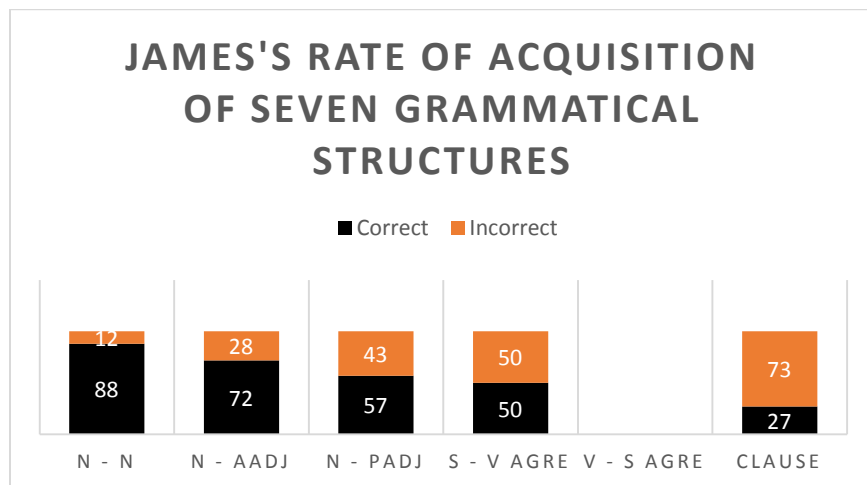


Figure 9: James' updated rate of acquisition:

Table 6-11: The morphological productions through stages by all learners after data 2 collection (Updated):

Participant	N – N	N – aAdj	N – pAdj	S – V agre	V – S agre	Clause
Philip	28/29 +	30/31 +	8/9 +	29/33 +	5/6 +	4/14 -
Nora	5/5 +	14/15 +	10/10 +	21/22 +	0/0	2/10 -
Emily	8/9 +	14/16 +	5/7 -/+	8/11 -/+	0/2	4/11 -
James	8/9 +	16/22 -/+	8/14 -	8/4 -	0/1	3/11 -
Linda	3/7	6/12 -	1/5 -	10/20 -	0/0	0/5 -
Michael	2/11 -	7/24 -	3/3	9/25 -	0/0	2/12 -

7. DISCUSSION

7.0. Overview:

In light of the Arabic structures reviewed earlier, and predictions of PT hierarchy, I hypothesize the collected data will support this hierarchy.

Lemma < category procedure < phrasal < Interphrasal < interclausal

Confirming these predictions would grant more support to PT as a valid SLA theory. The collected data was meant to look at the agreement features at three developmental stages of acquisition, namely; phrasal agreement (stage three), interphrasal agreement (stage four), and interclausal agreement (stage five).

My hypothesis is the following: Arabic learners will show an acquisition as indicated in the diagram below:

N-N / aAdj < pAdj / S-V agr / V-S agr < Conditional / Purpose

Phrasal agreement < Interphrasal agreement < Interclausal agreement

My data was confirmed by all the six participants in this study; Philip, Nora, Emily (fifth semester) James, Linda, and Michael (third semester). Although Emily and James showed some interesting patterns in the first data collection, the second data collection showed what seemed to be counter-evidence against PT hierarchy, which is in fact an instance of formulaic language. The discussion will proceed by organizing subsections based on the stages of acquisition. Thus, in section 7.1 the grammatical structures in stage three are discussed. Section 7.2 will shed lights on stage four, and finally we will focus on stage five in section 7.3.

7.1. Stage 3

There are two structures investigated at this stage; construct state (N – N) and noun phrase (N – aAdj). Four out of six participants acquired this stage; (fifth semester) Philip, Nora, Emily and (third semester) James. In the case of James, he acquired N – N structure by 88%, while N – aAdj is emerging (60%). The other two participants (third semester) Linda and Michael did not show neither the acquisition of the phrase procedures, nor even the emergence of this stage. Linda showed a 42% of positive evidence of N – N, and 50% of positive evidence of N – aAdj. Likewise, Michael showed 18% of N – N and 29% of N – aAdj. Michael and Linda showed a lot of negative evidence for stage two as well. Syntactically, they showed a lot of wrong word order in the canonical SVO (1a, 1d), and a difficulty to process the phrasal agreement. Both Michael and Linda used bare infinitive verbs without adding any morphology to the verb (150b, 150c, 150e).

150.

- a. * ʔal-bantʕaluun ʔal-kabiir ʔal-razul (Michael)
the-pants.MS the-big.MS the-man.MS
“The man’s pants are loose.”
- b. * ʔanaa juyl miθl ʔal-bint
I work.MS like the-girl.FS
“I work like a girl.”
- c. * ʔal-bint saaʕad ʔal-waalidat
the-girl.FS help-ϕ the-mother.FS
“The girl is helping her mother.”

d. * mini kuuper ʒamiil sajjara (Linda)

Mini Cooper pretty.MS car.FS

“Mini Cooper is a pretty car.”

e. * bint saʕad

the-girl.FS help-ϕ

“The girl is helping.”

Since stage three is not emerging for both Linda and Michael, both participants are ranked at stage two in PT hierarchy.

