"A Discourse Approach to the Acquisition of Arabic Subject-Verb Agreement by Australian learners."

By

Fethi MANSOURI

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Unless otherwise indicated, this sub-thesis is my own work.

Fethi Mansouri

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TABLE OF CONTENTS

Acknowledgments

Abstract

The acquisition of complex grammatical structures of a non-cognate language has been reported to be a daunting task for adult learners (Samimy and Tabuse, 1992; Bailey, 1983; Kleimann, 1977). In the case of Arabic morphology, this task is reported to be difficult not only for foreign learners (Bakalla, 1980; Neel 1980) but also for native speakers (Omar, 1973). The current study sets out to investigate the nature and the processes involved in the learning of Arabic subject-verb agreement structures by Australian adult learners. The investigation employs explanations from second language acquisition (SLA) theories as well as from linguistic theories. These latter, in particular, offer an independent explanatory basis for learning characteristics often accounted for by SLA theories only. It is hypothesised that (1) the amount and direction of information encoding (Person, Number and Gender) motivated by certain semantic categories and word order as well as (2) the availability of discourse cues would influence the learners' performance in subject-verb agreement tasks. The results reported in this study indicate that these two factors are significantly vital in predicting and accounting for the learners' final linguistic achievement in this grammatical structure.

ABBREVIATION LIST

SLA: Second Language Acquisition.

MSA: Modern Standard Arabic.

ESB: English-speaking background

PNG: Person, Number and Gender.

TAM: Tense, Aspect and Mood.

DLT: Discourse-Linking Theory

C(onsonant)

v(owel)

PL(ural)

DL: Dual

SG: Singular

Nom(inative)

Acc(usative)

Gen(itive)

Perf(ective)

Imperf(ective)

F(eminine)

M(asculine)

3: third person

1: first person

S(ource)

T(arget)

Compl(ementiser)

Part(icle)

NP: Noun Phrase

*: refers to ungrammatical sentences

Key to phonetic symbols

Symbol	Phonetic description	IPA
y	palatal glide	j
h	voiceless glottal fricative	h
H	voiceless pharyngeal fricative	ħ
@	voiced pharyngeal fricative	ʕ
sh	voiceless palato-alveolar fricative	ʃ
j	voiced palato-alveolar	ʒ
th	voiceless dental fricative	θ
dh	voiced dental fricative	ð
x	voiceless velar fricative	x
gh	voiced velar fricative	ɣ
q	uvular stop	q
?	glottal stop	ʔ
D	emphatic voiced alveolar stop	dˤ
T	emphatic voiceless alveolar stop	tˤ
S	emphatic voiceless alveolar fricative	sˤ
m	bilabial nasal	m
n	alveolar nasal	n
b	voiced bilabial stop	b
d	voiced alveolar stop	d
k	voiceless velar stop	k
l	alveolar lateral	l
t	voiceless alveolar stop	t
s	voiceless alveolar fricative	s
z	voiced alveolar fricative	z
f	voiceless labio-dental fricative	f
r	alveolar trill	r
a	low back vowel	a
aa	long low back vowel	aː
i	high front vowel	i
ii	long high front vowel	iː
u	high back vowel	u
uu	long high back vowel	uː
w	bilabial approximant	w

List of tables:

INTRODUCTION:

The main concern of this study is to find out how Australian students learn the morphology of subject-verb agreement marking in Arabic written discourse. The study investigates the effect of (1) word order (syntactic information structure), (2) the categories of 'humanness-animacy' and 'collectivity' (semantic and classificatory information structure) as well as (3) discourse cues (discourse information structure). Subject-verb agreement is viewed in the current study as an information exchange process which can yield different agreement patterns depending on a number of linguistic factors such as word order and the natural class of the 'subject'. The 'subject' is the source of the information exchange while the target of the exchange is the verb. The discourse-based approach taken in this study (following Barlow 1992) not only accounts for the seemingly conflicting agreement patterns motivated by both syntactic and semantic structures but also offers an additional information structure that the learners can resort to before producing agreement tokens. This information structure consists of the following discourse cues: (a) the semantic relevance (cf. Bybee, 1991) of agreement morphology in relation to the source's natural attributes; (b) the surface realisation of the subject and its persistence in the discourse (Barlow, 1992; Givon, 1983) as well as (c) the lexical 'specificity' of the subject in the discourse (Tyler and Bro 1986:75).

Although grammatical agreement in Arabic has, for some time, been of interest to general linguistics and debates on grammatical theories, little has been done in applied linguistics to investigate its implications on learning Arabic as a foreign language. It has been reported (e.g. Bakalla, 1980) that learners of Arabic appear to have more difficulties grasping grammatical agreement than any other single aspect of Arabic

grammar with the possible exception of deriving Broken Plurals.[1] If the availability of discourse cues in written discourse is found to have a significant effect on the learners' performance in subject-verb agreement tasks, then this research would present a step towards a better understanding of the nature of learning Arabic grammatical agreement and, consequently, a more efficient approach to the teaching of agreement structures in Arabic .

Besides this purely applied goal, this study aims to contribute to the existing research literature on the role of discourse structures and discourse cues in the learning of second languages. More specifically, it will be of some significance to the learning of Modern Standard Arabic as a second language, an area of second language acquisition where, in comparison to European languages, research is still lacking. It is hoped that this study may help to fill one of the many gaps that exist in the field of the acquisition of Arabic grammatical structures.

In recent years second language research has taken the view that second language acquisition is a multi-dimensional phenomenon in which it is difficult to separate the four interactive factors (learner characteristics; nature of target language; instruction/teaching and context) that influence the learning outcome (Stern 1988; Larsen-Freeman & long, 1991). This interactive aspect of SLA research is reflected in this study in which it is hypothesised that the learners' performance in agreement-related tasks will be influenced by the nature of Arabic agreement structures motivated by word order, semantic types and classificatory categories on the one hand, and by the availability of discourse information on the other.

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[1]Broken plurals are plural nouns derived from singular forms by phonological modification of their roots rather than by affixation of the plural marker [-uuna] as is the case with the regular derivation paradigm of Sound Plurals.

Huebner (1991) states that when accounting for second language acquisition one must incorporate a theory of learning. Such a learning theory, according to Berwick (1985), is likely to consist of (1) an initial state of knowledge where learners have access either to universal grammar or, in the case of adult learners, to their native language; (2) some indication of the linguistic input the learners are being exposed to; (3) an acquisition procedure, or parser, which entails what strategies the learner performs on the input data to move from the initial state, presumably towards higher proficiency in the target language. Without fully ignoring the effect of the initial state and the linguistic input, this study will focus on the learners' performance in subject-verb agreement marking which could lead to a possible explanation of the mechanism that drives the acquisition processes in the manner and order it does (cf., Marshall, 1979; Berwick & Weinberg, 1984).

The acquisition procedure in this study takes into consideration linguistic and non-linguistic factors. In other words, the acquisition of grammatical structures is influenced not only by linguistic constraints but also by non-linguistic constraints (cf., Huebner, 1991; Pinemann, 1989). The term 'linguistic factors' implies learning difficulties resulting from linguistically complex agreement structures inherent in the target language system. Non-linguistic factors comprise pragmatic considerations in the form of the availability of discourse information in the context in which a particular agreement structure occurs. It will be shown in the present study that both linguistic and pragmatic constraints together account for various learning characteristics.

As this paper investigates the acquisition of subject-verb agreement in Modern Standard Arabic (MSA) by Australian students, two main issues need to be addressed

before proceeding to the analysis of the learners' interlanguage. The first issue is socio-linguistic in nature and relates to the phenomenon of Arabic 'diglossia' in Ferguson's (1959) terms, and the problems associated with learning a language that has more than one variety. This problem will be addressed in chapter one. The second issue is related to the morphological system of MSA and its relevance to subject-verb agreement. This issue is of a general linguistic nature and will be addressed in chapter two.

Chapter 1: DIGLOSSIA IN ARABIC

1. Definition

The phenomenon of 'diglossia' in Arabic was first discussed by Charles Ferguson (1959) who identified the existence of two linguistic varieties in four different languages: Arabic, Greek, Haitian Creole and Swiss German. Campbell et al (1993) state that as far as Arabic is concerned the two varieties consist of a 'high variety' which is variously called standard, modern standard, or classical Arabic and is usually associated with the written code of the language and a 'low variety' also referred to as colloquial Arabic or dialect Arabic and is usually associated with the spoken code. Ferguson (1959:336) defines diglossia as:

> *"a relatively stable language situation in which, in addition to the primary dialects of the language (which may include a standard or regional standards), there is a very divergent, highly codified (often grammatically more complex) superposed variety, the vehicle of a large and respected body of written literature, either of an earlier period or in another speech community, which is learned largely by formal education and is used for most written and formal spoken purposes but is not used by any sector of the community for ordinary conversation".*

It is interesting that the superposed 'high' variety has two main versions, namely, Modern Standard Arabic and Classical Arabic, whereas the 'low' variety has a large number of versions including the different local dialects spoken in each of the 22 Arab countries. The term 'standard' in this study is used to refer to the 'high variety' only whereas the 'low varieties' are referred to as dialects or spoken Arabic. This view differs to that of Ferguson who claims that 'low varieties' may develop standard versions such as 'Standard Egyptian', 'Standard Tunisian' and so on.

However, the development of the concept of 'diglossia' does not seem to capture the realities of the linguistic situation in the Arab world according to many scholars. Daher (1987) refers to the emergence of a Variationist Theory which differs from other linguistic theories in that it rejects the claim that language is an autonomous system that should be studied independently of its social context.

Variationists view the linguistic situation in the Arab world not as diglossic but rather as being a multi-level variety. It is seen as a case of linguistic variation whose explanations lies at the interactional level of "form", "use" and "social context" (Eid: 1990:21). The interaction of these factors yields significant linguistic variations between MSA and the regional varieties to the extent that Arabic-speaking people who have not been formally educated in the standard language would not rate highly on MSA proficiency scales because of the extensive linguistic differences between the two varieties. Consider the following examples illustrating the extent of lexical difference not only between MSA and the regional varieties, but also between the many regional varieties themselves:

	MSA	**Tunisian Arabic**	**Egyptian Arabic**
'nose'	anf	xsham	manaaxiir
'went-he'	dhahab-a	mshii	raaH
'what'	maa	ashniya	eeh
'now'	al?aan	tawwa	dilwa?ti

In addition to the lexical differences illustrated in the above examples, there are also

extensive differences in syntax, phonology and other major grammatical structures of the 'high' and 'low' varieties of Arabic. The structural, lexical and phonological difference between certain regional varieties is so dramatic that a North African variety such as Algerian and a Middle-eastern variety such as Jordanian are barely mutually comprehensible. It seems that geographical distance is the key to the extent of linguistic differences between the regional varieties. The further apart two local varieties are the less mutually comprehensible they tend to be.

The problem of 'diglossia', however, is best outlined when the functions of the two varieties are considered. Spoken Arabic is the language of everyday life which varies form one country to another and from one city to another. Modern Standard Arabic, on the other hand, maintains a high degree of uniformity and functions as the official standard language in all Arab countries (Altoma, 1969). Standard Arabic is used in education, the press, and political and religious speeches. It is mainly a written language that is acquired in classrooms through education and not in natural settings as first languages are often acquired. There are many historical and cultural reasons for this split in functions. Standard Arabic, be it Classical or Modern, has a unique status among Arabs as the language of the Holy Quran which still represents an important unifying factor in the Arab world. Regional dialects of Arabic such as the Tunisian, the Egyptian, the Lebanese and other dialects, represent the language of the people spoken and understood by everyone in the speech community, educated and uneducated alike.

Not surprisingly, foreign students learning Arabic in schools and universities and those responsible for planning language courses are often faced with the dilemma of choosing which of the two varieties to focus on (Bakalla, 1980). In discussing the

problems associated with teaching languages with diglossia, Ferguson (1963) identified three major problems facing the curriculum planners. These are: the relative emphasis to be accorded the two varieties, the order in which the two varieties should be taught, and the effect of learning one variety on the maintenance of skills in the other. These problems are reflected in the case of the learners in this investigation who are studying Modern Standard Arabic primarily for academic purposes. Consequently, emphasis is placed on the standard variety with little attention being accorded to spoken varieties. Therefore, this study has chosen to focus on written data in MSA collected from free compositions, grammatical tasks and cloze tests. The linguistic effects of diglossia on the teaching and learning of Arabic are reflected in the curriculum designs of Arabic courses offered in Australian schools and universities.

2. Diglossia and the teaching of Arabic in Australian schools:

Campbell et al (1993) present a comprehensive account of the teaching of Arabic in Australia. They report that one main reason behind the surge of Arabic teaching in primary and secondary schools especially in New South Wales and Victoria, is the language maintenance programs aimed at assisting the Arabic speaking community in its efforts to preserve the Arabic language. In both states, Arabic is offered in mainstream programs as part of the regular school syllabus. The statistics reported by Campbell et al suggest that more than 7000 students mainly in Victoria and NSW and mostly from Arabic speaking backgrounds, study Arabic in state schools, independent schools and Catholic schools.

The implications of 'diglossia' on the teaching and learning of Arabic in Australia is

manifested by the obligatory split in the socio-linguistic functions of the two varieties. Students learning Arabic in formal settings are often exposed to the 'high' variety only, which implies that only those macro-skills associated with the 'high variety', namely reading and writing, are taught in the curriculum. Campbell et al (1993) report that one of the main challenges facing the teaching of Arabic in Australian schools is dealing with the difficult problem of intersection between varieties and macro-skills. There is a need for a new approach to curriculum design that takes into consideration the linguistic effects of diglossia in relation to achieving a balanced competence in the language.

This is the case with the students in this study who are attending Arabic courses aimed at beginners who have little or no prior knowledge of the language. The course these students are undertaking is divided into three levels: beginner level, intermediate level and advanced level. The main objective of the course is to teach the students the basic reading and writing skills and to a lesser degree some Arabic-English translating skills. Students are taught Standard Arabic mainly through a Grammar-translation method. This teaching approach is partly a result of the 'diglossic' nature of Arabic, i.e. that the two varieties of Arabic cut across the four macro-skills in a way that the speaking and listening skills, usually associated with the colloquial varieties of Arabic, are not emphasised in the curriculum.

It seems that the teaching of Arabic in Australian schools is generally confined to the 'high variety' for pedagogic and practical reasons. From the pedagogic perspective, it is still difficult to present a well balanced course where both varieties are equally emphasised without having to decide on the order and the degree of emphasis each variety should be accorded. From a practical viewpoint, it is easier to offer courses in

the Standard variety because of the lack of teaching experience and teaching material in the area of teaching spoken Arabic. Besides, the fact that there are more than 22 locally-spoken varieties, as opposed to one standard written variety, makes the decision of choosing which of the 22 varieties to teach even harder. The choice to teach the standard variety can also be the result of another equally important factor namely the widely held value judgements about the two varieties. It is often argued that standard Arabic is 'proper' and 'grammatical' and that colloquial Arabic is 'ungrammatical', 'slang' and 'improper'.

For the above reasons, this investigation employs written rather than spoken data as usually practiced in SLA research. Interestingly, Johnstone (1990) reports that Modern Standard Arabic, essentially a written code, is strongly characterised with 'oral' discourse features normally associated with the spoken code. Some of these features are interjections, repetitions, parataxis etc. Morphologically, however, spoken dialects have lost certain inflectional features such as case marking and hence, became less marked than standard Arabic which is still a highly inflectional and derivational linguistic system where morphology plays a vital role in marking grammatical relations.

Chapter 2: MORPHOLOGY OF ARABIC

Like other Semitic languages, Arabic is known for its highly complex morphological system. The morphological complexity is most apparent in the inflectional system of verbs which can inflect for person, number, gender (henceforth PNG), tense, aspect, mood (henceforth TAM), and voice as well as taking object suffixes. This means that verbs can constitute a semantically complete utterance constructed through the use of subject and object clitics. Consider the following example:

(1) darras-at-hu
    taught-3F.SG-him
    'She taught him'.

The base for example (1) is the triliteral root [d-r-s] to which is attached a number of morphemes, including an internal vowel pattern [a-a-], a templatic consonantal verbal form [CvCCvC] where there is gemination of the medial consonant, and the suffixes [-at] and [-hu] referring to the subject and the object of the clause respectively. The nominal suffixes are easily segmentable as they are attached to the suffix slot of the verb in a linear way.

Unlike inflectional morphology which will be discussed later in more detail, the linear segmentation of derived verbal forms in Arabic is quite unfeasible because infixation of different vowel melodies is essential for producing derived forms from the base root. The base for these derived forms usually consists of three consonants [CCC], sometimes four [CCCC] and rarely two [CC], with which a basic idea such as "writing, eating, doing etc" is associated. Within these base forms, vowels and affixes play a very important role in deciding the grammatical category as well as the

meaning of the word. Forms derived from one particular root can be both verbal and nominal as evidenced in the following example where the root [k-t-b-] denoting the idea of 'writing' is used to derive different lexemes:

[k-t-b] ------> kataba: 'wrote-he'

      ------> maktab: 'office'

      ------> kitaab: 'book'

      ------> kaatib: 'writer'

      ------> maktabat: 'library'

      ------> kuttaab: 'religious school'

The derivation of these forms is achieved by means of infixation of different vowel patterns, different [Cv] skeletons with possible gemination of the medial consonant as is the case with [kuttaab] and to a lesser degree by means of affixation. This kind of derivation is highly productive in Arabic not only in producing nouns but also verbs with as many as 15 verbal forms being derivable from a single root.

