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THE ACCESSIBILITY OF UNIVERSAL GRAMMAR IN LANGUAGE ACQUISITION: A CROSS-LINGUISTIC PERSPECTIVE

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ABSTRACT

THE ACCESSIBILITY OF UNIVERSAL GRAMMAR IN LANGUAGE ACQUISITION: A CROSS LINGUISTIC PERSPECTIVE

By

Ahmed Abdullah M. Al-Banyan

This research endeavor seeks to examine the acquisition of English by Arabic native speakers and the acquisition of Modern Standard Arabic (Arabic) by English native speakers. It explores the theory of Universal Grammar (UG) and its relationship to the acquisition processes of first (L1) and second language (L2). Particularly, it employs a principles and parameters approach to UG, as realized in Chomsky's (1981) Government and Binding theory. It investigates whether or not advanced adult L2 learners as a foreign language have access to UG principles and parameters; specifically, the Subjacency and the Empty Category Principles, and the Null Subject Parameter are tested. In addition, the study researches whether or not there is a difference between perception and production tasks in measuring UG principles/parameters. Moreover, it discusses the nature of UG-based acquisition studies and comments on UG properties that considered in such studies.

For data collection, two testing instruments are utilized, a perception (grammaticality judgment) task, and a production (question formation) task. These tasks are constructed in English for the English Experiment (EE), and in Arabic for the Arabic Experiment (AE). For each experiment, two groups (controls and subjects) are given the two tests. The subjects are 60 male adults who are advanced learners of English in Riyadh, Saudi Arabia (for the EE), and 34 male/female adult advanced learners of Arabic in the USA (for the AE). The collected data are tabulated, and descriptive statistics, Regression, and Chi-square are computed for data analysis.

The study reports that UG is still accessible to adult L2 learners but its accessibility is partly hindered by late acquired linguistic, cognitive, and socio-psychological components. In comparison, child L1 learners can directly access Core grammar (UG) while adult L2 learners access core grammar through late acquired peripheral components. Among other things, the study also reports some factors that may condition functional computation of components in the bilingual mind/brain.

Dedicated To

my beloved wife and children

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CHAPTER 1: INTRODUCTION

1.1 Background

Do the cases of child first (L1) and adult second (L2) language learning involve the same or different processes? Do adult L2 learners depend on the same Language Acquisition Device (LAD) as child L1 learners? In the last thirty years or so, these questions, among others, have received a lot of attention in language acquisition research. Some of the earliest answers to these questions are provided by Lenneberg (1967) who claims that adult L2 learners proceed in ways different from child L1 acquisition. Lenneberg argues for his Critical Period Hypothesis (CPH), "according to which there is a fixed span of years during which language learning can take place naturally and effortlessly, and after which it is not possible to be completely successful" (Ellis, 1994:484). This critical period is due to certain maturational (plastic) changes in the human brain where the optimum period for language acquisition falls within the first ten years of life

(see Singleton (1989) for details about the controversy over the age factor).

Further support for CPH comes from researchers (e.g. Schachter, 1988; Bley-Vroman, 1989; and others) who show that there are major differences between the two language acquisition cases. For example, L1 knowledge significantly influences the acquisition process of L2 learners in many areas such as pronunciation.

There is, however, some evidence to argue against Lenneberg's hypothesis. Several studies have shown that L2 learners frequently proceed in ways similar to child L1 acquisition. For instance, S. P. Corder (1967), Bailey et al. (1974), Dulay and Burt (1974a,b) and others investigate the developmental trends of both L1 and L2 learning processes. Their research is based on the theoretical assumption that there are underlying basic similarities of all languages in structure and organization. These similarities are referred to as linguistic universals which are innate rather than the results of learning. They investigate the previous question by comparing the utterances used by first and second language learners, focusing on structural differences and similarities between the languages. They claim that first and second language acquisition processes are the same, in spite of

differences such as motivation, previous knowledge, and so on. For example, the order in which particular features of the target language are acquired is usually the same in both L1 and L2 acquisition.

More recently, the relationship between first and second language acquisition has been explored by linguists working within the domain of a principles and parameters approach to Universal Grammar (UG), as realized in Government and Binding (GB) theory (Chomsky, 1981 & 1986). According to GB, UG is "the system of principles, conditions, and rules that are elements or properties of all human languages ... the essence of human language" (Chomsky, 1975:29). Chomsky argues that human beings are innately endowed with universal language-specific knowledge (i.e. UG) which constrains first language acquisition. In other words, human beings utilize certain principles that are biologically determined for language learning. This notion, according to Jensen (1990:4):

> had been developed in the seventeenth century by Descartes and his followers, and it forms an important part of the 'Grammaire generale et raisonnee' of Lancelot and Arnauld (1660) and Humboldt's (1836) 'Uber die Verschiedenheit des menschlichen Sprachbaues.' Modern Linguistics has done much to make specific claims about the content of universal grammar, especially under the aegis of Chomsky's Extended Standard Theory.

Being a theory of knowledge (not of behavior), UG concerns the internal structure of the human mind. It attempts to integrate human mind and grammatical principles in the processes of language acquisition. "It gives the child advance knowledge of many abstract and complex properties of language so that these do not have to be learned solely on the basis of linguistic input or by means of general learning strategies" (White, 1989:5). UG consists of a certain number of abstract principles and parameters which constrain the form and functioning of grammars. In Cook's words, "the speaker knows a set of principles that apply to all languages, and parameters that vary within clearly defined limits from one language to another" (1988:1-2).

Two examples of UG principles that are relevant to my study, namely the Subjacency Principle and the Empty Category Principle (ECP) are given here. First, Subjacency is a principle within the Bounding Theory, a sub-component of UG which defines the boundaries for movement. This principle says that movement may not cross more than one bounding node. For example, in English, like Modern Standard Arabic (henceforth, Arabic) (Aoun, 1981), the bounding nodes are the Sentence (S=IP) and the Noun Phrase (NP). One of the most cited categories constrained by the Subjacency principle is

wh-movement in questions (see § 2.2.1 for further details about Subjacency).

Regarding the ECP, it is a constraint on the distribution of empty categories (such as wh-trace, NP-trace, and so forth), which states that empty elements have to be properly governed. Proper government can be achieved either by a lexical element (such as V(erb), N(oun), P(reposition) etc.) or by a coindexed antecedent. (See § 2.2.2 for information about the ECP)

While UG principles which guide acquisition are universal, there is considerable variation between different languages. The grammar of Arabic, for example, differs in important respects from that of English. In Arabic, sentences exhibit V(erb) S(ubject) O(bject) word-order as the basic one while basic English word order is SVO. The two languages are similar, then, in 'principles' in that they both contain S, V, and O but differ 'parametrically' in their ordering of these elements. A child experiences one order or the other in his/her acquisition and 'fixes' the parameter in that direction.

An example of a parameter that concerns this study is the Null Subject parameter. This parameter is also called the "pro(noun)-drop(ping)" parameter. It is intended to explain,

among other things, the property exhibited by pro-drop languages such as Spanish and Italian (as opposed to non pro-drop languages like French and English) of allowing subject pronouns in tensed sentences to be dropped (Chomsky, 1989; Jaeggli, 1982; Rizzi, 1982) (for more details about this parameter, see § 2.2.3).

Universal Grammar has been supported by the "poverty of the stimulus" argument, which states that the input children receive is insufficient to bring about the linguistic knowledge that they finally attain. Consider the following two sentences:

(1)a. Which car did April think that John bought?

b.*Which car did April accept Sue's news that John bought?

Native speakers who are exposed to such sentences know intuitively that sentences like (6a) are grammatical while sentences like (6b) are ungrammatical. The question is how one can account for this knowledge. It has been assumed that the linguistic data to which language learners are exposed will not provide clear evidence for distinguishing between grammatical and ungrammatical cases. Consequently, it is supposed that there is built-in knowledge of UG which prevents learners from making UG violations.

Assuming that children have innate linguistic properties (UG) that aid them in acquiring a first language, one can ask if adult second language learners still have access to the cognitive system called UG. In other words, is UG still available to L2 learners? And if so, what could be the role of UG in L2 learning? Three different positions on these questions are represented in the literature:

A. UG is not available to adult L2 learners (e.g. Clahsen & Muysken, 1986; Clahsen, 1988). L2 learning proceeds only by means of problem-solving and hypothesis-testing.

B. UG is fully available to adult L2 learners (White, 1985b; 1988; Bley-Vroman et al., 1988; Flynn, 1988);

C. UG is not available in its entirety to adult L2 learners, but only those portions of UG which are instantiated in the learner's first language are available in second language acquisition (Schachter, 1989).

1.2 Plan Of The Study

This is an experimental cross-linguistic cross-directional study which aims to examine the acquisition of

English by native speakers of Arabic and the acquisition of Arabic by native speakers of English. It will explore the theory of UG and its relationship to the processes of first and second language acquisition cases. In particular, it will be concerned with a principles and parameters approach to UG, as realized in Government and Binding Theory (Chomsky, 1981 and 1986). It will focus on the question of the accessibility of UG in L2 acquisition. That is, it will investigate whether or not advanced L2 learners of Arabic and advanced L2 learners of English as a foreign language rely on the principles and parameters of UG. In addition, the study will investigate if there is a difference between perception and production tasks in measuring UG Principles and Parameters. Moreover, the study will discuss the nature of UG-based acquisition studies and comment on the UG properties that are considered in such studies. The particular properties of UG which I plan to test are: (1) The Subjacency Principle; (2) The Empty category principle; and, (3) The Null Subject Parameter. These properties of UG are selected for two reasons. First, they are appropriate for testing because they are accessible to surface level analysis (Schachter, 1989). Second, they have appeared in a number of L2 acquisition studies, making it possible to compare the findings of this study to others. The

purpose of comparison is to find out if the obtained results are consistent with the No Access -- i.e. UG is dead -- Hypothesis, or with the Access to UG hypothesis -- i.e., UG is available to L2 learners whether completely or partially.

The subjects will be asked first to complete a personal and academic questionnaire. This questionnaire will help reveal possibly significant variables among subjects such as age, age of first exposure to English or Arabic, years of formal instruction in English or Arabic, length of study of English or Arabic in English speaking countries or/and in Arabic speaking countries, and finally, educational level and area of specialization. Then they will be tested using two different types of tasks, namely perception and production tasks. The perception task contains a grammaticality judgment test (test one) which includes a syntax test. For this task, subjects have to respond *grammatical, ungrammatical* or *not sure* to the sentences, and to try to correct the sentences they label ungrammatical. Such corrections help the examiner in deciding whether subjects are rejecting the ungrammatical sentences for the right reasons (i.e. because these sentences violate one of the principles/parameters of UG). The production task contains written question formation (test two) which also includes a syntax test. For this task, subjects

will make wh-questions out of sentences, questioning only the underlined phrase.

The UG test items test for the presence or absence of the Subjacency Principle, the ECP and the Null Subject Parameter. The syntax test items, however, test for whether the learner has command of the relevant structures that are being examined by the UG test. If subjects fail to recognize the grammatical sentences (syntax test), this will show that they have not yet learned the structures in question.

The tests will be constructed in Arabic and English. They will be applied to four groups of subjects:(1) Native speakers of English (Control Group); (2) Native speakers of Arabic who are advanced learners of English in Saudi Arabia (Target Group); (3) Native speakers of Arabic (Control Group); and (4) Native speakers of English who are advanced learners of Arabic in the USA (Target Group).

1.3 Rationale For The Study

The present literature on the UG-accessibility topic (in adult L2 acquisition) provides three different positions ranging from the no access to UG to complete access to UG (see § 2.4.2 for details). In fact, we can find researchers who

disagree with their own earlier findings - for example, Clahsen and Muysken (1986) and Clahsen and Muysken (1989). In the 1986 paper, the authors argued that UG is totally unavailable; in the 1989 paper, however, they claimed that only fixed principles but not parameters are available. Although this difference obviously reflects an open-mindedness on the part of the authors, it clearly shows that the UG-accessibility question is still in need of further research before one can reach a satisfactory result (White, 1989).

Such different positions indicate that current research has not provided an unequivocal answer about the role of UG in L2 acquisition. The available literature regarding this question is not yet completely developed. Thus, there is still great necessity for many studies that can contribute to the determination of the role of UG in L2 acquisition. By reaching a decision about the role of UG in L2 acquisition, we will, first, come to grips with the impact of UG on the formation of second language grammars. Second, we can significantly contribute to the development of a principled theory of L2 acquisition. Finally, we can ultimately contribute to the development of a generative theory of language (Flynn, 1991).

In my view, most of the UG-studies (e.g. Clahsen & Muysken, 1986) conducted so far seem to be inconclusive for several reasons. First, to date only small fragment of the central core principles and parameters have been investigated. Second, researchers (e.g. Schachter, 1989) tend to concentrate mostly on European languages which has left many languages out of the picture, including Arabic. If we examine the current literature, we will find that there are very few, if any, studies that have native speakers of Arabic learning English as subjects for the UG test. Also, there is not any study, at least to my knowledge, that takes native English speakers learning Arabic as subjects for the UG test. It is extremely crucial to focus on many different languages so that we can have data from the whole spectrum which, in turn, will help in deciding the answer of the UG question and in finding common linguistic universals.

Third, most of the previous experiments look at the operation of principles and parameters of UG in only one direction. In other words, in their studies, researchers (e.g. Clahsen, 1988) tend to focus only on the acquisition of X (say English) by native speakers of Y (say French) or Z (say German). They rarely try to investigate (within the same study) the reverse acquisition; i.e. the acquisition of Y or

Z by native speakers of X. It is useful to look at the operation of principles and parameters in both directions (White, 1989). It is useful in the sense that one can compare learners whose L1, say English, has value A (of the Null Subject Parameter) learning an L2, say Arabic, with value B with learners whose L1 (Arabic) has value B learning an L2 (English) with value A. Different effects may appear, depending which setting is found in the L1 and which in the L2. Having cross-directional studies is crucial because it is not always easy to find pairs of previous studies each covering one direction. Further, it is not easy to find two one-directional studies that examine the same principles and parameters. Having the same principles/parameters is important for comparative reasons. Further, one can hardly find two one-directional studies that employ the same method as far as the choice of UG-tests and subjects is concerned (Liceras, 1989). UG-accessibility studies, when conducted on a cross-linguistic cross-directional basis, will certainly help us find answers to the many remaining questions concerning, for example, the various ways in which UG might intervene in the acquisition process, similarities and differences across languages which can be revealed by the

concept of parameters within UG, and relationships between the mother tongue and the target (i.e. second) language.

Fourth, methodologically speaking, most studies try to focus on a single test for tapping UG principles and parameters in L2 acquisition. For example, White (1985b), Liceras (1989) and Bley-Vroman (1988) used only a grammaticality judgement task to elicit perceptions of L2 learners. In contrast, Flynn (1988) used an elicited production task. Only few researchers (such as Hilles, 1986) used multiple tasks. It will be more reliable and revealing if we adopt a multimethod experiment in order to scrutinize the operation of UG in L2 acquisition. A multimethod experiment will enable us to see if L2 learners act differently from one type of task (perception) to another (production) and aid in our understanding of the process of acquisition.

Finally, there are very few, if any, studies that have been conducted in countries where English or Arabic is taught as a foreign language (EFL/AFL). When conducted in such environments, UG studies will certainly help us find answers to the many remaining questions concerning, for example, the role of instruction when it is the main source of the linguistic input. Moreover, they may shed some light on the

differences and/or similarities between the two learning environments (e.g. ESL versus EFL).

1.4 Research Questions

This study will attempt to find answers to the following questions:

1. Do adult L2 learners have access to the principles and parameters of UG?
2. If so, do they have full access to UG as do child L1 learners?
3. Or, do they have partial access to UG?
4. Given the results of the two tests, do subjects perform similarly/differently across the UG principles and parameters being tested?

1.5 Testable Hypotheses

The testable hypotheses for this study are the following:

H1: The background (demographic) independent variables will have no statistically significant effect on the Syntax and UG scores obtained by group one in the two tests.

H2: Following Schachter (1989), G1 subjects who pass the syntax test will also pass the UG test, and subjects who fail the syntax test will also fail the UG test.

H3: There will be no statistically significant difference in the Syntax and UG scores obtained by group one across the two tests.

H4: The background (demographic) independent variables will have no statistically significant effect on the Syntax and UG scores obtained by group two in the two tests.

H5: G2 subjects who pass the syntax test will also pass the UG test, and subjects who fail the syntax test will also fail the UG test.

H6: There will be no statistically significant difference in the Syntax and UG scores obtained by group two across the two tests.

H7: There will be no statistically significant difference in the Syntax and UG scores obtained by groups one and two across the two tests.

H8: The background (demographic) independent variable will have no statistically significant effect on the Syntax and UG scores obtained by group three in the two tests.

H9: G3 subjects who pass the syntax test will also pass the UG test, and subjects who fail the syntax test will also fail the UG test.

H10: There will be no statistically significant difference in the Syntax and UG scores obtained by group three cross the two tests.

H11: The background (demographic) independent variables will have no statistically significant effect on the Syntax and UG scores obtained by group four in the two tests.

H12: G4 subjects who pass the syntax test will also pass the UG test, and subjects who fail the syntax test will also fail the UG test.

H13: There will be no statistically significant difference in the Syntax and UG scores obtained by group four across the two tests.

H14: There will be no statistically significant difference in the Syntax and UG scores obtained by groups three and four across the two tests.

H15: There will be no statistically significant difference in the Syntax and UG scores obtained by experimental groups two and four across the two tests.

In summary, (1) Hypotheses 1, 4, 8, and 11 assume that the background demographic variables of the subjects will have no biasing effect on test scores. (2) Hypotheses 2, 5, 9, and 12 state that subjects who pass the Syntax test (i.e. show knowledge of syntactic constructions such as 'that-trace' effects of the ECP test) will also pass the UG test (i.e. demonstrate evidence of UG properties such as the ECP), and vice versa (i.e. subjects who fail the Syntax test will also fail the UG test. (3) Hypotheses 3, 6-7, 10, 13-15 deal with the comparison of subjects' scores within/between groups on both tests. They assume that subjects will behave similarly across the two tasks. In other words, there will be no significant difference within/between subjects' perceptive and productive performances.

In conclusion, as my hypotheses suggest and following Flynn (1987) and White (1989), I believe that there is at least a partial role for UG in the process of L2 acquisition. Further, UG is one component of an acquisition theory, whether of L1 or L2. This component will interact with various others (such as personality, aptitude, etc.), and the failure of L2 learners may be attributable to these other components and not necessarily to the non-accessibility of UG.

CHAPTER 2: LITERATURE REVIEW

2.1 Background

Chomsky (1986a) says that there are two broad approaches to the study of language, namely the Externalized (E-) approach and the Internalized (I-) approach. The former aims to collect samples of a particular language or languages and then to describe their properties. The latter, however, is concerned with a native speaker's knowledge about language which is treated as an internal property of the human mind/brain rather than something external.

Chomsky (1988) indicates that the recent history of linguistics demonstrates a move from an E-approach to an I-approach, as shown in the switch from the structural to the generative tradition in American linguistics. However, both approaches are relevant to the study of language universals. According to Eckman (1988), there are two prominent approaches to the study of language universals. The first is the study of typological universals as presented by Greenberg (1966) and has been continued by Comrie (1981), among others. The second

is the study of Universal Grammar (UG) as presented by Chomsky (1981a,b).

The Greenbergian approach is data-driven where data from a wide range of languages are analyzed in order to discover universal patternings (i.e. features that languages have in common). In comparison, the Chomskyan approach is theory-driven. It seeks to discover universals by the in-depth analysis of the properties of individual languages so as to identify the abstract principles of UG that constrain the form of any language grammar.

Comparing the UG and typological approaches, Eckman (1988) argues that they are similar in the sense that the formulation of parameters in UG is associated with the work of the typological school; such parameters predict the types of variation that can and cannot exist among languages. Moreover, he goes on by saying that "both approaches can be called 'typological' in this respect, since they both make predictions regarding the types of languages that can and cannot exist with respect to some grammatical property or construct" (p.418). According to Eckman, however, a basic difference between the two approaches is one of degree; that is, a distinction between them can be based on the degree of theory-dependence of the constructs used to make

generalizations. The constructs invoked by the UG approach are considered more theory-dependent than those used by the typological approach. The universal statements of the UG approach are formulated using theory-dependent, abstract concepts such as X-bar theory, parameters, etc., and they are stated with regard to abstract levels of representation. On the other hand, the typological approach makes universal statements that are indicative generalizations, using relatively theory-independent constructs such as linear order, lexical category, etc., and formulates these principles with respect to surface representation.

Since the focus of this research is on the accessibility question of UG in language acquisition, I will now turn to the Chomskyan view of linguistic universals and examine its contributions to the field of language acquisition.

2.2 UG As Realized In GB Theory

UG, species-specific, is a theory of the biological endowment of language faculty that characterizes the essential properties of grammars. In other words, UG is assumed to be an innate language faculty that sets the limits within which human languages can vary. It "consists of a highly structured

and restrictive system of principles with certain open parameters to be fixed by experience..." (Chomsky, 1981b:38). Such abstract, innate principles apply to all languages. They are principles of the initial state of knowledge which provides the basis for the language learner to develop his/her grammar. Two examples of UG principles that are relevant to this study, namely the Subjacency principle and the Empty Category Principle (ECP) will be discussed in detail in sections (2.2.1) and (2.2.2) respectively.

As far as parameters are concerned, they vary in certain restricted ways from one language to another. In Jaeggli and Safir's words, "parameters [are] a set of language specific options expressed as postulates that interact with universal principles to form the grammars of particular languages" (1989:2). The parameters within a theory of UG provide the mechanism with which we can account for the role of the mother tongue in L2 acquisition. Thus, they account for the differences between groups of various L1 speakers learning a common L2 (Flynn, 1988). An example of a parameter that is relevant to this study, namely the pro-drop parameter will be discussed in detail in section (2.2.3).