7.2. Stage 4

There are three sentential structures investigated at this stage; N – pAdj, SV(O), and VS(O). Four subjects are at this stage, where two participants showed an acquisition of at least two grammatical structures (Philip and Nora). For the other two participants, these grammatical structures are only emerging. Philip acquired all the three structures while Nora acquired two and didn't show any data for VS(O) agreement. On the other hand, Emily and James seemed like they only acquired SV(O) agreement in data collection one. Emily showed an acquisition of S – V agreement by a 100% rate, while the phrasal agreement did not reach 90%. Besides, N – pAdj agreement (interphrasal) was still emerging (71%). The rate of 100% was doubtful, and needed further investigation. Based on the literature review, Emily's S – V agreement showed a perfect acquisition of a structure which was expected to be less than 87% (the acquisition rate of N – N phrase). A special treatment was designed for Emily in order to produce utterances she never produced before. She was exposed to new vocabulary and three picture stories. For an hour, Emily was using the new lexical entries in various familiar contexts. Then, she was asked

to tell three stories using the pictures. Emily’s task was mainly to put together the words she learned separately, to narrate stories (60 – 100 seconds each). Emily showed a lot of pauses and repetitions and spent more than three minutes on each story. The sentences she produced were very short with almost no adjectives or adverbs at all. The S – V agreement is the only structure under focus in these new data. Results showed that Emily acquired S – V agreement by a rate of 72%, reducing a structure from being fully acquired to a structure which is only emerging. Unlike, formulae, language is said to be processed only when learners are producing sentences they have never produced before. By reducing the acquisition rate from 100% to 72%, Emily’s data seems to support the PT hierarchy as shown below. Therefore, Emily is at stage four since it is emerging.

Table 7-1: Emily’s rate of acquisition (updated):

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	14	8	5	8	0	4
Incorrect	2	1	2	3	2	7
Total	16	9	7	11	2	11
Rate	87 %	88 %	71 %	72 %	0%	57 %

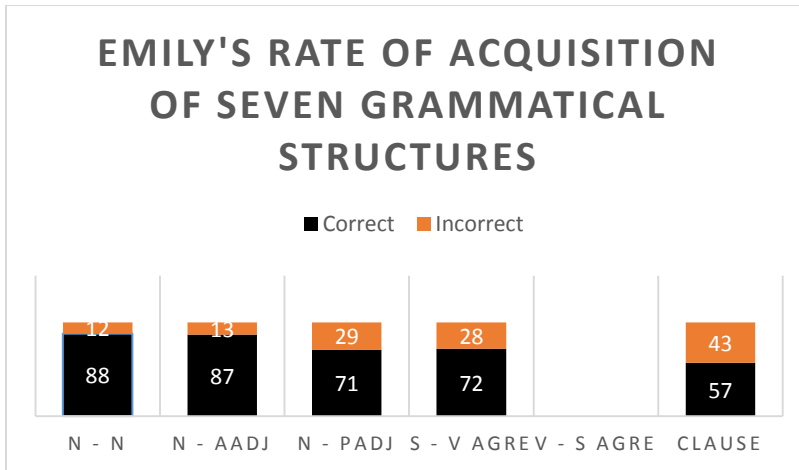


Figure 10: Emily's updated rate of acquisition:

James acquired S – V agreement in the first data collection by a rate of 83%, which is higher than the acquisition of the phrasal N – aAdj (60%). Based on PT hierarchy, he has to acquire interphrasal structure at a rate lower than 60%. James received the same treatment as Emily did in data collection two. After producing sentences he never produced before, James produced 50% of correct S – V agreement, reducing the rate of acquisition from 83% (acquired) to 50% (not acquired), as shown below:

Table 7-2: James' rate of acquisition (updated):

	N - aAdj	N – N	N – pAdj	S – V <i>agre</i>	V – S <i>agre</i>	Clausal <i>agre</i>
Correct	16	8	8	4	0	3
Incorrect	6	1	6	4	1	8
Total	22	9	14	8	1	11
Rate	60%	88%	57%	50%	-	27%

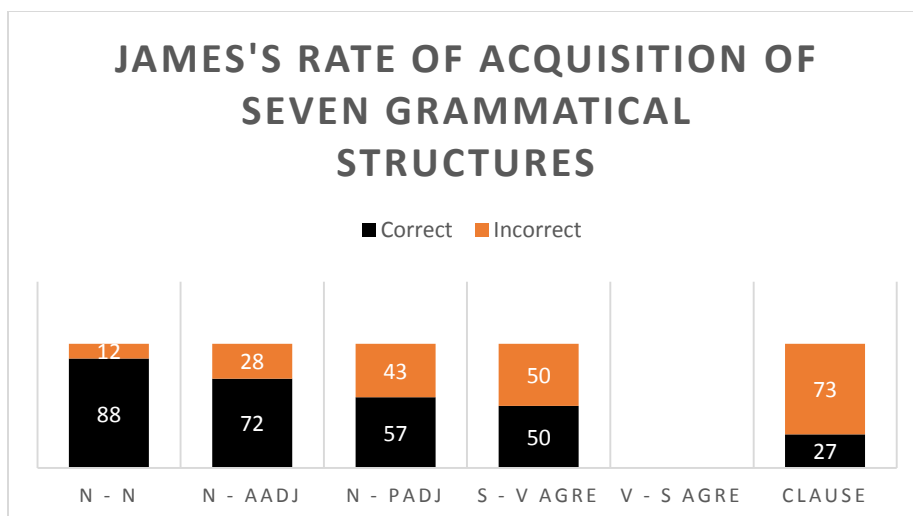


Figure 11: James' updated rate of acquisition:

Since all interphrasal structures under investigation have rates between 50 % – 79 %, Stage four is only emerging. Therefore, James is considered to be at stage four on the PT hierarchy.