1. Arabic verbal morphology:

The verbal morphology of Arabic is based on a system consisting of various derivational patterns that can apply to a single root to yield different verb forms. This aspect of Arabic morphology has been the subject of study in various phonological theories which try to account for the morpho-phonological characteristics of Arabic derivational morphology. McCarthy and Prince (1986,1990), for instance, took a prosodic approach to Arabic verbal morphology. They maintained that Arabic verbal forms contain three non-linear levels: (1) the consonantal root e.g., [k-t-b], (2) the

vowel melody e.g., [a-a-] and (3) the templatic morpheme e.g., [CvCCvC] also called the Cv skeleton. The non-linear nature of Arabic verbal morphology provides a perfect illustration of what has become known in the literature as 'Root-and-Patterns' morphology (McCarthy and Prince: 1990). To explain this idea better, let us consider the following verb forms of the triliteral root [k-t-b]:

(I)   katab = "write"

(II)   kattab = "cause (something or someone) to write intensively"

(III)   kaatab = "correspond" ·

(IV)   aktab = "cause to write"

(V)   takattab = "be intensively written"

(VI)   takaatab = "write to one another"

(VII) inkatab = "be written"

The above verb forms demonstrate the fact that affixation, internal vowel melodies and gemination are the main tools which allow such productive derivation. This implies that a linear segmentation of verb forms into separate morphemes is not feasible. The only possible way to segment these forms is illustrated through the approach taken by Goldsmith (1976) and Clements & Ford (1979) who propose an autosegmental analysis where the derivation of verbal forms is represented in terms of autosegmental rather than linear levels:

```
Vowel melody :      a   a       ------> perfective active
                    /    \
Cv skeleton :    C v  CC v C    ------> causative (form II)
                 |   \|/  |
Root :           k    t   b     ------> "write"
```
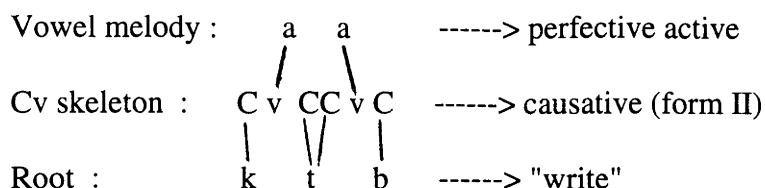
The above interaction results in the form [kattab] which means "cause something/someone to write". The non-linearity results from the fact that the form [kattab] can not be analysed in terms of linear segments or units as it is not linguistically possible to separate the three levels of morphemes contributing to the total meaning. Within these three levels, the root provides the basic meaning, the notion of 'writing', while the verbal form [CvCCvC] and vowel pattern [a- a-] supply semantic and grammatical modification of the basic meaning. In autosegmental theories, the verbal forms are referred to as 'template' morphemes each of which is usually associated with a fixed meaning. In addition to derivational morphemes, Arabic verbs can also take a number of inflectional morphemes: tense, aspect, mood (TAM), as well as person, number and gender (PNG) when marking subject-verb agreement. It is my intention, however, to focus on the morphological marking of PNG in subject-verb agreement which represents a major problem associated with learning Modern Standard Arabic as a foreign language (cf. Neel, 1980). Before investigating the characteristics of subject-verb agreement, it is useful to present a general discussion of Arabic grammatical agreement across different linguistic theories.

2. Grammatical Agreement in Arabic:

Agreement in Arabic is quite complex as it covers several components, including adjectival concord, numeral agreement and subject-verb agreement among others.

The investigation of all the components of grammatical agreement in the learners' Arabic is clearly beyond the scope of this paper. Therefore, focus is placed on the learning of subject-verb agreement by Australian students.

First, a definition of agreement is needed as this will prove essential in the analysis of the learners' performance in subject-verb agreement tasks. The importance of agreement definitions proposed by linguistic theories in their accounting for subject-verb agreement across languages and in Arabic in particular, is that it leads to independent explanations of the nature of subject-verb agreement structures and the order of their acquisition (Andersen: 1991; Bybee: 1985, 1991). In other words, linguistic theories are in a position to present independent explanations concerning the learning of subject-verb agreement marking based on the linguistic nature of the given agreement structures. These explanations are not the result of SLA research, therefore when SLA findings support them, this constitutes strong evidence for their validity. This illustrates the importance of a linguistic discussion of Arabic grammatical agreement, in general and the morphological marking of subject-verb agreement in particular.

2.1. Defining Grammatical Agreement:

Before proceeding to the discussion of the theory adopted in this paper, it is essential that a brief overview of other agreement theories is given. A number of linguistic theories have attempted to provide an appropriate general framework within which grammatical agreement can be defined and accounted for. Leehman (1982, 1988), Croft (1986, 1988) and Givon (1983, 1984) take a functional approach and discuss

agreement in terms of its functions in the morphosyntax. These functions vary from marking syntactic relations (Leehman, 1988) to marking verb type and transitivity (Givon 1984). It is Givon (1984:364), in particular, who argues that agreement is fundamentally a topic-related feature of the grammar where the topic hierarchy may predict the morphological features of agreement. The topic hierarchy includes:

> semantic case roles: agent > dative/benefactor > patient > others
> pragmatic case roles: subject > object > others
> Humanness/Animacy: human/animate > non-human/inanimate
> Definiteness: definite > indefinite

Givon then predicts that a language is more likely to display obligatory grammatical agreement with an NP higher on the above scales than with one lower on these scales. More specifically, a definite human noun phrase which occupies the subject slot and which is the semantic agent of the action is more likely to exhibit agreement marking than a noun phrase with different features. Givon's approach, specifically the pragmatic scale and the humanness-animacy scale, will prove to be of some relevance in dealing with certain aspects of Arabic grammatical agreement.

On the other hand, the Generative approach (Lapointe 1980, 1984, 1988; Sadock 1986, Pullum 1986) focused on determining the proper domains of agreement relations and then on applying appropriate constraints to these domains. Agreement is conceived as a process whereby the features of the nominal source are copied or duplicated on the target. This feature-copying approach to agreement is expressed in Anderson's (1985:188) statement that *"rules of agreement in most languages function to copy inherent or relational features from nouns onto other parts of the structure"*. The main and most obvious limitation of this definition is that it regards agreement as a simple feature-copying process. This implies that agreement relations

where there is no obvious correspondence between the features of the target on one hand and those of the source on the other hand will not be accounted for. A feature-copying approach to agreement is problematic for MSA where agreement marking includes instances of mismatch between the features of the source and the target.

Agreement in Government and Binding (G-B) theory consists of a coindexing relation of a nominal source and an inflectional morphology. Chomsky (1981:211) states that agreement is coindexed with the NP (subject) it governs, and that when an NP and a pronominal are coindexed, they must share the appropriate (PNG) features. Working within G-B theories, a number of linguists such as Van Riemsdijk and Williams (1986) and Bouchard (1984) discuss agreement across languages as a consequence of a coindexing relation based on an essentially feature-copying process. Sadock (1986) and Mohammad (1990) applied the G-B approach to agreement in Arabic. In accordance with Chomsky (1981), Sadock (1986) and Mohammad (1990) maintain that when the source and the target of an agreement relation coindex, they must share the appropriate morphosyntactic features. Like the generative approach, the G-B approach fails to account for agreement structures in Arabic where a feature mismatch is apparent because coindexing, by nature, assumes feature concord.

The approach adopted in this analysis is based on the principles of the discourse-linking theory advocated by Barlow (1992:05) who proposes a working definition of agreement as follows:

> *"Agreement holds between a relational category X, the target, and*
> *a nominal category Z, the source, when category X exhibits*
> *(pro)nominal features that are dependent on the form or*
> *interpretation of the nominal Z".*

The main idea expressed in this definition is that there is a kind of <u>dependency</u> of the features of the target on the <u>form</u> and/or the discourse <u>interpretation</u> of the source.[2] Dependency, in this context, should be understood in terms of agreement markers on the verb being dependent on the semantic as well as discourse <u>reference</u> of the subject. The term 'form' in this definition implies not only the morphosyntactic information concerning PNG but also information regarding the natural classification of the source along the humanness-animacy scale. This justifies the general approach in this study which views subject-verb agreement as an information exchange process which helps identify or re-identify referents by providing information on their morphosyntactic and classificatory properties.

However, it is not the case in Arabic that the morphosyntactic information involving PNG must be fully and explicitly realised on the subject NP of the clause. There are many instances where subject-verb agreement occurs despite ellipsis of the subject, a phenomenon usually referred to in the literature as 'the null subject' (cf. Pierce, 1992). Therefore, agreement is viewed as an exchange of information between the source and the target of agreement. This information may be obtainable from the preceding context and is not necessarily the result of a straightforward feature-copying process at the clause level. Consider the following examples where agreement is clearly not a feature-copying process, but rather an information-linking relation:

2. (a) inhazam-uu   haziimat-an nakraa?-a
       lost-3M.PL   loss-Acc   heavy-Acc
       'They suffered a heavy loss.'

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[2]Following Barlow (1992) 'source' refers to the 'subject' of the agreement relation and 'target' refers to the 'verb' of the same agreement relation.

(b) aT-Tuyuur-u   raHal-at   min hunaa.
     the-bird-M.PL-Nom   departed-3F.SG   from here
     'The birds have departed this place.'

Example (2.a) shows that in Arabic the subject does not have to be realised as a lexical NP within the same proposition for agreement relations to occur. Nevertheless, the information regarding the specification of the subject is still recoverable from the general context once the source has already been identified by the speech producer and a kind of reference line has been established throughout the discourse. The marking of the features [3.M.PL] in (2.a) is, in fact, a result of information stored in the long-term memory of the speaker/writer as opposed to information recoverable from short term memory as with (2.b) where the source is present at the clause level.

In example (2.b) the subject NP is a 'non-human' referent with the inherent features [Masculine, Plural][3] whereas its morphological marking on the verb is [Feminine, Singular]. Subject-verb agreement in Arabic, therefore, is not simply a mapping of the subject's morphosyntactic features onto the verb, rather it is a process whereby information regarding semantic types (humanness-animacy) and discourse interpretation play a major role in determining the marking of agreement features.

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[3] The transliteration in the examples involving plural head nouns indicates the features inherent to the head noun on the basis of its phonological structure and its semantics. Phonologically, the plurality of the head noun is realised through the presence of a long vowel as with 'kalb' (dog) and 'kilaab' (dogs). The gender of the plural head noun is recoverable from its singular form so that 'kalb' is masculine and not feminine. The feminine singular for 'dog' in Arabic would be 'kalb-at' and its plural is 'kalb-aat'. Therefore, throughout this paper the transliteration of plural head nouns as [M.PL] or [F.PL] is used according to these two factors.

The existence of an information-linking relation between the targets of agreement and their sources ensures feature consistency and coherence when inserting non-local agreement morphemes (cf. Pienemann, 1994; Givon, 1990). However, consistency of features does not imply absolute redundancy of such features, as morphological marking of subject-verb agreement will be shown to be influenced by a number of factors that will be discussed below.

In short, it can be said that subject-verb agreement in Modern Standard Arabic does not simply consist of the cross-referencing of subject's nominal information onto the verb. Instead, the final morphological outcome of this information cross-referencing is governed by discourse information as well as information inherent in the semantic and classificatory categories of the source. This view is articulated in the discourse-based approach presented in Barlow (1992). The basic principles of this approach, referred to as the Discourse-Linking Theory (henceforth DLT), are adopted in this investigation to account for certain aspects of the learners' performance in subject-verb agreement tasks. The main principles of DLT will be discussed in the following section.

2.2. Discourse-Linking Theory:

In discussing the relevant information structures that account for grammatical agreement, Barlow (1992:154) maintains that neither the syntactic nor the semantic information structures alone are sufficient to account adequately for agreement relations. The DLT proposes that agreement marking has no one single connection with either the syntactic features of the source or with its semantic representation.

Rather, agreement consists of the cross-referencing of a particular 'discourse referent' (source) onto the verb (target). The term 'discourse referent' as used by Barlow (1992) implies that every subject NP used in the discourse establishes a reference line in the discourse based on a collection of properties such as humanness, animacy, collectivity etc. The morphological cross-referencing of the subject onto the verb is potentially sensitive to such properties as evidenced in the following example:

(3) al-manaazil-u   taHaTTam-at
    the-house.M.PL-Nom collapsed-3F.SG
    'The houses collapsed.'

The semantic making of the source is specified for the features [M.PL] whereas the agreement marking on the target indicates the features [F.SG]. This exhibits a seemingly conflicting agreement relation. Since the singular form of the subject in the above example [al-manzil] is masculine, the question that ought to be asked is: what is the rationale behind non-human broken plurals being marked on verbs as feminine? There is no obvious answer to this question except that since there is no overt morphological marking for non human plural subjects, the feminine singular agreement morpheme [-at] is then used to indicate another feature namely collectivity. The basic rule accounting for such agreement relations assumes that in MSA all discourse referents with the properties [non-human; masculine; plural] are cross-referenced onto targets as feminine singular. Feminine gender in this context is a purely grammatical choice which does not indicate the natural gender associated with humans and animals. The agreement relation in example (3) cannot be explained with a feature-copying approach since the features of the subject seem to be in complete discord with those marked on the verb. The semantic property of the source [non-human] is far more decisive in determining the amount of agreement marking than the

morphosyntactic information [Plural; Masculine].

Another issue that adds to the intricacy of subject-verb agreement marking in Arabic is the fact that not all agreement 'sources' display the full amount of referential information. Pronouns and inanimates, for example, exhibit less referential information than nouns and animates respectively. Example (4) illustrating this point is given below:

(4) naHnu Tuunisiy-aani
    1.PL.   Tunisian-1M.DL-Nom
    'we (both) are Tunisians.'

The source [naHnu] is a non-singular first person pronoun which does not distinguish between plural and dual number. The distinction is only apparent through the agreement marking on the verb which indicates the dual suffix [-aani]. The marking of [naHnu] as dual is not ill-formed as there is no apparent incompatibility between the source and the target. But rather, there is an under-specification on the part of the source [naHnu] which is unspecified in number and, hence, exhibits reduced referential information. Both source and target indicate plurality [more than one], with the suffix [-aani] attached to the target and indicating the specific number of the source [two].

In general, the DLT maintains that grammatical agreement consists of a matching of properties (animacy, humanness etc) available at the discourse level rather than a simple matching of features (plural, feminine etc) contained in the morphosyntax. Barlow (1992:156) states that the two main parts of DLT are (1) the instigation of discourse referents in an utterance and (2) the linking of these discourse referents. For subject-verb agreement, the linking consists of cross-referencing properties associated

with the subject onto the verb. Such cross-referencing can only occur if both source and target are part of the same major event at the discourse level. It is the specification of the source in terms of these properties that determines the compatibility (grammaticality) or the lack of it and thus the linking (agreement marking) or the lack of it of sources and targets present in a particular utterance. Consider the following example:

(5) al-aTfaal-u   xaraj-uu
   the-boy-M.PL-Nom left-3M.PL
   'The boys left.'

In the above example the subject NP [the boys] is marked on the verb by means of the affix [-uu]. This marking occurs in the same event frame with the main properties (person, number, gender and humanness) of the source being manifested in their morphological marking on the target. Therefore, the marking of subject-verb agreement is consistent and the utterance is grammatically well-formed. However, for ungrammatical agreement marking as in the following sentence:

(6) *al-aTfaal-u   xaraj-a
   the-boy-M.PL-Nom left-3M.SG
   'The boys left.'

The ill-formedness of the agreement marking can be explained as a result of the cross-referencing of a discourse referent [al-aTfaalu] onto the verb [xaraj] by affixation of the morpheme [-a] which indicates to third person masculine singular. This cross-referencing yields internal inconsistency due to the incompatibility of the number feature of the source with its marking on the target: Source = PL whereas Target = SG. The following section presents a number of general principles which reflect the

effect of other linguistic constraints on the marking of subject-verb agreement in MSA.

2.3. Principles specific to subject-verb agreement in MSA:

These principles are considered as essential assumptions accounting for subject-verb agreement marking in Arabic. Their importance is due to the fact that they provide discourse-based explanations for seemingly ungrammatical agreement relations in MSA. A number of these principles have already been discussed above and will be briefly stated as follows:

a. Sources of agreement may indicate partial information, for example:

(7) naHnu   kabiir-aani
    we-PL   big-1M.DL
    'We (both) are big.'

In this sentence the source "naHnu" indicates the features [person = 1; number = more than one]; there is a partial reference to number with no apparent specification of gender.

b. Targets may provide information on the classification of sources as evidenced in the following example:

(8) al-jumhuur-u   Saffaq-a   lahu
    the-crowd-Nom applauded-3M.SG for-him
    'The crowd applauded him.'

The subject "al-jumhuur" is classified as a grouped entity (collective) and, therefore, cross-referenced onto the verb as third person masculine singular. The agreement marking on the target serves as indicator of the source's classification among other noun phrases.

c. Targets and Sources in well-formed utterances may exhibit conflicting features, for example:

(9) thalaath-at-un   faqaT HaDar-uu   l-Hafl-a
   three-F.SG-Nom only   attended-3M.PL the-Party-Acc
   'Only three (people) attended the party'.

This sentence is usually uttered as a response to a question about the number of people who attended the party. The conflicting agreement relation of this sentence is apparent in the gender and number polarity: the source carries the feminine singular gender affix [-at] while the target is marked with the affix [-uu] which indicates the features [plural, masculine].

d. Agreement marking may be influenced by different word order combinations: SVO, VSO and VOS as illustrated in the following sentences:

SVO-type agreement:

(10) ar-rijaal-u   ya@mal-uuna fi l-Haql-i
    the-man-M.PL-Nom work-3M.PL   in the-field-Gen
    'It's men who are working on the farm (not woman)'.
    Literal meaning: 'Men work on the farm.'

VSO-type agreement:

(11) ya@mal-u   ar-rijaal-u   fi l-Haql-i   kulla yawm-in
      work-3M.SG the-man-M.PL-Nom in the-field-Gen every day-Gen
      'Men work on the farm daily.'

VOS-type agreement:

(11.a) ya@mal-u   fi l-Haql-i   @aamil-aat-un   kathiir-aat-un
       work-3M.SG in the-field-Gen worker-F.PL-Nom   many-F.PL-Nom
       'Many women work in the field.'

SVO-type sentences indicate full agreement marking (person, number and gender), VSO-type ones indicate gender only, while VOS-type sentences do not indicate either number or gender. The features [3M.SG] marked on the verb in (11.a) is a default specification rather than an instance of subject-verb agreement marking. In light of these principles, the following section discusses in more detail a number of linguistic factors to which subject-verb agreement in Arabic is sensitive.