According to Chomsky's (1981a) theory of markedness, those rules that are determined by fixing the parameters of UG

on the basis of input from the language being learned constitute the Core grammar. This Core grammar is believed to be unmarked because it is acquired with minimal triggering data. In contrast to a Core grammar is the Peripheral grammar which is the set of marked rules that are outside of Core grammar and have to be learned without the help of UG. Chomsky (1981a) says that both theories of UG and markedness work together in the processes of language acquisition. He explains that

> In our idealized theory of language acquisition, we assume that the child approaches the task equipped with UG and an associated theory of markedness that serves two functions: it imposes a preference structure on the parameters of UG, and it permits the extension of core grammar to a marked periphery. Experience is necessary to fix the parameters of core grammar. In the absence of evidence to the contrary, unmarked options are selected. (1981a:8)

The goal of UG is generally twofold. First, it attempts to explain the complexity and richness of grammar. Second, it tries to explain how knowledge of a language is acquired despite limited and often degenerate linguistic experience/ input. White (1990:132) has specifically summarized the functions of the theory of UG for L2 acquisition by saying that

> What the UG perspective offers is the means to identify abstract properties of language, to study certain aspects of L2 competence in depth, and to reach a greater

understanding of precisely what formal properties L2 learners unconsciously internalize (or fail to internalize).

Chomsky (1981a) argues that it is impossible for a child to learn his/her first language without having a set of universal linguistic principles that comprise UG. The input a child receives is insufficient to bring about the linguistic knowledge that he/she finally attains. For instance, speakers of English intuitively know that (2a) is grammatical sentence while (2b) is ungrammatical:

(2) a. Who did Mary believe would be late?

b.*Who did Mary believe that would be late?

The conjunction (complementizer) *that* must not be present in (2). Children are not explicitly taught that (2b) is ungrammatical. Thus, this knowledge is not based on the learner's experience of the world, but it comes from the built-in knowledge of UG which prevents him/her from making UG violations.

To give another example, Ellis (1994) reported a dative alternation as an illustration of insufficient input a child receives. He said that English allows only two constructions with dative verbs such as "give" as illustrated by the following sentences:

(3) a. She gave the pen to John. (Noun Phrase [NP]+ Prepositional Phrase [PP])

b. She gave John the pen. (NP + NP)

c.*She gave to John the pen. (*PP + NP)

However, other dative verbs such as "explain" do not permit the NP+NP pattern as shown below:

(4) a. She explained the answer to John. (NP + PP)

b.*She explained John the answer. (*NP + NP)

c. She explained to John the answer. (PP + NP)

Given these examples, how do children find out that (3c) and (4b) are unacceptable? One way to attempt answering this question is by examining two types of evidence, namely positive evidence and negative evidence. Positive evidence, which comes from exposure to other speakers' speech, is not an adequate answer because it underdetermines the linguistic competence of children; that is to say, children acquire grammar that goes far beyond the actual sentences (input) that they have been exposed to. In contrast, negative evidence, which comes from adult/parent feedback, rarely occurs. Research on L1 acquisition indicates that children do not usually get negative feedback that tells them what is ungrammatical in their utterances (Chomsky, 1965). Even if

children are corrected, they usually ignore corrections (White, 1989a).

Having said that there is an insufficient positive evidence and no negative evidence, the answer to the previous question is that children must rely on innate knowledge which "in some sense compensate for the lack of availability of negative input" (White, 1989a:14).

Arbib and Hill (1988:96) say that "many linguists have assumed that the lack of negative feedback to children creates a logical problem for language acquisition that can be solved only by reference to innate constraints that prevent children from ever formulating overly general grammars." In other words, L1 learners achieve competence which goes beyond the linguistic input received. So UG is motivated due to the mismatch between the limited linguistic input to which a child is exposed and the complexity of then grammar which he/she achieves. The nature of this grammar is inseparable from the problem of how it is acquired, and this problem is approached by postulating that UG mediates language acquisition.

2.2.1 The Subjacency Principle

The subjacency principle is a principle within the Bounding theory, a sub-component of UG which defines the boundaries for movement. Thus, it defines the restrictions that govern how far an element can be moved from deep to surface structures. This principle says that movement may not cross more than one bounding node. For example, in English, like Arabic (Aoun, 1981), the bounding nodes are the Sentence (in GB terminology, S=IP, i.e. Inflectional Phrase) and the Noun Phrase (NP). One of the most cited categories constrained by the Subjacency principle is wh-movement in questions. Consider the following English (5) and Arabic (6) examples where the type of extraction is a wh-word and the domain of extraction is a noun phrase complement:

(5) a. *Whom does the president have evidence that the Senator trusted?

b. *[CP1 Whomi does [IP1 the president have [NP evidence [CP2 t'i that [IP2 the Senator trusted ti]]]]]?

(6) a. *man rafadha al-qadhi al-dali:la ?anna al-walada dharaba?

b. *[CP1 manɪ [IP1 rafadha al-qadhi[NPal-dali:l

Whom refused the-judge the-evidence

[CP2 t'ɪ bi-ʔanna [al-walada dharaba tɪ]]]]]?

that the boy hit

"*Whom did the judge refuse the evidence that the boy hit?"

The sentences in (5) and (6) violate the Subjacency condition. The wh-phrases 'whom' in (5) and 'man' in (6) have crossed two bounding nodes, namely NP and IP1. They have moved stepwise: first they move to the lowest [Spec(ifier), C(omplement)P(hrase)2] as step one, then they move to the matrix [Spec, CP1] as step two. Such movement is called successive cyclic: it applies in successive cycles, from bottom to top. Since each clause (CP) defines a syntactic domain in which wh-movement can apply, step one is legitimate (because only one bounding node (IP2) is crossed) and step two is illegitimate (because two bounding nodes (NP and IP1) are crossed).

With regard to Arabic, I assume that the Subject is generated VP-internally. Thus, VSO word order is derived by Verb movement to I, and SVO order is further derived by the Subject movement to Spec, IP (Aoun et al., 1994).

It is noteworthy that there are other types of extraction, namely relative pronoun, and topic, and other domains of extraction, namely sentential subject, relative clause, and embedded question.

Regarding parameters, the principle of Subjacency allows some parametric variation across languages with respect to the bounding nodes that they adopt. White (1990: 125) reports that "languages differ as to the bounding status of S; Italian and French, for example, [unlike English] have NP and S' as bounding nodes, but not S (Chomsky, 1981b; Rizzi, 1982; Sportiche, 1981)." Therefore, the variation is a choice between IP and CP(=S'). (For further examples about Subjacency, see Cook, 1988.)

2.2.2 The Empty Category Principle (ECP)

The ECP is a constraint on the distribution of empty categories such as wh-trace, NP-trace, and so forth. It states that empty elements have to be properly governed. Proper government can be achieved either by a lexical element such as V(erb), N(oun), P(reposition), etc., or by a coindexed antecedent. Consider the following sentences:

(7) a. *Who$_I$ do you think [CP t'$_I$ that [IP t$_I$ left]]?

b. Who$_I$ do you think [CP t'$_I$ [IP t$_I$ left]]?

These two sentences show that a subject can only be extracted from clauses without an overt complementizer (that). This phenomenon was described in terms of the that-trace filter. This filter has been reinterpreted in terms of the government requirement for traces. In (7a), the complementizer intervenes between the trace (t$_I$) in the subject position and the intermediate trace (t'$_I$) in [Spec, CP]. Thus, the intermediate trace cannot antecedent-govern the subject trace. Hence, the subject-trace violates the ECP and (7a) is ungrammatical. In contrast to a Subjacency violation which is considered a movement violation, this ECP violation is said to be a government violation.

In (7b), however, there is no overt complementizer to block government from the intermediate trace. The subject trace is properly governed. (I will talk about the ECP in Arabic when I discuss the properties of the Null Subject Parameter later.)

Regarding parameters, the ECP is parameterized with regard to the elements which constitute proper governors in different languages rather than with regard to whether it holds in some languages but not in others. White (1989)

reports that in English but not in French, preposition stranding is possible because in English the preposition constitutes a proper-governor but not in French. (For more examples on the ECP, see Cook, 1988.)

2.2.3 The Null Subject Parameter (NSP)

The Null Subject parameter (also called the pro(noun)-drop(ping) parameter) is intended to explain, among other things, the property exhibited by pro-drop languages such as Spanish, Italian, and Arabic (as opposed to non-pro-drop languages like French and English) of allowing subject pronouns in tensed sentences to be dropped (Chomsky, 1989; Jaeggli, 1982; Rizzi, 1982). Other properties that cluster together with the property of phonologically null subject pronouns and that have been associated with this parameter are the free inversion of subject and verb in declarative sentences and the extraction of a subject out of a *that* -clause under wh-movement (i.e. that-trace).

Liceras (1989) argues that these three properties are related in that acquiring the null subject is a condition for acquiring the other two properties. Further, she says that there is an implicational hierarchy of difficulty relating the

three properties of the pro-drop parameter (i.e. pro-drop>inversion>that-trace) so that if that-trace has been acquired, free inversion and null subject pronoun have been acquired too. For example, the grammar of English is set negatively for this parameter (i.e.[- pro-drop]) while the grammar of Italian is set positively for this parameter (i.e.[+ pro-drop]):

(8)	English	Italian
	a.*Smokes.	Fuma.
	b.*Smokes Mary.	Fuma Mario.
	c.*Who did you say that smokes?	Chi hai detto che fuma?

Unlike English, Arabic -like Italian - (Lakshmanan, 1986; Kenstowicz, 1989) is a pro-drop language. However, it differs from Italian with regard to the properties associated with the Null Subject parameter. Arabic allows subject pronouns to be omitted as (9a) shows:

(9) a. Sa-yadhabu.
Will go
"He will go."

As for the property of free subject inversion, Arabic (Owens, 1988) has the order of VSO as the most frequent and basic word order. An example (9b) is in order:

(9) b. Daraba zayd-un 9aliyy-an.

hit Zayd-Nom Ali-Acc

"Zayd hit Ali."

It should be pointed out that Arabic has two different types of sentence structure, namely the verbal sentence and the nominal sentence. The verbal sentence is one that begins with a verb and has the VSO word order. In contrast, the nominal sentence is one that starts with a noun and has, in certain constructions such as a nominal sentence that contains a verbal sentence, the SVO word order. In other constructions, the nominal sentence has no overt verb in its surface structure.

Regarding the extraction of an embedded subject (leaving a trace) out of a clause containing a complementizer (that-trace effects), Arabic allows 'that-trace' effects only in certain contexts but not in others. This asymmetry is due to the fact that Arabic (Aoun, 1981) is more complex (than Italian, for example) in that extraction of a subject is dependent on the main verb. In Arabic, there are two types of complementizers, namely Nominal *?anna that* and Verbal *?an that*. Nominal *?anna* can only cooccur with "believe-type" verbs like *yadunnu think* while Verbal *?an* can only cooccur with "want-type" verbs such as *yuri:du want*. Also, Nominal

?anna must be followed by a noun or a cliticized pronoun while Verbal *?an* must be followed by a verb.

In Aoun's (1981:639) own words, "*?anna* is a case-assigning element and *?an* a mood-assigning element: *?anna* and *?an* assign accusative and subjunctive, respectively. ... The subjunctive feature will be paired with the verb [while the accusative feature] will be paired with a following lexical NP if there is one or spelled out as a clitic if there is none."

Noun phrases (NPs) that occur, for example, in sentential complements of "believe-type" verbs cannot be extracted if they occur in the subject position (i.e., immediately following the complementizer *?anna*). However, if NPs occur in the object position, extraction is possible. An example of impossible extraction is (10c):

(10) c.*man$_I$ dhanna muhammad-un[CP2t'$_I$

Who think Mohammad-Nom

?anna[IP2 t$_I$ ishtara al-siyarata]]?

that bought the-car

"*Who did Muhammad think that __ bought the car?"

The presence of the complementizer *?anna* prevents the intermediate trace (t'i) from counting as the antecedent-governor of the lower trace (t*i*) in subject position. Hence, the ECP is violated.

In comparison, NPs that occur, for example, in sentential complements of "want-type" verbs can be freely extracted whether they occur in the subject or object positions. (For further examples about the NSP, see White, 1985b; 1989a.)

2.3 UG-based Studies In L1 Acquisition

The theory of UG is closely tied to a theory of L1 acquisition. Chomsky argues that children come to the acquisition task with innate knowledge which aids them to recognize and figure out linguistic structures of their language on their own. In White's words, "UG provides a kind of blueprint as to what the grammar will be like, but details can only be filled in by input from the language being learned" (1989:16). Thus, UG help explain the speed and ease with which language is learned.

Goodluck (1991) argues that the child is biologically equipped with knowledge of UG. This fact can be supported by examining language development which shows many of the properties of biologically given behaviors. Two examples of such properties are in order. First, there is an "orderly progression of stages"; that is, children develop their linguistic abilities by following distinct stages. For

instance, the 'cooing' stage (when the child begins producing vocalizations with a vowel-like quality) emerges before the 'babbling' stage (the process of combining consonant-like and vowel-like sounds); the 'one word' stage precedes the 'two word' stage, and certain grammatical morphemes exhibit similar order of acquisition across different children learning the same language (Brown, 1973). The second property concerns the fact that linguistic development is to a degree "independent of external stimuli". In other words, a speech stimulus is either unnecessary or only minimally needed because children possess a biologically timed system that is not dependent on exposure to speech. For example, some researchers (e.g. Goodluck, 1991) support this fact by reporting that even deaf children go through the 'babbling' stage. Having said that, I should point out that a child has to be exposed to language in order to achieve normal linguistic development (White, 1989a).

In the literature of language acquisition, there are two types of studies, namely observational studies (based on collecting speech data in natural settings) and experimental studies (based on eliciting linguistic structures from language learners).

In an observational research, Brown (1973) longitudinally studied first language development on three unacquainted children (Adam and Sarah, both 27 months old; Eve, 18 months old). The aim of Brown's study was to investigate the development of L1 (English) grammar acquisition after the emergence of syntax in the child's two-word (or more) utterances. Brown discovered that the three children generally appear to develop English grammatical morphemes in a roughly similar order of acquisition. Such morphemes were present progressive [-ing], plural [-(e)s], irregular past [went], possessive [-'s], uncontracted copula [is], articles [the], regular past [-ed], regular third person singular [-s], and contracted auxiliary ['s]. Brown found that the same results when he compared his study with other studies dealing with the acquisition of morphemes by children in the same age range.

As a support of Brown's (1973) results, De Villiers and De Villiers (1973) reported a similar order of morpheme acquisition across all subjects. They reached this conclusion by conducting a cross-sectional study which involved twenty-one children (ages 16-40 months old) learning English as their first language.

Generally speaking, the major argument of the above two studies is that the order of the acquisition of morphemes was not influenced by the frequency of morpheme appearance in the children's environment. Rather, child language acquisition is guided by Universal Grammar. Moreover, child language acquisition cannot be adequately explained by imitation and the like.

In comparison to the above observational studies, Carol Chomsky (1969) conducted an experimental study that was based on eliciting certain grammatical structures (easy vs. eager to see, tell vs. promise) from English-speaking children. She tested her subjects' ability to distinguish between sentences such as:

(11) a. John is eager to please.

b. John is easy to please.

Although these two sentences (that have missing object constructions) have similar surface structures, they have different underlying (deep) structures. In (11a) 'John' is said to please other people. In (11b), however, 'John' is said to be pleased by other people. It is claimed that children can discriminate between such structures that they could not have acquired from their surrounding environment; children rely on UG in figuring out such structures. Further,

C. Chomsky explained that children learn to use linguistic processes in the simpler cases first (e.g. 11a), and then proceeds to employ them in the more complex cases (e.g. 11b).

More recently, Hyams (1986) conducted an analytic study focusing on the pro-drop parameter. She analyzed published examples of children's language. Some examples are in order:

(12) a. Want look a man.

b. Read bear book.

c. He ride bike.

d. I want hold it.

Hyams discovered that English-speaking children produced subjectless sentences (12a,b) at the earlier stages. At the same time, they could also produce sentences with subjects (12c,d). Hyams argued that children start with a positive value of the pro-drop parameter that allows null-subject sentences regardless of their L1 languages (e.g. English or Arabic). Then English-speaking children (like German-speaking children) go on to realize that their language does not allow subjectless sentences (i.e. a non-pro-drop language), setting the parameter to a negative value. Hyams explained that English-speaking children, being exposed to positive evidence, reach such realization when they first acquire expletive

subjects (i.e. the use of 'it' and 'there' as subjects) such as "It's time to go."

Clahsen (1988) argued that child L1 acquisition primarily follows from principles of UG. To this end, the author studied the emergence of agreement markings (e.g. subject-verb agreement) in child L1 learners of German. He provided three kinds of evidence in favor of the parameter view of L1 acquisition. They are the following:

> 1. Possible grammar: In all stages of the L1 acquisition process of German syntax, the grammar of the child is fully definable within the theory of grammar.
> 2. Developmental interactions: given the INFL[ection]/V parameter, it is expected that in child L1 development, the acquisition of correct verb placement and the attainment of the agreement system takes place in the same developmental phase.
> 3. Triggering experience: The availability of complementizers [such as *dab* 'that'] and certain items of the agreement paradigm allow the child to reset the values chosen for the INFL/V and the COMP/INFL parameter. (Clahsen,1988:65)

It is noteworthy that Clahsen's claim that children have access to principles of UG was originally made by Clahsen and Muysken (1986) who studied the acquisition of German word order in L1 acquisition.

Thornton and Crain (1994) studied 21 three-and-four-year-old childrens' emerging knowledge of successive cyclic movement (see section 2.2.1 for an explanation of such

movement). This study contained four experiments which investigated children's productions and comprehension of wh-questions. It showed that young children have the mechanisms of long-distance wh-movement available to them. Most children produced well-formed questions such as "What do you think Cookie Monster eats?"

In conclusion, pioneer L1 acquisition studies suggest that children are biologically equipped with knowledge of Universal Grammar. Such contention, however, does not entail that all principles of UG are available to the child from the outset. In fact, there are three broad approaches relating to the question whether some UG principles emerge only after a period in which they are not present in the child's grammar. These three positions are the following:

1. The Strong Continuity approach. All principles of UG are present in the child's grammar at the outset of syntactic development.

2. The Weak Continuity approach. All principles of UG such as the X'-theory are available to the child from the beginning of language development, but the actual syntactic tree has to be posited based on the input.

3. The Maturational approach. The development of grammar is taken to result from maturation processes. That is,

principles of grammar are biologically programmed to emerge only after a certain period of development.

Different researchers have supported one or the other of the above three positions. However, according to Goodluck (1991), the Weak Continuity position is the most popular one in L1 literature since the 1970s. Next, literature on child and adult L2 acquisition will be reviewed in detail.

2.4 UG-based Studies In L2 acquisition

Does the theory of UG have relevance for the field of L2 acquisition as it does for the field of L1 acquisition? L1 children progress from an initial state of knowing nothing except UG to a final state of knowing everything about their L1 language. In contrast, L2 learners, whether children or adults, already know a first language. Children learning an L2 are not in full possession of competence in their L1 while adults possess complete competence in their L1.

In the literature of language acquisition (e.g. Cook, 1988), there are five different methods of learning, other than UG, proposed to explain language acquisition. These are: (1) Imitation (e.g. repeating sentences after a competent speaker); (2) Grammatical explanation (e.g. explaining

'reflexives' such as 'himself' in pedagogical grammar books); (3) Correction and approval (e.g. correcting grammatical mistakes in the classroom); (4) Social interaction; and (5) Dependence on other faculties. These methods have been rejected for L2 acquisition as well as L1 acquisition (Bley-Vroman et al., 1988; Cook, 1988). Many studies have revealed that L2 learners know things that they could not have acquired from the environment around them. This leads us to the question of UG-accessibility in L2 acquisition. Before trying to answer this question in terms of the present research, I will review some important previous literature dealing with child L2 acquisition (§ 2.4.1) and adult L2 acquisition (§ 2.4.2).

2.4.1 Child L2 Acquisition Studies

O'Grady et al. (1989) reported on both cross-sectional and longitudinal morpheme acquisition studies of children learning English as a second language. Those studies found that L2 children, regardless of their first language, showed a similar order of grammatical morpheme acquisition.

Dulay and Burt (1974a) conducted a morpheme-acquisitional study on 115 children (6-8 years old) learning English as an

L2. These children came from different (Chinese and Spanish) linguistic backgrounds. They were tested for the sequence of acquisition of eleven grammatical morpheme. Then, the results of the L2 sequence were compared with the corresponding order in L1 acquisition of English. The authors found that the sequence of acquisition, among the subjects, was the same regardless of their L1. Further, they said that their findings revealed a different sequence from that of L1 acquisition. This difference can be explained by the fact that L2 learners "need not struggle with the same kinds of semantic notions already acquired in earlier childhood" (Dulay and Burt, 1974a:52).

Furthermore, Dulay and Burt (1974a,b) spelled out their above position by advancing a major theory for L2 acquisition, namely the theory of Creative Construction (CC). According to CC, L1 and L2 acquisition cases follow from the same set of innate principles. L2 acquisition patterns are determined by the language structure of an L2 and the creative construction powers of the L2 learner. The fact that the L2 learner already has knowledge of a language is considered irrelevant.

Heckler (1975) conducted a study that dealt with the acquisition of English verb morphology by Arabic, Japanese, and Spanish speakers. He based his research on Berko's (1958)

experimental L1 study on English morphology which tested production rather than comprehension. He found that L2 learners tend to learn English morphemes in a non-randomized order. For example, the past allomorphs /-t/ and /-d/ were mastered before the allomorph /-id/. Heckler's results revealed similar order of acquisition in first and second language learning.

Krashen (1982) discussed the results of 21 English-morpheme-acquisition studies that had L1 and L2 learners as subjects. He found that there was a similar order of acquisition for L2 learners, regardless of differences in age and L1 background; such an order was referred to as the "natural order" of acquisition. These results agreed with Dulay and Burt's (1974a,b) findings. Further, he said that the order of acquisition for a second language was not identical to that for a first language.