7.3. Stage 5

Two structures were investigated at this stage. The conditionals and the sentence of purpose. None of the participants showed neither acquisition, nor emergence of these structures. Therefore, Philip, Nora, Emily, and James are considered at stage four in the PT hierarchy.

Overall, the findings represent a 100% scalability of PT predictions for both third and fifth semester learners. In the classroom environment, learners are approaching the language through segmented units. They are introduced to single words and learn how to grammatically relate these words through different class activities (reading, writing, listening, speaking ...). Wray 2002 claimed that classroom learners learn by focusing on grammatical relations more than focusing on formulaic language. In case a learner cannot get into the inner structure of a

string of entries, he might memorize the whole chunk as one non-compositional unit (Wray 2008).

Here, it is mandatory to discriminate between two types of mental devices. Pinker (1991, 1995) stated that the mental Lexicon is a storage device for non-compositional units. The second type is the mental Grammar, which is a set of principles and parameters which generate all these atomic entities in the mental lexicon. Therefore, we assume that any lemma, either it is a single word or a formulaic string, to be stored holistically in the mental lexicon and not generated by the mental grammar (Pinker 1999). Van Lancker and Kempler (1987) studied the right- and left-brain damaged subjects on the production of novel and familiar phrases and they found that the right-brain impaired group did better on novel phrases while the left-brain impaired group performed better on familiar phrases. These facts are supporting the fact that language production has a dual system which comprises expending different cognitive capacities (Ullman et al. 2005, Ullman 2001).

7.4. Frequency and the Emergence Criterion

Second Language processability is controlled by the frequency of the language used by a certain community (Ellis 1996, Wray 2002). The data showed that the produced forms by the six participants are highly repetitive. The following examples were produced by all the participants.

151.

?anaa ?a-skun fii Milwaukee

I 1S.Imperf-live in Milwaukee

“I live in Milwaukee.”

Two participants produced this sentence to answer the question “Do you live with your parents?” All the six productions were native-like and fast, which emphasizes the fact that they were retrieved as a whole.

152.

ʔanaa ʔa-drus fii zaamiʕat Milwaukee
I 1S.Imperf-study in university Milwaukee
“I study at the university of Wisconsin-Milwaukee.”

The above sentence is also produced by all the participants, and it was hard for some of them to answer some follow up questions like “Who do you study with?”

Another form of formulaic language is “I like + noun”. Some participants used this form to describe a picture, or to answer a question. In answering a question about why Linda likes watching a movie at home she replied

153.

* ʔu-ħibbu film
1S.PRS-like movie
“I like movies.”

These forms look as if they are analyzed, but they are in fact single lemmas where the participants didn’t modify the inner structure when it is needed.

As discussed in the literature, the working memory can retrieve thousands of stored chunks. (Pawley & Syder, 1983; Erman & Warren, 2000; Howarth, 1998). The emergence criterion as stated by PT (Pienemann, 1998), would not be sufficient to account for the acquisition, or even

the emergence of a grammatical structure. The emergence criterion is not concerned about the acquisition of a structure, but its main concern is the early appearance of the structure in the learner's interlanguage. Since the early emerging forms are highly formulaic, then it is hard to find patterns when the data collected are limited in number.

However, guiding learners to produce utterances by addressing unfamiliar topics, using new lexical entries, would make the stored chunks useless. Therefore, learners apply grammatical relations to joins words they have just learned in isolation. None of the previous studies on PT mentioned that their subjects received such a treatment. For instance, Emily produced a 100% of correct subject-verb agreement in S – V word order, on familiar topics in data one. This rate was reduced in data two to 72% on unfamiliar topics. The significance of data two for Emily is that the rate of acquisition for S – V agreement decreased from complete acquisition to the emerging state. In the case of James, producing utterances on unfamiliar topics reduced the rate of acquisition from 83% (acquired) to 50% (emerging). These findings made the predictions of PT hierarchy valid as long as the language produced by participants is generated by grammar, and is not retrieved as chunks. The findings in this study confirm the hypothesis that PT account of the developmental stages of learning Arabic as a second language is adequate.

8. CONCLUSION

8.0. Overview:

The goal of this dissertation goes beyond checking the validity of the predicted stages of development of the grammatical structures. It looks at the nature of the language productions and how they can affect the linguistic analysis.

I adopted Pienemann's Processability Theory in this study because it makes predictions about learning and has implications on language teaching. Since the theory recognizes the use of formulae in the initial stage of development it is obvious that the formulaic language should be treated differently from the processed language. This fact made combining the literature on both PT and formulae evident, and achievable. This arrangement offers an insight on how the language should be treated in both curriculum development and assessment.