3. Linguistic constraints on subject-verb agreement in MSA:

Subject-verb agreement in Arabic is marked for person, number and gender (PNG). The morphological representation of this marking, in turn, is sensitive to the effects of (i) the aspect of the clause i.e., perfective as opposed to imperfective; the properties of (ii) 'Humanness-animacy' and (iii) Collectivity which will be referred to as 'natural classes', and (iv) word order of the clause i.e., VSO, SVO and VOS.

3.1. Aspect:

Perfective aspect is marked for subject-verb agreement exclusively by means of suffixes, whereas agreement in imperfective aspect is marked mainly by means of a combination of prefixes and suffixes. All these affixes are pronominal in nature and indicate person, number and gender. Following is a chart representing pronominal affixes marking subject-verb agreement in Perfective and Imperfective aspects respectively:

Perfective suffixes:

	Singular	Dual	Plural
1 (no gender)	tu	naa	naa
2 Masculine	ta	tumaa	tumuu
2 Feminine	ti	tumaa	tunna
3 Masculine	**a**	**aa**	**uu**
3 Feminine	**at**	**ataa**	**na**

For the specific purposes of this study only the highlighted affixes will be discussed as the learners' written data is in most cases about a third person (friends, family members, animals, etc). In the subject-verb marking of perfective verbs, both singular and dual forms are distinguished in gender by the suffix [-at] denoting feminine subjects. Third person feminine plural is marked by the suffix [-na] while third person masculine plural is marked by [-uu].

Imperfective Affixes (prefixes and suffixes):

	Singular	Dual	Plural
1 (no gender)	a -----	(lacking)	na ----
2 Masculine	ta ----	ta ---- aa	ta ---- uu
2 Feminine	ta ----- ii	ta ---- aa	ta ---- na
3 Masculine	**ya ----**	**ya ---- aa**	**ya ---- uuna**
3 Feminine	**ta ----**	**ta ---- aa**	**ya ---- na**

Some generalisations about the Imperfective suffixes may be drawn from this table. It is obvious that third person feminine forms (singular and dual) are marked by the prefix [ta-], whereas third person feminine as well as all third person masculine forms are marked by the prefix [ya-].[4] With the exception of the third person plural suffixes [-uuna] and [-na] for masculine and feminine respectively, the suffixes for third person singular [zero suffixes] and third person dual [-aa] are the same for both genders.

McCarthy (1979) proposes a prosodic explanation of the distribution of these inflectional morphemes. He maintains that the phonological well-formedness principle accounts for the way verbs are marked for PNG in Arabic. Imperfective verbs receive a prefixed consonantal slot, and non-third perfective verbs receive a suffixed consonantal slot. By the well-formedness principle, affixes are mapped onto the consonantal slots. More important, however, is the fact that aspect does not affect subject-verb agreement in MSA in terms of information linking of the features of person, number and gender (PNG) but rather in terms of the morpho-phonological realisation of these (pro)nominal features on verbs. The relevance of aspect for the

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[4]Third person feminine plural can also take the prefix [ta-] in the imperfective aspect (see Fassi Fehri, 1990).

present study will become clear once the processes involved in undertaking subject-verb agreement marking are highlighted. One of the processes is in the learners' awareness of the appropriate agreement morpheme in the given context and then the identification of the relevant target onto which this morpheme needs to be affixed. The actual agreement morpheme is phonologically dependent on the aspect of the clause as shown in the above tables.

The other two main factors affecting subject-verb agreement in Arabic are (1) the natural classes of the source of agreement and (2) the type of word order combination used in the clause. These two elements, together with the adopted discourse cues, represent the main variables employed to measure the learners' performance in subject-verb agreement tasks. The variables of this study can be categorised into three major types: (1) variables motivated by the natural class of the source (Humanness-animacy and collectivity), (2) syntax-motivated variables as manifested in word order, namely SVO-type versus VSO-type, and (3) the discourse cues which are predicted to have an influence on learning Arabic grammatical agreement.

3.2. Natural classes:

The idea that nouns which are higher on the 'humanness-animacy' scale are more likely to display full grammatical agreement with verbs than those which are low on this scale is discussed by Givon (1984:365), Hopper and Thompson (1980:252) and Barlow (1992: 205). It is Barlow (1992) who specifically argues that accounting for grammatical agreement involving nouns that are [-human] or [+collective] can best be

explained in terms of the discourse reference of the 'subject' in its context rather than in terms of a lexical item *per se.* Some illustrative examples will be discussed below, as a full discussion of this approach is beyond the scope of this study. For the purposes of the current study, the natural categories used as independent variables include 'humanness-animacy' and 'collectivity'.

a. Humanness-animacy:

Overt marking of humanness in agreement morphology is quite common across many languages. Less common, however, is the overt marking of animacy. In Arabic, like many other languages, non-human nouns are not cross-referenced on verbs in number (cf. Merlan, 1982). Both inanimate and non-human NPs undergo the same agreement-marking process whereby number is not indicated on the target even though the morpho-phonological structure of the source indicates it. This is because Arabic grammatical agreement, in general, is sensitive to the natural class of the source. Specifically, it is the property [± human] that seems to influence the morphological form of subject-verb agreement marking. Sources of agreement that exhibit the property [-human] are not cross-referenced onto targets in terms of number features as illustrated in the following examples (12) and (13):

(12) an-nusuur-u   haajar-at   ila l-januub-i
     the-eagle-M.PL-Nom   migrated-3F.SG   to   the-south-Gen
     'The eagles migrated to the south.'

(13) al-anhaar-u   tajammad-at   fii sh-shitaa?-i
     the-river-M.PL-Nom   froze-3F.SG   in   the-winter-Gen
     'The rivers froze in winter.'

The obvious generalisation about this phenomenon is that sources which are specified

as [+Plural; -Human] are mapped onto targets with the agreement specifications [+Singular; +Feminine].

The DLT shows that this agreement relation is accounted for from a general discourse viewpoint rather than from a semantic one. The failure of a purely semantic approach is apparent when it becomes obvious in MSA that agreement relations are not influenced simply by the association of a particular lexical item (source of agreement) with the features [± human]. Rather, it is also influenced by the way a particular lexical item is used in the discourse and not whether this lexical item is actually 'human' or not. Consider the following examples where the non-human lexical head nouns are used to refer to human referents:

(14) an-nusuur-u   hazam-uu   l-yuunaan-a
     the-eagle-M.PL-Nom   defeated-3M.PL   the-Greece-Acc
     'The Eagles defeated Greece.'

(15) ha?ulaa?i l-Hayawaanaat-i   qattal-uu   aTfaal-an   abriyaa-?a
     those   the-animal-M.PL-Gen killed-3M.PL   children-Acc innocent.PL-Acc
     'Those animals massacred innocent children.'

Unlike example (12), the lexeme "eagles" in example (14) is used to refer to people (players of a particular team) rather than to the actual birds. Therefore, agreement is influenced by the actual discourse referent (players) rather than by the actual lexical item (eagles). Similarly, the word "animals" in example (15) refers to people, probably soldiers, and not to any specific animal. The features [M.PL] mapped onto the target are associated with a discourse referent indicating the property [human] and not with the lexical item *per se* which exhibits the property [non-human]. This illustrates the importance of the DLT in accounting for these seemingly conflicting agreement

relations.

b. Collectives

The term 'collective' is applied to normal collective nouns such as the Arabic
equivalent of 'band, elite, crowd, people etc' as well as to what is known in Arabic as
broken plurals (BP). Generally, Arabic collectives can show either plural or singular
agreement markers depending on whether the collective is viewed in the discourse as
a grouped entity or as a collection of individuals as illustrated in the following
examples:

(16) al-jamaa@at-u   rafaD-at   al-@arD-a
     the-group-Nom   refused-3F.SG   the-offer-Acc
     'The gang refused the offer.'

(17) al-jamaa@at-u @aad-uu   muntaSiriin
      the-group-Nom returned-3M.PL victorious-3M.PL
      'The group (of soldiers) returned victorious.'

The word "jammaa@at' is viewed as referring to an undifferentiated entity in example
(16), hence the presence of singular agreement marker on the verb; in example (17),
however, it is viewed as referring to a group of individuals and, therefore, a plural
agreement marker is mapped on the verb. The interpretation of collectives is
dependent on contextual information as well as on the speech producer's own view of
the word "jamaa@at". In the above examples the subject being [+collective] with no
obvious reference to number nor to gender is mapped onto the verb as either [+plural;
+masculine] or [+singular, +feminine] depending not on the lexical item *per se*
[group] but rather on its discourse referent: the <u>individuals</u> that constitute the group

as opposed to an <u>undifferentiated</u> group. Barlow (1988) observes that what highlights the individuality of the members of one group is high animacy, agency and familiarity as well as clear and visible boundaries between individuals. In contrast, group boundary is highlighted by the lack of the above characteristics which depend to some extent on the speaker's viewpoint, on contextual information available in the discourse as well as on properties inherent to the head noun in question. Interpretation of 'collectivity' involves a close connection between cognitive perception, discourse information and inherent semantic properties.

Broken plurals are also included in this category because they can be ambiguous and, therefore, cause difficulties for learners as far as producing subject-verb agreement tokens is concerned. This is due to the fact that the morpho-phonological structure of certain broken plurals does not show plural morphology, yet they require plural agreement markers on the target. Consider the following example illustrative of this point:

(18) as-saasat-u   staghall-uu   sh-sha@b-a
      the-politicians-Nom exploited-3M.PL the people-Acc
      'The politicians exploited the people.'

The plurality of the source [saasat] is achieved not by affixation of the usual plural marker [-uu] but by phonological modification of the singular form [saa?is]. From the learners' perspective, producing the plural agreement marker [-uu] on the target depends, among other things, on their own perception of the identity of the source and the appropriate information associated with it rather than on the simple copying of an overtly encoded plural marker. It is predicted that when the plural feature on the source is not explicitly marked, as is the case with broken plurals, cross-referencing the appropriate agreement marker onto the target would be difficult. The importance

of collectives and broken plurals, as defined in this section, is that they provide agreement tokens where there is a feature mismatch in the direction of the verb. This occurs when morphosyntactic features such as number and gender are not explicitly indicated on the source yet when agreement occurs these features are explicitly marked on the verb.

In general, agreement patterns involving collectives, as used in this study, involve the cross-referencing of a discourse referent associated with the properties [+human; +collective] on the verb by suffixation of agreement morphemes exhibiting the features [+M; +PL]. The only exception to this pattern of agreement marking is the presence of the dual form of collective head nouns. In Arabic grammar, collectives which are in the dual form are obligatorily marked on verbs by suffixation of agreement morphemes exhibiting the number specification [Number = two]. This rule is always valid in SVO-type sentences regardless of the semantic or natural class of the target. Consider the following example illustrating this point:

(19) ash-sha@b-aani   S-Sadiiq-aani   ta@aawa-naa   ma@an
     the-people-M.DL.Nom the-friendly-M.DL.Nom cooperated-3M.DL   together
     'The two friendly peoples cooperated together.'

This is similar to the way human referents are cross-referenced onto verbs, that is the source and the target being equal in terms of feature specification (Source = Target).
In summary, collectives and broken plurals are governed by discourse in a similar way to non-human nouns: both are marked on verbs in different ways depending on the way they are viewed in the discourse context. The main difference is that the direction of agreement marking is the opposite. With non-humans there is a feature mismatch in favor of the source ([Source=PL] > [Target=SG]), while with collectives

the mismatch is in favour of the target ([Source=SG] < [Target=PL]).

3.3. Word order [5]

Arabic is a language that tolerates a high level of word order flexibility to the extent that many linguists have argued for different canonical word order combinations for Arabic. Bakir (1980) and Fassi Fehri (1982, 1988), for instance, take VSO as the canonical word order in Modern Standard Arabic with the other two word order combinations being achieved by transformation. Edmond (1980) and Mohammad (1990) take SVO as the canonical word order and argue that the verb always agrees with a preceding NP. They relate VSO-type agreement marking where plural number is not cross-referenced onto the verb to the existence of a second subject, namely an expletive pronominal whose features are [3.M.SG]. The verb, according to this theory, agrees with the preceding expletive pronominal rather than with the following NP. This is different from Anshen and Schreiber (1967) who suggest that the underlying word order in Arabic is VOS. They maintain that the other two combinations are derived from the basic word order by means of movement. An important issue in this kind of argument is the role of case-marking which is employed to signal the semantic and pragmatic roles assigned to different NPs in a given sentence. The existence of case-marking and its binding nature is the basis for the claim that SOV is the canonical word order in MSA.

The puzzle for learners of MSA is the influence word order has on subject-verb

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[5]Word order is used to provide a different source of data (syntax-motivated data), in addition to the already available semantics-motivated data, in order to test hypothesis(1) in the two levels (S>T typified in VSO-type sentences) and (S=T typified in SVO-type sentences).

agreement marking. In fact, in SVO-type sentences where the source (subject) precedes the target (verb) agreement is fully marked (person, number and gender), in VSO-type sentences it is partially marked (gender only) and in VOS-type sentences there is no agreement marking at all as only the base form of the verb which inherently indicates masculine singular is used. The discourse-based approach to agreement (Barlow:1992) offers a good account of this aspect of Arabic grammar. Barlow suggests an ordering of discourse referents in an information exchange process which takes place in discourse rather than an ordering of the syntactic categories 'verb' and 'subject' which takes place at the clause level. Subject and verb are viewed in the DLT as the source and the target of the exchange of grammatical information respectively. As such, the information exchange is complete when the source precedes the target and incomplete when it follows it.

From a speech processing perspective, it seems reasonable that when the source precedes the target, as in SVO-type sentences, agreement marking is cognitively easier for the learners because the information to be marked on the verb is presented before the verb itself appears. When the source follows the target as in VSO-type sentences, however, it is less easy as the learners are left to predict the nominal information about the subject which needs to be mapped onto the already existent verb. This idea is illustrated in the following examples:

(20) a. aT-Tullaab-u   jalas-uu
        the-student.M.PL-Nom   sat-3M.PL
        'The students sat (down).'

    b. jalas-a   T-Tullaab-u
        sat-3M.SG   the-student.M.PL-Nom

'The students sat (down).'

(21) a. al-banaat-u   tushaahid-na   film-an
        the-girl.F.PL-Nom watching-3F.PL   movie-Acc
        'The girls are watching a movie.'

    b. tushaahid-u   l-banaat-u   film-an
        watching-F.SG the-girl.F.PL-Nom movie-Acc
        'The girls are watching a movie.'

Examples (20.a) and (21.a) show that there is full agreement between the verb and its subject NP, whereas in (20.b) and (21.b) the verb is marked for gender only. Verbs occurring in VSO clauses are obligatorily marked for third person singular regardless of the number of the actual subject NP. In fact, the subject NP in (20.b) is third person plural, yet the verb is marked for third person singular. It is plausible to say that verbs in VSO-type sentence lack number marking since full agreement marking would yield ungrammatical sentences (22 & 33):

(22) *jalas-uu   T-Tullaab-u
      sat-3M.PL   the-student.M.PL-Nom
      'The students sat (down).'

(23) *tushaahid-na   l-banaat-u   film-an
      watching-3F.PL   the-girl.F.PL-Nom   movie-Acc
      'The girls are watching a movie.'

Barlow (1992:132) states that "if there is any difference in the amount of agreement in target-source order compared to source-target order, then the agreement is less when the target precedes the source". In other words, agreement marking is reduced only if the source does not precede the target. The pronominal affixes [-a] and [-at]

for masculine singular and feminine singular respectively which are attached to verbs in VSO sentences are associated with a default specification in terms of number. In VSO-type utterances any marking of subject-verb agreement in terms of plural number would yield ungrammatical sentences as illustrated in (22) and (23).

The third agreement pattern that yields not only a default number, but also a default gender occurs in the rare word order (VOS). Consider the following example (24):

(24) qaam-a   bi-l-baHth-i   Taalib-aat-un   tuunisiyy-aat-un
     did-3M.SG with-the-research-Gen student-F.PL-Nom Tunisian-F.PL-Nom
     'Tunisian (female)students undertook/did the research.'

(25) akal-a   l-xubz-a   l-banaat-u
     ate-3M.SG the-bread-Acc   the-girl.F.PL-Nom
     'As for bread, the girls ate it'.
     Literal: 'Ate the bread the girls'.

These are VOS-type sentences with no agreement mapping: source = [F.PL] with the target = [3M.SG]. The mapping of the suffix [-a] does not represent an instance of subject-verb agreement but rather it is associated with the Arabic verbal base form which inherently indicate the features [M.SG] and functions as an infinitival form. Mohammad (1990) argues that in constructions like (25) the verb agrees with an expletive pronominal whose properties were established to be third person masculine singular. His evidence for such argument is that the expletive pronominal is obligatorily lexicalised as a result of the constraint of barring empty pronominals from occurring in non-nominative positions. Mohammad (1990:112) gives the following example to support his claim:

25. (a) za@am-a   aHmad-u   anna-hu jaa?-a   r-rijaal-u
       claimed-3M.SG AHmad-Nom   that-it   came.3M.SG the-men-Nom
       'AHmad claimed that the men arrived.'

According to Mohammad the expletive pronominal which is dropped in example (25) but is lexicalised in (25.a) is the pronominal [-hu]. However, Mohammad does not explain convincingly why in SVO-type construction the gender of this expletive pronominal which is supposed to be established as [masculine] can also be cross-referenced as feminine. Leaving the argument about the presence of expletive pronominal aside, what should be retained is that in examples (24, 25 and 25.a) the suffix [-a] which is cross-referenced onto targets does not provide information on the source other than that there is an unspecified discourse referent (subject) that will follow in the discourse.

In short, the effect of word order on the marking of subject-verb agreement can be summarised as follows: when the source precedes the target [SVO] subject-verb agreement is fully marked i.e., person, number and gender; when the source follows the target [VSO] subject-verb agreement is partially marked i.e., gender only and finally, when the source and the target are not directly linked [VOS] subject-verb agreement is marked neither in number nor in gender. Because it was difficult to collect data on a large enough scale for VOS-type agreement, this pattern was not used in this study.