Sabra (1987) conducted an observational study that dealt with the process of L2 acquisition of English syntax by four Arabic children (ages 6-7) in kindergarten and first-grade classrooms. They were observed for five weeks in the two classroom; then, they were observed for eight weeks out of school. Sabra considered the subjects' developmental stages (e.g. negative and interrogative structures), learning process

in comparison to that of other L1 and L2 learners of English, L1 interference, and communicative strategies used to compensate for language deficiencies. In general, the author found that children demonstrated the following: (1) significant development in the acquisition of English syntax; (2) similar stages of acquisition to those found in L1 and L2 studies; (3) no L1 interference; and finally, (4) different communicative strategies such as repetition, gestures, noises and simplification in order to compensate for their language deficiencies.

To sum up, the above studies and others have revealed that (1) there is a similar order of acquisition for L2 learners; (2) In spite of differences such as motivation, previous knowledge, and so on, first and second language acquisition processes are the same in terms of studies of negation and interrogation development. For example, the developmental stages in which particular features of the target language are acquired are usually the same in both L1 and L2 acquisition. This gives evidence that child L2 learners, like child L1 learners, have access to UG which facilitates language acquisition; (3) According to morpheme studies, however, the order of acquisition for an L2 is not identical to that for an L1 (e.g. Dulay and Burt, 1974a).

Larsen-Freeman (1976) explains this difference by saying that L1 order of acquisition is conditioned by cognitive development, while L2 acquisition order correlated with frequency in input.

2.4.2 Adult L2 Acquisition Studies

Assuming that child L1 and L2 learners have innate linguistic principles (UG) that help them in acquiring a first or second language, one can ask if adult L2 learners still have access to UG. Put differently, is UG still accessible to adult L2 learners? And if so, what could be the role of UG in L2 learning? Three different positions on these questions are represented in the literature: (1) UG is not accessible to adult L2 learners (e.g. Clahsen and Muysken, 1986; Clahsen, 1988, Meisel, 1991) (see § 2.4.2.1 for literature review); (2) UG is fully accessible to adult L2 learners (e.g. Bley-Vroman et al., 1988; Flynn, 1988; White, 1988) (see § 2.4.2.2 for review of literature); and, (3) UG is not accessible in its entirety to adult L2 learners, but only those portions of UG which are instantiated in the learner's L1 are accessible in L2 acquisition (e.g. Clahsen and Muysken, 1989; Schachter, 1989; Clahsen, 1990) (see § 2.4.2.3 for review of studies).

2.4.2.1 The Non-Accessibility Of UG Studies

Lenneberg (1967) was among the first to tackle the question of the accessibility of UG in L2 acquisition. He argued for his Critical Period Hypothesis (CPH) which states that L2 learners are cut off from UG after a certain age. This critical period is due to certain maturational (plastic) changes in the human brain where the optimum period for language acquisition falls within the first ten years of life (or around the age of puberty). In other words, L2 learners have no access to the principles and the parameters of UG after they reach a specific age.

In support of Lenneberg's CPH, Johnson and Newport (1989) argued that a critical period for language acquisition extends its effects to second language acquisition. To test their argument, they conducted a study on 46 Chinese and Korean learners of English as a second language. These subjects ranged in age of arrival in the United States from ages 3 to 39. They were tested on their knowledge of English syntax and morphology, using a grammaticality judgment task of spoken English sentences of varying types. Johnson and Newport found that there is a gradual decline in language acquisition skills over the period of on-going maturational growth. Subjects'

performance gradually declined from about age seven on until adulthood.

Arguing against the CPH, Cook (1985) says that Lenneberg's hypothesis is not concerned with acquisition processes but with physical or cognitive maturational processes. Further, she wonders how one can retrieve the L1 parameters to fix their values differently in the L2 if he/she has no access to UG. Moreover, Flynn and Manuel (1991) questioned the validity of Lenneberg's CPH by reviewing a large number of relevant studies. They argued that the logical problem of L1 and L2 acquisition is the same. They indicated that there are both post-puberty L2 learners who achieve full command of a second language as well as pre-puberty learners who fail to attain native-like competence.

Clahsen and Muysken (1986) compared the acquisitional sequences of German word order in L1 and L2 acquisition, especially the question of whether learners of German treat the verb phrase as head-initial or head-final. They found major differences between the two (L1 and L2) cases of acquisition. For example, unlike L1 learners, adult L2 learners have consistent difficulties in discovering the underlying SOV word order of German. They argued that adult L2 learners, unlike L1 learners, resort to general problem-

solving (learning) strategies to acquire the second language. Thus, UG is not available to adult L2 learners.

In a reply to the above study, DuPlessis et al. (1987) reanalyzed Clahsen and Muysken's data in terms of three parameters: head position, adjunction (of ADV/PP to IP), and proper government (e.g. COMP as a proper governor of INFL). They found that the rules that adult L2 learners employ, the stages that they go through, and the errors that they make are completely consistent with a UG that incorporates such parameters. To further support their position, DuPlessis et al. discussed their own data on the acquisition of German and Afrikaans which revealed that adult L2 learners still have access to UG. For example, adult L2 learners are said to restructure their grammar, when they find out that German is not an SVO language, but an SOV language.

In addition, White (1989a) argued that Clahsen and Muysken failed to distinguish between L2 performance and the acquisition of L2 competence. In White's words, "German is a particularly problematic case, allowing a number of surface word orders in declaratives, including: SVO, $SV^{+/-}OV^{+/-}$, AVSO, and $AV^{+/-}SOV^{+/-}$, in main clauses, and SOV and $^{+/-}$SOV V in subordinate clauses" (p. 104). She concluded that since both SVO and SOV are possible word orders, one cannot claim that UG

is not accessible in L2 acquisition simply because L2 learners adopt an incorrect word order for German.

In support of his earlier position, Clahsen (1988) argued that adult L2 acquisition follows from general learning strategies not observed in child L1 acquisition in the construction of a target language. He reached his conclusion by comparing the emergence of agreement markings in adult L2 and child L1 learners of German. He argued that adult L2 learners have great difficulty in acquiring the intricacies of German word order. He concluded by saying that there were essential differences between children and adults with regard to the process of acquisition.

Flynn and O'Neil (1988) argued against Clahsen's (1988) conclusion by saying that UG might in fact be involved in the process of adult L2 acquisition. They explained that the essential language faculty does not change significantly over time. Moreover, the argument of pattern matching, advanced by Clahsen, (i.e. patterns of acquisition for the L2 should exactly match those for the L1 acquisition in order for one to argue for UG) by itself does not necessarily and completely rule out UG-accessibility in L2 acquisition. For example, Flynn and O'Neil said that

> in order to develop an explanatory theory of L1 acquisition, we must account for both the learner's L1 knowledge and principles independent of this knowledge. Clahsen ... assumes a "clean slate" approach to L2 learning. ... The role of L1 knowledge is not accounted for in Clahsen's framework. Perhaps, if we assumed that L2 learners do not start with a clean slate ..., then by reformulating questions in terms of interactions of the L1 and the L2, we might be able to explain the Clahsen data without invoking general indicative learning principles at the level he investigated. (p. 10)

Finally, Flynn and O'Neil say one can support the Access-to-UG hypothesis if we try to reformulate assumptions about the structure of German as argued by DuPlessis et al.

More recently, Meisel (1991) argued that UG is not available any more in L2 acquisition. In support of this position, he provided three types of evidence:

1. L2 typically involves "learning" in the traditional sense (trial and error, gradual approximation to the norm, etc.) Whereas L1 development can be described adequately as triggering of implicitly available knowledge (UG), resulting in "instantaneous acquisition".
2. The observed developmental patterns in L2 can be accounted for without referring to UG principles.
3. There are crucial differences between L1 development and L2 acquisition which cannot be explained as resulting from parameter resetting (P. 272-3).

In a response to Meisel (1991), Schwartz (1991) explained that Meisel's argument (that UG is not available to L2 learners) is weak on three grounds. First, UG-based explanation of L2 acquisition is preferred over any other approach (e.g. general learning mechanisms) because of both the higher predictive power and the explicitness of UG principles. Second, it is not sufficient to prefer a different approach other than UG simply because it accounts for the same data as UG-based approach. Third, it is theoretically simpler to rely only on UG to explain certain facts about L2 acquisition processes than one that must resort to a combination of mechanisms.

In conclusion, proponents of the no-access to UG (in adult L2 acquisition) argue that L1 acquisition requires a linguistic theory (i.e. UG) whereas L2 acquisition requires a cognitive theory (e.g. the Multidimensional Model (MM)). The MM, proposed by Meisel, Clahsen, and Pienemann (1981) as a predictive framework, focuses on the relationship between implicit knowledge and output by indicating the strategies which have to be mastered in order to produce different structures. It attempts tp provide an explanation of observed development in learner-language. (See Ellis (1994:382-88) for full account of the MM.)

Arguing against it, Ellis (1994) explained that the MM only gives an explanation of acquisition with regard to learner production. There is nothing in this model that shows how learners come to comprehend grammatical structures, and how comprehension and production interact.

2.4.2.2 The Full-Accessibility Of UG Studies

Dulay and Burt (1974), Bailey, Madden, and Krashen (1974), and others (e.g. Bley-Vroman et al., 1988; Flynn, 1988; White, 1989) found that L2 acquisition is, in essential respects, similar to L1 acquisition. That is, regardless of their age, language learners proceed in similar ways. These studies demonstrated that, first, developmental L2 errors are similar to those committed by L1 learners; and, second, the acquisition order of certain morphemes is the same in both L1 and L2 acquisition cases. Third, both first and second language acquisition involves the 'logical problem' (also called 'Plato's problem') which states that the input language learners are exposed to is, as Cook (1988), White (1989), and Flynn and Manuel (1991) argued, (a) underdetermined (i.e. linguistic competence learners attain goes far beyond the actual sentences they are exposed to); (b) degenerate (i.e.

learners are exposed to an input that is not always perfect); and (c) finite (i.e. lack of negative evidence). In other words, the poverty of the stimulus argument applies equally to L2 acquisition. Thus, there is no significant difference between children and adults as far as language acquisition is concerned.

Hanania and Gradman (1977) conducted a case study on a Saudi adult female in Bloomington, Indiana. They investigated the subject's acquisition of English sentence structure, mean length of utterance, and order of acquisition over a period of eighteen months. They found that the subject progressed in a manner similar to the process of L1 acquisition. Further, the study demonstrated that the subject did not seem to be influenced by her first language (Arabic) in the production of English utterances and that she dealt with English creatively.

Flynn (1984; 1987; 1988) argues that adult L2 learners have access to the same language faculty as L1 learners by showing, in an experimental study, that the Principal Branching Direction (PBD) is operative in adult L2 acquisition. The PBD is also called the Head-position parameter which has two values, namely head-initial (i.e. the head such as a noun or a verb which occurs before a complement as in English and Arabic, which are described as right-

branching languages) and head-final (i.e. the complement occurs before the head as in Japanese, a left-branching language).

Flynn's subjects, consisting of 51 Spanish native speakers and 53 Japanese native speakers coming from different levels of proficiency, were tested with a standardized elicited imitation task and an act-out comprehension task that dealt with English complex sentences. Flynn wanted to see if L2 acquisition of anaphora is constrained by branching direction. The results indicated that Spanish subjects were more successful than Japanese in performing the two tasks. This is due to the fact that Spanish, unlike Japanese, is head-initial like English which gave Spanish speakers an advantage over Japanese speakers. Generally speaking, Flynn concluded that UG is still available to adult L2 learners and learning is facilitated if the L1 and L2 parameter settings are the same. However, if the L1 and L2 have different parameter settings, the pattern of acquisition will resemble the early stages of L1 acquisition. In other words, there is no need to reassign a value in the Native Language (NL) to match the Target Language (TL) if a parameter-value in the NL and the TL match. However, a process of parameter-value reassignment is necessary if the NL and the TL do not match.

Felix (1988) conducted an experiment designed to find out whether or not adult L2 learners have access to principles of UG. He tested 48 German college students who had learned English as an L2 for their intuitions about grammatical contrasts in constructions involving different principles hypothesized to be part of UG. The test sentences reflected contrasts which did not have any parallels in German, for example sentences with 'that-t' effects which are explained in terms of the ECP violations:

(13) a. Who does John believe that he saw?

b.*Who does John believe that saw him?

Such sentences and others representing different kinds of structures formed the questionnaire that was given to the subject. The subjects were asked to mark each sentence as either 'grammatical' or 'ungrammatical'. The same questionnaire was also given to a control group of 23 native speakers of English. Results of Felix's study indicated that L2 learners were able to make correct grammatical judgments on these sentences. Felix argued that these results strongly indicated that adult L2 learners are able to achieve grammatical knowledge which can neither be learned from available speech data (i.e. positive evidence) nor from what

is explicitly taught in the foreign language classroom. Thus, adult L2 learners do have access to principles of UG.

Further support of Felix' results comes from White (1988) who examined the acquisition of Subjacency and the ECP by native speakers of French learning English. White's subjects consisted of 43 adults and 23 adolescents. A number of different tests (cloze test, a multiple-choice judgment task, a paced judgment task, and a comprehension task) were devised to test for the two principles of UG. White hypothesized that UG is available to the L2 learner. She argued that the errors that the L2 learners will make in the TL will not constitute violations of UG-principles; In other words, they will not constitute impossible errors. White's hypothesis was borne out by the results of her study.

Clahsen and Muysken (1989) criticized the above two studies (Felix, 1988 and White, 1988) by stating that the results of these two studies "can only demonstrate that L2 learners can use their UG knowledge to some extent in the evaluation of target sentences, but most of the evidence is consistent with the notion that is only UG knowledge which is instantiated in the L1 of the learners" (p. 26). They concluded by saying that the main difference between child L1 acquisition and adult L2 acquisition is that children have

direct access to UG, while adults only have access to those UG principles and parameters which are present in their first language.

Bley-Vroman, Felix and Ioup (1988) addressed the debate about whether adult L2 learners have access to the principles/parameters of UG. They investigated two principles of UG, namely Subjacency and ECP, by testing 92 advanced Korean speakers learning English and a control group of 34 native speakers of English. The test was a grammaticality judgment task, with 32 randomized wh-movement sentences, approximately half of which were ungrammatical sentences which violated Subjacency or the ECP. The subjects were required to demonstrate whether a sentence was 'possible' or 'impossible' in English, or whether they were 'unsure'. The results revealed that the subjects achieved scores (at 75%) considerably higher than chance suggesting that UG is still available to adult L2 learners.

The study of Bley-Vroman et al. is not without problems. There were not enough sentences for each syntactic phenomena (such as relative clauses, noun complements, etc. which form part of Subjacency). In fact, we can find only one test sentence for some of the structural categories. More that one

test sentence is needed in each category (e.g. relative clauses) so that we can have reliable results.

Liceras (1989) investigated the setting of the pro-drop parameter by 30 English and 32 French speakers learning Spanish as a foreign language. English and French are non-pro-drop languages while Spanish is a pro-drop language. Thus, a "resetting" (i.e. from -pro-drop to +pro-drop) of L1 parameter was forced, which necessarily influenced a cluster of linguistic properties (i.e. null subjects, verb-subject inversion, and that-trace violations). Liceras suggested that there may be an implicational hierarchy among these properties such that if 'that-trace' has been acquired, subject-verb inversion and null subject will have been acquired at an earlier stage. She also hypothesized that Spanish represents the unmarked option of the parameter and that L2 learners of Spanish may begin with the unmarked setting rather than their (marked) L1 setting.

Liceras' subjects were asked to respond to a written grammaticality judgment task consisting of 17 items written in Spanish. Each item contained one or two instances of the properties of the pro-drop parameter. The results indicated that most L2 learners do not start with the L1 setting as far as the null subject is concerned. In other words, there is no

L1 transfer into the L2. In addition, the results suggest that acquiring the null subject (and verb inflection) comes first in order before acquiring inversion and 'that-t' effects. The study showed that adult L2 learners have access to all possible parameter settings, not just the ones instantiated in their native languages.

Thomas (1991) conducted an experiment as an attempt to answer the question of whether UG is available to adult L2 learners. She investigated the interpretation of English reflexive pronouns by 132 native speakers of Japanese and of Spanish, and the interpretation of the Japanese reflexive *Zibun* by 41 native speakers of English and of Chinese. The subjects were given two experimental tasks: One contained elicited imitation of sentences in L2 with pronouns and anaphors in varied syntactic structures, whereas the second task was a multiple-choice comprehension test of the interpretation of pronouns and anaphors in L2. Consider the following example:

(14) Mary heard that Sue told the doctor about herself.

The subjects were asked whether the reflexive 'herself' refers to 'Mary', 'Sue', some other person not mentioned in the sentence, or any combination of 'Mary', 'Sue', or some other person.

Thomas' results supported the hypothesis that UG is available to adult L2 learners and disconfirmed the claim that learners can activate in L2 only that form of UG instantiated in L1. Having said that, I can see at least one problem with Thomas' study; namely some of her subjects are not true adult learners. That is, some of the subjects began to study the L2 at ages as young as 4 years old.

White, Travis, and Maclachlan (1992) investigated the question of whether adult L2 learners whose L1 is Malagasy (a VSO language in the Western Malayo-Polynesian branch of the Austronesian family) observe constraints on wh-movement in English. They pointed out that Malagasy and English differ in terms of the domains from which wh-extraction is possible, as well as in what may be extracted. They hypothesized that UG is available to post-puberty learners.

White et al's subjects were 38 adult Malagasy learners of English as a foreign language in Madagascar. They were given two tasks: A grammaticality judgment task and a question formation task. These tasks were not timed. The results indicated that Malagasy learners of English at different proficiency levels (i.e. high and low intermediate) knew what domains permit extraction and what domains prohibit it in

English. Such results are consistent with the claim that UG is available in non-primary (L2) acquisition.

All these experimental studies by Hanania and Gradman (1977), Flynn (1984; 1987; 1988), Felix (1988), White (1988), Bley-Vroman et al. (1988), Liceras (1989), Thomas (1991), and White et al. (1992) argue, whether directly or indirectly, that UG is fully accessible in adult L2 acquisition just as in child L1 acquisition. These studies investigated several principles and parameters of UG such as the PBD, Subjacency, the ECP, pro-drop, and other syntactic structures. They found that adult learners are able to reset UG parameters which are different from their first language suggesting the availability of UG in L2 acquisition. Moreover, the results of these studies came as a counterevidence against the proponents of the CPH.

2.4.2.3 The Partial-Accessibility Of UG Studies

As an argument against the full-accessibility of UG (in L2) position, Schachter (1988) and Bley-Vroman (1989) discussed some differences between first and second language learning situations. These differences reflect that it is not possible to suggest that the two learning cases are entirely

similar. First, Schachter (1988) explored four basic areas of differences between L1 and L2 acquisition cases. These are: completeness, equipotentiality, previous knowledge, and fossilization. These basic differences show that while children attain complete mastery of their L1, adults cannot achieve complete mastery of their L2. Adults are also not equipotential for any natural language. Schachter (1988:225) said that "equipotential is a cover term to indicate the ability to learn any arbitrary natural language X in the same amount of time and with the same ease as the time and effort required to learn a completely unrelated language Y." Adults' previous knowledge (i.e. their L1s) has a substantial effect on the second language learning situation. Finally, adults demonstrate instances of fossilization. That is, there is a "regular reappearance or re-emergence in IL [InterLanguage] productive performance of linguistic structures which were thought to be eradicated" (p. 228). For example, English native speakers may use the indicative form of the verb in Spanish in cases where it is inappropriate.

Having discussed the major differences between L1 and L2 learning cases, Schachter argued that underlying processes for the two types of language acquisition are not the same. Further, she defended her position by commenting on the

morpheme and negation studies which show similarities between first and second language learning situations. She said that "much goes on in language use that is not attributable to the language faculty (or module) per se, but rather involves other systems independent of but interacting with it" (p. 230). The similarities so far discovered between child L1 acquisition and adult L2 acquisition are not due to the language module, but rather are due to other systems (or modules). Schachter raised the interesting possibility that the native language mediates access to UG. In other words, UG is available to adult L2 learners only in the form in which it is instantiated in L1.

Further support for Schachter's proposal came from Bley-Vroman (1989) who made several arguments about the role of UG in L2 acquisition, in light of the fundamental differences between first and second language acquisition cases. He discussed nine basic characteristics in which he found adult language learning significantly different from child language learning, as a support for what he called the "Fundamental Difference Hypothesis". These are: Lack of success; general failure; variation in success, course, and strategy; variation in goals; fossilization; indeterminate intuitions; the

importance of instruction; negative evidence; and role of affective factors.

These nine characteristics demonstrate that adults lack general, guaranteed success. Complete success is rare especially with respect to accent (pronunciation). Bley-Vroman explained that adults differ from one another with regard to success, course of learning, and strategies of learning. They also vary with regard to the type of attainment -- some seem concerned about grammatical corrections, while others seem concerned about having a good pronunciation. Adults tend to reach only a particular stage of learning, a stage short of native-like ability. They seem to lack clear grammaticality judgments. Formal instruction matters to them in second language learning. Negative evidence is also sometimes useful and necessary in the L2 learning situation. Finally, affective factors such as motivation, personality and the like are crucial to L2 acquisition.

Bley-Vroman (1989) noted that the adult second language learner can reconstruct principles of Universal Grammar by observing his/her native language. He cited Kellerman (1977) who "showed that adult learners had ideas of what, in their native languages, was universal ... and what was specific to the native language" (p. 53).

White (1985) conducted a study about the effects of the pro-drop parameter in adult L2 learning. She hypothesized that adult L2 learners have certain problems when their L1s have different parametric value (e.g -pro-drop) than the L2 (e.g. +pro-drop). She suggested that the L2 learner would transfer the L1 value of the pro-drop parameter to the L2. She tested these hypotheses on 19 French (controls) and 54 Spanish (experimental group) learners of English. These subjects were given a grammaticality judgment task that contained 31 randomized English sentences, some of which were incorrect. They were asked to read the sentences at their own pace and to distinguish the correct from the incorrect. The results showed that French learners did significantly better than Spanish learners with regard to the property of the null subject. This is due to the fact that French, like English, is a non-pro-drop language -- learning was facilitated -- while Spanish is a pro-drop language -- learning was difficult. This finding supported White's claim that only those UG principles and parameters which are instantiated in the learner's first language are available to adult L2 learners.