8.1. General summary of the study:

This dissertation is an empirical study, which investigated the developmental stages of acquisition, based on Processability Theory claim (Pienemann, 1998). PT claimed the acquisition of any language is developed through the acquisition of five implicational stages, where acquiring a higher stage entails any lower stage in the hierarchy.

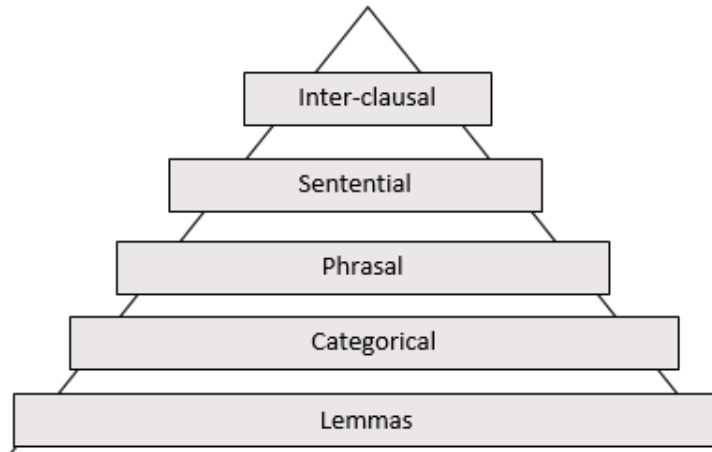


Figure 12: The processability hierarchy

Seven grammatical structures were targeted; namely, N – N AGR, N – aAdj AGR (phrasal procedure, Stage three), N – pAdj AGR, S – V AGR, V – S AGR, (sentential procedure, Stage four), Conditionals, and Purpose (inter-clausal procedure, Stage five). Six subjects participated in this study. They are all students at the University of Wisconsin-Milwaukee, who are learning Arabic as a second language. Data were collected within a week time using the following tasks:

- A. The language proficiency test⁷ (Screening test):
- B. Picture description test⁸:
- C. Picture comparison test⁹:
- D. Story-telling tasks¹⁰:

An Emergence Criterion was applied in this study, where at least five tokens are the minimum requirement for a structure to be analyzed. The tokens should be, lexically and structurally

⁷ See Appendix B

⁸ See Appendix C

⁹ See Appendix D

¹⁰ See Appendix F

varied. Four out of the six subjects produced the targeted forms with rates as predicted by PT hierarchy:

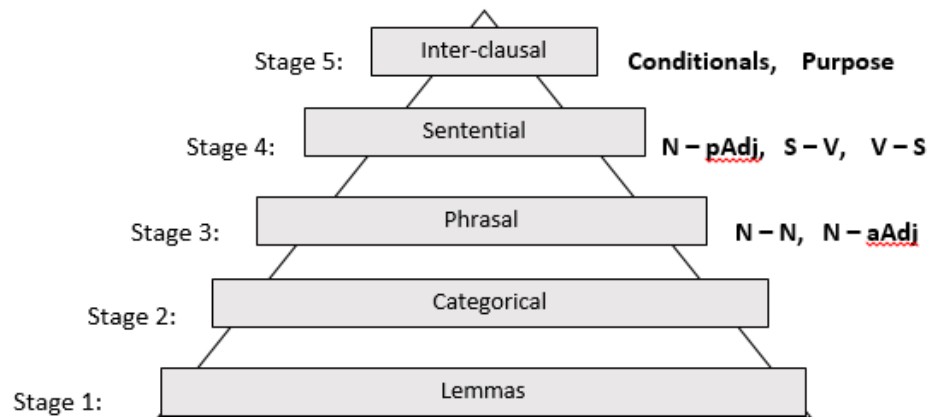


Figure 13: The predicted hierarchy of the Arabic structures

Two students, somehow, deviated from this hierarchy. We observed that the rate of acquiring S - V agreement is higher than the rate of acquiring the phrasal agreement. Alhawary (1999) made the same observation on the early acquisition of this grammatical feature.

On the other hand, some studies on language processing and memory stated that the human memory is capable of storing hundreds of thousands of pre-fabricated chunks and are retrieved from memory at the moment language processing becomes cognitively demanding (Pawley & Syder, 1983; Wray, 2002). These findings led us to control our two subjects to produce utterances that cannot be retrieved from memory. Both participants received a special treatment one week after data collection one. They were introduced to three picture stories. The sets of vocabulary they were exposed to are unfamiliar, and they learn them in isolation from context. Then, we assumed the story-telling utterances are new sentences the two

participants never heard or produced before. By analyzing these productions the rate of acquiring S – V agreement was reduced for both participants. The new data showed a rate of acquisition of sentence agreement lower than the rates for the phrasal agreement in data one. Therefore, this finding confirms the PT claim, and leads to assume that what might seem to be a counter-evidence against the PT hierarchy might be just instances of memorized chunks. The former studies that disconfirm the PT claim, might have found different results in case they took formulae in consideration.

8.2. Significance of the findings

The focus in this dissertation was to investigate the validity of PT hierarchy on the acquisition of Modern Standard Arabic morphology, and more precisely agreement. The findings confirmed the validity of the PT claim, as far as the seven studied forms are concerned. These findings lead us to derive to important implications: a theoretical, and a pedagogical implication.