Summary:

Although this chapter does not deal with all aspects of grammatical agreement in MSA, it is apparent that a discourse-based approach to subject-verb agreement in Arabic provides a reasonable account for this complex phenomenon. Treatment of subject-verb agreement as a discourse-based process is achieved by means of general conditions related to the internal consistency of properties of sources and targets of agreement relations as well as to saliency conditions where sources are cross-referenced onto targets that belong to the same major event frame in the discourse.

The most important outcome of the discourse approach to subject-verb agreement in Arabic, however, is that it resulted in the establishment of a number of discourse-motivated agreement structures. These structures differ in the direction and amount of agreement marking on the verb. Structure (1) refers to a feature concord between the source and the target of agreement achieved when the natural attributes of the source are fully indicated on the target. Structure (1) can be represented as [Source=Target]. Structure (2) refers to a feature mismatch where the source indicates natural and grammatical attributes not cross-referenced onto the target. This occurs with non-humans when the number feature is not apparent in subject-verb agreement marking. This structure is represented as [Source>Target]. The third agreement structure is [Source<Target] and occurs when the target indicates features not apparent in the source as is the case with certain collectives marked onto verbs for plural number even though their morpho-phonological structure does not explicitly exhibit plurality.

The above structures reflect the effect of the discourse principles specific to subject-verb agreement in Arabic as discussed above. These structures represent the three levels of directionality (Source=Target; Source>Target; Source<Target) of agreement marking. Because they are the result of linguistic theories, the agreement structures

offer an independent explanatory basis for predictions on the order as well as the nature of the acquisition of subject-verb agreement in Arabic written discourse.

Having discussed the main factors affecting the morphological marking of the various subject-verb agreement structures in Arabic, it is now necessary to demonstrate the processes involved in carrying out this operation from the learners' perspective. Pienemann (1994) suggests four main processes that learners have to undertake before subject-verb agreement marking can be produced. Firstly, the learners need to recognise the lexical item assigned the role of grammatical subject of the sentence; secondly, they need to recognise the morphosyntactic features (PNG) of the subject NP and, in the case of Arabic, its semantic (humanness-animacy) and classificatory (collectivity) attributes; thirdly, learners need to identify which verbal element in the sentence has to carry the agreement marking and finally, learners need to carry out the actual affixation of the appropriate agreement morpheme to the verb.

Taking into consideration the effect of word order, collectivity and humanness on the final outcome of subject-verb agreement marking, the affixation process of 'subjects' with the features [third person plural] can be represented as follows:

Verbal base form

[Verb-**a**]

	Strict		Deflected	
	Masc.	Fem.	Non-human	Collectives
Perf.=	[Verb-**uu**]	[Verb-**na**]	[Verb-**at**]	[Verb-**uu**] [Verb-**at**]
Imperf. =	[**ya**-Verb-**uuna**]	[**ya**-Verb-**na**]	[**ta**-Verb]	[**ya**-Verb-**uuna**] [**ta**-Verb]
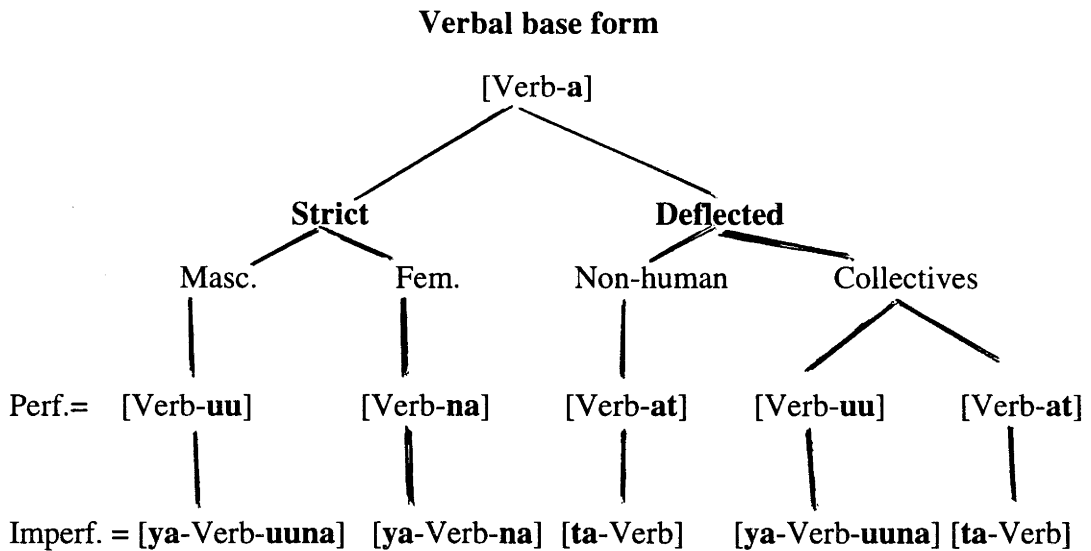
The terms 'strict' and 'deflected' (Belnap, 1993) refer to 'regular' and 'irregular' agreement paradigms respectively. In Arabic there are two major paradigms for subject-verb agreement marking: one strict paradigm involving structure 1 where regular agreement marking occurs if the agreement morpheme reflects the actual properties of the source. The relevant properties are PNG and humanness, so that [+human] source with the properties [+Masculine, +Plural] is cross-referenced onto the verb with a morpheme indicating those same properties. The other paradigm is deflected (structures 2 and 3) with irregular agreement marking resulting either in under-specification [Source>Target] or in over-specification [Source<Target] of the marking of subject's properties, as a consequence of the source being non-human or collective respectively. Therefore, a source with the properties [+Masculine, +Plural, -Human], for example, will always be marked by the affix [-at] normally used to mark feminine singular head nouns.

The above diagram shows an interesting aspect of the way collectives function in

terms of their marking onto verbs (cf., Cooreman and Kilborn, 1991; Lakoff, 1987; Chafe, 1980). In fact, depending on their discourse interpretation, collectives in Arabic can cross-reference either as plural when viewed as a group of individuals, or as singular when viewed as one grouped entity. The former interpretation yields a regular agreement paradigm whereas the latter results in an irregular agreement paradigm. Whether a particular collective is treated as a grouped entity or as non-grouped individuals depends on the pragmatic motivations of the language producer, namely, whether to focus on the collective noun as a single entity or as a group of individuals, as evidenced in examples (16) and (17) above.

On the one hand, the diagram presents a clear picture of the morphological variation of subject-verb agreement in Arabic illustrating its non-random nature. Agreement variability in Arabic functions as an information resource available to speech producers to classify more narrowly the referents represented by lexical head nouns (Belnap, 1993). On the other hand, this diagram is potentially capable of offering explanations for matters related to learners' performance in agreement tasks involving collectives. The fact that collectives can be marked on verbs either as plural or as singular will prove important in explaining what otherwise would appear to be odd results when intermediate learners seem to have outperformed advanced learners in agreement tasks where the source is a collective referent. This variational aspect of the morphological marking of collective head nouns in agreement relation depends, in turn, on the speech producer's own perception of such collectives in a given context. Utterances are often part of larger stretches of language without which the interpretation and the grammatical categorising of word classes would be inadequate. For this reason contextual information provided by discourse cues will prove to have a strong impact on the marking of agreement relations.

Chapter 3: DISCOURSE CUES

1. Definition and domain:

Discourse is generally viewed as the stretches of language that go beyond the sentence level, the usual limit of grammatical analysis (Fine, 1988). Indeed, most actual language use comprises not single sentences but multi-propositional stretches of language whose organisation and linguistic marking are guided by discourse principles (Cooreman and Kilborn, 1991). This multi-propositional language is the domain of discourse analysis where focus is placed on oral conversations or written language when searching for the organisation of language patterns. In the analysis of second language discourse one must determine the nature of these stretches of language, how they are signalled by specific linguistic markers and what mental processes are involved in producing and comprehending them in larger stretches of language. The nature of subject-verb agreement, its morphological marking and the mental processes involved in producing them, have already been discussed in earlier sections. What remains to be discussed is the importance of discourse information in producing subject-verb agreement tokens in Arabic written discourse.

Unlike spoken discourse, written discourse is more under the control of the one producer/writer. There is a less active negotiation of the context and structure of the discourse. The influences on written discourse are, therefore, of a more general linguistic and contextual nature than is the case with spoken discourse. Chafe (1985) goes a step further to argue that the difference between spoken and written language is best understood with reference to the notion of idea units. He maintains that in spoken discourse there is a limit to the amount of information that can be held in

short-term memory of the speech producer. In written discourse, however, the speech producer has more time for the organisation of linguistic resources and the processing of larger amounts of information. This has implications for the potential importance of discourse cues in the learners' performance in subject-verb agreement marking in written discourse.

In general, the production and comprehension of written discourse can be influenced by a number of factors such as the interference of the learner's culture and language as well as differences in foreign language discourse structures (in this study MSA) and first language discourse structures (English). For instance, in this study it is a fact that the learners are not familiar with the need in Arabic discourse for specific linguistic markers to signal subject-verb agreement because their first language (English) employs a more morphologically-reduced agreement pattern based on word order and free morphemes rather than on inflectional morphology. The present study will not discuss learning difficulties associated with language transfer, rather it will focus on the relationship between grammatical encoding and discourse cues on the one hand and the process of acquiring subject-verb agreement on the other.

2. Discourse cues

Three main discourse cues are used as variables in this study. They consist of (a) the semantic relevance of the subject's attributes to be marked onto verbs; (b) the surface realisation of the subject and its persistence in discourse and (c) the lexical specificity available to assist the learners in recognising the subject's identity and reference in the discourse.

2.1. Semantic relevance:

The notion of 'semantic relevance' as used in this investigation refers to the cross-referencing of agreement morphemes indicative of and relevant to the 'natural gender' and 'natural number' (Barlow 1992:308) of the subject. Semantic relevance is employed as a discourse cue because its interpretation is often dependent on the contextual information present in the discourse. For example, when the lexical item 'eagles' is cross-referenced onto verbs, it can be assigned either grammatical gender and number [feminine; singular] if the referent in the discourse is the actual animals [-human], or natural gender and number [masculine; plural] if the referent in the discourse is humans [+human]. This idea is illustrated in the following examples (26 & 27):

(26) an-nusuur-u   ta@iish-u   fi-l-ghaabat-i
     the-eagle.M.PL-Nom   live-3F.SG in-the-forest-Gen
     'Eagles live in the forest.'

(27) inna   an-nusuur-a   ntaSar-uu   fii mubaaraat-i   l-ams-i
     Compl. the-eagle.M.PL-Acc   won-3M.PL   in game-Gen   the-yesterday-Gen
     'The Eagles won in yesterday's game.'

It is predicted that if the natural attributes of the subject are relevant to their grammatical marking on the verb then learning subject-verb agreement marking should be easier. If, on the other hand, the natural attributes of the subject are not relevant to their morphological marking on the verb, learning agreement is more difficult.

This prediction is in line with Bybee's (1991) 'semantic relevance principle' which

states that the more relevant inflectional morphology is to the meaning of the lexical item, the more easily first or second language learners will learn it. After a number of SLA cross-linguistic studies, Bybee proposed that inflectional morphemes associated with the verb differ in the degree of semantic relevance they exhibit toward the meaning of the verb stem they are attached to. Bybee applied the relevance principle to morphological categories such as PNG, aspect, tense, voice, etc. She found that aspect, for example, was more relevant to the verb stem than voice, because it modifies the action that the verb stem indicates and thus was predicted to be acquired before voice. Similarly, it is predicted in the current study that agreement morphology which exhibits semantic relevance to the subject's natural attributes will be easier to acquire than agreement morphology which is irrelevant to the subject's natural attributes. From the perspective of SLA theories, the importance of the claim that 'semantic relevance' would assist the learners in acquiring subject-verb agreement is that it could potentially lead to a kind of hierarchy where the subject's features can be placed accordingly. As a result, features such humanness, animacy, agency, collectivity etc, could be predicted to be learned in a particular chronological order depending on the relevance of their morphological marking vis-a-vis their semantic content.

2.2. 'Surface realisation of the subject and its persistence in the discourse':

This variable is discussed in Barlow (1992:156) and also in Givon (1990:896) though from a slightly different perspective, where it is called *referential coherence in multi-propositional discourse'*. The operational definition of this discourse cue adopted in this study is that 'surface realisation' refers to instances when the subject is explicitly

expressed in the discourse as opposed to being understood or omitted for pragmatic reasons. Lack of a 'surface realisation' of the subject in the discourse is very similar to anaphoric agreement across sentences. Consider the following examples illustrative of both instances respectively:

(28) al-awlaad-u   dhahab-uu   ila-l-madrasat-i
     the-boy. M.PL-Nom went-3M.PL to-the-school-Gen
     'The boys went to school.'

(29) la-qad   dhahab-uu   ila-l-madrasat-i
     Part.   went-3M.PL to-the-school-Gen
     'They went to school.'

Surface realisation is available in (28) but is lacking in (29) where anaphoric agreement is prevailing. It is hypothesised that 'surface realisation' of the subject would enhance the learners' performance in subject-verb agreement whereas anaphoric agreement relations would hinder their performance. 'Persistence' of subject implies that the same discourse referent is present over a span of several propositions in the written discourse. When multiple discourse referents are used as 'subjects' of agreement relations within one stretch of discourse, 'persistence' is then lacking. Like surface realisation, the availability of 'persistence' or the lack of it is predicted to influence the learners' performance in agreement tasks. Givon (1983:12) argues that the following assumptions motivate 'subject's persistence' in discourse:

    i. "What is continuing is more predictable"

    ii. "What is predictable is easier to process"

    iii. "What is discontinuous or disruptive is less predictable"

    iv. "What is less predictable, hence surprising, is harder to process"

Givon's assumptions highlight the decisiveness of subject's continuity in the processing of linguistic information among speech producers across the languages of the world. Givon sees efficient processing of linguistic information as mainly a result of the general discourse context where the 'subject' operates. The convenient term 'discourse coherence' is employed throughout this paper to indicate 'surface realisation of the subject and its persistence in the discourse'.

2.3. 'Lexical specificity' at the discourse level:

A major concern of this study is to find out how Australian students of MSA go about processing and producing subject-verb agreement morphology in written discourse. In dealing with subject-verb agreement in MSA, learners need to be able to recognise the specific properties (i.e., information concerning PNG, humanness etc) encoded in the discourse referent (subject) to be marked on the verb in question. Tyler and Bro (1986:75) argue that the 'specificity' of the discourse referent is very important to learners of foreign language discourse structures. They define 'specificity' as a category under which is included *"the use of articles, pronominalisation, and what we will call lexical specificity, which includes certain aspects of adjectival modification and appropriate lexical choice... The overarching notion is that the referent in discourse should be sufficiently identified to avoid undue ambiguity or confusion"*.

In this study, 'lexical specificity' refers to lexical information achieved through the availability of modifiers, relative pronouns, numerals etc. The following is an illustrative example where a relative pronoun is used to give more information on the

identity and interpretation of the 'subject':

(30) al-jamaa@tu llatii   @araf-at   l-Halla   faaz-at   bi-l-jaa?izati
     the-group   which-F.SG knew-3F.SG the-solution won-3F.SG with-the-prise
'The group (of participants) who knew the solution won the prise.'

The cross-referencing of the collective "al-jamaa@at" in this sentence is less ambiguous because of the presence of the relative pronoun "allatii" which carries information on the classification of "al-jamaa@at" (collective) and hence its cross-referencing onto the verb as [3F.SG]. The relative pronoun "allatii" is a cue in this sentence in that it exhibits information about the classification of the 'subject' of the agreement relation. It is predicted that the presence of such information would enhance the learners' performance in agreement tasks while the lack of it would hinder their overall performance.

Having discussed the linguistic constraints influencing subject-verb agreement marking, the main hypotheses of the present study can now be formulated as follow.

3. Hypotheses:

Hypothesis (1): "the amount and direction (Source<Target; Source>Target or Source=Target) of grammatical encoding would have an effect on the learning of subject-verb agreement".

This hypothesis tested the categories humanness-animacy and collectivity as learning variables. Word order (SVO vs VSO) was also used to test the difference between the

two levels [Source=Target] and [Source>Target] of this hypothesis. In general, hypothesis (1) predicts that the strict agreement paradigm where semantic relevance is prevailing, i.e. [Source=Target], will be easier to learn than deflected agreement patterns where there is a feature mismatch as in [Source>Target] and [Source<Target].

The second major hypothesis in this study addresses the relationship between the availability discourse cues and the learning of subject-verb agreement.

Hypothesis (2): "the availability of discourse cues in the written discourse would facilitate the learning of subject-verb agreement".

This major hypothesis sets out to test the effect of three discourse cues. This implies that there will be three minor hypotheses each testing one discourse cue. These are:

Hypothesis (2.a): "the semantic relevance of the subject's attributes in relation to their marking onto the verb would facilitate the learning of subject-verb agreement".

Hypothesis (2.b): "the surface realisation of the subject (the existence of an explicit subject NP) and its persistence in the discourse would have a positive influence on the learning of agreement".

Hypothesis (2.c): "the availability of lexical specifiers which modify the subject would have a positive impact on the learning of agreement".

In general, it is predicted that the learners' performance in agreement tasks will be

positively influenced by the availability of discourse cues. These cues represent an additional resource of information which is expected to assist the learners in their recognition processes before agreement marking eventually takes place.

The aim of this study is to confirm the above hypotheses (1 and 2) and determine the exact significance of their effect on the learners' performance in agreement tasks. This would prove that the direction and amount of encoding are essential in predicting the learners' performance in subject-verb agreement in MSA and that the availability of discourse cues in written discourse does have a positive effect on the learning of subject-verb agreement.

Chapter 4: METHODOLOGY

1. The learners:

This study was conducted with a group of 17 Australian students enrolled at the Arabic department of the Australian National University (A.N.U.) in three levels: Beginner, Intermediate and Advanced classes.[6] They were selected on the basis of their age (all in their twenties), their ethno-linguistic backgrounds (all from English-speaking background, henceforth ESB) [7], and their motivation for learning Arabic (academic purposes). The three groups of learners differed only in terms of their linguistic proficiency in Arabic.

a. Beginners:

There were five students (3 females and two males) who had been studying Arabic for one year with more than one hundred and twenty (120+) hours of formal tuition. They are able to satisfy basic communicative needs with limited accuracy. They are able to read very simple texts but have great difficulty handling multi-propositional discourse (e.g., complex and lengthy structures containing relatives and/or subordinate clauses).