However, the differences between the responses of the two groups with regard to the properties of inversion and "that-t"

effects were not significant. While they correctly rejected the sentences that contained Verb-Subject word order in declarative sentences, the subjects had problems in correctly identifying the ungrammaticality of subject extraction from clauses with the complementizer present (i.e."that-t" effects).

In response to White's (1985) study, Lakshmanan (1986) argued that White's results are inconclusive because adult L2 learners from different pro-drop L1 backgrounds were not considered. Taking this issue into consideration, Lakshmanan conducted a study to investigate whether adult L2 learners from different pro-drop L1 backgrounds (Arabic, Spanish, and Japanese) would carry any property of the pro-drop parameter over from L1 to L2 (English) causing transfer errors. The subjects were 53 adults in total: 16 Spanish speakers, 21 Arabic speakers, and 16 Japanese speakers. As for the control group, White's (1985) data on the control group of 19 French speakers was adopted. The subjects were tested on the three pro-drop properties, using a grammaticality judgment task. The test used was identical to the one used by White in her study.

Lakshmanan's results indicated that the differences in the responses between all the experimental groups and the

control group were not significant as far as the null subject is concerned. Furthermore, for all of the sentences that contained null subjects, the performance of the three experimental groups was at the chance level. These results differ from White's findings. However, similar results as those obtained by White were observed with respect to subjects' responses to Subject-Verb inversion and "that-t" effects. Lakshmanan concluded that it is not certain that Arabic, Spanish, and Japanese speakers are consulting their L1s in the processing of the null-subject property. An exception was noted with regard to "that-t" effects: The Arabic subjects appeared to transfer the asymmetry of their L1 into English (see § 2.2.3 for an explanation of this asymmetry).

Schachter (1989) carried out a study to find out whether adult second language learners have access to the principles of UG. In particular, Subjacency was tested. The subjects included: 19 native speakers of English (the control group); 21 advanced Korean speakers of English; and 40 advanced Chinese and Indonesian speakers of English. Korean does not show evidence of Subjacency, while Chinese and Indonesian demonstrate some evidence of Subjacency. Subjects were given a grammaticality judgment task that contained four syntactic

construction tests (i.e. Sentential Subjects (SS), Relative Clauses (RC), Noun phrase Complements (NC), and Embedded Questions (EQ) as the syntax test and four Subjacency (violation) tests (i.e. *SS, *RC, *NC, and *EQ) as the UG test. Some examples of these constructions, which were used in Schachter's (1989:86-7) study, are in order (The use of asterisks indicates ungrammaticality, and italicized *t* indicates the original extraction site.) :

(15) a. That oil prices will rise again this year is nearly certain. (SS)

b. *Which party did for Sam to join *t* shock his parents? (*SS)

c. The professor that gave the most interesting lecture just left for Harvard. (RC)

d. *Which problem did Bill find a principle which solves *t*? (*RC)

e. There is a good possibility that we can obtain the information elsewhere. (NC)

f. *Who did the police have evidence that the mayor murdered *t*? (*NC)

g. The police didn't discover who the murderer was? (EQ)

h. *Who did the police wonder who saw *t*? (*EQ)

The results showed that the control group passed the tests (i.e. the tests were appropriate), while many of the other subjects did not perform well in determining Subjacency violations. In other words, many subjects failed the Subjacency test, although they were proficient in English. These results constitute a major challenge for those who believe that UG is fully accessible to adult L2 learners. Furthermore, Schachter's results provided some support for the position that only those UG principles which are present in the learner's first language will be accessible in the L2 learning situation. This position is well-supported by the Korean, Indonesian, and Chinese data. Since the Korean language demonstrates no evidence of Subjacency, many Korean subjects failed the test. On the other hand, both the Indonesian and Chinese languages show evidence of Subjacency; as a result, native speakers of those languages performed better as a whole than did the Korean subjects.

Clahsen and Muysken (1989) argued that full knowledge of the properties of the L1 grammar is available in L2 acquisition. In other words, adult L2 learners only have access to UG as it is mediated through their L1 grammar. To support their argument, they discussed studies that dealt with the fundamental differences between L1 and adult L2

acquisition; such differences are said to be attributed to different kinds of learning mechanisms. In particular, they discussed their previous studies of L1 and L2 acquisition of three different areas of German grammar, namely verb placement, verb inflection, and negation (e.g. Clahsen and Muysken, 1986; Clahsen, 1988). They concluded that adult L2 learners (when asked to give a grammaticality judgment in any language) fall back on UG principles that have instantiations in their first language.

Clahsen (1990) supported Clahsen and Muysken's (1989) claim that adult L2 learners have access only to those UG principles which are instantiated in their L1. He stated that "the crucial differences ... between L1 and L2 acquisition are (a) that adult L2 learners no longer have open parameters and (b) that they only have access to stable UG principles in so far as these principles have instantiations in the speakers' native language" (p. 143).

White (1990) discussed the motivation for Universal Grammar, and reviewed the three different positions regarding the availability of UG to adult L2 learners. She reported on a UG study (presented at the 13th Annual Boston University Conference on Language Development, 1988) by Schachter who studied 18 adult native speakers of Dutch and 21 native

speakers of Korean. All subjects were advanced English as a second language (ESL) learners. Dutch, like English, shows evidence of Subjacency, while Korean does not show evidence of it. The subjects were tested on their knowledge of Subjacency. The test was a grammaticality judgment task that contained Subjacency violations and grammatical sentences of equivalent complexity.

Schachter's results demonstrated that while Korean speakers were accurate in their judgment of the grammatical sentences, many of them failed to reject Subjacency violations. In comparison, the Dutch speakers were considerably accurate in accepting the grammatical sentences as well as rejecting the Subjacency violations. The Dutch speakers, unlike the Korean speakers, behaved just like the control group. These results suggested that only UG principles that are present in the learner's L1 are available for acquisition of the target language.

Further, White (1990) discussed some studies (e.g. Bley-Vroman et al., 1988) which argue for the full-accessibility of UG in the L2 acquisition situation. She said that we cannot rule out at least indirect effects from the L1 despite the researchers' original hypotheses. She concluded her article by saying that "the question of UG accessibility in L2

acquisition is still unresolved. However, at the very least, the studies discussed in [this] article indicate that there is accessibility via the L1."

2.5 Summation

It is generally accepted that child L1 and child L2 learners resort to innate linguistic properties (i.e. UG) during language acquisition. In other words, children have direct access to UG (e.g. Chomsky, 1969; Brown, 1973; Dulay and Burt, 1974; Heckler, 1975; Sabra, 1987; Clahsen, 1988; O'Grady et al., 1989; Goodluck, 1991; and others). In contrast, it is still controversial whether the adult L2 learner, like the L1 learner, has access to the principles of UG. Three different positions on this issue can be detected. One position (e.g. Clahsen and Muysken, 1986), which focuses on the difficulties experienced by adult L2 learners, is that UG is not accessible; a second position (e.g. Bley-Vroman et al., 1988) is that UG is fully accessible to adults; and a third position (e.g. Schachter, 1989) is that UG mediates the acquisition of the L2 through the L1.

Some researchers try to explain the status quo. Some examples are given now. First, White (1990:125) states that:

> the differences in these positions can be traced in part to whether emphasis is on the relative lack of success of L2 learners (their knowledge, fluency, and ultimate attainment rarely approach that of native speakers) or their success (they do acquire many complex properties of language which are not transparent in the input).

Second, Cook (1988:183) claims that "the problem in choosing between the three [positions] is that they might be true for different learners, or for different aspects of language for the same learner; L2 learning depends on an interaction between learner and situation." But they are intended to be true of all, for UG. Third, in his attempt to make a distinction between the learning experience of adults and children with regard to UG, Felix (1985) argues that the crucial difference is due to the separate faculties that adults and children bring to bear upon the learning experience. For adults, UG is in competition with late-acquired general principles of a problem-solving nature; children rely on UG alone. Finally, Hudson (personal communication) says that one explanation is certainly the flexibility of the theory. As I have said elsewhere, there is some evidence to suggest that adult L2 learners proceed in ways similar to child L1 learners (e.g. Bailey et al., 1974). White (1989) argues that adults, like children, achieve

competence (knowledge of language) which goes beyond the linguistic input received. That is, the competence of adults, like children, includes properties which are not immediately obvious and which are not explicitly taught. This fact gives support to the notion that there is no principled difference between child and adult language acquisition. Furthermore, Flynn (1987) argues that the biological endowment for language does not change substantially over time. Thus, UG can be argued to hold in adult L2 acquisition as well as child L1 acquisition. In support of this position, Cook (1985) wonders how the L2 learner knows that the question '*Is$_1$ the book that t$_1$ on sale is good?' is ungrammatical unless there is something (UG) which guides him/her to understand that fact.

Generally speaking, adults seem to do as well as children in acquiring many aspects of language and they manifest a similar development route in L2 acquisition (CooK, 1973; Taylor, 1974). Given such considerations based on these studies and others (such as White, 1985; Bley-Vroman et al., 1988), there is some reason to believe that UG may continue to operate in adult L2 acquisition process. In other words, findings of these studies suggest that UG is still available to adults, if not totally, at least partially.

CHAPTER 3: METHODOLOGY

This research utilized a combination of perception and production methods for the collection of English and Arabic data and a combination of qualitative and quantitative techniques for analyzing the data.

Presented in this chapter are descriptions of the research sample population (subjects), research instrumentation (the questionnaire), and procedures followed for data collection and statistical analysis.

Prior to data collection, approval of the research methods of this project was granted from the (Michigan State) University Committee on Research Involving Human Subjects (UCRIHS).

3.1 Subjects

Data sought for this investigation was solicited from four groups: (1) Native speakers of American English as a control group; (2) Native speakers of Arabic who are advanced

learners of English as a foreign language (EFL) as a test-group; (3) Native speakers of Arabic as a control group; (4) Native speakers of American English who are advanced learners of Arabic as a foreign language (AFL) as a test-group. Groups one and two participated in the English experiment whereas groups three and four took part in the Arabic experiment.

3.1.1 Group One

Group one (henceforth, G1) consisted of native speakers of American English; of those, 9 people did not return their questionnaires, and 7 people were dropped from the sample because their questionnaires were incomplete. The remaining 25 subjects were 9 males and 16 females, ranging in age from 19 to 50 (the majority of the subjects - 18 - are in their early twenties). They were all Michigan state residents, and had no background in Linguistics. Most of them are either undergraduate or graduate students at Michigan State University (MSU), East Lansing. Table 1 shows the distribution of subjects according to age, major of study, and educational level.

Table 1 Subjects' Profile

CATEGORY	1	2	3	4	TOTAL
Age	18	2	3	2	25
Major	5	10	9	1	25
E. Level	20	5	0	0	25

A. Age:(1)19-29;(2)30-39;(3)40-49;(4)50-0ver.
B. Major:(1)Science & Engineering;(2)Social Science;
(3) Humanities;(4)fine Arts.
C. Level:(1)Undergraduate;(2)graduate

The selection of this group was made in two ways. First, some friends and neighbors were approached for participation in this study. Second, some MSU instructors were asked to allow their students to take part in this research.

3.1.2 group Two

Group two (hereafter, G2) consisted of 77 advanced learners of English enrolled in the English Language Center (ELC) at the Institute of Public Administration (IPA, a governmental agency which offers training programs related to civil service such as accounting, banking, sales, hospital administration, etc.) in Riyadh, Saudi Arabia, during the Summer semester of 1995. Of them, 11 subjects were dropped from the sample population because they did not fill out their

questionnaires. The remaining 60 subjects were adult male Saudi Arabic speakers, ranging in age from 19 to 30 years (most of them - 51 - were under 25 years old). Except for 4 of them who are university graduates, all of the subjects are high school graduates. They have received basic instruction in English during their intermediate (3 years) and high school (3 years) studies. Specifically, they had been taught in a traditional, grammar-oriented fashion for four hours per week. In the ELC, however, they studied different language skills (grammar, writing, reading, conversation, and listening) for 24 hours per week. Obviously, the subjects had been exposed to English as a foreign language (i.e. in a non-English speaking environment), rather than English as a second language (i.e. in an English speaking environment). In comparison, there may well be considerable differences in the type and amount of input available in the two environments.

The subjects were classified as advanced learners on the basis of their level in the ELC program. This level was determined by using a placement examination which was developed and administered by the ELC teaching staff. Table 2 indicates the subjects' profile according to age of first exposure to English (Exposure), years of formal instruction in

English (Instruction), length of study of English in English-speaking countries (E. in ESC), and major of study (Major).

Table 2 Subjects' profile

CATEGORY	Exposure	Instruction	E.in ESC	Major
1	4	54	54	22
2	53	6	5	11
3	3	0	1	16
4	0	0	0	11
TOTAL	60	60	60	60

A. Exposure:(1)7-11;(2)12-15;(3)16-20.
B. Instruction:(1)6-9;(2)10-13.
C. E.in ESC:(1)None;(2)1-6 months;(3)6-1 year.
D. Major:(1)Accounting;(2)Banking;(3)Sales;(4)Hospital Administration.

This group was selected by personally contacting the Director of the ELC at the IPA to seek his permission to allow his students to be involved in this project.

3.1.3 Group Three

Group three (henceforth, G3) consisted of 22 native speakers of Saudi Arabic. Of those, 10 people did not returned their questionnaires despite repeated attempts to get them back. The remaining 12 subjects were adult male Saudi

Arabians who were (MA or Ph.D.) Graduate students at MSU during the fall of 1995. The age of participants ranged from 30 to 39 years. They had no background in Linguistics and their majors of study were varied: 6 were majoring in Science and Engineering, 2 in Social Sciences, and 4 in Humanities. This group was selected by approaching my local friends and seeking their participation in this study.

Since Modern Standard Arabic is not spoken natively by anybody, a clarification word is in order. I claim, following Lewkowicz (1978) and many other modern Arabists, that any speaker of a variety of Arabic who has at least completed a college education in an Arab country (conducted primarily in Arabic) will be a valid source of information about Arabic.

3.1.4 Group Four

Group four (hereafter, G4) consisted of 58 native speakers of American English who were advanced learners of Arabic in the USA. Of them, 17 did not return their questionnaires and 7 were dropped from the sample because either they did not complete the two tests devised for data collection or they were not English native speakers. The remaining 34 subjects were adult (24) males and (10) females.

They came from different educational institutions, namely the Arabic Language Program (ALP) at The Ohio State University (OSU), The Program of teaching Arabic to Speakers of Other Languages (TASOL) at the Institute of Islamic and Arabic Sciences in America (IIASA), and Arabic and Islamic Studies Program (AISP) at the University of Pennsylvania (U of Penn). Table 3 shows the distribution of the subjects according to school, age, age of first exposure to Arabic, years of formal instruction in Arabic, length of study of Arabic in Arabic-speaking countries (A in ASC), major of study, and educational level.

Table 3 Subjects' Profile

CATEGORY	1	2	3	4	TOTAL
School	11	12	11	0	34
Age	19	5	5	5	34
Exposure	10	19	3	2	34
Instruction	20	14	0	0	34
A. in ASC	19	6	6	3	34
Major	10	6	18	0	34
E. Level	1	10	23	0	34

A. School:(1)OSU,(2)IIASA;(3)U of Penn.
B. Age:18-29;(2)30-39;(3)40-49;(4)50-over.
C. Exposure:(1)0-8;(2)16-27;(3)33-37;(4)42-50
D. Instruction:(1)1-3;(2)3-6.
E. A in ASC:(1)None;(2)1-6 months;(3)6-1 year;(4)1-2 years
F. Major:(1)Science & Eng.;(2)Social Science;(3)Humanities
G. Level:(1)High School;(2)Undergrad;(3)Grad.

As the table 3 illustrates, there were some subjects who have been exposed to Arabic at an early age. But, this was really not a true 'exposure'. In fact, the majority of them had been only exposed to Quranic (i.e. the holy book of Islam which contains the revelations of Allah to Muhammad peace be upon him) Arabic since they are Muslims. Usually, they read transliterated text along with English translation. Thus, this is only a reading process done mainly in English. The rest of these subjects have been exposed only to Colloquial Arabic (not Modern Standard Arabic). Further, English has been used predominately because they have been raised in the USA and schooled in American Public schools.

The selection of this group started in early fall of 1995 and was made in several steps. First, a request for student participation was sent to the LINGUIST List via e-mail. Upon this request, several responses from different individuals were received; of them, only the Coordinator of the ALP at OSU agreed to assist in the endeavor. Second, the Internet was searched for possible web sites dealing with Arabic studies. Two people were located and contacted via e-mail and telephone. Of these, only one agreed to help with the research, namely the Coordinator of Arabic language instruction at the University of Pennsylvania. Third, the

researcher knew of the IIASA which is funded by the government of Saudi Arabia. Thus, the Director of the TASOL program at this institute was contacted by phone and agreed to assist in this study.

Now, a brief description of the above three Arabic programs is in order. First, the ALP at the OSU is located in Columbus, Ohio. It offers a proficiency-oriented and functionally-based approach that emphasizes student-student and student-teacher oral interaction. It focuses on the pragmatic meaning of language without neglecting the structural aspect, which is taught implicitly at the beginning stage. This approach combines oral interaction with audio, video, and interactive CALL (Computer-Assisted Language Learning) components. The basic learning skills of writing, reading, listening, and speaking are emphasized throughout the courses of instruction.

Second, the AISP at the University of Pennsylvania is located in Philadelphia, Pennsylvania. It offers proficiency-based courses, implying that all activities are aimed at placing learners in the context of the native-speaking environment. Emphasis is on all four language skills: speaking, listening, reading and writing.

Third, the TASOL program is located in Fairfax, Virginia. It is part of an educational institution (IIASA) linked to the Islamic University of Imam Muhammad Ibn Saud of Riyadh, Saudi Arabia. This program emphasizes all four language skills and grammar.

On the basis of their teachers' assessments and their level in their respective programs, the subjects were advanced learners of Arabic. Such assessments were adopted in this study. Admittedly, since these assessments came from three different programs, it is not clear whether 'Advanced' is really equivalent among the students in this group. But, in agreement with White (1989a), it is hard to come by a similar measure of proficiency that can be applied to all subjects, given different circumstances. Moreover, given the small number of students who study Arabic in the USA, in general, and the small number of Advanced learners of Arabic in particular, it was necessary to find an adequate number of Advanced learners from different programs.

3.2 Research Instruments

In order to test the question of the availability of UG in adult L2 (English or Arabic) acquisition, two tasks were

devised in English and Arabic, a grammaticality judgment tasks (henceforth, test one) and a question formation task (hereafter, test two). These two tasks were preceded by an introductory sheet eliciting demographic information which are: age, age of first exposure to English or Arabic, years of formal instruction in English or Arabic, length of study of English or Arabic in English-speaking countries or/and in Arabic-speaking countries, and finally, educational level and area of specialization (Appendix A). Such biographical data would be helpful in revealing possibly significant variation among subjects.

The use of test one has both a practical and a theoretical rationale. Practically speaking, it is better than oral production tests in the sense that some phenomena are not available to examination in production data because of their rare or zero occurrence. This is due to the observation that learners try to avoid grammatical structures that they find difficult. Theoretically speaking, the use of grammaticality judgments enables the researcher to investigate the learner's linguistic competence ("knowledge") (Kellerman, 1986). Therefore, "learner judgments of acceptability are a reflection of that learner's competence in the target language" (Arther, 1980:182). Grammaticality judgments

provide "something about mental structures and processes that make learning possible, and about their interaction with the learner's input and environment" (Bley-Vroman et al., 1988:2). Further, such tasks have been extensively utilized by generative linguists who have depended on their own intuitions about grammaticality as a basis for testing hypotheses about underlying principles of grammar (Ellis, 1994).

Recently, however, criticisms have been advanced towards the use of grammaticality judgment task as the only source of information about the learner's linguistic competence (e.g. White, 1989a). These criticisms have been based on the observation that there can be response biases associated with such tasks. Thus, it is necessary to provide supporting evidence from different sources. For this reason, test two was used as an alternative means of assessing whether UG constraints adult L2 acquisition.

3.2.1 The Grammaticality Judgment Task (Test One)

This perception test consisted of 36 randomized items requesting intuitional responses of grammaticality; 15 constitute the syntax test and 21 constitute the UG test. The syntax test was designed to ensure that subjects have reached

a level at which Subjacency, Empty Category Principle (ECP), and the Null Subject Parameter (NSP) should have appeared in the L2. As for the UG test, it was devised to test for the presence or absence of the relevant structures that were being examined by the Syntax test. This test was constructed in English (Appendix C) and Arabic (Appendix D). The English version of the test includes grammatical sentences (the syntax test) and ungrammatical sentences (the UG test). In contrast, the Arabic version of the test contains 21 grammatical sentences, 15 of which constituted the Syntax test and the rest (items #s 5,6,14,16,26, and 28) were part of the UG test, and 15 ungrammatical sentences (the remaining part of the UG test). The ungrammatical sentences in this test violated the Subjacency principle, the ECP, or the NSP. For this test, subjects have to respond 'grammatical', 'ungrammatical' or 'not sure' to the test-sentences, and to try to correct the sentences they think ungrammatical. Such corrections provide the researcher with more evidence whether or not subjects' rejections of ungrammatical sentences come as a result of their awareness that these sentences violate UG principles/parameters.