8.2.1. The theoretical implication:

Most of the literature on formulaic language is related to the study on “fluency” in first and second languages. These studies used tools like memory, repetition, pauses, speed, etc. to detect, and analyze the influence of formulae on fluency. This is beyond the specialty of the linguistic analysis since formulae are non-compositional. Linguists use the emergence criterion as a tool to minimize the structures to be analyzed by eliminating structures that are not structurally and lexically varied. In this study, data collection one showed that the emergence criterion does not suffice to avoid the productions of familiar utterances which are circulated in classrooms for a couple of semesters. In this dissertation, we suggested eliciting data in a new

environment where the learner finds the stored pre-fabricated strings useless. In other words, since we cannot detect, linguistically, whether an utterance is formulaic, we can still avoid its production by a simple data elicitation method.

8.2.2. The pedagogical implication:

The findings in this thesis also lead to a new insight in the pedagogical field. On the one hand, curriculum developers should consider linguistic variety in teaching grammar. A grammatical structure is acquired when a learner can use it effectively in different structural and lexical contexts. For instance, to design activities for the present tense in Arabic textbooks, the designer should include tasks and activities that help learn present tense in all genders, numbers, persons, and moods. The following example is a sketch of possible ways to learn the verb *sakana* “to live”:

154.

- a. ʔanaa ʔa-skun maʔa waalida-tii
I 1S.IMPER-live with mother-my
“I live with my mother.”
- b. ʔaʕmaam-ii ja-skun-uun maʔa-naa
uncle.MPL-my 3MIMPER-live-PL with-us
“My uncles live with us.”
- c. hal ta-skun waḥda-haa
Q 3SFIMPER-live self-her
“Does she live by herself?”

d. naħn laa na-skun fii haađihi ʔal-madiina ʔal-sʕayir-a
we Neg 1PLIMPER-live in this.FS the-city.FS the-small-FS
“We don’t live in this small city.”

On the other hand, assessment should be designed in a way that helps elicit new utterances the learner never produced before. The learner has to discuss unfamiliar topics, using new lexical verbs in the present tense with a variety of genders, numbers, and persons situations.

8.3. Suggestions for future research:

There are a few limitations in this study, which future research could address. First, the number of participants who participated in the second data collections were only two. More data is needed from a higher number of participants in order for the findings to be statistically significant. Second, more grammatical structures should be tackled in the future including interclausal structures. Finally, we need more samples cross-linguistically to determine the influence of formulae on the linguistic analysis.

References

- Alhawary, M. T. (1999). Testing processability and effectiveness of computer-assisted language instruction: A longitudinal study of Arabic as a second/foreign language. Georgetown University, United States -- District of Columbia.
- Al Shatter, G. (2010). Acquisition and development of nominal and verbal structures in Arabic: Agreement morphology in second language acquisition. Saarbrücken: VDM, Verlag Dr. Müller.
- Anderson, M. (1992). Intelligence and development: A cognitive theory. Oxford: Blackwell.
- Anderson, J. R. (1983). The Architecture of Cognition. Cambridge, Massachusetts: Harvard University Press.
- Bloomfield, L. Letter to T. Michelson. In letters from Bloomfield to Michelson and Sapir, edited by C. F. Hockett (pp. 40–41). In: Hall R.A Jr, editor. Leonard Bloomfield: Essays on his life and work. Amsterdam: John Benjamins; 1919a. pp. 39–60.
- Bonilla, C. L. (2012). Testing Processability Theory in L2 Spanish: Can readiness or markedness predict development? Unpublished doctoral dissertation. University of Pittsburgh, Pittsburgh, Pennsylvania.
- Brustad, K., Al-Batal, M., & Al-Tonsi, A. (1995). Alif baa : introduction to Arabic letters and sounds. Washington, D.C: Georgetown University Press.
- Brustad, K., Al-Batal, M., & Al-Tonsi, A. (1995). al-Kitab fi ta'allum al-'Arabiyyah: a textbook for beginning Arabic (Vol. 1). Washington, D.C: Georgetown University Press.
- Chomsky, Noam. Language and Mind. New York: Brace and World, 1968.

- Conklin, K. and N. Schmitt. 2008. Formulaic Sequences: Are they Processed More Quickly than Nonformulaic Language by Native and Nonnative Speakers? *Applied Linguistics* 29/1: 72-89.
- Coulmas, Florian (1997): "Introduction." In: Coulmas, Florian (ed.): *The Handbook of Sociolinguistics*. Oxford & Malden: Blackwell. 1-11.
- De Bot, Kees. (1996). The psycholinguistics of the Output Hypothesis. *Language Learning*, 46, (3):529-555.
- Di Biase, B., & Kawaguchi, S. (2002). Exploring the Typological Plausibility of Processability Theory: Language Development in Italian Second Language and Japanese Second Language. *Second Language Research*, 18(3), 274-302.
- Dickerson, Leslie, and Wayne Dickerson. 1977. Interlanguage phonology: current research and future directions. *Actes du 5ème Colloque de Linguistique Appliqué de Neuchâtel: the notions of simplification, interlanguages and pidgins and their relation to second language acquisition*, ed. by S. Pit Corder and Eddy Roulet, 18-29. Geneva: Droz.
- Dulay, H. S., and Burt, M. K. (1974). Natural sequences in child second language acquisition. *Language Learning*, 24, 37-53.
- Dyson, B. (2009). Processability Theory and the role of morphology in English as a second language development: A longitudinal study. *Second Language Research*, 25(3), 355-376.
- Ellis, R. (1999). Making the classroom acquisition-rich. In R. Ellis (Ed.), *Learning a second language through interaction* (pp. 211-229). Amsterdam: John Benjamins.