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[6]The following two sets of terms (advanced; intermediate; beginner) and (high proficiency; middle proficiency; low proficiency) are used interchangeably in this paper.

[7]A number of students were not included in this study because of their different ethno-linguistic backgrounds (one from Iran, one from Ghana and another student from Indonesia).

The data provided by beginners were mainly used to shed light on the developmental features concerning the acquisition of Arabic agreement by Australian learners. Beginners did not provide data for the testing of the effect of discourse cues on the learning of subject-verb agreement. The reason is that discourse cues, namely lexical specificity and discourse coherence, require the processing of long stretches of discourse in highly contextualised passages (used as cloze tests). Such tasks were beyond the limited proficiency level of beginners.

b. Intermediate Students:

Five female and two male intermediate learners have been studying Arabic at the A.N.U. for the last two years. They had a little over two hundred and fifty hours (250+) of tuition and will be leaving for Egypt on completion of their course work. At the time of the study they were able to write, speak and understand simple everyday topics with limited structural complexity (e.g., personal letters, basic communicative tasks). They were also able to read simple texts on subjects within familiar contexts (e.g., family matters, friends and relationships etc).

c. Advanced students:

Five students (three females and two males) represented the relatively high-proficiency level students (advanced students studying at year III). They had more than five hundred hours (500+) of Arabic tuition in Australia, and have spent six months studying and living in an Arabic-speaking country (Egypt) as part of their

course requirements. These five students are able to speak the language and write it with sufficient structural and vocabulary accuracy, as well as being able to read standard newspaper items and other everyday materials (e.g., novels, reports etc) with occasional difficulty when confronted with unusually complex sentences.

Both Advanced and Intermediate students provided data used in testing the two major hypotheses concerning the effect of (1) directionality of encoding and (2) the availability of discourse cues on learning of subject-verb agreement.

2. Data collection:

The nature of this study requires data from written rather than spoken tasks. Two main data-eliciting procedures are employed: grammatical tasks and cloze tests. Free composition is also used for analysis of acquisition stages and emergence criteria. In grammatical tasks and cloze tests, students were asked to fill in the gaps with the appropriate forms (in terms of the marking of person, number and gender) of the missing verbs. This study tested a number of variables ('discourse cues' as well as 'directionality of grammatical encoding') so the data were collected in such a way that each set of data tested one and only one independent variable, thus maintaining the independence of samples. The data-eliciting tasks were specifically designed so that when one variable (e.g., 'discourse coherence') was being tested the learners were not, at the same time, under the effect of another variable (e.g., 'lexical specificity').

The first hypothesis claiming that directionality of grammatical encoding would have an impact on the learning of agreement is tested by means of data collected from

grammatical tasks, while the hypotheses predicting that discourse cues would have a positive effect on the learners' performance in agreement tasks are tested with data collected from cloze tests.

a. Grammatical tasks:

The grammatical tasks were designed to test the effect of semantic and classificatory categories (e.g., humanness, collectivity etc) on the learners' performance in subject-verb agreement tasks. Each category was tested between 5 and 10 times for each proficiency group. Students were given the basic form of the missing verb so that they were not distracted by another equally hard task of finding the missing lexical item and then assign agreement marking to it accordingly. Both correct and incorrect answers were tallied when testing each variable. Because this study is interested in the ability of learners to perform agreement tasks, both grammatical mistakes and inability to provide agreement tokens were treated as inability to produce agreement marking. In many cases, beginners and intermediate students were unable to provide agreement tokens even if the sentences and the supplied verb roots presented to them were chosen from basic material already covered in their tutorials and could be assumed to cause no comprehension difficulty. Thus, unfilled gaps are regarded as a failure to accomplish the subject-verb agreement task.

In summary, three different sets of grammatical tasks were designed for the three groups of learners. The only difference between these three sets of tasks used was the degree of structural and lexical difficulty. This was manipulated according to the students' proficiency level. Samples of the grammatical tasks are included in the

appendices.

b. Cloze tests:

Cloze tests were used to test the effect of discourse cues, namely 'lexical specificity', 'semantic relevance' as well as 'discourse coherence', on the learning of agreement. Cloze tests were used for Advanced and Intermediate learners only as beginners had great difficulty dealing with long stretches of language.

Two sets of cloze tests were designed for both groups of students. The topic of each passage was similar to a text already seen in the classroom so that unnecessary comprehension difficulties were avoided. The passages used for these tasks were slightly manipulated, mainly in terms of the identity of the discourse participants, to ensure that strict memory of the original text did not influence the learners' performance in subject-verb agreement tasks.

Each passage testing a particular discourse cue consisted of two paragraphs: the first was a highly contextualised paragraph which contained linguistic items (modifiers, relative pronouns etc) and/or discourse features (topic continuity and its surface realisation in multi-proposition discourse etc) that provided additional information structure for the learners; the second is a paragraph which does not contain such linguistic items nor those discourse features that are likely to provide extra information concerning various referents in a given agreement relation. The effect of discourse cues was measured and evaluated in terms of grammatical errors of subject-verb marking as well as in terms of the failure to fill in the gap with any inflected form of the supplied verb.

c. Free compositions:

In addition to cloze tests and grammatical tasks, a third type of data was needed for the analysis of developmental stages in the acquisition of different agreement structures. These data were collected from free compositions for higher proficiency learners and single-sentence writing for lower proficiency learners. These assignments varied in their linguistic complexity depending on the proficiency level of each individual learner.

Following Pienemann (1994) who argues that judgments concerning acquisition criteria are best interpreted on individual rather than group basis, three students representing the three levels of proficiency were selected randomly for the investigation of acquisition sequences and the chronological emergence of subject-verb agreement structures.

Chapter 5: RESULTS

Before reporting the statistical results of this investigation it is useful to present a linguistic description of the actual linguistic problems experienced by the learners at all levels and which have been referred to in the statistical tables as 'incorrect' agreement marking. It should be noted that the learners' errors are not to be regarded as right or wrong in themselves but mainly as evidence of an evolving grammar. Such developmental errors are primarily motivated by the learners' limited linguistic competence in Arabic at the time of the testing.

1. Linguistic analysis of learners' performance:

It has already been argued in this paper that subject-verb agreement in Arabic is not a straightforward process whereby morphosyntactic features (person, number and gender) of the 'Subject' are cross-referenced onto the 'Verb'. Rather, other properties - semantic (humanness, animacy), classificatory (collectivity) and syntactic (word order) - determine the specific agreement pattern required for a given agreement relation in the discourse. Therefore, to cross-reference all the apparent features of the 'subject' onto the 'verb' does not guarantee that agreement marking would be grammatical. For example, in the following sentence the learner (advanced level) managed to cross-reference the correct features, yet the sentence was ungrammatical because the subject was non-human and, therefore, can not be marked on the verb for 'plural' number:

```
(31) *al-@aSaafiir-u        haajar-uu        ila l-januub-i
     the-bird-M.PL-Nom  migrated-3.M.PL to the-south-Gen
     'The birds migrated to the south.'
```

For the above sentence to be grammatical the verb 'migrate' needs to be marked for the features third person feminine singular:

(32) al-@aSaafiir-u   haajar-at   ila l-janᴜub-i
     the-bird-M.PL-Nom   migrated-3.F.SG. to the-south-Gen
     'The birds migrated to the south.'

This example illustrates one of the main intricacies associated with learning subject-verb agreement in Arabic and which often results in grammatical errors. Grammatical errors made by learners can be divided into two main types: (1) the first type consists of marking the appropriate morphosyntactic features (person, number, gender) in agreement relations which exhibit constraints on such marking for semantic (non-human referents), syntactic (word order) and pragmatic (interpretation of referents in discourse) reasons; (2) the second type of error is found in agreement relations where learners mark the morphosyntactic features (person, number, gender) on the verb which are in discord with those expressed by the subject. The following ungrammatical sentence provides an example where the learner (intermediate level) cross-references the inappropriate gender category on the verb:

(33) *al-waziir-u   HaDar-at   mu?tamar-an
     the-minister-Nom   attended-3F.SG. seminar-Acc
     'The minister (male) attended a seminar.'

The learner in this example should have used the form [HaDar-a] which indicates [M.SG.] since the source (al-waziir) explicitly exhibits these same features.[8] Natural gender is explicitly represented and the failure to mark it correctly on the verbal

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[8]If the word 'minister' was referring to a female person its form would have been [al-waziirat-u] with the sufix [at] indicating the features [F.SG].

constituent of the clause yields ungrammatical agreement mapping. Number can also cause the same type of 'errors' if learners fail to perceive and interpret correctly the subject's morphological representation. The following example illustrates an agreement marking error motivated by number discord:

(34) *zumalaa?-ii   kaan-a   fii ntidhaar-ii   fii l-maTaar-i
       friend-M.PL-my   was-3M.SG.   in waiting-me   in the-airport-Gen
       'My friends (classmates) were waiting for me in the airport.'

For the agreement to be grammatical, the learner (beginner) in this example needed to supply the masculine plural form of 'to be' which is [kaan-uu].

In general, three main types of errors were noticed in the data provided by all three groups of students: pragmatic-semantic, syntactic and feature discord. The following table displays the distribution and the frequency of these 'errors' across the three groups:

Table (1) Typology of errors:

Learners	Correct	Feature concord but ungrammat-ical	Feature discord and ungrammatical			
		Pragmatic-semantic	Syntactic	Gender	Number	Total
High	135	13 (65%)[9]	2 (10%)	3 (15%)	2 (10%)	155
Middle	98	20 (34%)	11 (18.6%)	7 (12%)	21 (35.5%)	157
Low	75	15 (27%)	13 (23.6%)	10 (18%)	17 (31%)	130

Not surprisingly the table shows that advanced learners commit far fewer overall errors (20 out of 155 agreement tokens) than intermediate learners (59 out of 157 tokens) and beginner learners (52 out of 130 tokens). The difference between the intermediate learners and beginners is not very apparent in the above table. This might be because beginners were given straightforward tasks involving human referents which employed basic sentence patterns (subject-verb as opposed to verb-subject). Both beginner and intermediate learners still have difficulty with word order variations and its implication on the marking of subject-verb agreement as well as with marking number and, to a less extent, gender in agreement relations. On the other hand, advanced learners seem to make very few errors that are related to either syntax (2 errors), gender (3 errors) or number (2 errors). The main source of difficulty for high proficiency learners is the identification of the appropriate natural class of discourse referents (13 errors) as in the following example:

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[9]These are percentages of total number of errors and not of total number of observations which are reported in the total column.

(35) *al-fi?raan-u   akal-uu   kulla 1-Hubuub-i
    the-mouse-M.PL-Nom ate-3.M.PL.   all   the-grain-Gen
    'Mice ate all the grain.'

In the above example a non-human referent is cross-referenced for plurality [-uu] and therefore yields an ungrammatical agreement relation. It is worth mentioning that advanced learners perform significantly better in such agreement relations in highly contextualised passages where extra sources of information on the identity of referents is available to them (see tables 3, 4, and 5 below). The figures in the above table should be treated cautiously because they do not reflect the fact that beginners and intermediate learners were not able to provide agreement tokens in contextualised stretches of discourse, which is why they appear to make fewer errors of this type than advanced learners.

In general, advanced learners seem to have acquired the mechanism involved in cross-referencing person-number and gender in both SVO-type and VSO-type clauses. However, they still have some difficulties dealing with agreement relations that are sensitive to semantic and/or pragmatic interpretation as evidenced in the following example:

(36) *al-@arab-u   rafa@-a   min sha?n-i ad-dustuur-i
    the-Arab-Nom raised-3M.SG. from status   the-constitution-Gen
    'The Arab (people) raised the status of the constitution.'

For the above example to be grammatical, the word [al-@arab] being collective should be marked onto the verb with the masculine plural suffix [-uu] rather than the masculine singular [-a]. Many collective words in Arabic (e.g., group, band, bedouin, people, etc) are interpreted as a scattered group of individuals and marked onto verbs

as such. The confusion arises from the fact that certain collectives are often interpreted as a non-scattered group of people and thus marked as singular. These collectives include words like 'people', 'youth', 'army', 'elite', etc.[10] This distinction is usually dependent on the background information available in the discourse and recoverable from lexical modifiers such as adjectives, relative pronouns and numerals.

For intermediate and beginner learners, the three main types of errors seem to be distributed evenly across the board, which suggests that students at this developmental stage still have problems with subject-verb agreement in marking respect of word order, number and gender. Consider the following examples observed in data provided by intermediate and beginner respectively:

(37) *al-aqaarib-u   staqbal-a   muhammad-an   fii l-maTaar-i
     the-relative-M.PL-Nom   met-3M.SG.   muhammad-Acc in the-airport-Gen
     'The relatives met Muhammad at the airport.'

(38) *aT-Taalib-aat-u   ta-@mal-u   kathiir-an
     the-student-F.PL-Nom work-3F.SG.   much
     'The students (female) work very hard.'

In both examples the ungrammaticality is due to a feature mismatch between the 'subject' (plural) and its morphological marking on the verb (singular). Less prevalent than number-related errors were gender-motivated errors. This may be due to the fact that gender in Arabic is explicitly marked on nouns with the suffix [-at], which makes 'femininity' quite apparent and hence easily marked on verbs when required.

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[10]The word "people" in Arabic can be translated as either [naas] which can only be cross-referenced as masculine plural or [sha@b] which is marked onto verbs only as masculine singular.

Nonetheless, both low and middle proficiency learners still made more errors related to gender than high proficiency learners. Following are some illustrative examples observed in data provided by intermediate learners and beginners respectively:

(39) *taHaddath-a   l-?ustaadh-at-u   @ani s-sinima   fii miSr
    spoke-3M.SG.   the-teacher.F.Sg-Nom about the-cinema   in Egypt
  'The teacher (female) spoke about Egyptian cinema.'

(40) *sawfa yadrus-u   Taalib-at-un   kitaab-an fi l-maktabat-i
     will   study-3.M.SG student-F.SG-Nom book-Acc in the-library-Gen
    'The student (female) will study the book in the library.'

It should be noted that cross-referencing feminine gender was more difficult than cross-referencing masculine gender. Arabic, like many other languages, takes masculine to be the base from which feminine is derived by attaching the suffix [-at]. It was reported on the literature (e.g., Bybee, 1991; Greenberg, 1966, 1991) that non-derived forms are easier to learn than derived ones as they are morphologically less complex and semantically more natural.

In general, there were not too many gender-motivated errors noticed in the data provided by the three groups of learners. It seems that the main types of errors present in advanced learners' data are those related to the pragmatic interpretation of discourse referents (collectivity in particular). Beginners and intermediate learners make errors that are a result of a morphosyntactic feature mismatch (number and gender), word order variation as well as pragmatic interpretation of discourse referents. The differences between the performance of the three groups in subject-verb agreement tasks will be statistically analysed below.

2. Statistical analysis of data:

The statistical results of learners' performance in subject-verb agreement tasks will be reported independently in three sections according to the proficiency level. A between-group comparison will then be presented in a separate section where issues related to developmental aspects of the acquisition of agreement in Arabic will be discussed.

2.1. Advanced learners:

a. Hypothesis (1) testing the effect of 'amount and direction of encoding' :

The first hypothesis tested the prediction that the amount and direction of grammatical encoding would have an effect on the learners' performance in agreement tasks. In other words, the three levels of directionality of grammatical encoding, i.e. [Source>Target]; [Source<Target] and [Source=Target] in terms of feature specification, would have differing impact on the students' performance in agreement marking. The statistical results of this test are shown in table (2):

Table (2) effect of directionality of encoding on learning of agreement [11]:

amount and direction of encoding	Correct	Incorrect	Total
Source>Target as with [-human]	48 *(42.4)*	12 (17.6)	60
Source<Target as with [+collective]	21 *(36.74)*	31 *(15.26)*	52
Source=Target as with [+human]	49 *(38.86)*	6 *(16.14)*	55
Total	118	49	167

X2= 34.526; df= 2; p= .0001

Table (2) shows that there is a clear significant difference (*X2*= 34.526; p=.0001) between the performance of advanced learners in the three levels of the 'amount and direction of encoding'. Thus it is safe to say that this hypothesis predicting that directionality of encoding would affect the learners' performance in agreement tasks has been supported. However, since this hypothesis includes three levels, it is important to verify whether or not the students' performance in every single level is significantly different from their performance in every other single level. Interestingly, *X2* did not show a significant difference (*X2*= 1.796; df=1; p= .1802) between [Source=Target] on one hand and [Source>Target] on the other hand. This implies that high proficiency learners are able to handle a feature mismatch whereby the non-human source is more specified (marked for number and gender) than the target (marked for gender only) as effectively as they handle agreement relations involving human referents. However, both [Source=Target] and [Source>Target] were significantly different from [Source<Target] with (*X2*= 28.03; df= 1; p=.0001) and

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[11]In all tables reporting statistical analyses, the italic figures presented between parentheses refer to the expected values (EV) of that particular cell. The observed value (OV) is indicated on the left hand side of the parentheses in the same cell.

(*X2*= 18.483; df= 1; p= .0001) respectively.

This analysis illustrates the fact that the learners perform significantly worse in [Source<Target]-type agreement relations. Learners are unable to provide the correct agreement tokens when there is a feature mismatch due to a 'collective' source partially specified (the morphosyntactic feature of 'number' being unmarked), while the verb obligatorily shows full agreement.