Each of the three UG properties being tested was represented by certain number of constructions. First,

Subjacency was represented by three syntactic construction tests, each consisting of three grammatical sentences, and three Subjacency tests, each consisting of three ungrammatical sentences. The constructions were as follows: Relative Clauses (RC), Noun-phrase Complements (NC), and Embedded Questions (EQ1). Second the ECP was represented by two syntactic construction tests, each consisting of three grammatical sentences, and two ECP tests, each consisting of three ungrammatical sentences. These constructions were the following: That-trace Effects (Th-T), and Embedded Questions (EQ2). Third, the NSP was represented by two syntactic construction tests, each consisting of three grammatical sentences, and two NSP tests, each consisting of 3 ungrammatical sentences for the English test or three grammatical sentences for the Arabic test. These constructions were: Subject Omission (SO), and Subject-Verb Inversion (SVI). Finally, there was an overlap between some of the constructions; that is, EQ2 involved not only the ECP but also Subjacency, and Th-T involved the NSP as well as the ECP. Table 4 shows the categorization of English and Arabic sentences according to sentence type, item number of the Syntax test-sentences, and item number of the UG test-sentences.

Table 4 Categorization of Sentences

S Type	English STI	Arabic STI	English UGTI	Arabic UGTI
RC	12128	1825	152232	101929
NC	81831	22235	62629	111531
EQ1	52335	32030	91124	72336
Th-T	21316	41233	31734	172427
EQ2	41225	91832	101936	132134
SO	21316	41233	71430	51426
SVI	21316	41233	202733	61628

S(entence);STI=Syntax Test Items;UGTI=UG Test Items.
Note that sentence types 4,6, and 7 have the same item #s for the syntax test since they constitute the properties of the same parameter, the NSP.

3.2.2 The Question Formation Task (Test Two)

This production test was constructed in English (Appendix E) and in Arabic (Appendix F). It consisted of 11 randomized declarative sentences, each containing and underlined phrase. Subjects were asked to write a grammatical English or Arabic question which questioned the underlined phrase. There were three simple sentences that required the formation of simple questions; these served as the Syntax test. The types of extraction out of these simple sentences are: object of a preposition, direct object, and subject. The extraction of

any one of these types will result in a grammatical English or Arabic question. The Syntax test was used to make sure that subjects were capable of making basic wh-questions. The other eight sentences served as the UG test. As far as domains of extraction are concerned, two of the sentences could have resulted in (Subjacency) ungrammatical extraction from RC, two in extraction from NC, and two in extraction from EQ1. AS for the ECP and the NSP, two of the sentences could have resulted in Th-T violations. The UG test was devised to examine for the presence or absence for Subjacency, the ECP, and the NSP.

Table 5 indicates the categorization of English and Arabic sentences according to sentence type, item number of the Syntax-test sentences, and item number of the UG-test sentences.

Table 5 Categorization of Sentences

Sentence Type	Syntax Test-item	UG Test-item
Simple	1, 5, 10	-
RC	-	2, 6
NC	-	3, 7
EQ1	-	4, 8
Th-T	-	9, 11

Following Liceras (1989), if Th-T has been acquired, SVI and SO would have been acquired too. For this test, subjects would find some way of phrasing their questions to avoid violating a principle/parameter of UG, if they know constraints on wh-movement in English/Arabic (White et al., 1992).

3.3 Procedures

The administration of the questionnaire to the four groups was done either directly (for G1 and G3) or indirectly (for G2 and G4) by the researcher. As for G1 and G3 (the control groups), subjects were contacted (in/outside classroom) by the researcher who handed in the questionnaire himself. As for G2 and G4 (the experimental groups), the Directors of the different English/Arabic programs were instructed (either face-to-face for G2, or by phone and e-mail for G4) on how to administer the questionnaire to their students. For G4 only, mail was used to send questionnaires to the three Arabic program Directors.

Subjects were told that they were needed to help with a doctoral research into the acquisition of English and Arabic. They were assured that they would not be assessed in any way

by the two tests and that the results of the tests would be kept confidential. Then, they were instructed to fill out a personal and academic information sheet. After that, they were asked to be concerned with certain points while answering the tests. First, they should concentrate on the grammar rather than meaning, spelling, vocabulary, and the like. Second, they should not change their first answer. Third, they should take a break whenever they need one. Fourth, they should do the tests by themselves and not consult a grammar book or work with anybody. To ensure optimum understanding, test instructions were translated into Arabic/English and typed on the instruction sheets (Appendix B).

As for test one, subjects were given three choices ("grammatical"/"ungrammatical"/"not sure"). They were told to read the sentences and to judge them according to these three choices. They were required to correct any sentence that they found grammatically incorrect. With regard to test two, subjects were asked to make wh-questions out of the sentences, questioning only the underlined phrase.

No time limit for completion of the two tests was imposed. Thus, subjects were free to spend whatever time they needed. Imposing a time limit would result in failing to complete the tests by some learners.

After test completion, questionnaires were collected and classified according to groups (G1, G2, G3, G4). Each questionnaire was assigned a sequential number (1, 2, etc.); then the subject's personal information along with his/her test-responses were coded, transferred into op-scan forms, and then entered into (computer) spreadsheet so that scoring and computation can be done more easily.

3.4 Methods of Data Analysis

3.4.1 Coding and Scoring

The subjects' personal and academic information (i.e. independent variables such as age, major of study, etc.) were coded by grouping them into units in order to index group membership. For instance, the variable 'age' was divided into units (1= 18-29; 2=30-39; etc.)and subjects were grouped into these units according to their own age (see § 3.1 for full account of such variables). As for subjects' responses, they were coded differently depending on the type of the test. Responses to test one were coded as follows: (1) Correct; (2) Incorrect with the right correction; (3) Incorrect without correction; (4) Incorrect with the wrong correction; and (5) Not sure. The status of these responses were the following:

(1) will be the right answer for only a grammatical sentence; (2) and (3) will be the right answers for only an ungrammatical sentence; (4) and (5) will be regarded as wrong responses.

As for test two, responses were coded as follows: (1) Correct; (2) Simple violation; (3) RC violation; (4) NC violation; (5) EQ1 violation; (6) Th-T violation; and (7) Other.

For scoring the two tests, one point was assigned for a correct response and zero for an incorrect response. As for test one, the way for passing each of the syntax construction tests was for the subject to judge two of the three sentences as grammatical. Thus, a subject will pass the RC test if he/she has judged as grammatical two of the three grammatical sentences containing RC, and so on. The criterion for passing each of the UG tests was for the subject to judge two of the three sentences as ungrammatical. Thus, a subject will pass the RC Subjacency test if he/she has judged as ungrammatical two of the three ungrammatical sentences containing a wrong extraction from relative clauses, and so on. There was an exception to the last criterion which concerned the Arabic test: The criterion for passing the SO and SVI tests was for the subjects to judge two of three sentences as grammatical.

Regarding test two, the criterion for passing the syntax test was for the subject to correctly supply two grammatical questions out of the three simple sentences. With regard to the UG tests, the criterion for passing the RC Subjacency test was for the subject to correctly supply one grammatical question out of the two sentences containing RC, and so on.

3.4.2 Statistical Tests

Descriptive statistics, in the form of percentages, simple frequency tables, means, and standard deviations, was utilized. The aim of such procedure was to draw generalized descriptions regarding subjects' performance in the two tests.

Further, a simple logistic Regression analysis was performed to investigate the effects of each background independent variable (e.g. age) on the two dependent variables, the Syntax test and the UG test. Regression analysis estimates a model in which the dependent variable (y) is approximated by a linear combination of the independent variables (x1,...,x2). It shows the relationship between a set of independent variables and one (or more) dependent variable(s). It answers the question: to what extent can a dependent variable be explained and predicted by one or more

independent variables (Hatch & Farhady, 1982)? For example, I estimate how the number of years of formal instruction in English/Arabic affects subjects' scores on the UG test.

Further, a Chi-square test (or simply X^2) for a 2x2 contingency table was performed. This test was used to determine whether statistically significant difference exists among the groups (G1,G2,etc.) and/or between the two tasks used. Schachter's (1989:79) design of a contingency table was adopted in this study. This design is presented in Figure 1.

TEST TYPE	SYNTAX PASS	SYNTAX FAIL
UG PASS	A	B
UG FAIL	C	D

Figure 1 Research Design for Testing for UG

This research design helps reveal certain important predictions about the accessibility of UG in L2 acquisition. First, subjects who pass the Syntax test are predicted to pass the UG test also; thus, subjects who fall into cell A will be said to observe UG principles/parameters. On the other hand, subjects who fall into cell D have failed the Syntax test and, as a result, have failed the UG test as well. Finally, subjects who fall into cells B and C would constitute a

serious challenge to those who hold the position of the full-accessibility of UG in adult L2 acquisition.

The data were further analyzed by converting the P(robability)-value into a percentage form for easy reading. To do this, the following formula was utilized: "(1- P-value) x 100%". The probability level of .05 (95%) was selected as a threshold of statistical significance. Thus, a 95% probability of nonchance results was accepted as significant.

CHAPTER 4: DATA ANALYSIS AND RESULTS

This chapter presents the analysis and results of the two experiments in this research, the English Experiment (EE) and Arabic Experiment (AE). The data was obtained from the two tests given to G1 and G2 for the EE and from the two tests given to G3 and G4 for the AE.

4.1 The English Experiment

This section provides the findings of the control (G1) and experimental (G2) groups in the two tests. Also, it presents across task and across group comparisons.

4.1.1 The control Group

Hypothesis 1 assumes that the background independent variables (age, major, educational level) will have no statistically significant effect on the Syntax and UG scores obtained by group one in the two tests. To test this

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hypothesis, three separate regression procedures were performed, two for test one --one with scores on the Syntax test (Table 6.1) and one with scores on the UG test (Table 6.2); and the third procedure was for test two (Table 6.3). The results were nonsignificant in the two tests. Thus, Hypothesis 1 was supported. Tables 6.1, 6.2, and 6.3 show the p-values along with their percentages computed on the data which clearly indicate the nonsignificance of the attribute variables on test scores. Notice that an overall statistically significant regression value is set to be significant at $p<.05$ (95%).

Table 6.1 Regression Test On The Syntax Scores (T.1)

Type	Age	%	Major	%	E.Level	%
RC	0.7015922	29.85	0.7015922	29.85	0.7015922	29.85
NC	0.246739	75.33	0.246739	75.33	0.5690341	43.1
EQ1	0.5873026	41.27	0.3904715	60.96	0.4707726	52.93
TH-T	0.09948679	90.06	0.8346364	16.54	0.8297221	17.03
EQ2	0.8297221	17.03	0.8297221	17.03	0.1464118	85.36
SO	0.09948679	90.06	0.8346364	16.54	0.8297221	17.03
SVI	0.09948679	90.06	0.8346364	16.54	0.8297221	17.03

Table 6.2 Regression Test On The UG Scores (T.1)

Type	Age	%	Major	%	E.Level	%
RC	0.05258698	94.75	0.5609153	43.91	0.2092923	79.08
NC	0.3792179	62.08	0.3792179	62.08	0.3792179	62.08
EQ1	0.4120182	58.8	0.7249469	27.51	0.4046165	59.54
TH-T	0.8261385	17.39	0.4463903	55.37	0.3825315	61.75
EQ2	0.4780725	52.2	0.3248069	67.52	0.5690341	43.1
SO	0.6300769	37.0	0.2301086	76.99	0.1753483	82.47
SVI	1	0.0	1	0.0	1	0.0

6.3 Regression Test On Test Two Scores

Type	Age	%	Major	%	E.Level	%
SIM	0.4214111	57.86	0.04335453	95.67	0.4131625	58.69
RC	0.6504092	34.96	0.8020747	19.8	0.7197408	28.03
NC	0.7433741	25.67	0.5362194	46.38	0.4046165	59.54
EQ1	0.5534034	44.66	0.7823668	21.77	0.1278598	87.22
TH-T	0.3792179	62.08	0.3456719	65.44	0.863423	13.66

Note. SIM=Simple constituted the Syntax Test.

4.1.1.1 Results Of The Two tests

Hypothesis 2 assumes that G1 groups subjects who pass the Syntax test will also pass the UG test and that subjects who fail the Syntax test will also fail the UG test. This group of native speakers overwhelmingly perform as expected in the two tasks. Thus, Hypothesis 2 is substantiated. The majority of subjects pass both the Syntax and UG tests for the

constructions tested; thus, they tend to fall in the A cell. Specifically, the mean score of test one is 21.44 and of test two is 17.67. Tables 7.1, 7.2, and 7.3 indicate the Subjects' results in test one and Tables 7.4, 7.5, and 7.6 show their results in test two. The method of presenting these Tables is that the first one gives Subjects' results in each construction separately, followed by Subjects' results in each property of UG as whole in terms of Means (M) and Standard Deviations (SD), and then Subjects' results in the whole test presented by Ms and SDs too. The frequency distribution of Subjects' responses in the two tests is listed in detail in Appendix G.

Table 7.1 Test One Results

RC	NC	EQ1	TH-T	EQ2	SO	SVI
20 0	19 1	19 3	21 1	23 0	22 1	24 1
4 1	5 0	3 0	3 0	2 0	2 0	0 0

Table 7.2 Means and Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	23.33	1.16	20.67	1.16	19.33	0.58
	Fail	1.67	1.16	4.33	1.16	0.33	0.58
ECP	Pass	24.5	0.71	22.5	0.71	22.0	1.41
	Fail	0.5	0.71	2.5	0.71	0.0	0.0
NSP	Pass	24.0	0.0	24.0	1.41	23.0	1.41
	Fail	1.0	0.0	1.0	1.41	0.0	0.0

Note. Sub(jacency)=RC,NC,EQ1;ECP=TH-T,EQ2;NSP=SO,SVI.
Sy. is short for Syntax.

Table 7.3 Overall Means and Standard deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	23.94	0.59	22.39	1.67	21.44	1.9
Fail	1.06	0.59	2.61	1.67	0.11	0.19

Table 7.4 Test Two Results

RC	NC	EQ1	TH-T
18 3	17 1	17 1	18 1
1 3	2 5	2 5	1 5

Table 7.5 Means And Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	19	0	19	1.73	17.33	0.58
	Fail	6	0	6	1.73	4.33	1.16
ECP	Pass	19	0	19	0	18	0
	Fail	6	0	6	0	5	0

Table 7.6 Overall Means and Standard deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	19.0	0.0	19.0	0.0	17.67	0.48
Fail	6.0	0.0	6.0	0.0	4.67	0.48

These results demonstrate that the two tasks are effective and appropriate ones for UG testing. The English native speakers know both the syntactic (grammatical) constructions of the principles/parameters tested, and the Subjacency and ECP constraints on domains of extraction. They also recognize the ungrammaticality of subjectless sentences and verb-subject sentences (NSP). Thus, they have access to UG.

It is noteworthy, however, that the Subjects' relatively poor performance on test two was not due to violation of a property of UG; rather, some of the subjects did not follow the directions of the test properly. For example, instead of questioning the underlined word, they questioned some other phrase. Having said that, one may argue also that not following the test direction was a strategy to avoid violating a UG principle.

Finally, as presented in the above Tables, the results show that the correctness of answers varied across different construction types. In other words, this group performed generally better in some constructions than in others. Table 7.7 gives the rank order of the principles/parameter tested as measured by the percentage of those who pass both the Syntax and UG tests.

Table 7.7 Rank Order of UG Types in percentages

UG Type	Test One	Test Two
NSP	92%	-
ECP	88%	72%
Subjacency	77.32%	69.32%

One possible explanation for such an order is that a certain principle/parameter is easier/more difficult to access than others. It is interesting to note that the order is consistent across the two tests.

4.1.1.2 Across Test Comparison

Hypothesis 3 states that there will be no statistically significant difference in the Syntax and UG scores obtained by group one across the two tests. The chi-square test was used to test this hypothesis. The results showed that there was no significant difference in the subjects' scores across the two tests; thus, the hypothesis was supported. The p-values and their percentages are supplied in Table 8.

Table 8 Chi-square For Test Comparison

Type	Chi-value	P-value	Percent
RC	5.905263	0.1163115	88.37%
NC	6.396825	0.0938215	90.62%
EQ1	6.311111	0.0974170	90.26%
TH-T	6.230769	0.1009070	89.91%

4.1.2 The Experimental Group

Hypothesis 4 says that the background independent variables (age of first exposure to English, years of formal instruction in English, English in English-speaking countries, and major of study) will have no statistically significant effect on the Syntax and UG scores obtained by group two in the two tests. To test this hypothesis, three separate regression procedures were performed, one for the Syntax test of task one (Table 9.1), one for the UG test of task one (Table 9.2), and one for task two in general (Table 9.3). The regression test results show some random significant effect of some of the independent variables on the dependent variables (i.e. RC, NC, etc.). Thus, Hypothesis 4 was not fully supported. In fact, one can trace only one consistent effect of "Exposure" on "SO" in the Syntax test and UG test of task one. Tables 9.1, 9.2, and 9.3 indicate the p-values and their percentages computed on the scores of the two tasks.

Table 9.1 Regression Test On The Syntax Scores (T.1)

Type	Exposure	%	Instruction	%
RC	0.9270966	7.3	0.9379218	6.21
NC	0.3322787	66.78	0.1222775	87.78
EQ1	0.3074646	69.26	0.2709474	72.91
TH-T	0.001634416	*99.84	0.1335307	86.65
EQ2	0.09018724	90.99	0.3350756	66.5
SO	0.001634416	*99.84	0.1335307	86.65
SVI	0.001634416	*99.84	0.1335307	86.65

Table 9.1 (cont'd).

E. In ESC	%	Major	%
0.1277144	87.23	0.816326	18.37
0.001188633	*99.89	0.5636998	43.64
0.3606661	63.94	0.01791276	*98.21
0.3263482	67.37	0.3072984	69.28
0.1472112	85.28	0.721474	27.86
0.3263482	67.37	0.3072984	69.28
0.3263482	67.37	0.3072984	69.28

Note. *P<.05

Table 9.2 Regression Test On The UG Scores (T.1)

Type	Exposure	%	Instruction	%
RC	0.2910545	70.9	0.9356642	6.44
NC	0.2384059	76.16	0.7154724	28.46
EQ1	0.0165465	*98.35	0.001674686	*99.84
TH-T	0.6158443	38.42	0.2382089	76.18
EQ2	0.2677423	73.23	0.001036542	*99.9
SO	0.02897469	*97.11	0.1326322	86.74
SVI	0.2209572	77.91	0.3002859	69.98

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Table 9.2 (cont'd).

E. In ESC	%	Major	%
0.3720305	62.8	0.7507975	24.93
0.4417537	55.83	0.4642319	53.58
0.704513	29.55	0.1693198	83.07
0.6478563	35.22	0.01073157	*98.93
0.7756574	22.44	0.7537754	24.63
0.5782007	42.18	0.03650714	*96.35
0.704513	29.55	0.3929697	60.71

Note. *P<.05

Table 9.3 Regression Test On Test Two Scores

Type	Exposure	%	Instruction	%
Sim	0.3502923	64.98	0.1125675	88.75
RC	0.506815	49.32	0.08236171	91.77
MC	0.267148	73.29	0.3609504	63.91
EQ1	0.3625261	63.75	0.1879762	81.21
TH-T	0.1797332	82.03	0.757628	24.24

Table 9.3 (cont'd).

E. In ESC	%	Major	%
0.3357125	66.43	0.8821459	11.79
0.8072692	19.28	0.04930279	*95.07
0.3957236	60.43	0.2802787	71.98
0.4235362	57.65	0.3108651	68.92
0.7942093	20.58	0.3346315	66.54

Note. *P<.05

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Table 9.1 demonstrates the following significant effects of variables:(1) "Exposure" had an effect on the scores of the properties of the Null Subject parameter, 'TH-T', 'SO', and 'SVI'; (2) "English in English-speaking countries" had an effect on the 'NC' scores; and (3) "Major" had an effect on the 'EQ1' scores. As for Table 9.2, we can trace the following effects: (1) "Exposure" had an effect on the 'EQ1' and 'SO' scores; (2) "Instruction" had an effect on the 'EQ1' and 'EQ2' scores; and (3) "Major" had an effect on the 'TH-T' and 'SO' scores. Finally, Table 9.3 shows that only "major" had an effect on the scores of 'RC'.

4.1.2.1 Results Of The Two Tests

Hypothesis 5 assumes that G2 subjects who pass the Syntax test will also pass the UG test and that subjects who fail the Syntax test will also fail the UG test. The results of this group of non-natives were varied; that is, some subjects behaved as the hypothesis predicted, others did not. Thus, Hypothesis 5 was partly supported/rejected. Tables 10.1, 10.2, and 10.3 summarize the results of test one whereas Tables 10.4, 10.5, and 10.6 summarize the findings of test two. The way of presenting these Tables is that the first one

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gives Subjects' results in each construction separately, followed by Subjects' results in each property of UG as a whole in terms of Means (M) and Standard Deviations (SD), and then Subjects' results in the whole test presented by Ms and SDs too. The frequency distribution of Subjects' responses in the two tests is listed in detail in Appendix H.

Table 10.1 Test One results

RC	NC	EQ1	TH-T	EQ2	SO	SVI
10 9	20 5	13 10	13 3	10 4	25 5	32 5
29 12	31 4	23 14	39 5	32 14	27 3	20 3

Table 10.2 Means and Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	42.0	7.93	22.33	3.06	14.33	5.13
	Fail	18.0	7.93	37.66	3.06	10.0	5.29
ECP	Pass	47.0	7.07	15.0	1.41	11.5	2.12
	Fail	13.0	7.07	45.0	1.41	9.5	6.36
NSP	Pass	52.0	0.0	33.5	4.94	28.5	4.94
	Fail	8.0	0.0	26.5	4.94	3.0	0.0

Note. Sub(jacency)=RC,NC,EQ1;ECP=TH-T,EQ2;NSP=SO,SVI.
Sy. is short for Syntax.

Table 10.3 Overall Means and Standard Deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	47.0	5.0	23.61	9.32	18.11	9.10
Fail	13.0	5.0	36.39	9.32	7.5	3.90

Table 10.4 Test Two Results

RC	NC	EQ1	TH-T
32 3	17 3	15 4	30 3
18 7	33 7	35 6	20 7

Table 10.5 Means and Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	50	0	24.67	8.96	21.33	9.29
	Fail	10	0	35.33	8.96	6.67	0.58
ECP	Pass	50	0	33	0	30	0
	Fail	10	0	27	0	7	0

Table 10.6 Overall Means and Standard Deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	50.0	0.0	28.83	5.89	25.67	6.13
Fail	10.0	0.0	31.16	5.89	6.83	0.24

As the above Tables demonstrate, about three quarters of the subjects show knowledge of the constructions in question by falling into cells A or C and, thus, passing the Syntax tests in the two tasks. Put differently, subjects correctly judge grammatical sentences of different constructions as grammatical (task one), and supply simple grammatical questions (task two).