- Erman, B. and B. Warren. 2000. 'The idiom principle and the open choice principle,' *Text* 20/1: 29–62.
- Ellis, N. C. 1996. 'Sequencing in SLA: phonological memory, chunking, and points of order,' *Studies in Second Language Acquisition* 18: 91–126.
- Ellis, N. C. and S. G. Sinclair. 1996. 'Working memory in the acquisition of vocabulary and syntax: putting language in good order,' *The Quarterly Journal of Experimental Psychology* 49A/1: 234–50.
- Fodor, J. (1983). *The modularity of mind*. Cambridge, MA: MIT Press.
- Fries, Charles C. 1927. *The teaching of the English language*. New York: Thomas Nelson & Sons.
- Gass, S., & Mackey, A. (2006). Input, interaction and output: An overview. *AILA Review*, 19, 3-17.
- Gasser, Michael. (1990). Connectionism and universals of second language acquisition. *Studies in Second Language Acquisition*, 12:179-199.
- Glahn, E., Hakansson, G., Hammarberg, B., Holmen, A., Hvenekilde, A., & Lund, K. (2001). Processability in Scandinavian Second Language Acquisition. *Studies in Second Language Acquisition*, 23(3), 389-416.
- Hakansson, G. (2001). Tense morphology and verb-second in Swedish L1 children, L2 children, and children with SLI*. *Bilingualism: Language and Cognition*, 4(1), 85-99.
- Howarth P. (1998): *Phraseology and Second Language Proficiency*, „*Applied Linguistics*“, t. XIX, Oxford, s. 24–44.

- Husseinali, G. T. A. (2006). Processability and development of syntax and agreement in the interlanguage of learners of Arabic as a foreign Language (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database. (0419-4209).
- Ishigami, Judith Preston 2009 Examining the reliability of processability theory-based procedure for use in Japanese SLA assessment
<http://ir.nul.nagoyau.ac.jp/jspui/bitstream/2237/14657/1/0903.pdf>
- Johnston, Malcolm. (1995). Stages of acquisition of Spanish as a second language. University of Western Sydney, Macarthur: The National Languages and Literacy Institute of Australia, Language Acquisition Research Centre.
- Johnston, M. (1985). Syntactic and morphological progressions in learner English. Canberra: Department of Immigration.
- Kaplan, R. & Bresnan, J. (1982). Lexical-functional grammar: A formal system for grammatical representation. In J. Bresnan (Ed.), *The mental representation of grammatical relations* (pp. 173-281). Cambridge, MA: The MIT Press.
- Lado, R. (1957). *Linguistics across Cultures*. Ann Arbor: University of Michigan Press.
- Larsen-Freeman, D. 1975. 'The acquisition of grammatical morphemes by adult ESL students,' *TESOL Quarterly* 9: 409–19.
- Levelt, W. 1989. *Speaking from Intention to Articulation*. Cambridge, MA: The MIT Press.
- Lyons, C. (1999) *Definiteness*. Cambridge: Cambridge University Press.
- McLaughlin, B. (1990). Restructuring. *Applied Linguistics*, 11, 1-16.
- McLaughlin, B. 1987. *Theories of Second Language Learning*. London: Arnold.

- Mansouri, Fethi and Hakansson, Gisela* (2007) Conceptualising intra-stage sequencing in the learner language, in Mansouri, Fethi (eds), *Second language acquisition research: theory-construction and testing*, pp. 95-117, Cambridge Scholars Press, United Kingdom
- Mansouri, Fethi (2005) Agreement morphology in Arabic as a second language: typological features and their processing implications, in Pienemann, Manfred (eds), *Cross-linguistic aspects of processability theory*, pp. 117-153, John Benjamins Publishing, Amsterdam
- Mansouri, F. (2000) *Grammatical Markedness and Information Processing in the Acquisition of Arabic as a Second Language*, pp. 1-260, LINCOM EUROPA Academic Publishers, Munchen, Germany
- Mansouri, F. (1999) *The Acquisition of Arabic As A Second Language: From Theory to Practice*, pp. 1-123, University of Western Sydney & The National Language and Literacy Institute of Australia, Language Acquisition Research Centre, Sydney, NSW
- Mansouri, F. (1999) Interlanguage Syntax in Arabic as a Second Language: A Processability Theory Perspective, *Languages and Linguistics (An International Journal of Linguistics)*, vol. 0, no. 0, pp. 45-71, University Sidi Mohamed Ben Abdellah, Fes – Morocco
- Mansouri, F. (1997) From Emergence to Acquisition: Developmental Issues in Arabic Interlanguage Morphology, *Australian Review of Applied Linguistics*, vol. 0, no. 0, pp. 83-105, ALAA, ANU
- Mansouri, F. (1995) The Acquisition of Arabic Subject-Verb Agreement in Arabic as a Second Language, *Australian Review of Applied Linguistics*, vol. 0, no. 0, pp. 65-85, The Applied Linguistics Ass. of Australia, Australia