The syntax-motivated agreement provided an additional source of data for checking the above finding concerning the non significant difference in the learners' performance in [Source=Target] and [Source>Target] tasks. Results of this analysis are displayed in table (3):

Table (3): testing the effect of word order:

word order	Correct		Incorrect		Total
SVO for (S=T)	48	(47.14)	9	(7.86)	57
VSO for (S>T)	42	(42.86)	8	(7.14)	50
Total	90		17		107

X2= .229 (non significant); df= 1; p= .6322

The above statistics confirm the early findings that the difference between the advanced learners' performance in [Source=Target] and [Source>Target] is not significant in both semantically-motivated (human vs non-human participants) patterns and syntactically-motivated patterns (SVO-clauses vs VSO-clauses). Unfortunately, it is not possible to test (Source<Target) from a syntactic perspective because word order does not provide such agreement patterns.

b. Hypothesis (2) testing the effect of discourse cues:

The second hypothesis dealing with the effect of discourse cues on students' performance in subject-verb agreement tasks was investigated primarily by means of cloze tests. As this hypothesis is testing the effect of discourse cues students were tested both in tasks rich in discourse cues and those poor in discourse cues. In both instances correct and incorrect answers were tallied to check if the difference was significant. The results involving each of the three discourse cues used, surface realisation and persistence of the subject, lexical specificity and semantic relevance, are shown in tables 4, 5 and 6 respectively.

Table (4) effect of discourse coherence on learning of agreement:

Coherence	Correct		Incorrect		Total
+coherence	46	*(36.37)*	7	*(16.63)*	53
-coherence	24	*(33.63)*	25	*(15.37)*	49
Total	70		32		102

$X2 = 15.198$; df= 1; p = .0001

Table (5) testing the effect of 'lexical specificity':

Lexical Specificity	Correct		Incorrect		Total
+specificity	48	*(35.47)*	8	*(13.53)*	56
-specificity	56	*(61.53)*	29	*(23.47)*	85
Total	104		37		141

$X2 = 4.072$; df= 1; p = .0436

Table (6) testing the effect of 'semantic relevance':

Relevance	Correct		Incorrect		Total
+relevance	57	*(48.97)*	8	*(16.03)*	65
-relevance	56 .	*(64.03)*	29	*(20.97)*	85
Total	113		37		150

$X2 = 8.292$; df= 1; p = .004

The Chi-square test used to test the statistical significance of the effect of discourse cues on the learning of subject-verb agreement revealed that all three cues used do have a significant influence (p<.05) on advanced learners' performance in agreement tasks. In fact, 'surface realisation and persistence of the subject' was clearly significant (p=.0001). Students did perform significantly better in a context where the subject is persistent and explicitly expressed than in a context where different lexical NPs are assigned the role of subjects and/or where these subjects are anaphoric. Both 'Lexical specificity' and 'semantic relevance' were also significant, (p=.0436 and p=.004 respectively). The results of this test reveal that advanced learners perform significantly better in subject-verb agreement in highly contextualised texts (rich in discourse cues and where natural attributes of the subject are equal to their grammatical marking on the verb) than they do in texts poor in discourse cues (lack of topic continuity; lack of lexical modifiers and lack of feature concord between natural attributes of the 'source' and its grammatical marking on the 'target').

Tables (4), (5) and (6) clearly illustrate the fact that advanced students make far more errors when they had to provide agreement tokens in a passage that lacks discourse coherence, lexical information or semantic relevance. On the other hand, they committed far fewer errors when they had to perform agreement tasks in a highly contextualised passage where additional information concerning the 'source of agreement' had been provided.

2.2. Intermediate Learners

The data provided by intermediate students is not numerically consistent as there were few cases where one or two students did not complete certain tasks for various reasons.[12] Consequently, the total number of observations for each variable is not equal. As with data collected from beginners, tables (7) and (8) are set to test the first hypothesis regarding the effect of directionality of encoding on the learning of agreement. Tables (9), (10) and (11) address the second hypothesis testing the effect of discourse cues on intermediate learners' performance in subject-verb agreement. The results as seen in table (7) do not support the hypothesis regarding the effect of directionality.

The overall difference between the learners' performance in the three levels of directionality did not reach the required level of statistical significance (p<.05). The detailed results displayed in the following table, however, do indicate some differences in the mid-proficiency learners' performance in the three levels of agreement patterns.

[12]Some students did not turn up to university on the day of the task completion. In general, enough students did complete the tasks not knowing exactly what they were being tested for.

Table (7) effect of directionality of encoding on learning of agreement:

Directionality	Correct	Incorrect	Total
Source>Target	52 *(57.65)*	25 *(19.35)*	77
Source<Target	50 *(49.42)*	16 *(16.58)*	66
Source=Target	47 *(41.93)*	9 *(14.07)*	56
Total	149	50	199

$X2 = 4.676$; df= 2; p = .0966

Although there seems to be a difference between the learners' performance in the three levels of the first hypothesis testing the effect of directionality on learning of agreement, the statistical analysis does not reveal any significance in this difference ($X2=4.676$; df= 2; p=.0966). This means that the learners' performance was not significantly affected by the natural (human vs non-human) and grammatical (collectives vs plurals) attributes of the source. Nonetheless, the difference in the learners' performance in [Source=Target] with 'human' subjects as opposed to [Source>Target] with 'non-human' subjects is on the borderline of statistical significance (p=.0525). Semantic relevance is the main factor contributing to the better result here, as the [Source=Target] instance is usually associated with natural attributes such as gender and number.

Word order provides an additional source of data to look at the learners' performance in agreement marking with feature concord [Source=Target] being instigated by SVO-type sentences, while feature mismatch [Source>Target] is instigated by VSO-type sentences.

Table (8) testing the effect of word order:

word order	Correct		Incorrect		Total
SVO (Source=Target)	47	*(42.38)*	9	*(13.62)*	56
VSO (Source>Target)	37	*(41.62)*	18	(13.38)	55
Total per Column	84		27		111

X2= 3.326; df= 1; p= .0682

The statistical analysis in table (8) shows that the learners commit far fewer agreement errors in SVO-type sentences (9 out of 56) than in VSO-type sentences (18 out of 55). Although the learners seem to commit double the number of mistakes in VSO structures in comparison to SVO, the Chi-square analysis shows that this difference (p=.0682) is slightly below the required level of significance (p<0.05). More research in this area may well prove that intermediate learners perform significantly better in agreement relations where the source is equal to the target [Source=Target] than in agreement relations where there is a feature mismatch in the direction of the source [Source>Target]. Tables (9) and (10), below, address the effect of discourse coherence and 'lexical specificity' on the learning of agreement.

Table (9) effect of discourse coherence on learning of agreement:

Coherence	Correct		Incorrect		Total
+coherence	36	*(34.76)*	27	*(28.24)*	63
-coherence	44	*(45.24)*	38	*(36.76)*	82
Total	80		65		145

X2= .062; df= 1; p= .8028

This hypothesis was not supported (p=.8028). The presence of 'discourse coherence' does not seem to be of any help to learners at this developmental stage (intermediate). There was no significant difference between the number of errors made in all cases. In fact, observed values were very close to expected values in all cases. The results indicate that, unlike advanced learners, intermediate learners are unable to utilise discourse coherence as a discourse-structuring cue in their performance in agreement tasks.

'Lexical specificity' was used as another discourse cue testing intermediate learners' performance in subject-verb agreement tasks. The results, however, show that there was no significant difference in the intermediate learners' performance in both environments.

Table (10) testing the effect of 'lexical specificity':

Specificity	Correct	Incorrect	Total
+specificity	27 (28.89)	29 (29.11)	56
-specificity	38 (36.11)	32 (33.89)	70
Total	65	61	126

$X2=$ .248; df= 1; p= .6183

The value of $X2$ ($X2$=.248; p=.6183) reported in table (10) does not support this hypothesis. Like discourse coherence, lexical specificity does not serve learners of Arabic below a certain proficiency level. The implication of this point will be discussed in a later section.

The notion of 'semantic relevance' refers to the encoding of gender as a natural attribute as opposed to gender being marked as a syntactic choice. Semantic relevance is used in this paper as a discourse cue in a similar way to 'humanness' as both are manifested in agreement relations whereby the source (Subject) equals the target (Verb) in terms of feature specification. Semantic relevance is realised in the discourse when the learners are able to perceive that the natural attributes of the 'subject' (both in terms of number and gender) are equal to their morphological cross-referencing on the verb in question. On the other hand, semantic relevance is lacking when grammatical choices are in conflict with the natural attributes of the 'source'. Semantic relevance is treated as a discourse cue because the interpretation of lexical items in Arabic is often dependent on its contextual usage. The statistical results are reported in table (11):

Table (11) testing the effect of 'semantic relevance':

Relevance	Correct		Incorrect		Total
+relevance	63	*(57.23)*	11	*(16.77)*	74
-relevance	53	*(58.77)*	23	*(17.23)*	76
Total	116		34		150

X2= 4.231; df= 1; p= .0397

Unlike lexical specificity and discourse coherence, 'semantic relevance' is found to have a significant impact on intermediate learners' performance (X2=4.231; p=.0397) on agreement tasks. The learners made fewer errors (11) in semantically relevant agreement relations, whereas they made far more errors (23) in agreement relations involving 'non-relevant' features such as grammatical gender assigned to non-human

plural head nouns (e.g. houses, cars, etc). This result is in line with Bybee's (1991) 'semantic relevance principle' whereby learners use semantic rather than syntactic attributes in their linguistic processing of new input in the target language.

2.3. Beginners:

Data collected from beginners were quite restricted in scope as the low proficiency level of the five students meant that testing the effect of discourse cues on the marking of subject-verb agreement in long stretches of discourse was beyond their scope. Therefore, the students were tested in the basic agreement pattern where the 'subject' of the agreement relation refers to a 'human' participant. This ensures a kind of basic semantic relevance between the natural attributes of the 'subject' and its morphological marking on the 'verb'. Collectives and non-human participants are not included as the learners at this level have not been exposed sufficiently to such input.

The data could only partially test the first hypothesis predicting that directionality of encoding would have an effect on the learners' performance in agreement tasks. The two levels of directionality of encoding tested (Source=Target vs Source>Target) are primarily syntactically motivated (SVO vs VSO) rather than being semantically instigated (animacy, humanness).

Table (12) reports the descriptive statistics on the learners' performance in two syntax-motivated sets of data.

Table (12) testing the effect of word order:

word order	Correct	Incorrect	Total
SVO for (S=T)	46 (38.79)	22 (29.21)	68
VSO for (S>T)	31 (38.21)	36 (28.79)	67
Total	77	58	135

$X2$ = 6.294; df= 1; p = .0195

Statistically, the learners performed significantly ($X2$= 6.294; p= .0195) better in agreement relations where the source and target are equal in terms of encoded features [Source=Target] than in agreement patterns where there is partial encoding [Source>Target]. The learners commit far fewer agreement errors in SVO-type sentences (one error in three agreement tasks) than in VSO-type ones (one error in two agreement tasks).

The Chi-square analysis shows that the observed value of errors was less than expected in SVO-type sentences (observed=22; expected=29.21) but clearly more than expected in VSO-type clauses (observed=36; expected=28.79). As for correct answers, the learners performed better than expected in SVO-type tasks (observed=46; expected=38.79) but worse than expected in VSO-type tasks (observed=31; expected=38.21). These figures illustrate the importance of syntax as a moderator of directionality of encoding for the learners' performance and learning of agreement marking. It should be noted that semantic relevance is present in both SVO and VSO data produced by beginners and, therefore, is not considered a variable when analysing the data.

The overall results partially support the first hypothesis predicting that directionality of encoding would have an effect on the learners' performance in agreement tasks. It remains to be seen, however, whether the differences between the three groups in terms of directionality are significant or not. Because beginners were not able to provide data where collectives are assigned the grammatical role of 'subject', the third level of directionality [Source<Target] is not included in the following analysis. Kruskal-Wallis was used for the purpose of comparing the three groups of students in their performance in the two basic agreement structures [Source=Target] and [Source>Target]. The statistical analysis of the differences between the three groups yielded the following results:

Table (13): Kruskal-Wallis test for [Source=Target] agreement patterns:

	Cases	Sum Ranks	Mean Ranks
High	5	59	11.8
Mid	5	34	6.8
Low	5	27	5.4

H=5.87; df=2

The difference between the three groups is not significant because the observed value of H (H=5.87) is smaller than the critical value of $X2$ (5.991) at p<0.05. It should be noted, however, that there are obvious differences between the three groups of learners (different mean ranks) in these two structures. As a matter of fact, the observed value of H is only marginally smaller than the critical value of X2 (H=5.87 while X2= 5.991). It seems that learners from all three levels of competence do not encounter major difficulties when dealing with agreement patterns where the source

and the target of information exchange are equal in terms of features specification. However, there is a hierarchical ranking of the three groups motivated by linguistic competence.

The main difference lies between advanced learners on the one hand and the other two groups of learners on the other hand. This can be related to the amounts of exposure to the target language different groups of learners have had. The gap between beginners and intermediate learners is not as great as that between intermediate and advanced learners. As for agreement relations where the source of information exchange is superior to the target [Source>Target] in feature specification, the following results were obtained:

Table (14): Kruskal-Wallis test for [Source>Target] agreement patterns:

	Cases	Sum Ranks	Mean Ranks
High	5	57	11.4
Mid	5	43	8.6
Low	5	20	4

H=7.185; df=2

The overall statistical difference is significant (H=7.185; $X2$=5.991; p<0.05) at the probability level (p=0.05). To find out whether the difference between groups is significant or not we need to carry out a Ryan Procedure test, the results of which are presented below:

Table (15): Ryan Procedure for Kruskal-Wallis:

	Mid	Low
High	-.973	-2.66
	(2.13)	(2.40)*
Mid		-1.601
		(2.13)

* is significant at $p<0.05$

Table (15) illustrates the fact that only the comparison between high proficiency students and low proficiency students is significantly different with regard to [Source>Target]-type agreement patterns. This difference, which is in favour of high proficiency students was reflected in the low percentage score of correctness of beginners' performance in this particular structure (46.2%) in comparison to (84%) for advanced learners. In order for us to be able to claim that these structures have been acquired by certain learners and not others we need to undertake an individual analysis of the data and at the same time establish clear criteria for the emergence and/or acquisition of subject-verb agreement in Arabic.

Chapter 6: DISCUSSION

1. Directionality of encoding and acquisition criteria

The question of acquisition is raised in hypothesis (1) which addresses the effect of directionality on learning of agreement. Hypothesis (1) predicts that (a) agreement patterns where the subject is represented by a 'human' referent should be easy to learn because the natural attributes of the referent and their morphological marking on the 'verb' are equal [Source=Target], (b) agreement patterns involving 'non-human' referents will be more difficult to learn because they result in a feature mismatch between the natural attributes of the subject and their morphological marking on the verb [Source>Target] and (c) agreement patterns where the subject is a human collective will be most difficult to learn because there is a feature mismatch in favour of the verb [Source<Target].

One should bear in mind that the main objective of this study is to investigate the effect of discourse cues on the learners' performance in subject-verb agreement. Focus is placed firstly on exploring the learners' performance in different subject-verb agreement patterns (Source=Target; Source>Target; Source<Target) and secondly on studying the effect of contextual information in carrying out these agreement relations. These two aspects of this study are, as we will see later, inter-related in more than one way. The following is an attempt to address some of the developmental issues associated with the acquisition of agreement morphology.

The fact that this study looks at groups of learners rather than individual learners makes it difficult to make sound claims about acquisition unless a few conditions are

met: firstly to define our own emergence criteria for the acquisition of subject-verb agreement in Arabic, secondly, to look at specific agreement structures from an individual perspective across the three different proficiency levels, thirdly, to specify the linguistic environment where agreement markers are provided by the learners (distributional analysis) and finally to employ an adapted implicational scale (cf. Pienemann, 1994; Slobin, 1973) in order to make any kind of statement about acquisition and acquisition order.

However, before discussing these developmental issues, it will be useful to compare the three groups of learners in terms of their performance in agreement tasks in the three basic agreement patterns: [Source=Target], [Source>Target] and [Source<Target].[13] The following table displays percentages regarding the three groups' performance in these structures.

Table (16) shows the effect of directionality of encoding:

	Low Proficiency	Mid Proficiency	High Proficiency
Source=Target	67.6 %	83.9 %	84.2 %
Source>Target	46.2 %	67.2 %	84 %
Source<Target	--------	75%	40%

This table illustrates, in summary, that advanced learners enjoy a high success rate in both [Source=Target] and [Source>Target] instances, that intermediate learners are more successful with [Source=Target] and that beginners are not as successful in either agreement pattern. Cells with light shading indicate a transitional stage where

[13]A comparison in Source<Target was not possible as beginners were not ready to carry out agreement tasks which involve collectives.

learners seem to be progressing in their understanding of subject-verb agreement marking. Interestingly, the table suggests that intermediate students outperformed advanced students in agreement relations of the [Source<Target] type involving 'collective' head nouns. This surprising finding, however, is most probably the result of 'random hits' where learners with lower proficiency levels tend to over-generalise grammatical rules which in this particular context resulted in the correct answers. What seems to be happening here is that intermediate learners are marking most collectives as [M.PL]. This is because (i) they are looking for the semantic content of the head nouns rather than for their grammatical categorisation and (ii) they are not aware of the irregular nature of collectives which can be marked either as masculine plural or as feminine singular depending on the interpretation of each collective head noun in a particular context. This over-generalisation strategy seems to be behind their surprisingly high success rate in [Source<Target] agreement pattern.

High proficiency learners, on the other hand, are beginning to realise that collectives in Arabic are an irregular class, with one sub-class being marked as [+PL] while the other marked as [+SG]. It is this awareness of the deflected nature of 'collectives' and the need to choose which of the two sub-paradigms to employ in subject-verb agreement marking, that resulted in the high rate of errors committed by advanced learners. In the morphology section discussed above a diagram highlighting the two agreement paradigms (regular and irregular) in Arabic was presented. It was shown that collectives are represented in both paradigms depending on the discourse interpretation and the inherent semantic properties of the head noun as well as on the learner's own perception of the same head noun. The linguistic awareness of high proficiency learners of these constraints explains their relatively low success rate in agreement patterns involving collective head nouns.

This phenomenon is similar to the acquisition of past tense in English, when first or second language learners seem to be quite successful in producing irregular verbs in the past tense such as [ate] before realising that the usual past tense morpheme is [-ed], and, therefore, in later stages produce words of the kind of [eated] etc. This is why it is important that the learners' language be analysed individually in lexically and morphologically variant contexts before final judgements about emergence and/or acquisition of agreement structures are made.