However, less than one sixth of the subjects exhibit that they fail both the Syntax and the UG tests in the two tasks; thus, falling into cell D. This performance supports Hypothesis 5. One may say that these subjects are not as advanced in their English as the other subjects are.

On the other hand, only about one third of the subjects pass both the Syntax and UG tests in the two tasks. So, they fall into cell A. Such performance supports Hypothesis 5.

Penultimately, about 50 percent of the subjects either pass the Syntax test and fail the UG test or vice versa; thus, they fall into cells C or B. The behaviors of these subjects fail to support Hypothesis 5.

Ultimately, the results indicate that the correctness of answers may vary across different construction types. Subjects perform better in certain constructions than in others. Table 10.7 provides the rank order of the

principles/parameter tested as measured by the percentage of those who pass both the Syntax and UG tests in both tests(tasks).

Table 10.7 Rank Order Of UG Types in Percentages

Type	Test 1	Type	Test 2
NSP	47.5%	-	-
Subjacency	23.85%	ECP	50%
ECP	19.17%	Subjacency	35.55%

As the above Table shows, subjects' intuitions differ with different UG properties. But, the order is not consistent across the two tests. Thus, it is difficult to say which property is easier/more difficult to access than others.

In comparison, the rank order of UG types is similar across the subjects (G2) and the controls (G1) on test two. In test one, however, the rank order is the same in terms of only one UG property, the NSP. It must be concluded that the NSP is the easiest to access.

4.1.2.2 Across Test Comparison

Hypothesis 6 states that there will be no statistically significant difference in the Syntax and UG scores obtained by group two across the two tests. To test this hypothesis, the chi-square test was employed. Except for one construction (NC), the results indicate that there was a significant difference in the results across the two tests. Thus, the hypothesis was weakly rejected. The chi-values and p-values along with their percentages are presented in Table 11.

Table 11 Chi-Square For Test Comparison

Type	Chi-value	P-value	Percent
RC	18.414067	0.0003613	*99.97%
NC	1.623925	0.6539772	34.61%
EQ1	8.397044	0.0384806	*96.16
TH-T	13.172907	0.0042772	*99.58

Note. *P<.05

As the previous section shows, the non-natives did generally better in test two than in test one. In other words, they performed much better in the production task (test two) than in the perception task (test one). One possible

explanation is that non-natives are more experienced in production tasks than in perception tasks.

4.1.3 Across Group Comparison

Hypothesis 7 assumes that there will be no statistically significant difference in the Syntax and UG scores obtained by groups one and two across the two tasks. The chi-square test was used to verify this hypothesis. The results indicate that there is a significant difference in the results of test one across the two groups; thus, the hypothesis is rejected. However, test two results show that there is a partially significant difference across the two groups; thus, the hypothesis is partly rejected/accepted. Tables 12.1 and 12.2 provide the chi-values, p-values, and percentages of differences in test one and test two respectively.

Table 12.1 Chi-value For Group Comparison (Test 1)

Type	Chi-value	P-value	Percent
RC	25.170719	0.0000142	*99.99%
NC	11.101709	0.0111884	*98.89%
EQ1	19.742708	0.0001919	*99.98%
TH-T	24.160320	0.0000231	*99.99%
EQ2	43.397980	0.0000000	*100%
SO	11.360283	0.0099290	*99.01%
SVI	7.969642	0.0466433	*95.34%

Note. *P<.05

Table 12.2 Chi-value For Group Comparison (Test 2)

Type	Chi-value	P-value	Percent
RC	3.220666	0.3588379	64.12%
NC	16.512381	0.0008901	*99.92%
EQ1	18.200901	0.0003998	*99.97%
TH-T	4.4215278	0.2193975	78.07%

Table 12.2 demonstrates that there is no significant difference, between the scores of the two groups, in two of the constructions, RC (Subjacency), and TH-T (ECP). This difference is due to the fact that the non-natives performed significantly better in the second task, in comparison to the first task.

However, the overall results of the two groups indicate that the native speakers (G1) did significantly better than the non-natives (G2) across the two tasks. Tables 12.3 and 12.4 present the overall results of both tests of group one and group two respectively. These results are presented in terms of means and standard deviations of subjects who pass and/or fail the Syntax test, the UG test, and both the Syntax and UG tests.

Table 12.3 Overall Subjects' Results of Both Tests (G1)

	Sy.		UG		Sy&UG		
	M	SD	M	SD	M	SD	%
Pass	21.47	3.50	20.70	2.40	19.56	5.02	78.24
Fail	3.53	3.50	4.30	2.40	2.39	3.22	9.56

Note. N=25

Table 12.4 Overall Subjects' Results of Both Tests (G2)

	Sy.		UG		Sy&UG		
	M	SD	M	SD	M	SD	%
Pass	48.5	2.12	26.22	3.69	21.89	5.34	36.49
Fail	11.5	2.12	33.78	3.69	7.17	0.47	11.95

Note. N=60

In agreement with White et al. (1992), natives and non-natives who passed the UG tests in the second task resorted to different strategies of paraphrasing sentences in order to avoid violating a principle of UG. Such paraphrasing appeared in different forms such as changing a complex sentence into a simple one, using wh-*in situ* (i.e. a wh-phrase which has not moved to [Spec, CP]), and so on. Some examples of paraphrases are in order.

(16) a. The manager bought the dog that had brought the ring. (RC)

Target Subjacency violation:*What did the manager buy the dog that had brought?

Paraphrase: What did the dog bring?

b. The father has proof that his son bought the red house. (NC)

Target Subjacency violation:*What does the father have proof that his son bought?

Paraphrase: Of what does the father have proof?

c. John wondered who would sell the diamond ring. (EQ1)

Target Subjacency violation:*What did John wonder who would sell?

Paraphrase: Who would sell what?

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d. Tom suspected that Lisa liked John. (Th-T)

Target ECP violation:*Who did Tom suspect that liked John?

Paraphrase: Who liked John? Or, Who did Tom suspect liked John?

4.2 The Arabic Experiment

This section presents the analyses/results of controls (G3) and subjects (G4) in the two tasks of the Arabic experiment. Further, it provides across task and across group comparisons.

4.2.1 The Control Group

Hypothesis 8 says that the background independent variable (major of study) will have no statistically significant effect on the Syntax and UG scores obtained by group three in the two tasks. To examine this hypothesis, three separate regression procedures were performed, two on task one (one on the set of the Syntax scores and the other on the set of the UG scores) , and the last procedure on task two. The results indicate that the background attribute had

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no significant effect on the subjects' scores of both tasks. Thus, the hypothesis is accepted. Tables 13.1 and 13.2 demonstrate the p-values and percentages of the effect of "major" on test one and test two respectively.

Table 13.1 Regression Of Test One Scores

Type	Major 1	%	Major 2	%
RC	0.3376009	66.24	0.1589887	84.11
NC	0.3096396	69.04	0.1037541	89.63
EQ1	0.2618949	73.82	1	0.0
TH-T	0.3575508	64.25	0.7194269	28.06
EQ2	0.7881004	21.19	0.6231033	37.67
SO	0.3575508	64.25	1	0.0
SVI	0.3575508	64.25	0.3575508	64.25

Note. Major 1=Regression of Syntax Scores;2=UG

Table 13.2 Regression of Test Two Scores

Type	Major	%
Sim	1	0.0
RC	1	0.0
NC	0.3575508	64.25
EQ1	0.1293913	87.07
TH-T	1	0.0

4.2.1.1 Results Of The Two Tests

Hypothesis 9 states that G3 subjects who pass the Syntax test will also pass the UG test and that those who fail the Syntax test will also fail the UG test. The results indicate that G3 (Arabic native speakers) performed as expected in all constructions in the two tests, as demonstrated by Tables 14.1, 14.2, 14.3 (for test one), and 14.4 (for test two). They pass both the Syntax and UG tests for the constructions tested; thus, they tend to fall in the A cell. The mean score for those who pass the first test is 10.28 and the second test is 12 (recall that the number of subjects is 12). The way of presenting these Tables is that the first one gives Subjects' results in each construction separately, followed by Subjects' results in each property of UG as a whole in terms of Means (M) and Standard Deviations (SD), and then Subjects' results in the whole test presented by Ms and SDs too. (Since the subjects achieved perfect score on the second task, I only provide one Table which shows their scores on each construction separately.) More details about the frequency distribution of subjects' responses in the two tests are listed in Appendix I.

Table 14.1 Test One Results

RC	NC	EQ1	TH-T	EQ2	SO	SVI
11 0	12 0	11 0	10 0	8 2	10 0	11 0
1 0	0 0	1 0	2 0	2 0	2 0	1 0

Table 14.2 Means And Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	12.0	0.0	11.33	0.58	11.33	0.58
	Fail	0.0	0.0	0.67	0.58	0.0	0.0
ECP	Pass	11.0	1.41	10.0	0.0	9.0	1.41
	Fail	1.0	1.41	2.0	0.0	0.0	0.0
NSP	Pass	12.0	0.0	10.5	0.71	10.5	0.71
	Fail	0.0	0.0	1.5	0.71	0.0	0.0

Table 14.3 Overall Means And Standard Deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	11.67	0.58	10.61	0.68	10.28	1.18
Fail	0.33	0.58	1.39	0.68	0.0	0.0

Table 14.4 Test Two Results

RC	NC	EQ1	TH-T
12 0	12 0	12 0	12 0
0 0	0 0	0 0	0 0

These results show that the two tasks are effective and appropriate ones for testing of UG. The Arabic native speakers know both the syntactic constructions for the principles/parameters being tested and the UG constraints on domains of extraction. They know what is grammatical and ungrammatical in Arabic. Thus, they have access to UG knowledge.

Finally, the results show that subjects performed differently across different constructions. In other words, subjects tend to pass both the Syntax and UG tests in a certain property of UG more than others. Table 14.5 gives the rank order of UG types as measured by those who pass both the Syntax and UG tests in the two tasks.

Table 14.5 Rank Order of UG Types in Percentages

Type	Test 1	Test 2
Subjacency	94.41%	100%
NSP	87.5%	-
ECP	75%	100%

In comparison, the above rank order is totally different from the rank order reported by English native speakers (G1). This difference is not easy to explain; however, I agree with Felix (1988:290) who says that "in the absence of more detailed studies about UG-generated knowledge in adult L2 learners, the rank order figures must be viewed with much caution."

4.2.1.2 Across Test Comparison

Hypothesis 10 assumes that there will be no statistically significant difference in the Syntax and UG scores obtained by group three across the two tasks. This hypothesis was supported by the chi-square test that showed that there was no significant difference between the scores of the two tests. Table 15 supplies the results of the chi-square test.

Table 15 Chi-square For Test Comparison

Type	Chi-value	P-value	Percent
RC	0.086956	0.9933553	0.67%
NC	0	1	0.0%
EQ1	0.086956	0.9933553	0.67%
TH-T	0.363636	0.9476476	5.24%

4.2.2 The Experimental Group

Hypothesis 11 states that the background independent variables will have no statistically significant effect on the Syntax and UG scores obtained by group four in the two tests. To test this hypothesis, three separate regression procedures were carried out, one with scores on the Syntax tests (RC, NC, etc.) as the dependent variables (test one, Table 16.1), one with scores on the UG tests as the dependent variables (test one, Table 16.2), and one with scores on the Syntax and UG tests as the dependent variables (test two, Table 16.3). Generally speaking, the results demonstrate that the attribute variables (i.e. school, age, age of first exposure to Arabic, years of formal instruction in Arabic, Arabic in Arabic-speaking countries, major, and educational level) did not have a biasing effect on test scores. Thus, the hypothesis was supported.

Tables 16.1, 16.2, 16.3 provide the breakdown of the effect of the independent variables on the dependent variables in terms of p-values and percentages.

Table 16.1 Regression Test On The syntax Scores (T.1)

Type	School	%	Age	%	Exposure	%
RC	0.527355	47.27	0.495106	50.49	0.737984	26.21
NC	0.851055	14.9	0.312259	68.78	0.482892	51.72
EQ1	0.554112	44.59	0.907846	9.22	0.590879	40.92
TH-T	0.244273	75.58	0.674658	32.54	0.119060	88.1
EQ2	0.676534	32.35	0.259114	74.09	0.124238	87.58
SO	0.244273	75.58	0.674658	32.54	0.119060	88.1
SVI	0.244273	75.58	0.674658	32.54	0.119060	88.1

Table 16.1 (cont'd).

Instruct	%	A.ASC	%	Major	%	E.Level	%
0.664534	33.55	0.560670	43.94	0.703766	29.63	0.133043	86.7
0.468046	53.2	0.066850	93.32	0.475526	52.45	0.500923	49.91
0.937227	6.28	0.267435	73.26	0.541570	45.85	0.570589	42.95
0.733948	26.61	0.361444	63.86	0.693046	30.7	0.157584	84.25
0.413617	58.61	0.728715	27.13	0.901648	9.84	0.818432	18.16
0.733948	26.61	0.361444	63.86	0.693046	30.7	0.157584	84.25
0.733947	26.61	0.361444	63.86	0.693046	30.7	0.157584	84.25

Table 16.2 Regression Test On The UG Scores (T.1)

Type	School	%	Age	%	Exposure	%
RC	0.746912	25.31	0.708371	29.17	0.737556	26.25
NC	0.341925	65.81	0.250184	74.99	0.852860	14.72
EQ1	0.978993	2.11	0.555204	44.48	0.563652	43.64
TH-T	0.532265	46.78	0.689152	31.09	0.730130	26.99
EQ2	0.270921	72.91	0.500430	49.96	0.346623	65.34
SO	0.432438	56.79	0.183289	81.68	0.275173	72.49
SVI	0.338240	66.18	0.572034	42.8	0.454528	54.55

Table 16.2 (cont'd).

Instruct	%	A.ASC	%	Major	%	E.Level	%
0.513982	48.61	0.656132	34.39	0.525664	47.44	0.451142	54.89
0.033160	*96.69	0.147816	85.22	0.647810	35.22	0.155701	84.43
0.358502	64.15	0.311836	68.82	0.613636	38.64	0.562494	43.76
0.416634	58.34	0.177970	82.21	0.357858	64.22	0.365466	63.46
0.567298	43.28	0.696119	30.39	0.812990	18.71	0.620668	37.94
0.951327	4.87	0.098960	90.11	0.027964	*97.21	0.703061	29.7
0.951327	4.87	0.409887	59.02	0.008500	*99.15	0.728799	27.13

Note. *P<.05

Table 16.3 Regression Test On Test Two Scores

Type	School	%	Age	%	Exposure	%
Sim	0.542507	45.75	0.291356	70.87	0.403529	59.65
RC	0.126840	87.32	0.956680	4.34	0.106092	89.4
NC	0.351210	64.88	0.616224	38.38	0.928462	7.16
EQ1	0.053969	94.61	0.884494	11.56	0.077946	92.21
TH-T	0.052966	94.71	0.824116	17.59	0.215278	78.48

Table 16.3 (cont'd).

Instruct	%	A.ASC	%	Major	%	E.Level	%
0.312375	68.7	0.609941	39.01	0.04932	*95.07	0.747995	25.21
0.358501	64.15	0.06523	93.48	0.910063	9	0.645197	35.49
0.813904	18.61	0.177969	82.21	0.357858	64.22	0.572934	42.71
0.890465	10.96	0.108002	89.2	0.172124	82.79	0.423384	57.67
0.69871	30.13	0.06355	93.65	0.419722	58.03	0.588145	41.19

Note. *P<.05

Tables 16.2 and 16.3 show some random significant effect of two variables ("Instruction", and "Major") on some of the constructions. Table 16.2 shows that :(1) "Instruction" had an effect on the 'NC' scores; (2) "Major" had an effect on the 'SO' and 'SVI' scores. Table 16.3 indicates that "major" had an effect on 'SIM' (SIMple = the syntax test). These variables' effects were not consistent throughout the data; so, one cannot claim that these attributes had any biasing effect on test scores.

4.2.2.1 Results Of The Two Tests

Hypothesis 12 predicts that G4 subjects who pass the Syntax test will also pass the UG test and that those who fail the Syntax test will also fail the UG test. This hypothesis

was partly supported by the results, as indicated by Tables 17.1, 17.2, and 17.3 for test one; 17.4, 17.5, and 17.6 for test two. The way of presenting these Tables is that the first one gives Subjects' results in each construction separately, followed by Subjects' results in each property of UG as a whole in terms of Means (M) and Standard Deviations (SD), and then Subjects' results in the whole test presented by Ms and SDs too. Full details of the frequency distribution of subjects' responses in the two tests are provided in Appendix J.

Table 17.1 Test One Results

RC	NC	EQ1	TH-T	EQ2	SO	SVI
10 2	5 3	13 5	12 4	16 1	20 9	22 7
18 4	15 11	11 5	11 7	14 3	3 2	1 4

Table 17.2 Means And Standard Deviations Of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	24.0	4.0	12.67	5.03	9.33	4.04
	Fail	10.0	4.0	21.33	5.03	6.67	3.79
ECP	Pass	26.5	4.95	16.5	0.71	14.0	2.82
	Fail	7.5	4.95	17.5	0.71	5.0	2.82
NSP	Pass	23.0	0.0	29.0	0.0	21.0	1.41
	Fail	11.0	0.0	5.0	0.0	3.0	1.41

Table 17.3 Overall Means And Standard Deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	24.5	1.80	19.39	8.54	14.78	5.87
Fail	9.5	1.80	14.61	8.54	4.89	1.83

Table 17.4 Test Two Results

RC	NC	EQ1	TH-T
26 0	24 0	24 0	23 0
6 2	8 2	8 2	9 2

Table 17.5 Means and Standard Deviations of Results

		Sy.		UG		Sy&UG	
		M	SD	M	SD	M	SD
Sub.	Pass	32.0	0.0	24.67	1.16	24.67	1.16
	Fail	2.0	0.0	9.33	1.16	2.0	0.0
ECP	Pass	32.0	0.0	23.0	0.0	23.0	0.0
	Fail	2.0	0.0	11.0	0.0	2.0	0.0

Table 17.6 Overall Means and Standard Deviations

	Sy.		UG		Sy&UG	
	M	SD	M	SD	M	SD
Pass	32.0	0.0	23.83	1.19	23.83	1.19
Fail	2.0	0.0	10.17	1.19	2.0	0.0

These Tables indicate that the adult Arabic learners can recognize the constructions tested, as shown by the fact that about three quarters of them pass the Syntax tests; thus, falling into cells A or C. In other words, most subjects judge grammatical sentence items as grammatical.

However, about one half of the subjects demonstrated knowledge of both Syntax tests and their equivalent UG construction tests. These subjects fall into cell A, thus, substantiating hypothesis 12.

A smaller number of subjects (about 10 percent) failed both the Syntax and UG tests. The behaviors of these subjects were predicted by Hypothesis 12. These subjects must have lower competence of Arabic than the other subjects.

On the other hand, about 30 percent of the subjects either passed the Syntax test and failed the UG test or vice versa; thus, falling into cells C or B. The behaviors of these subjects failed to support Hypothesis 12.

Finally, the findings of this group show that the correctness of answers varied across different construction types. In other words, subjects tend to pass both the Syntax and UG tests in a certain property of UG more than others. Table 17.7 presents the rank order of UG types as measured by those who pass the UG principles/parameter. It shows that the order is not consistent across the two tests. Thus, it is difficult to say which UG property is easier/more difficult to access than others.

17.7 Rank Order of UG Types in Percentages

Type	Test 1	type	Test 2
NSP	61.76	-	-
ECP	41.17	Subjacency	72.56
Subjacency	27.44	ECP	67.64

In comparison, the rank order of UG types is similar across G3 (the controls) and G4 (the subjects) on test two. In test one, however, the rank order is completely different across the two groups.

It is interesting to note, however, that the natives (G1 and G3) were consistent in their performance across the two tests (though they demonstrated different order from each other). On the other hand, the non-natives (G2 and G4) did not show consistent order across the two tests (and the order was different across these two groups too). They also demonstrated similar order with their respective natives on only test two. These results may indicate that the natives and non-natives are productively similar but perceptively different.

4.2.2.2 Across Test Comparison

Hypothesis 13 states that there will be no statistically significant difference in the Syntax and UG scores obtained by group four across the two tasks. To test this hypothesis, a chi-square analysis was performed. This hypothesis was partly accepted/rejected, as the results in Table 18 indicates.

Table 18 Chi-square Of Test Comparison

Type	Chi-value	P-value	Percent
RC	11.333333	0.0100534	*99%
NC	17.241379	0.0006304	*99.94%
EQ1	4.432432	0.2183969	78.17%
TH-T	4.742857	0.1916242	80.84%

Note. *P<.05

This partially significant difference in the two tests' scores was due to the fact that the non-natives performed generally better in test two than in test one.

4.2.3 Across Group Comparison

hypothesis 14 assumes that there will be no statistically significant difference in the Syntax and UG tests' scores obtained by groups three and four across the two tasks. The chi-square test was utilized to test this hypothesis. The results of test two supported this hypothesis. In test one, however, the results indicated that there was a significant difference between the two groups in only two Subjacency constructions, RC and NC. Thus, Hypothesis 14 was partly accepted/rejected. Tables 19.1 and 19.2 present the chi-

values, p-values, and percentages of difference in test one and test two respectively.