- Mansouri, F. (2000). Grammatical Markedness and Information Processing in the Acquisition of Arabic as a Second Language. Muenchen: LINCOM EUROPA.
- Milroy, Lesley & Mathew Gordon (2003) Sociolinguistics: Method and Interpretation. Oxford: Blackwell.
- Nattinger J. R. & DeCarrico J. S. (1992) Lexical Phrases and Language Teaching. New York: Oxford University Press.
- Pawley, A. & Syder, F. H. (1983) „Two puzzles for linguistic theory: Nativelike selection and nativelike fluency“. Richards, J. C. & Schmidt, R. W. (eds.), Language and communication. London: Longman.
- Pienemann, M., Di Biase, B. & Kawaguchi, S. 2005. Extending Processability Theory, In Cross-linguistic Aspects of Processability Theory, M. Pienemann (ed.), 199-251. Amsterdam: Benjamins.
- Pienemann, M. (2005). Discussing PT. In M. Pienemann (Ed.), Cross-linguistic aspects of Processability Theory(pp. 61-83). Philadelphia: John Benjamins.
- Pienemann, M. (1998). Language Processing and Second Language Development: Processability Theory. Amsterdam: Benjamin.
- Pienemann, M., & Mackey, A. (1993). An empirical study of children’s ESL development. In P. McKay (Ed.), ESL development: Language and literacy in schools. Vol. 2: Documents on bandscale development and language acquisition (pp. 115–259). Canberra: National Languages & Literacy Institute of Australia and Commonwealth of Australia.
- Pinker, S. 1997: How the Mind Works. New York: Norton.
- Ryding, Karin C. 2005. A Reference Grammar of Modern Standard Arabic. Cambridge UP.

- Sperber, D. (1994) Understanding verbal understanding. In J. Khalfa (ed.) What is Intelligence? Cambridge: Cambridge University Press. 179-98.
- Skinner, B. E (1958). Teaching machines. *Science*, 128, 969-977.
- Snow, C.E. (1995) 'issues in the study of input: fine-tuning, universality, individual and developmental differences, and necessary causes', in P. Fletcher and B. MacWhinney (eds) *Handbook of Child Language*. London: Blackwell. Snow, C.E. and Ferguson, C.A. (1977) *Talking to Children: Language Input and Acquisition*. Cambridge: Cambridge University Press.
- Vygotsky, L. S. (1987). *The collected works of L.S. Vygotsky, Vol. 1*. New York: Plenum.
- Wood, D. 2010b. *Formulaic Language and Second Language Speech Fluency: Background, Evidence, and Classroom Applications*. London/New York: Continuum.
- Wray, A. 2009. 'Identifying formulaic language: Persistent challenges and new opportunities' in R. Corrigan, E. A. Moravcsik, H. Ouali, and K. M. Wheatley (eds): *Formulaic Language Volume 1: Distribution and Historical Change*. John Benjamins Publishing Company, pp. 27–51.
- Wray, A. 2002. *Formulaic Language and the Lexicon*. Cambridge: Cambridge University Press.
- Wray, A. (2000) „Formulaic sequences in second language teaching: principle and practice“. *Applied Linguistic*, 21:4, 463-489.
- Wray, A. (1999a). *Formulaic language in learners and native speakers*. *Language Teaching*, 32, 213–231.

Zhang, Y. (2005). Processing and formal instruction in the L2 acquisition of five Chinese grammatical morphemes. In M. Pienemann (Ed.), *Cross-linguistic aspects of Processability Theory*(pp. 155-178). Amsterdam: John Benjamins.

Zhang, Y. (2004). Processing constraints, categorical analysis, and the second language acquisition of the Chinese adjective suffix –de (ADJ),’ *Language Learning* 54: 437–68.

Ziadeh, Farhat J. and R. Bayly Winder. 1957. *An introduction to modern Arabic*. Princeton: Princeton University Press.

APPENDIX A:
STUDENT'S QUESTIONNAIRE

AS PART OF MY PHD FULFILLMENT, I AM ACQUIRED TO CONDUCT A STUDY ON THE ACQUISITION OF ARABIC LANGUAGE BY AMERICAN STUDENTS. GATHERING INFORMATION FROM STUDENTS IS A VITAL PART OF THIS PROCESS. PLEASE FILL OUT THIS QUESTIONNAIRE.