Emergence as defined by Pienemann (1994:75) "can be understood as the point in time at which certain skills have, in principle, been attained or at which certain operations can, in principle, be carried out". As such, emergence of any linguistic structure can only be claimed when certain criteria are met. The first major emergence criterion that has to be satisfied is lexical and morphological variance of subjects and verbs in the learners' interlanguage. Lexical variance implies that the learner's system includes agreement marking with various lexical verbs and noun phrases and not just one noun/pronoun or one verb. Morphological variance means that the morpheme being cross-referenced onto the verb does vary in number, person and gender. Pienemann (1994) argues that one can talk about emergence only if subject and verb vary lexically and morphologically in the given interlanguage, because if they do not vary, they can simply be learned as one block. Lexical and morphological variance makes it impossible for the learners to learn subject-verb agreement marking as unanalysed chunks ('chunk-learning'). For example, when the learner produces an utterance like:

(41) akal-a
    ate-3M.SG.
    'He ate.'

one has to make sure, before claiming that this is an instance of subject-verb agreement, that in the same interlanguage there are other utterances that vary lexically such as:

(42) aḥmad-u   sharib-a
    Ahmad-Nom   drank-3M.SG
    'Ahmad drank (water).'

and also morphologically such as:

(43) akal-na
    ate-3F.PL.
    'They (feminine) ate.'

It is only when learners are tested in lexically various verbs and subjects with differing morphosyntactic attributes (number, person and gender) that one can talk about genuine acquisition of subject-verb agreement rather than the acquisition of one single lexical item in the learner's system. This condition was comprehensively satisfied in this study as the large amount of data collected ensured lexical and morphological variance at all levels.

For Arabic, therefore, the emergence criteria for the acquisition of subject-verb agreement is the morphological and lexical suppliance of agreement tokens in the learner's interlanguage. Because of the dynamic nature of interlanguage systems, both correct and incorrect suppliance are considered indicators of emergence of subject-verb agreement. This is, of course, different from analysing the learners' performance in agreement tasks under the effect of availability of discourse cues where only

correct suppliance is considered as an indicator of effective use of discourse information. Natural data are good indicators of how grammatical structures are developed by second language learners (Pienemann, 1994), therefore, this section is based on data collected from free compositions.

The second condition that needs to be met before making any kind of claim about acquisition is to study very specific agreement structures across individual learners. In this case three learners one from each level of proficiency, chosen at random, were studied. The specific structures that will be investigated are the three basic instances of directionality of encoding as represented in the first hypothesis concerning the effect of directionality on the learning of agreement. For the purposes of this individual analysis the null version of this hypothesis must be used instead (Pienemann, 1994). Therefore, it is predicted that the three agreement patterns (Source=Target; Source>Target and Source<Target) do not have any effect on the learning of subject-verb agreement in Arabic. The aim of what follows is, of course, to reject the null hypothesis and demonstrate that directionality does have an impact on the way agreement structures are learned.

The third important condition is the specific description of the linguistic context in which agreement morphemes were supplied by the learners.This is important because it would clarify the lexical and the morphosyntactic contexts for agreement morphemes insertion. For the individual samples of data used for this developmental analysis, the following linguistic contexts were selected:

Subject's person = 3rd

Subject's number = plural

Subject's gender = masculine

Subject = lexically variant

Subject's natural class = human

Verb's Tense/Aspect = (Im)perfective

Verb = lexically variant

Word order = SVO

It should be noted that the selection of the morphosyntactic feature [3.M.PL] does not imply that other agreement morphemes with different feature specifications were not produced by the learners. On the contrary, it was noticed that there were a large number of agreement tokens with [3M.SG] and [3F.SG] but not many with [3F.PL] nor with first and second persons. The reason for choosing [3.M.PL] over agreement morphemes with other features, is that the basic form of Arabic verbs inherently indicates the feature [3M.SG] and, therefore, would not illustrate the process of information transfer from the subject onto the verb that the learner is supposed to carry out. The parameters selected above narrow down the analysis to the insertion of the agreement morpheme [-uu] for perfective and [-uuna] for imperfective, as evidenced in the following example from an advanced learner:

(44) anaa adhunn-**u** anna   l-amarikiyyiina   ya@tabir-**uuna**   anfusahum ash-shurTat
I think-1.SG. Compl. the-American-M.PL consider-3.M.PL themselves the-police
al-@aalamiyya amma l-ustiraaliyyiina   fa-ya@rif-**uuna** anna laysa lada dawlat-i-him
the-universal   as for the-Australian-M.PL know-3M.PL Compl not have state-Gen-their
dawr-in fi l-@aalam-i
role-Gen in the-world-Gen

"I think that the Americans consider themselves the international police. As for the Australians, they know that their country does not have a (significant) role in the world".

In this example 'subjects' vary lexically (first person pronoun, Americans and Australians), while verbs vary lexically (consider; know; think) and morphologically ('think' is marked for first person; 'consider' and 'know' are marked for third person masculine plural). However, because first person marking was too rare to make any kind of conclusive statements about its emergence and/or acquisition, only third person masculine plural marker [-uuna] [14] will be analysed.

Using the frequency as well as correctness of plural morpheme insertion in agreement relations, the following results were obtained:

	Learner I	Learner II	Learner III
Structure 1 (Source=Target)	-/+	+	+
Structure 2 (Source>Target)	_	-/+	+
Structure 3 (Source<Target)	_	_	-/+

The signs used in this table include [+] which means that the structure in question is acquired because there is a high frequency of correct suppliance, i.e. it has been supplied in the correct context when required (more than 90% correct suppliance); [-/+] can be considered as an emerging agreement structure because there is a high frequency of correct and incorrect suppliance which means that it may be in a

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[14]The third person plural [3rd.PL] marker for non-human is [-at] regardless of gender.

transitional stage (around 60% of correct suppliance); and finally [-] indicates that either there was not enough suppliance of the particular agreement structure to allow us to make sound claims, or simply that the learner is not ready yet to produce the agreement token for that structure even when the linguistic context stipulates it.

It is obvious that on the basis of the samples of the three individual sets of data, it seems that the low proficiency student (learner I) has not acquired structures 2 and 3, while structure 1 is only emerging in his interlanguage. In fact, this learner tends to supply the morpheme [-uuna] mostly when this morpheme is redundant, i.e. explicitly realised on the subject as illustrated in the following example:

(45) al-mu@allim-**uuna**   ya@mal-**uuna** kulla yawm-in
     the-teacher.M.PL-Nom   work-3.M.PL   every day-Gen
     'The teachers work every day.'

The intermediate student (learner II), however, seems to have acquired structure 1 as the frequency and correctness of suppliance are relatively high, while structure 3 was not supplied frequently enough even when required. As for structure 2, the data indicate that it is in the stage of emergence with good frequency but not enough correctness. Finally, the advanced student (learner III) seems to have developed both structures 1 and 2, with structure 3 being in an emerging stage.

The above analysis can be formulated in what is known as implicational scale (Gutman, 1948; Decamp, 1973; Pienemann and Johnston, 1985; Pienemann, 1994) in which structures are acquired in a cumulative way so that if a learner can produce structure 3 [Source<Target] productively in lexically and morphologically variant context then he/she can produce structure 2 [Source>Target] and structure 1

[Source=Target] In other words, the acquisition of structure 1 [Source=Target] is a prerequisite for the acquisition of structure 2 [Source>Target] which, in turn, is a prerequisite for the acquisition of structure 3 [Source<Target] The presence of structures 1 and 2 in the learner's system, however, does not automatically imply the presence of the more complex structure 3. On the other hand, the presence of structure 3 in the learner's interlanguage does imply the presence of both structures 1 and 2, in the same way that structure 2 implies the presence of structure 1. The word 'presence' means productive producing of the structure in question. The notation of such a scale usually looks like this:

structure3 $>$ structure2 $>$ structure1

(S<T) $>$ (S>T) $>$ (S=T)

This kind of analysis offers a sound account of learners' data because it is able to capture the dynamic and changing nature of learners' interlanguage systems in relation to their linguistic competence. More important, however, is the fact that because the hypotheses in this study are theoretically motivated it was possible to predict which particular agreement structures would be easy to acquire and which structures would be difficult to process. In other words, the order in which agreement structures are acquired is not only motivated by the learners' linguistic competence but also by the nature and complexity of the target language's (Arabic) grammatical structure. These two constraints, linguistic competence and TL grammar, were essential to predict what is processable by the learner at which point in time during the developmental process.

In summary, the null version of hypothesis (1) concerning the effect of directionality

has been rejected as the three different agreement structures have been shown to be acquired in different chronological sequences by each of the three individual learners. The next section discusses the effect of discourse cues on the acquisition of agreement morphology in Arabic

2. The effect of discourse cues on the learning of Agreement morphology

2.1. Advanced learners:

The statistical results obtained after testing the effect of discourse cues on the learners' performance in subject-verb agreement have already been reported for both intermediate and advanced students. It has been shown that advanced students performed significantly better in discourse-rich tasks than in discourse-poor tasks in all three instances, i.e. lexical specificity, basic semantic relevance and surface realisation of subject and its continuity in discourse (cf. Givon, 1990).

Not surprisingly, the statistical findings of this study indicate that advanced learners perform significantly better in agreement tasks when discourse cues are available in the passage than when they are not. The importance of context in advanced learners derives from the fact that discourse cues represent an additional source of information regarding the identity and the attributes of the subject. The other source of information is the semantic knowledge of the world that speakers of all languages share about things around them. It is, in particular, in complex agreement patterns that advanced learners have successfully used discourse cues in order for them to cross-reference the appropriate attributes of the 'subject' in question onto the verb

(cf., Fakhri, 1984; Bates & MacWhinney, 1981). Some of these complex agreement relations include clauses where the 'subject' is either 'non-human' or 'collective', in both cases their morphological marking was not equal to their natural semantic attributes. Needless to say, in less complex agreement relations (with human participants) advanced learners did not have difficulties carrying out subject-verb agreement marking. Discourse cues, however, did have a positive effect on the learners' marking of such subject-verb agreement relations.

There is a strong indication that learners of Arabic who have reached a relatively high proficiency level use information not only from the already available semantic structure but also from the discourse structure. Information extracted from the general discourse context consists of what is recoverable from explicit cues as well as from the learners' own perceptual and cognitive interpretation of different discourse referents in a particular context (cf., Bates and MacWhinney, 1981). Learners tend to employ such strategies when confronted with complex structures in the target language in which there is no one-to-one correspondence between forms and their functions in the discourse (Cooreman and Kilborn, 1991). Thus discourse information together with the learner's own perception of the source's identity play a crucial role in allowing syntactic rules to be an efficient processing device (Givon, 1983) in subject-verb agreement.

It remains to be determined, however, whether discourse cues and perception do assist learners with lower proficiency levels in dealing with agreement relations in general, and complex agreement patterns in particular.

2.2. Intermediate students:

The statistics reported in tables (8, 9 and 10) display mixed results with respect to the effect of discourse cues on the intermediate-learners' performance in agreement tasks. Like advanced learners, intermediate learners performed significantly better in tasks where agreement relations were more relevant than in tasks where they were not. This, of course, confirms the hypothesis which predicts that 'semantic relevance' would positively influence the learners' performance in agreement tasks. This finding is in line with the prediction of Bybee (1985; 1991), Andersen (1991) and others, that the more natural the semantic attributes of a lexical item the easier they are to acquire. Bybee (1985; 1991), Slobin (1985) and Andersen (1991) argue that the relevance of inflectional morphology to the meaning of the lexical item, correlates positively with the acquisition of grammatical agreement.[15] Bybee's 'Relevance Principle' is confirmed in this study as learners from all proficiency levels performed significantly better in agreement relations where natural attributes and grammatical choices are equal than in agreement relations where there is a feature mismatch. This phenomenon is similar to what is known as semantic 'boot strapping', a process whereby learners rely on basic natural semantics as their main source of information when negotiating new linguistic input in the target language. Interestingly, it appears that semantic relevance works quite effectively even with low proficiency learners as evidenced in the results reported in this study (table 12). High linguistic proficiency is not a prerequisite for successful learning of agreement relations where the agreement marker reflects the actual properties associated with the head noun in question.

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[15]For more detailed discussion of this principle see Andersen, (1991).

The other discourse cues, lexical specificity and discourse coherence, which require more advanced linguistic skills, did not result in a significant difference in the intermediate learners' performance (see tables 9 and 10). Discourse coherence is only effective when learners have reached a high proficiency level. Such a proficiency level allows learners to locate and identify the subject from the background contextual information. Not surprisingly, a 'subject' that was present in the preceding clause is easier to identify and cross-reference correctly than a 'subject' re-introduced after a long absence, i.e. three or more clauses earlier (cf. Givon 1983). The difficulty is a result of the lack of information on the identity of the referent in the short-term erasable file of the learner.

Pienemann (1994) discusses the complexity of morpheme affixation in second language learning in terms of location of morpheme insertion: insertion of local morphemes which are obtainable from the 'subject' of the same clause as opposed to insertion of non-local morphemes which are obtainable from outside the clause. The theory predicts that local morphemes require a lesser degree of processing complexity than non-local morphemes. In the present study the availability of surface realisation of the topic and its continuity in the discourse is an instance where agreement marking consists of the insertion of a local morpheme since the information regarding the 'topic' is easily accessible within the same clause. For example in the following sentence:

(46) al-laa@ib-uuna   Haqqaq-uu   naSr-an   kabiir-an
     the-player-M.PL-Nom   achieved-3.M.PL victory-Acc big-Acc
     'The players won a great victory.'

the morpheme [-uu] mapped onto the verb (achieve) is considered local since it is

overtly present in the preceding source of agreement (the players). In this particular example the insertion of the morpheme [-uu] is not only locally obtainable but also facilitated by the fact that it is morphologically redundant, i.e. the masculine plural marker [-uu] is present in both the source and the target of information transfer. The insertion of non-local morphemes is more demanding as it requires the identification of the syntactic class of all elements involved not only at clause level but also in the preceding sentences. The identification process is essential for the learner to be able to recognise the source and the target of agreement. Anaphora, as opposed to surface realisation of the subject in the discourse, is one instance where there is insertion of a non-local morpheme as evidenced in the following examples:

(47) @indamaa waSalt-u   kaan-uu   qad   xaraj-uu
     when   arrived-1.SG   was-3M.PL already left-3M.PL
     'When I arrived they had already left.'

(48) naam-uu   qabla an   ta-Sila   layla
     slept-3M.PL before that 3F.SG-arrive Layla
     'They fell asleep before Layla arrived.'

In both examples the identity of the morphemes to be inserted is not locally obtainable. The learner needs to identify the source of agreement from what has already preceded and hence be able to insert the appropriate morpheme in the appropriate slot. High linguistic competence as well as mastery of local morpheme insertion are obvious prerequisites for the accomplishment of this task. Pienemann's (1994) prediction that the insertion of local morphemes is easier and thus will be acquired before non local morphemes is supported in this study as learners performed better in local morpheme insertion when information is held in short term memory

from one internal position (source) to another (target) than they did in non-local morpheme insertion (table 4).

Lexical specificity, although slightly different from surface realisation of the topic and its persistence in the discourse, operates in almost the same way. The information encoded in 'lexical specificity' can only be extracted through the comprehension of extended stretches of discourse and was, therefore, tested in rather long passages (around 150 to 200 words). This task requires high linguistic competence for successful processing of all the additional information. Intermediate students seem to be unable to make use of lexical cues not because of unsuccessful learning strategies but simply as a result of their limited linguistic proficiency. The learners at this particular developmental stage are unable to resort to discourse cues in multi-propositional discourse because such tasks require high linguistic skills not yet at their disposal. The fact that intermediate learners are able to make effective use of cues at the clause level (semantic relevance) while failing to capitalise on those present in longer stretches of discourse prove that contextual information can not be used effectively unless a certain linguistic proficiency has been attained.

In summary, to be able to understand the way in which discourse cues function in regard to the learning of agreement morphology of Arabic, we need to identify the learners' proficiency levels (high vs intermediate vs low), the complexity of the target language input (clause level, i.e. local morpheme vs discourse level, i.e. non-local morphemes) as well as the nature of that input (semantically relevant vs semantically non-relevant).

Learners with different linguistic proficiency levels in the target language appear to

utilise different learning strategies and different information structures when dealing with new grammatical and linguistic input. Obviously, intermediate learners and beginners rely primarily on their semantic knowledge of the world as their prime information structure. This information structure is universally accessible as it relates to the real world. It is this universal semantic knowledge that allows speakers of different languages to classify basic things around them (man, woman, tree etc) into various semantic and classificatory categories as with [± human], [± animate] etc. Semantic knowledge of the world is called upon by SL learners as the main information structure because their limited proficiency does not allow for the use of additional information structures such as discourse cues.

It is against this background that intermediate learners in this study performed significantly better in 'relevant' agreement patterns than they did in 'non-relevant' agreement patterns even in highly contextualised passages where sufficient information concerning the 'source' of agreement had been provided in the discourse. The information exchange between the 'source' and the 'target' of agreement is only facilitated when semantic relevance is prevalent. Advanced students, on the other hand, were able to use discourse information effectively because of their higher proficiency level. Their overall performance in agreement tasks is clearly better than intermediate students because they had two information structures at their disposal: semantics and discourse, whereas intermediate students could only rely on their basic semantic knowledge of the world and, thus, failing to provide complex agreement tokens not represented in 'natural' semantics. Such agreement patterns cause great difficulty to learners because they are semantically language-specific (e.g., grammatical gender in MSA), rather than non-linguistic universals (e.g., natural gender).