Table 19.1 Chi-value for Group Comparison (T.1)

Type	Ch-value	P-value	Percent
RC	11.732026	0.0083598	*99.17%
NC	24.830450	0.0000167	*99.99%
EQ1	6.569444	0.0869636	91.31%
TH-T	5.778966	0.1228734	87.72%
EQ2	2.127451	0.5463792	45.37%
SO	1.900653	0.5932802	40.68%
SVI	1.629827	0.6526457	34.74%

Note. *P<.05

Table 19.2 Chi-value for Group Comparison (T.2)

Type	Ch-value	P-value	Percent
RC	0.965944	0.8094916	19.06%
NC	1.647058	0.6487672	35.13%
EQ1	1.647058	0.6487672	35.13%
TH-T	1.647058	0.6487672	35.13%

The overall results of the two groups demonstrate that the native speakers (G3) performed generally better than the non-natives (G4) across the two tasks. Tables 19.3 and 19.4 provide the overall results of both tests for groups three and

four respectively. These results are given in terms of means and standard deviations of subjects who pass and/or fail the Syntax test, the UG test, and both the Syntax and UG tests.

Table 19.3 Overall Subjects' Results of Both Tests (G3)

	Sy.		UG		Sy&UG		
	M	SD	M	SD	M	SD	%
Pass	11.83	0.22	11.30	0.98	11.14	1.21	92.83
Fail	0.17	0.22	0.70	0.98	0.0	0.0	0.0

Note. N=12

Table 19.4 Overall Subjects' Results of Both Tests (G4)

	Sy.		UG		Sy&UG		
	M	SD	M	SD	M	SD	%
Pass	28.25	5.30	21.61	3.13	19.30	6.40	56.76
Fail	5.75	5.30	12.39	3.13	3.44	2.04	10.11

Note. N=34

As noted in the analysis of the English experiment, natives and non-natives who passed the UG tests in the second task resorted to different ways of paraphrasing sentences in order to avoid violating a principle of UG. The data revealed different forms of paraphrasing such as changing a complex sentence into a simple one, using wh-*in situ*, and so forth. Some examples of paraphrasing are provided below.

(17) a. Ra'a zaid-un al-fatat allati ishtarat al-sa9a.

Saw Zaid-nom the-girl who bought the-watch

"Zaid saw the girl who bought the watch."

Target (RC) Subjacency violation:

*matha ra'a zaid al-fatat allati ishtarat?

What saw Zaid the-girl who bought

"*What did Zaid see the girl who bought?"

Paraphrase: ayyu fatatin ra'a zaid?

Which girl saw Zaid

"Which girl did Zaid see?"

b. saddaqa ali al-khabar ?anna muhammad saraq

accepted Ali the-news that Muhammad stole

al-tufaha.

the-apple

"Ali accepted the news that Muhammad stole the apple."

Target (NC) Subjacency violation:

*matha saddaq ali al-khabar ?anna muhammad saraq?

What accepted Ali the-news that Muhammad stole

"*What did Ali accept the news that M. Stole?"

Paraphrase: matha saraq muhammad?

What stole Muhammad

"What did Muhammad steal?"

c. sa'al al-muzar9 al-rajul man sa-uhthitu

asked the-farmer the-man who would-bring

al-baqara.

the-cow

"The farmer asked the man who would bring the cow."

Target (EQ1) Subjacency violation:

*matha sa'al al-muzar9 al-rajul man sa-uhthiru?

what asked the-farmer the-man who would-bring

"*What did the farmer ask the man who would bring?"

Paraphrase: matha sa'al al-muzar9 al-rajul?

What asked the-farmer the-man

"What did the farmer ask the man?"

d. i9taqad zaid ?anna at-tifl sharab al-halib.

thought Zaid that the-child drank the-milk

"Zaid thought that the child drank the milk."

Target (TH-T) ECP violation:

*matha i9taqad zaid ?anna sharab al-halib?

what thought Zaid that drank the-milk

"*What did Zaid think that drank the milk?"

Paraphrase:i9taqad zaid ?anna man sharab alhalib?

thought Zaid that who drank the-milk

"Zaid thought that who drank the milk."

4.3 Across Experiment Comparison

Hypothesis 15 states that there will be no statistically significant difference in the Syntax and UG test scores obtained by experimental groups two and four across the two tasks. To test this hypothesis, a chi-square analysis was employed. This hypothesis was generally accepted, as the results of test one indicate in Table 20.1. There was a significant difference in only one construction, namely SO.

In test two, however, Hypothesis 15 was partly accepted/rejected, as the findings show in Table 20.2. There was a significant difference in the results of both groups in two constructions, NC and EQ1.

Table 20.1 Chi-square for Group Comparison (T.1)

Type	Chi-value	P-value	Percent
RC	1.452399	0.6932994	30.68%
NC	4.718585	0.1936022	80.64%
EQ1	2.331372	0.5065374	49.35%
TH-T	5.905725	0.1162881	88.38%
EQ2	5.746973	0.1245908	87.55%
SO	8.762178	0.0326258	*96.74%
SVI	4.718300	0.1936255	80.64%

Note. *P<.05

Table 20.2 Chi-square for Group Comparison (T.2)

Type	Chi-value	P-value	Percent
RC	2.625219	0.4530853	54.7%
NC	14.102534	0.0027688	*99.73%
EQ1	15.897765	0.0011900	*99.89%
TH-T	1.604957	0.6582663	34.18%

Note. *P<.05

Generally speaking, group four (Arabic learners) performed better than group two (English learners) in both tests. The percentage of those who passed both tests was 56.76% in G4, and 36.49% in G2. One possible explanation for this difference is that G4 were more advanced in their knowledge of Arabic than G2 in their knowledge of English.

Other factors may have contributed to this difference such as motivation, and the like.

In general, the two experimental groups performed better on the second (production) task than on the first (perception) task. This performance may be due to the fact that the subjects have greater difficulty in perceiving UG principles/ parameters. This difficulty level can be attributed to lack of experience in such tasks.

4.4 Foreign Language Vs. Second Language

In this section, I compare the overall results of test one Subjacency scores of the English learners (G2) to those of Schachter's (1989) subjects. The purpose of this comparison is to find out if there are significant differences between learning English as a foreign language (EFL) and learning English as second language (ESL).

Schachter's subjects were 20 Chinese, 21 Korean, and 20 Indonesian people. They were advanced learners of ESL. They were given a grammaticality judgment task that contained four constructions (SS,RC,NC,EQ) which aimed to test for the accessibility of Subjacency (UG) in L2 acquisition. For the purpose of comparison, I focused on only three of these four

constructions since this study did not include the construction of Sentential Subject (SS).

The method of comparison was to collapse the three sets of scores (i.e. the scores of RC, the scores of NC, and the scores of EQ1) into one 2x2 table for each group; and then performed a chi-square analysis on the number of those who pass/fail the Syntax tests, pass/fail the UG tests, and pass/fail both the Syntax and UG tests. Also, percentages were calculated. Each one of Schachter's three groups was compared to group two of this study. Table 21 presents the results of the chi-square test along with percentages.

Table 21 Chi-square for Group Comparison

	Arab		Indo.		
	NO	%	NO	%	Chi-value
Sy.Pass	126	70	48	80	*34.97
Fail	54	30	12	20	*26.73
UG Pass	67	37.22	24	40	*20.32
Fail	113	62.78	36	60	*39.80
Bo.Pass	43	23.89	22	36.67	*6.78
Fail	30	16.67	10	16.67	*10.0

Table 21 (cont'd).

Chinese			Korean		
NO	%	Chi-value	NO	%	Chi-value
50	83.33	*32.82	46	73	*37.20
10	16.67	*30.25	17	27	*19.28
27	45	*17.02	10	15.87	*42.19
33	55	*43.83	53	83.13	*21.69
24	40	*5.39	10	15.87	*20.54
7	11.67	*14.30	17	26.98	3.6

Note. Bo(th)=Sy(ntax)&UG;Indo is short for Indonesian.
*P<.05 (df=1). The percentages are for the NOs, not for the Chi-values.

As indicated in the above Table, the results of each of Schachter's three groups differed significantly from those of the Arabic-speaking learners of English in this study. The Chinese and Indonesian subjects performed generally better than the Arabs and the Koreans did. In contrast, the Arab subjects performed better as a whole than the Korean group did. According to Schachter (1989), Korean shows no evidence of Subjacency; as a result, the Koreans performed relatively poorly on the test. The other groups (Chinese, Indonesian, and Arab groups) performed generally better than the Korean because their languages show evidence of Subjacency; and , thus, accessing UG was somewhat facilitated.

Now, the question is why did the Chinese and Indonesian subjects perform generally better than the Arabs, even though Subjacency obtains in Arabic as it does in English? One possible explanation is that the learning context may have some effect on the outcomes of those subjects. In other words, ESL context may well be a positive factor that contributed to the better performance demonstrated by the Chinese and Indonesian subjects. Of course, there may be other contributing factors, one of which is different teaching materials and/or methods.

Finally, I must point out that for lack of literature, no attempt was made to compare the performance of G4 (learners of Arabic) with that of other groups in a different study.

CHAPTER 5: DISCUSSIONS AND CONCLUSIONS

5.1 Discussions

Given the results of the English and Arabic experiments, do adult L2 learners have access to the principles and parameters of UG? The answer should be affirmative because a good number of subjects passed both the Syntax and UG tests of both tasks in the two experiments. According to White (1989a), chance performance would be 25% because there are four possible cells into which subjects could fall into. The results indicate that the non-natives scored above chance in both experiments. The percentage of those who passed both tests is 36.49% for the English learners and 56.76% for the Arabic learners. The difference between the two experimental groups might be attributable to the fact that they are not equally advanced learners of the target language.

Thus, the results of the two experiments constitute a challenge to advocates of the no-UG-access hypothesis. If adult L2 learners have no access to UG (and only have access

to problem-solving and hypothesis-testing mechanisms), they should be totally unable to work out the appropriate restrictions on wh-movement in English/Arabic which cannot be directly induced from surface structure (White et al., 1992). Those who passed the UG tests did not violate the principles of UG.

Arguing for the UG-accessibility position, do adult L2 learners have FULL access to UG as in the case with L1 children? The answer is no. The results of both experiments demonstrate that there were many subjects who failed the UG tests, thus falling into cell C. If UG was fully available to the subjects, they would have done well on determining UG violations for the constructions they knew in English/Arabic. Moreover, if adult L2 learners have full accessibility of UG, why did they not do as well as the English/Arabic native speakers, even when the principles of Subjacency and ECP operate in both English and Arabic.

The above argument leads us to the third position that UG is only partially accessible to adult L2 learners. According to this view, only those portions of UG which are instantiated in the leaner's first language are available in the second language. Given the findings of this research, this position is not supported. Although both languages English and Arabic

show evidence of Subjacency and ECP, a number of subjects in each experiment failed to recognize UG violations for the constructions they already knew. Reaching similar results, Schachter (1989) explained that L2 learners might have difficulty in accessing their linguistic knowledge reliably.

Furthermore, the results of the Null Subject Parameter (NSP) in both experiments constitute a serious challenge to proponents of the UG-partial accessibility position. The NSP is set differently in English and Arabic; English is a non-pro-drop language (negative) while Arabic is a pro-drop language (positive). Yet, many subjects performed significantly better in the NSP tests than in the tests of Subjacency and ECP which operate almost similarly in both languages.

The present findings do not support any of the three positions on the question of the accessibility of UG in adult L2 learning. The subjects did not perform as bad (below chance level) to say that UG is not available to them; and they did not do as well as child L1 learners (or native speakers) to say that UG is available to them. Further, subjects' results came as a counterargument to the prediction of the position that claims that UG is only partially accessible to adults.

For the moment, the picture seems more complicated; UG is available but neither fully nor partially. The proponents of the full-access hypothesis claim that the L2 learner proceeds in the same way as the L1 learner. On the other hand, the advocates of the partial-UG access hypothesis believe that the L2 learner has only access to UG principles/parameters that are operative in his/her L1. The findings of this paper form a major challenge to these positions (and, of course, to the no-access position).

Actually, we can reach a solution to this problem by carefully examining the rationale behind the conflicting positions. First, the no-access hypothesis should be totally disregarded for the following reasons:(1) There are relatively few studies which claim that UG is entirely not available to adult L2 learners. If we combine the studies which claim full UG-accessibility with those which claim partial UG-accessibility, we can conclude that these studies demonstrate that UG is available in one way or another; thus; these studies together constitute a serious challenge to the no-access position. (2) Two prominent advocates of this position have changed their no-access position to the partial-access position, namely Clahsen and Muysken (1989). (3) Since there is no major biological restructurings in the human brain

after birth, it is reasonable to assume that, in some way, UG also determines L2 acquisition (Lust, 1988). In other words, UG is available to adult L2 learners because biological endowment for language does not change substantially over time, despite CPH (i.e. Critical Period Hypothesis) (Flynn, 1987). (4) Differences between L1 and L2 acquisition have nothing to do with the presence or absence of UG. They only mean that adult L2 learners face more learning difficulties than their L1 counterparts. UG is one component of an acquisition theory, whether of L1 or L2. Such component will interact with various others (such as personality, aptitude, emotional states, etc.) and the failure of L2 learners may be attributable to these other components, and not necessarily to the non-accessibility of UG. (5) Finally, to say that UG is not available is to go backward in time and say that adults learn a habit system, a system of disposition to behavior, acquired through training and conditioning (Chomsky, 1986a). Such an idea has long been abandoned as a way of explaining L1 acquisition and should be abandoned for L2 acquisition too.

Second, we should do away with the position which states that UG is partially available to adult L2 learners. It is partial-access in the sense that only L1 UG-principles/parameters are available to them. This position is

not convincing for several reasons: (1) many studies (e.g. Bley-Vroman et al., 1988) have shown that adult L2 learners perform above chance in grammaticality judgment tasks even if the L1 (e.g. Korean) of these learners do not show evidence of a UG principle (e.g. Subjacency) as in the L2 (e.g. English). (2) Other studies (e.g. this paper) indicate that adult L2 learners do not do as well as L1 learners even when a UG principle is involved in both languages, the L1 and the L2. (3) Differences between L1 and L2 acquisition should not be taken to mean that the accessibility of UG is diminished. Such differences may only contribute to the difficulties adult L2 learners face while accessing UG. Thus, the accessibility issue should be separated from the difficulty issue. (4) A number of studies (e.g. Schachter, 1989) did not fully support this position. They only provided limited support. (5) Finally, the proponents of this position fail to distinguish between L2 performance and the acquisition of L2 competence (White, 1989).

Finally, the hypothesis that UG is fully available should be reformulated and reinterpreted. It should be reconstructed for several reasons: (1) Most studies (e.g. Bley-Vroman et al., 1988) did not fully support this position. Although subjects of these studies achieved scores considerably higher

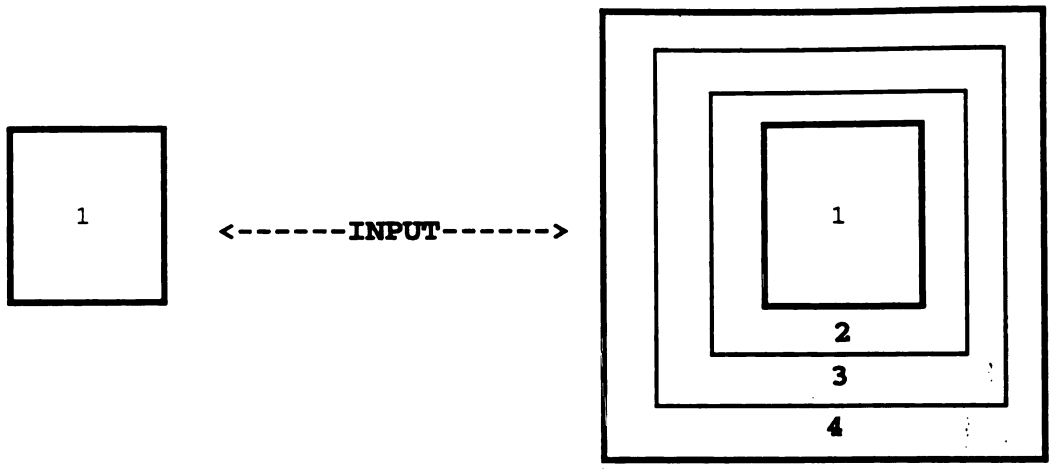
than chance, they did not score as the native speakers did. (2) Many studies indicated that adult L2 learners rarely if ever achieve native-like competence (Ellis, 1994). (3) The advocates of this position claim that if the L1 and the L2 have similar parameter settings, learning is facilitated because there is no need for parameter-resetting; but when the L1 and L2 have different parameter-settings, learning pattern will resemble the early stages of L1 acquisition (Flynn, 1987). This argument is not supported by the findings of this research which show that subjects performed generally better in constructions that differed parametrically from English to Arabic (e.g. the NSP) than constructions that operated similarly in both languages (e.g. Subjacency).

Given the above arguments, we can try to solve the UG paradox by saying that UG is still available to adult L2 learners but it interacts with other linguistic, cognitive, and socio-psychological components that have been acquired by the learner over the years. Such interactions cause learning processing difficulties (e.g. contradictions, blockage, etc.) which contribute in partly distorting the accessibility of the underlying principles/parameters of UG. The mind/brain of the adult L2 learner has more linguistic and cognitive components

to compute than the child L1 learner; hence, the differences that are found between the two cases of acquisition.

It is very important to assume the interactions of various components of the human mind which process language, vision, memory, etc. in order to solve the UG paradox. Perhaps we can describe UG in isolation as one component, but we cannot analyze and explain its operation without understanding, describing, explaining, and analyzing other faculties of the mind. Of course, we are far from understanding what the human mind/brain is doing while processing language, but at least we can observe its results (Chomsky, 1988).

Stated somewhat differently, children have direct access to Core grammar which is a particular instantiation of built-in UG principles and parameters. In contrast, adults have access to core grammar but only through layers of peripheral components, an idiosyncratic linguistic component, a cognitive component, and a socio-psychological component. Figure 2 will help illustrate this position.



Child L1 Acquisition Vs. Adult L2 Acquisition

1.Core Grammar; 2.Peripheral Linguistic Component; 3.Peripheral Cognitive Component; 4.Peripheral Socio-psychological Component.

Figure 2 UG-accessibility in Language Acquisition

One may be tempted to ask why we have tremendous variations in subjects' results from one UG-study to another. One way to answer this question is to consider the factors that may condition functional computation of components in the bilingual brain as suggested above and as are represented in levels 2, 3 and 4 in adult L2 acquisition in Fugure 2.

5.2 Conclusions

This study was carried out to examine the acquisition of English by Arabic native speakers and the acquisition of Arabic by English native speakers. It explored the theory of UG and its relationship to the processes of first and second language acquisition. Particularly, it was concerned with a principles and parameters approach to UG, as realized in Government and Binding theory (Chomsky, 1981). It focused on the question of the accessibility of UG in adult L2 acquisition by investigating whether or not advanced learners of Arabic and advanced learners of English as a foreign language rely on the principles/parameters of UG. The specific properties of UG which were investigated were the Subjacency Principle, the Empty Category Principle (ECP), and the Null Subject Parameter. In addition, the study investigated whether or not there was a significant difference between perception and production tasks in measuring UG principles and parameters. Moreover, the study discussed the nature of UG-based acquisition studies and commented on the UG properties that were considered in such studies.

The study contained two experiments, English and Arabic, with two groups of subjects in each experiment. In the

English experiment, there were 25 controls and 60 advanced Arabic-speaking learners of English, while in the Arabic experiment, there were 12 controls and 34 advanced learners of Arabic.

The subjects were asked to fill out an information sheet about their age, age of first exposure to English or Arabic, years of formal instruction in English or Arabic, length of study of English or Arabic in English-speaking countries and/or in Arabic-speaking countries, and finally, educational level and area of specialization. Then they were tested using two different types of tasks, a grammaticality judgment task and a question formation task. The first task tested the receptive abilities of the subjects while the second task tested their productive abilities.

Upon data collection, statistical procedures were utilized for analysis of data. Such procedures were descriptive statistics (means, standard deviation, etc.), a generalized logistic regression test, and a chi-square test. The regression test was used to investigate the effects of each background variables on the scores of the two tasks. In contrast, the chi-square test was used to determine whether or not statistically significant difference existed within/between groups.

A number of conclusions have been drawn from this research:

1. Rejection of the position of no-UG-access in adult L2 acquisition and the position of partial-UG-access in adult L2 acquisition. These two positions are shown to be inconclusive for several reasons explained earlier.

2. Reformulation of the position of full-UG-access in order to solve the UG paradox. This position reconstruction reads as follows: UG may still be accessible to adult L2 learners but its accessibility is partly distorted/delayed by late acquired linguistic, cognitive, and socio-psychological components which are in constant interaction with UG. In other words, children directly access core grammar (UG) while adults access core grammar through late developed peripheral components.

3. Generally speaking, subjects (and controls) tend to perform better in production tasks than in perception tasks. One possible reason is that language learners are more experienced in production tasks than in other tasks.

4. The results of the rank order of UG types have indicated that the natives (G1 and G3) and the non-natives (G2 and G4) are productively similar but perceptively different.

5. There are some factors that may condition functional computation of components in the bilingual brain. Some of

these factors are the representation of language in the learner's mind, the language acquisition context, the structural relationship between the L1 and L2, and so on.

6. Learning a language as a second language (rather than as a foreign language) may contribute positively in accessing UG more accurately. This is due to the fact that the type (and quality) of input is different from one environment to another.

7. English-speaking learners of Arabic performed generally better than Arabic-speaking learners of English in both tasks even though their respective languages show evidence of Subjacency and ECP.

8. The experimental groups (G2 and G4) performed generally better in the NSP tests than any other test even though the parameter-setting is different from one language to another.

9. The results of the second task revealed some of the subjects' processing strategies such as changing a complex sentence into a simple one, using wh-*in situ*, etc. in order to avoid violating a principle of UG.

5.3 Recommendation For Further Research

In order to better understand UG and to permanently solve the controversy over the UG-accessibility question found in adult L2 language acquisition literature, we must draw on the work of cognitive scientists such as neurolinguists and psycholinguists. Pursuing this question should be tied with the question of the organization of the bilingual brain. Particularly, we should cooporate with those who pursue the question of whether the bilingual's two languages are mentally represented as a single system or as two separate systems. This call for close cooporation is legitamte since we are dealing with the theory of innateness, the biological endowment of language.