FULL NAME: _____ AGE: _____ SEX: _____

EMAIL: _____ CITIZENSHIP: _____

NATIVE LANGUAGE(S): _____

LANGUAGES LEARNED AT SCHOOL: _____

PLEASE CIRCLE A RESPONSE FOR EACH QUESTION. IF TWO RESPONSES APPLY, CIRCLE BOTH. WHEN YOU ARE DONE, RETURN THE QUESTIONNAIRE TO: ABDELLATIF OULHAJ (OFFICE: CRT 878)

WHAT IS/ARE YOUR MAJOR/S: _____

WHAT IS YOUR MINOR (IF ANY): _____

1. WHAT IS YOUR CLASS STANDING?

- A) NON-MATRICULATED
- B) FRESHMAN
- C) SOPHOMORE
- D) JUNIOR
- E) SENIOR
- F) GRADUATE

2. IF YOU HAVE A JOB, HOW MANY HOURS PER WEEK DO YOU WORK?

- A) 1-14 HOURS
- B) 15-24 HOURS
- C) 25-34 HOURS
- D) 35+ HOURS
- E) I DO NOT HAVE A JOB

3. DO YOU TAKE DAY OR EVENING CLASSES?

- A) DAY
- B) EVENING

4. THE TIME DEMANDS FOR THE HOMEWORK ASSIGNMENT

- A) LESS THAN 30 MINS PER DAY
- B) BETWEEN 30 AND 60 MINS PER DAY
- C) BETWEEN 1 AND 2 HOURS PER DAY
- D) MORE THAN 2 HOURS PER DAY

5. WHY DO YOU LEARN ARABIC?

APPENDIX B:
PICTURE DESCRIPTION





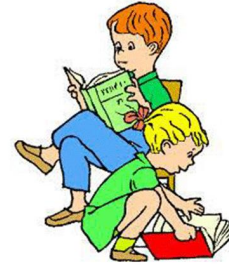
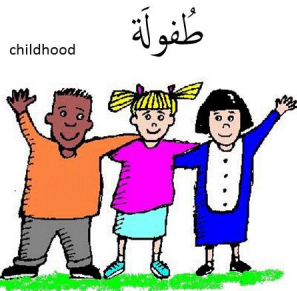
أمريكي

American



هم

They



مفيد

interesting



مشكلة

problem



ساعد

To help

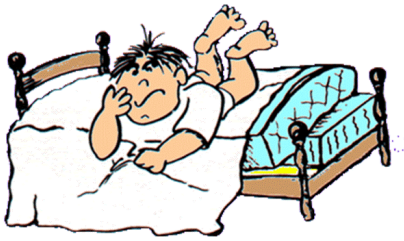


A lot
كثير



جواب

answer



عَظْبَان

angry



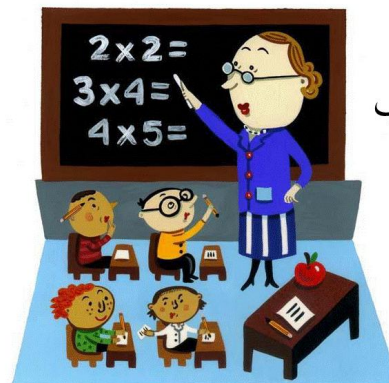
هَدِيَّة

Present, gift



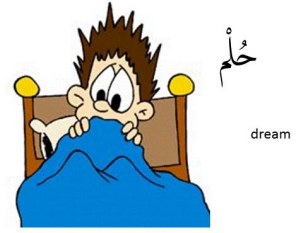
مُسْتَحِيل

impossible



حِسَاب

math



APPENDIX C:

SAMPLE QUESTIONS FOR THE ORAL INTERVIEW

1. Hello, my name is Abdellatif. What is your name?
2. Where do you live?
3. With who?
4. What is your address?
5. Do you like living alone? Why or why not?
6. Can you describe your place to me in few sentences?
(Few follow-up questions will be asked as the interviewee is describing the place she/he lives in)
7. Are you a student?
8. What classes are you taking this semester?
9. Tell me about your classmates in Arabic class. Who are they? What do you like about them?
10. Do you like studying? doing homework? writing papers? taking exams? Why/why not?
11. Is it your last year of school?
12. When are you graduating?
13. What are your plans after graduation?
14. Do you have siblings?
15. Tell me about you family. Your parents, and siblings.
16. (Few follow-up questions will be asked as the interviewee is talking about and describing his/her family members)
17. How old are you? Can you tell me your family members' age in order?
18. How many hours you spend at school?
19. Tell me about a normal day at school, what do you do since you wake up until you go to bed.
20. Do you have free time for yourself?
21. How do you spend the week-end?
22. Tell me about a normal weenend-day, what do you do since you wake up until you go to bed.
23. Do you have hobbies? What are they?
24. Do you like to go to the movies?
25. What is the title of your favorite movie?
26. Is it better to go to the movies or just watch a movie at home? Why?
27. Is it better to watch is during the week or on the week-end? Why?
28. What about traveling, is it a hobby of yours? Why/why not?
29. Do you know Lebanon (or any other Arab country)? What do you know about it?
30. How is the weather in the Arab world compared to the weather in the United States?
31. What is your favorite season? Why?
32. What was your daily schedule when you were in the high school?
33. What are the differences between your daily schedules at the high school and at the university?
34. Tell me about your last vacation in details.

35. Do you have a roommate?

36. In case you are looking for a roommate in the future, how do you like your roommate to be?

37. Tell me what you are going to do after this interview.

APPENDIX D:
STORY TELLING TASK

The money bill



The wig



The boys' club