Further research on the accessibility of UG in adult L2 learning is extremely crucial. We should focus on many different languages so that we can have data from the whole spectrum which, in turn, will help in deciding the answer of the UG question and in finding common linguistic universals. Moreover, we should focus on more varied principles and parameters than those which have previously been examined.

APPENDICES

APPENDIX A

Personal And Academic Questionnaire

Native Language: ----------

Sex: Please circle one: MALE FEMALE

Age: ----------

Age of first exposure to English (for native speakers of Arabic only) or to Arabic (for native speakers of English only): -------

Years of formal instruction: ----------

Length of study of English (for native speakers of Arabic only) or Arabic (for native speakers of English only) :

a. In English speaking countries: ----------

b. In Arabic speaking countries: ----------

Educational level: ----------

Area of specialization: ----------

APPENDIX B

Instruction Sheet

There are two voluntary tests to do. The aim of these tests is to help with Doctoral Research into the acquisition of English and Arabic. You will NOT be assessed in any way by these tests, and the results of the tests will be kept confidential.

Please concentrate on grammar rather than meaning, spelling, and the like. When answering the tests, do not try to change your first answer. Take a break whenever you feel like it. PLEASE DO NOT CHECK A GRAMMAR BOOK. DO NOT WORK WITH ANYBODY. DO THE TESTS BY YOURSELF.

TEST ONE

Please read the following sentences. Put a √ in the parentheses next to any sentence that you think is GRAMMATICAL. Put an X in the parentheses next to any sentence that you think is UNGRAMMATICAL. Put a ? if you are NOT SURE.

If you think that a sentence is UNGRAMMATICAL, please correct it by writing the complete correct sentence in the space provided.

TEST TWO

Thank you for completing the information sheet and doing the first test! For this test, please make wh-questions (i.e. questions that start with what, where, why, who, etc.) out of the following sentences, questioning only the underlined phrase. Write the questions in the provided spaces.

EXAMPLE: She saw the car. -------> What did she see?

APPENDIX C

English Test One

1. The house I rented two days ago will be sold next week.
   ( )

---.

2. I think that he saw Mary. ( )

---.

3. Who did you think that got married? ( )

---?

4. I wonder when John bought these books. ( )

---.

5. The department chairman asked me whom I wanted to have as my main adviser. ( )

---.

6. Whom did the man have proof that John liked? ( )

---?

7. Wanted to run for re-election. ( )

---.

8. There is a good chance that you can pass the test next month. ( )

---.

9. What does Mary wonder who would steal? ( )

----------?

10. Who do you wonder when sold the house? ( )

----------?

11. Whom did the employee ask the manager where he would send?( )

----------?

12. She wondered where he would read the letter. ( )

----------.

13. John believes that his brother will be late. ( )

----------.

14. Spent $10 on his shirt. ( )

----------.

15. What did Susan reject the letter that had in it? ( )

----------?

16. We believe that John hit Sue. ( )

----------.

17. Who did Mary believe that would be late? ( )

----------?

18. There is a good opportunity that he can buy a new house today. ( )

----------.

19. Who did you wonder what would sell? ( )

----------?

20. Thought she that her boss would give her a payraise. ( )

----------.

21. The plan we discussed last week will be tested for efficiency. ( )

----------.

22. Whom did John make the claim that he hit last month? ( )

----------?

23. I wonder whom Sue will invite. ( )

----------.

24. Whom did Sue tell you where she had seen? ( )

----------?

25. He wondered where his wife spent the weekend. ( )

----------.

26. Whom does the president have evidence that the Senator trusted? ( )

----------?

27. Brought he too many toys for his kids. ( )

----------.

28. Mary doesn't like dresses that have flowers on them. ( )

---.

29. What did the fact that you didn't buy surprise your wife? ( )

---?

30. Has built many houses in the past 10 years. ( )

---.

31. The fact that he wants to marry her angers his mother. ( )

---.

32. Whom did the Principal refuse the student that had criticized? ( )

---?

33. Knows Mary that her husband doesn't love her anymore. ( )

---.

34. Who does he believe that died? ( )

---?

35. He doesn't remember what he wrote. ( )

---.

36. Who did Alice wonder what would buy? ( )

---?

APPENDIX D

Arabic Test One

1. Jaa'a al-walad allathi kataba al-qisata.
   came the-boy who wrote the-story
"The boy who wrote the story came."

2. Sharah al-rajul al-hadath bi-?anna al-lisa saraq
   explained the-man the-incident that the burglar stole
   al-mujawharat.
   The-jewelry
"The man explained that the burglar stole the jewelry."

3. Sa'ala al-mudir al-ustatha an matha kasar al-taleb.
   Asked the-principal the-teacher what broke the-student
"The principal asked the teacher what the student broke."

4. I9taqad muhammad ?anna khalid tazawaj al-fatat al-
   thought Muhammad that Khalid married the-girl the-
   sagira.
   Young
"Muhammad thought that Khalid married the young girl."

5. Sa-yahthuru.
   Will-come
"He will come."

6. Qatal zaid-un nafsah.
   Killed Zaid-Nom himself
"Zaid killed himself."

7. *matha sa'ala omar salem man katab?
   What asked Omar Salem who wrote
"*What did Omar ask Salem who wrote?"

8. Al-waled allathi harab min al-madina mat abu-h.
   The-boy who escaped from the-city died father-his
"The father of the boy who fled the city died."

9. Sa'ala ali fatimah mata jaa'at.
   Asked Ali Fatimah when arrived-she
"Ali asked Fatimah when she arrived."

10. *matha ahaba al-rajul al-fatah allati qara'at?
    What liked the-man the-girl who read
"*What did the man like the girl who read?"

11. *man saddaq salem al-hadath ?anna lyla saraqat?
    Who believed Salem the-claim that Lyla robbed
"*Whom did Salem believe the claim that Lyla robbed?"

12. Thanna zaid ?anna muhammad baa9 al-siyyarah.
    Thought Zaid that Muhammad sold the-car
"Zaid thought that Muhammad sold the car."

13. *man thanna al-rajul matha ?anna saraq?
    Who thought the-man what that stole
"*Who did the man think what that stole?"

14. Thahaba ila al-mataar.
    Went to the-airport
"He went to the airport."

15. *man rafatha al-qathi al-iddi9a bi-?anna al-walad tharab?
    Whom rejected the-judge the-claim that the-boy hit
"*Whom did the judge reject the claim that the boy hit?"

16. Nama al-awlaad.
    Slept the-boys
"The boys slept."

17. *man thanna muhammad ?anna ishtra al-siyyarah?
    Who thought Muhammad that bought the-car
"*Who did Muhammad think that bought the car?"

18. Iktashaf rijaal al-shurtah man saraq al-bank.
   Discovered men the-police who robbed the-bank
"The policemen discovered who robbed the bank."

19.*man ra'aytu al-siyyarah allati thanan-tu ?ann-hu
Who saw-I the-car Which thought-I that-he
hatamaha?
Destroyed-it
"*Who did I see the car that I thought that-he destroyed?"

20. Sa'ala ali al-fatah matha ahthara-t.
Asked Ali the-girl what brought-she
"Ali asked the girl what she brought."

21. *matha i9taqada ali man ?anna ishtara?
What thought Ali who that bought
"*What did Ali think who that bought?"

22. Ashaa9 muhammad al-khabar bi-?anna al-taleb kasar al-
Spread Muhammad the-news that the-student broke the-
zujajeh.
glass
"Muhammad spread the word that the student broke the glass."

23. *man sa'al al-mudir al-taleb man tharab?
Whom asked the-principal the-student who hit
"*Whom did the principal ask the student who hit?

24. *man yathun ali ?anna ra'a al-bait?
Who think Ali that saw the-house
"*Who does Ali think that saw the house?"

25. Ahthar-tu al-kutub alti ista9ar-tu-ha min-k.
Brought-I the-books that borrowed-I-them from-you
"I brought the books that I borrowed from you."

26. Jaa'a min al-safar.
Came from the-travel
"He came back from the trip."

27. *matha i9taqad al-walad ?anna inkasar?
What thought the-boy that broke
"*What did the boy think that broke?"

28. Al-mara'a naamat fi al-siyyara.
The-woman slept in the-car
"The woman slept in the car."

29. *matha tharabat al-mara'a al-walad allathi akal?
What hit The-woman the-boy who ate
"*What did the woman hit the boy who ate?"

30. Araf muhammad ayy kitaab qara'at.
Knew Muhammad which book read-I
"Muhammad knew which book I read."

31. *matha rafatha al-walad al-iddi9a ?anna al-fatah
What rejected the-boy the-claim that the-girl
hatamat?
Destroyed
"*What did the boy reject the claim that the girl destroyed?"

32. Sa'alat al-mara'a ayna thahabat al-qittah.
Asked The-woman where went the-cat.
"The woman asked where the cat went."

33. 9alima zaid ?anna al-walad mujtahid.
Knew Zaid that the-boy good
"Zaid knew that the boy is good."

34.*matha haddatha zaid ali man ?anna qara'a?
What told Zaid Ali who that read
"*What did Zaid tell Ali who that read?"

35. Thamma omar al-iddi9a ?anna al-zawaj utiil al-umer.
Criticized Omar the-claim that the-marriage prolong the-life
"Omar criticized the claim that marriage prolongs one's
life."

36. *matha sa'al muhammad fatimah ayna akala-t?
What asked Muhammad Fatimah where ate-she
"*What did Muhammad ask Fatimah where she ate?"

APPENDIX E

English Test Two

1. He went to Paris.

---?

2. The manager bought the dog that had brought the ring.

---?

3. The fact that you didn't tell the truth proves your dishonesty.

---?

4. My brother wondered who saw me.

---?

5. He gave me a present.

---?

6. John has sold the cat that ate the rat.

---?

7. The father has proof that his son bought the red house.

---?

8. John wondered who would sell the diamond ring.

---?

9. Paul thought that a virus entered the computer system yesterday.

----------?

10. John bought a new house.

----------?

11. Tom suspected that Lisa liked John.

----------?

APPENDIX F

Arabic Test Two

1. Thahab muhammad ila al-suq.
   Went Muhammad to the-mall
"Muhammad went to the mall."

2. Ra'a zaid al-fatah alti ishtarat al-saa9a.
   Saw Zaid the-girl who Bought the-watch
"Zaid saw the girl who bought the watch."

3. Qaddam al-a'ab al-ddalil ?anna al-rajul kasar
   Presented the-father the-evidence that the-man broke
   al-bab.
   the-door
"The father presented the evidence that the man broke the door."

4. Sa'al al-ustaath al-taleb man akhath al-qalam.
   Asked the-teacher the-student who took the-pen
"The teacher asked the student who took the pen."

5. A9daa-ni al-ustaath hadiyyah.
   Gave-me the-teacher present
"The teacher gave me a present."

6. Baa9 zaid al-qittah allati akalat al-samakah.
   Sold Zaid the cat that ate the fish
"Zaid sold the cat that ate the fish."

7. Saddaq ali al-khabar ?anna muhammad saraq al-tufaha.
   Accepted Ali the-news that Muhammad stole the-apple
"Ali accepted the news that Muhammad stole the apple."

8. Sa'al al-muzar9 al-rajul man sa-uhthiru al-baqara.
   Asked the-farmer the-man who would-bring the-cow
"The farmer asked the man who would bring the cow."

9. Thannat hind ?anna al-rajul ishtara al-khatem al-
   Thought Hind that the-man bought the-ring the-
     thahabi.
     Golden
"Hind thought that the man bought the golden ring."

10. Ishtara muhammad siyyarah jadidah.
    Bought Muhammad car new
"Muhammad bought a new car."

11. I9taqad zaid ?anna at-tifla sharab al-haleeb.
    Thought Zaid that the-child drank the-milk
"Zaid thought that the child drank the milk."

APPENDIX G

Frequency Distribution Of Responses (G1)

TEST ONE

Item	Grammar	Status	R. #1	R. #2	R. #3	R. #4	R. #5	Total Rs
1	1	1	23	1	0	0	1	25
2	4	1	20	5	0	0	0	25
3	4	2	1	22	0	2	0	25
4	5	1	23	2	0	0	0	25
5	3	1	20	5	0	0	0	25
6	2	2	1	9	4	4	7	25
7	6	2	2	22	1	0	0	25
8	2	1	23	2	0	0	0	25
9	3	2	0	21	1	1	2	25
10	5	2	1	19	3	1	1	25
11	3	2	0	7	9	7	2	25
12	5	1	24	1	0	0	0	25
13	4	1	24	1	0	0	0	25
14	6	2	1	23	1	0	0	25
15	1	2	0	19	3	2	1	25
16	4	1	24	1	0	0	0	25
17	4	2	2	23	0	0	0	25
18	2	1	20	4	0	1	0	25
19	5	2	0	20	3	0	2	25
20	7	2	0	25	0	0	0	25
21	1	1	24	1	0	0	0	25
22	1	2	6	16	0	2	1	25
23	3	1	19	6	0	0	0	25
24	3	2	1	21	2	0	1	25
25	5	1	24	1	0	0	0	25
26	2	2	3	12	4	3	3	25
27	7	2	0	25	0	0	0	25
28	1	1	25	0	0	0	0	25
29	2	2	0	21	3	0	1	25
30	6	2	1	21	2	0	1	25
31	2	1	24	1	0	0	0	25
32	1	2	2	7	7	5	4	25
33	7	2	0	25	0	0	0	25
34	4	2	5	17	1	1	1	25
35	3	1	24	0	0	1	0	25
36	5	2	0	18	4	1	2	25

TEST TWO

Item	Grammar	R#1	R#2	R#3	R#4	R#5	R#6	R#7	Total Rs
1	1	21	0	0	0	0	0	4	25
2	2	19	0	0	0	0	0	6	25
3	3	14	0	0	0	0	0	11	25
4	4	19	0	0	0	0	0	6	25
5	1	19	0	0	0	0	0	6	25
6	2	19	0	0	0	0	0	6	25
7	3	14	0	0	3	0	0	8	25
8	4	16	0	0	0	0	0	9	25
9	5	17	0	0	0	0	1	7	25
10	1	16	0	0	0	0	0	9	25
11	5	17	0	0	0	0	0	8	25

APPENDIX H

Frequency Distribution Of Responses (G2)

TEST ONE

Item	Grammar	Status	R. #1	R. #2	R. #3	R. #4	R. #5	Total Rs
1	1	1	27	4	22	7	0	60
2	4	1	41	3	13	1	2	60
3	4	2	18	13	15	10	4	60
4	5	1	28	1	14	3	14	60
5	3	1	28	0	15	1	16	60
6	2	2	21	1	25	6	7	60
7	6	2	16	6	25	0	13	60
8	2	1	53	0	6	0	1	60
9	3	2	27	0	21	5	7	60
10	5	2	26	2	22	4	6	60
11	3	2	32	0	19	2	7	60
12	5	1	39	0	8	3	10	60
13	4	1	51	0	7	0	2	60
14	6	2	21	6	26	5	2	60
15	1	2	24	0	26	3	7	60
16	4	1	49	0	9	0	2	60
17	4	2	34	1	20	0	5	60
18	2	1	52	0	5	0	3	60
19	5	2	24	0	20	1	15	60
20	7	2	10	3	33	1	13	60
21	1	1	36	1	17	2	4	60
22	1	2	30	0	20	2	8	60
23	3	1	39	0	13	1	7	60
24	3	2	21	0	28	6	5	60
25	5	1	45	1	7	0	7	60
26	2	2	22	0	23	1	14	60
27	7	2	15	10	30	1	4	60
28	1	1	46	0	10	1	3	60
29	2	2	34	0	19	2	5	60
30	6	2	26	3	24	5	2	60
31	2	1	28	0	21	2	9	60
32	1	2	23	0	19	2	16	60
33	7	2	25	4	26	0	5	60
34	4	2	43	0	15	1	1	60
35	3	1	38	1	17	2	2	60
36	5	2	39	0	12	0	9	60

TEST TWO

Item	Grammar	R#1	R#2	R#3	R#4	R#5	R#6	R#7	Total Rs
1	1	54	5	0	0	0	0	1	60
2	2	23	0	5	0	0	0	32	60
3	3	9	0	0	0	0	0	51	60
4	4	8	0	0	0	7	0	45	60
5	1	43	6	0	0	0	0	11	60
6	2	24	0	1	0	0	0	35	60
7	3	16	0	0	7	0	0	37	60
8	4	15	0	0	0	5	0	40	60
9	5	22	0	0	0	0	5	33	60
10	1	42	2	0	0	0	0	16	60
11	5	24	0	0	0	0	7	29	60

APPENDIX I

Frequency Distribution Of Responses (G3)

TEST ONE

Item	Grammar	Status	R. #1	R. #2	R. #3	R. #4	R. #5	Total Rs
1	1	1	12	0	0	0	0	12
2	2	1	8	3	0	0	1	12
3	3	1	12	0	0	0	0	12
4	4	1	9	3	0	0	0	12
5	6	1	7	2	0	1	2	12
6	7	1	10	2	0	0	0	12
7	3	2	1	8	1	2	0	12
8	1	1	10	2	0	0	0	12
9	5	1	10	1	0	1	0	12
10	1	2	1	8	1	2	0	12
11	2	2	1	10	1	0	0	12
12	4	1	12	0	0	0	0	12
13	5	2	0	8	2	2	0	12
14	6	1	11	1	0	0	0	12
15	2	2	0	10	1	1	0	12
16	7	1	11	0	0	1	0	12
17	4	2	1	10	1	0	0	12
18	5	1	11	1	0	0	0	12
19	1	2	0	10	2	0	0	12
20	3	1	11	1	0	0	0	12
21	5	2	1	4	4	2	1	12
22	2	1	11	1	0	0	0	12
23	3	2	0	9	2	0	1	12
24	4	2	1	8	2	1	0	12
25	1	1	11	1	0	0	0	12
26	6	1	9	3	0	0	0	12
27	4	2	2	6	2	1	1	12
28	7	1	9	3	0	0	0	12
29	1	2	1	9	1	0	1	12
30	3	1	11	0	1	0	0	12
31	2	2	1	7	1	1	2	12
32	5	1	11	1	0	0	0	12
33	4	1	11	0	1	0	0	12
34	5	2	1	8	2	0	1	12
35	2	1	11	0	1	0	0	12
36	3	2	1	8	2	0	1	12

TEST TWO

Item	Grammar	R#1	R#2	R#3	R#4	R#5	R#6	R#7	Total Rs
1	1	12	0	0	0	0	0	0	12
2	2	12	0	0	0	0	0	0	12
3	3	11	0	0	0	0	0	1	12
4	4	12	0	0	0	0	0	0	12
5	1	12	0	0	0	0	0	0	12
6	2	12	0	0	0	0	0	0	12
7	3	9	0	0	0	0	0	3	12
8	4	11	0	0	0	0	0	1	12
9	5	12	0	0	0	0	0	0	12
10	1	11	0	0	0	0	0	1	12
11	5	12	0	0	0	0	0	0	12

APPENDIX J

Frequency Distribution Of Responses (G4)

TEST ONE

Item	Grammar	Status	R. #1	R. #2	R. #3	R. #4	R. #5	Total Rs
1	1	1	30	1	0	2	1	34
2	2	1	14	0	3	5	12	34
3	3	1	28	3	0	3	0	34
4	4	1	19	5	0	4	6	34
5	6	1	25	5	1	0	3	34
6	7	1	28	3	1	1	1	34
7	3	2	6	10	0	7	11	34
8	1	1	16	12	1	4	1	34
9	5	1	25	2	0	3	4	34
10	1	2	6	12	4	8	4	34
11	2	2	12	4	2	4	12	34
12	4	1	25	2	1	2	4	34
13	5	2	2	9	9	6	8	34
14	6	1	30	2	0	2	0	34
15	2	2	15	5	3	3	8	34
16	7	1	25	1	0	5	3	34
17	4	2	8	20	1	3	2	34
18	5	1	24	3	1	4	2	34
19	1	2	12	6	4	3	9	34
20	3	1	23	7	0	2	2	34
21	5	2	3	9	7	5	10	34
22	2	1	23	4	0	2	5	34
23	3	2	5	21	3	1	4	34
24	4	2	8	13	1	3	9	34
25	1	1	27	2	0	3	2	34
26	6	1	27	5	0	0	2	34
27	4	2	9	8	5	1	11	34
28	7	1	26	6	0	0	2	34
29	1	2	4	13	5	4	8	34
30	3	1	17	4	1	7	5	34
31	2	2	5	7	6	4	12	34
32	5	1	32	1	0	1	0	34
33	4	1	21	3	2	3	5	34
34	5	2	4	6	8	4	12	34
35	2	1	20	1	0	2	11	34
36	3	2	7	14	4	3	6	34

TEST TWO

Item	Grammar	R#1	R#2	R#3	R#4	R#5	R#6	R#7	Total Rs
1	1	33	0	0	0	0	0	1	34
2	2	22	0	4	0	0	0	8	34
3	3	22	0	0	5	0	0	7	34
4	4	19	0	0	0	4	0	11	34
5	1	27	0	0	0	0	0	7	34
6	2	22	0	2	0	0	0	10	34
7	3	18	0	0	4	0	0	12	34
8	4	19	0	0	0	4	0	11	34
9	5	22	0	0	0	0	7	5	34
10	1	31	0	0	0	0	0	3	34
11	5	22	0	0	0	0	5	7	34

KEY for Test One Tables

Grammar: 1.RC;2.NC;3.EQ1;4.TH-T;5.EQ2;6.SO;7.SVI.
Status: 1.Correct;2.Incorrect.
R(esponse): 1.Correct; 2.Incorrect with right correction; 3.Incorrect without correction; 4.Incorrect with wrong correction; 5.Not sure.

KEY for Test Two Tables

Grammar:1.Simple;2.RC;3.NC;4.EQ1;5.TH-T.
R(esponse):1.Correct;2.Incorrect Simple;
3.Incorrect RC; 4.Incorrect NC;5.Incorrect EQ1;
6.Incorrect TH-T;7.Other.

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