In summary, it was found that the availability of discourse cues is generally associated with enhancing the learners' performance in subject-verb agreement. This positive correlation is statistically significant only with advanced learners who are able to utilise contextual information in the insertion of non-local agreement morphemes (cf. Fakhri, 1984). Because this task is cognitively (long term memory information) and linguistically demanding (extended stretches of discourse), it is only natural that it is mastered at late stages of the learning process. Semantic relevance, on the other hand, has a positive effect on the learners' performance in agreement tasks at all three developmental stages though with differing degrees. The following is a schematic overview which summarises the effect of the various discourse cues on the performance of the three groups of learners in subject-verb agreement tasks:

Table (17) displaying the effect of discourse cues:

	Beginner	Intermediate	Advanced
Semantic relevance	67%	85%	87%
Discourse coherence	-----	57%	86%
Lexical specificity	-----	48%	85%

Shaded cells indicate a relatively high level of performance (more than 8 correct answers in every ten tasks) in agreement tasks motivated by information contained in the various discourse cues. Only advanced students have reached this level in all three instances, with intermediate learners reaching it with natural agreement patterns only. Beginners seem to have partially learned the mechanism involved in marking information transfer in Arabic, which may explain their relatively low percentage performance even with semantically relevant agreement relations. Not surprisingly,

for learners at this stage, providing agreement tokens is not aided by contextual information which requires higher linguistic competence as a processing prerequisite. In other words, learners can only process what is readily available to them; discourse cues are, obviously, not available to beginners and thus have no effect on their performance in agreement tasks.

CONCLUSION

This investigation began with the observation that subject-verb agreement in Modern Standard Arabic presents a major problem for foreign learners. In providing possible explanations for this problem, a discourse-based approach to subject-verb agreement was employed, the results of which have already been reported and discussed. The clear advantage of using discourse to account for the learners' problems with agreement is that (i) it offers independent explanations for the learning characteristics and cognitive difficulties associated with various factors affecting agreement encoding, (ii) it presents a hierarchical scale concerning the complexity of agreement structures based on pure linguistic principles, namely the amount and direction of grammatical encoding and (iii) it makes predictions about the nature as well as the order of the acquisition of these structures.

From a cognitive perspective it became clear that the order of acquisition, [Source=Target], [Source>Target] and [Source<Target], reflects the degree of complexity involved in cross-referencing information from the source to the target in different instances of grammatical encoding (Huebner, 1991; Pienemann, 1989). Not surprisingly, the more natural the encoding is the easier the information transfer and hence, the more accessible agreement marking will be to the learners. When the source of information is available to the learner prior to the target, cross-referencing the information is made easier. When information is not readily available in the source cross-referencing is cognitively more difficult as the learners would rely on less explicit resources of identification such as the natural class of the referent.

The statistical results confirm the first hypothesis claiming that directionality of

grammatical encoding would have an effect on the learners' performance in agreement tasks. It is shown that feature concord between the natural attributes of the source and their marking on the target (structure 1) is most important and that this has effect on directionality of encoding where structure 1 is likely to be affected by semantic relevance. The data suggests that learners from all three levels perform significantly better in agreement tasks where semantic relevance is prevalent than in agreement tasks where it is not (cf., Bybee, 1991; Greenberg, 1991).

The second hypothesis concerning the effect of discourse cues has been confirmed at the advanced level with high linguistic competence proving to be a prerequisite for successful utilisation of discourse information. This is not unusual as discourse cues are often included in multi-propositional stretches of discourse which can not be processed by learners of lower levels of proficiency. High linguistic competence leads to awareness of discourse cues which, in turn, leads to more successful information processing and hence easier subject-verb agreement marking.

The fact that there is a lack of statistical significance between structure 1 [Source=Target] and structure 2 [Source>Target] in the performance of advanced learners shows a greater awareness of the discourse rather than the morphosyntactic basis of subject-verb agreement. Advanced learners are able to monitor the morphological marking of the source's features not only on the basis of its natural classification but also on the basis of its interpretation in the discourse (cf., Barlow, 1992). This is why feature mismatch in structure 2 does not significantly hinder advanced learners' performance in providing the appropriate agreement tokens. This also shows that properties inherent to the source, e.g., animacy and collectivity, and their interpretation in the discourse are as important as semantic relevance at later

stages but not important at early stages of acquisition.

The overall findings of this study imply the existence of a hierarchy of agreement acquisition [Source=Target; Source>Target; Source<Target) with structure 1 which involves human referents being explainable not from discourse considerations but from semantic considerations. Structure 2 which involves non-human referents is explainable from both discourse and semantic considerations. Structure 3 which involves collectives is mainly explainable from discourse considerations.

The acquisition of subject-verb agreement in Arabic is quite complex with a number of factors (discourse, semantics and directionality of encoding) affecting the final learning outcome. For this reason the two hypotheses in this study are in fact not independent but rather inter-related. They interact quite clearly at least at the higher levels of proficiency where both directionality of grammatical encoding and discourse cues are utilised by the learners at the time of producing agreement tokens. The two hypotheses are not as inter-related with the lower levels because students at both beginner and intermediate levels were not yet able to use successfully the discourse information because of their limited proficiency at that point in time. High proficiency in the target language is a linguistic prerequisite for utilisation of discourse cues whereas low proficiency acts as a constraint against utilising discourse cues effectively.

The hierarchy of agreement structures demonstrates the fact that each agreement structure is a prerequisite for the acquisition of another. The order in which these structures are acquired is determined by the amount and direction of encoding between the source and the target and the way this relates to mental processing of

grammatical information. The findings of this study are in line with Givon's claim (1990:949) that the order of acquisition of any grammatical structures reflects the order of cognitive complexity of such structures. Structure 3 [Source<Target] is cognitively more complex than structure 1 [Source=Target] because the former requires the mapping of certain features on the target that are not easily recoverable from the source whereas the latter requires the mapping of features that are readily available in the source.

Klein (1991) argues, correctly, that SLA research should not be content with the gathering of an increasing stock of information about acquisition, but more importantly it must lead to the formulation of a general theory of acquisition. This holds for both first and second language acquisition studies. A general theory is important because it uncovers the general principles that govern the acquisition process rather than simply providing a detailed description of the whole process. In this study the analysis of the data has led to the uncovering of two general principles accounting for ESB students' learning of Arabic subject-verb agreement. The first principle relates to the effect of directionality of grammatical encoding on the learning of subject-verb agreement. This principle has led to the establishment of an implicational hierarchy of acquisition where agreement structures are acquired in an order which reflects the complexity degree of directionality of encoding. The second principle relates to the effect of discourse cues on the learners' performance in agreement tasks. It indicates the discourse nature of information processing and agreement marking and highlights the linguistic prerequisites for utilising discourse cues. It remains to be seen whether the same general principles would apply as effectively to the acquisition of other grammatical structures in Arabic and in other languages across the world.

IMPLICATIONS FOR TEACHING:

Although this study does not claim to be a purely pedagogical exercise, it is hoped that its findings may provide useful information about the nature and the processes associated with the acquisition of Arabic grammatical agreement in formal settings. The overall results point out what the learners are able to do at different levels of proficiency. This perspective challenges the traditional view that any grammatical structure can be taught at any time as long as enough teaching and practice are made available to the learner.

This assumption is rejected in favour of an empirically formulated view where learning is conceived as a developmental process in which grammatical structures and morphological paradigms are accumulated in a universally similar pattern (Ferguson, 1984; Eckman, 1984; Greenberg, 1991). The cumulative nature of the learning process assumes that the acquisition of a particular structure, for example agreement structure 2, implies the acquisition of structure 1 but not structure 3. This constitutes strong evidence for learning development which can be a useful pedagogical tool in designing course material and syllabus content for learners with various linguistic levels of proficiency.

This study indicates that more complex agreement structures are learnable only when certain linguistic skills are achieved. This is important because it accounts for the order in which agreement structures are acquired. In other words, each of the three agreement structures has its own linguistic prerequisite without which it is not learnable. This is very significant for second language teachers because it highlights the developmental stages through which learners have to pass before acquiring certain

grammatical structures in the target language.

The hierarchical nature of the acquisition of subject-verb agreement structures in Arabic offers the possibility of determining which particular agreement structure can be taught at what point. It was established that the three subject-verb agreement structures are acquired in the following order: (1) [Source = Target]; (2) [Source > Target]; (3) [Source < Target]. These stages can be useful pedagogically because they establish a reference point for which agreement structures can be taught at a particular stage of the learning process. This reference point, in turn, allows teachers to identify where different learners are positioned in relation to the stages of the acquisition of subject-verb agreement in Arabic as indicated in the hierarchy (cf. Pienemann, 1994).

Learning a foreign language *"has been viewed in an idealised way as a progression from zero proficiency to one hundred percent, full, or native-like proficiency, and it has been thought of as divided into progressive stages"* (Stern, 1983:394). In this study, however, we are not interested in the learners achieving one hundred percent proficiency, instead, we are seeking to understand the nature of acquisition and identify the stages through which agreement structures are acquired. Once these stages are clearly established, one can easily identify which errors are motivated by limited competence and which ones represent simple 'lapses' of performance in Selinker's (1972) terms. The notion of 'error' in this study is not a function of the traditional practice where the teacher's viewpoint of the learner's performance is imposed on the analysis of the data. Instead, 'errors' are considered as evidence of an evolving grammar representing a linguistic system in its own right rather than a distorted version of the target language system. The importance of analysing the

learners' performance in subject-verb agreement marking and the errors the learners make is that it represents an explanatory basis on the source and nature of these errors. In this particular study, errors that are of significant relevance are those motivated by developmental factors, namely the three standardised agreement structures reflecting the developmental stages associated with the acquisition of agreement morphology.

The aim of error analysis is usually to evaluate learners' errors, classify them into categories and then develop effective remedies to improve the learners' chances of overcoming them. The remedies are often introduced through the designing of new syllabus content which reflects the linguistic and mental constraints regarding what is learnable at what point in time (Pinemann, 1989).

This study is an attempt to explain and account for the acquisition of subject-verb agreement in Arabic from the learners' perspective rather than from the perspective of other external factors such as instruction, social context and course material. The effect of these factors is not denied but instead is deliberately left out so that a clear picture of the learning characteristics can be obtained primarily from the learners' perspective. This picture has been gained and the stages of acquisition have been established in terms of agreement structures varying in degrees of complexity.

Once the developmental stages and the learning characteristics have been recognised, one can bring the effects of the other external factors into perspective. This can be done by introducing remedial treatment into course syllabus reflecting the nature and order of acquisition as established in the study. This is a purely applied goal that theoretically-motivated research in SLA can achieve.

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APPENDICES:

Sample(1): Grammatical tasks for Beginners

1. Fill in the blank with the appropriate form of the supplied word. E.g.:

(قابل) ..... الاستاذ طلابه في المكتبة هذه الايام.

يقابل الاستاذ طلابه في المكتبة هذه الايام.

١. زملائي (ترك) ..... المكتبة و(ذهب) ..... لزيارة صديق لهم.

٢. الطلاب لم (فهم) ..... احدى جمل الدرس.

٣. (حضر) ..... الاساتذة غدا اجتماعا هاما.

٤. قلت لاصدقائي: «اين (ذهب) ..... البارحة؟»

٥. (تحدث).....الاستاذة البارحة عن السينما في مصر.

٦. زملائي (كان).....في انتظاري في المطار.

٧. (خرج).......الطالبان من بيتهما كل يوم و (ذهب).....إلى المكتبة
و (درس).......هناك.

٨. الطالبات (عمل).......كثيرا و (درس)......كثيرا.

٩. الاصدقاء (وصل).....إلى بيتي غدا.

١٠. نادية (ساعد).......زميلتها ليلى كثيرا هذه الايام.

Sample(2): Grammatical tasks for Intermediate learners

Fill in the gaps with the appropriate form of the supplied words:

١ . الشباب...........الى حفل عيد ميلاد وفاء .(حضر)

٢ .القطط.........من القفص. (هرب)

٣ .العلب.........(تكسر)

٤ . العرب ....طعاما كثيرا .(اكل)

٥ الاسود ....في الغابات. (عاش)

٦ .المنازل.......من شدة الريح. (تحطم)

٧ . البدو.......على انغام الموسيقى. (رقص)

٨ . العصافير.......من الشمال الى الجنوب. (هاجر)

٩ . المدارس.......ابوابها في شهر مارس. (فتح)

١٠ . ان القوم ....محمدا(شكر)

١١ . الكلاب.......في شوارع المدينة. (تجول)

١٢ . الحقائب ....سالمة .(وصل)

١٣ .الجميع في مصر.......الحفل الموسيقي على شاشة التلفزيون. (شاهد)

١٤ . الارانب.......في المزرعة. (سكن)

١٠ . السيارات.......في الطريق. (سار)

١٦ . كل الناس.......السفرالى امريكا . (اراد)

١٧ . الفئران.......كل الحبوب. (اكل)

١٨ . بعض الطلاب لا ....مصلحتهم. (عرف)

١٩ . الاقارب.......محمدا في المطار . (استقبل)

٢٠ . الاساتذة.......من الطلاب ان يعملوا بِجِدٍّ. (طلب)

٢١ . ...الصبيان الحلوى. (اكل)

٢٢ . ...الاولاد الى الحديقة. (ذهب)

٢٣ . ...الفتيات بعض الملابس الصيفية. (اشترى)

٢٤ . ...الفتيات الصغيرات اكل الحلوى. (احب)

٢٥ ....الاطفال كل الطعام. (اكل)

٢٦ . ...هذا الطعام فتيات عربيات. (طبخ)

٢٧ . ...هذه السجائر ابناء العم منصور . (اخذ)

٢٨ . ...بهذه الجائزة طالبات من استراليا . (فاز)

٢٩ . ...الحبوب عُمال المزرعة. (جمع)

٣٠ . ...الكرة اطفال من الحي الاخر . (سرق).

Sample(3): Cloze test for Intermediate learners

Give the appropriate form of the supplied verbs in the following two texts:

١.

ان العادات العربية و العادات الفرنسية(اختلف)........في امور و (اتفق)
في امور اخرى. اما العرب فانهم (احترم)........دينهم و (افتخر)........
بعاداتهم. ان طرق الحياة في فرنسا لا (شابه)........طرق الحياة في
البلدان العربية. كما ان الناس الذين (عاش)........في فرنسا لا (عرف)
.... طرق الحياة العربية. لذلك فان كل الذين (سمع)........بخبر زواج
مصطفى من كلير لم (وافق)........على ذلك. اما مصطفى و شقيقته
زينب فقد ذكرا ان الاختلافات الشكلية لا(مثّل)........مشكلا كبيرا طالما
ان مصطفى و كلير يفهمان ذلك جيدا.

٢.

بدات العطلة الصيفية و لذلك فان الاولاد لن (بدا)........نشاطهم اليومي
عند شروق الشمس. كما انهم (فرح)........ بانتهاء الموسم الدراسي
و(اصبح)........ ينامون الى ما بعد الساعة ٩ صباحا. ان السيدة صالحة
تعرف ان الاولاد (احب)........ اللعب و (كره)........ الدراسة. اما
البنات فقد (قال)........ انهن (عمل)........طوال السنة الدراسية و انهن
(اراد)........الذهاب الى الشاطئ للتمتع بالراحة. اما الاطفال الصغار فقد
(طلب)........ من ابيهم ان يحملهم في سيارته الى الاسكندرية.
اما السيدة صالحة فقد (جلس)........في المطبخ و (استمع)........ الى
الراديو بينما (جلس)........ الاولاد في غرفة الجلوس و (شاهد)........
التلفزيون. و بعد ان (مكث)........ هناك مدة ساعة (خرج)........ الى
الحديقة للعب. اما البنات فقد(نزل)........الى السوق. و بعد ساعتين
(عاد)........ الى المنزل و قد (اشترى)........ بعض الملابس الصيفية.
و قالت البنات ان بعض صديقاتهن (ذهب)........ الى الشاطئ و البعض
الاخر (سافر)........ الى الخارج و (غيّر)........ من روتين الحياة
قليلا.

Sample(4): Grammatical task for Advanced learners

١. الجميع ــــــ ــــــ أنّ ما قاله الزعيم مهمّ جدّا .

٢. ذكر الكاتب أنّ الساسة ــــــ مصالحهم الشخصيه فحسب .

٣. كلّ العمّلة ــــــ بإضراب عام للحصول على زيادة في الأجور .

٤. الباعة كثيرا ما ــــــ على أرباح كثيرة .

٥. العرب ــــــ على توحيد الأمة العربيّة .

٦. ــــــ المتظاهرون بإطلاق سراح سعد زغلول .

٧. إذا ــــــ المسلمون يعتبرون محمدا خاتم النبيّين فإنّ العرب يعتبرونه بطلهم القومي .

٨. ــــــ الحركات التقدّميّة إلى تبدّل أساسي في نظام العيش .

٩. وإنّما ــــــ الأفراد بما يقدمونه للمجتمع .

١٠. ــــــ الصحفيّون لغة جديدة وهي لغة الشعب .

١١. الصهيونيّون ــــــ في معركة ولم ــــــ ــــــ حربا .

١٢. تبيّن أنّ الضبّاط الأحرار ــــــ بأعمال الفساد والتخريب .

١٣. النساء العربيّات ــــــ لائحة احتجاج على أوضاعهنّ المتردّية .

١٤. قالت زعيمات الثورة أنّهنّ ــــــ لإرساء مجتمع طاهر .

١٥. ــــــ الصحف أنّ السعادة هي في أن ــــــ المرء بنفسه ولا يحتاج إلى أحدٍ .

Sample (5): Cloze test for Advanced learners

١. إملأ الفراغات الموالية مستعملا المفردات التالية:

" قرّر ـ أصبح ـ انقاد ـ عجّل ـ تحوّل ـ جاء ـ شاء ـ نادر ـ اتجه ـ حمل ـ طالب ـ رفض ـ ألقى ـ واصل ـ ركّز ـ وقف ـ لازال ـ كرّر "

كان سعد زغلول وأصحابه ـــــــ ـــــــ من أجل استقلال مصر. وقد ـــــــ ـــــــ الاستعمار البريطاني و ـــــــ بزواله. ونتيجة لذلك ـــــــ ـــــــ السلطات البريطانية عليهم القبض ونفتهم إلى جزيرة مالطة. ولكن تبيّن أن سعد وأصحابه لن ـــــــ للراحة بل سوف ـــــــ حملهم كأنهم ـــــــ ـــــــ في مصر. وما أن ـــــــ ـــــــ إلى مالطة حتّى ـــــــ برقيّة إلى رئيس الوزراء البريطاني ـــــــ فيها المطالب التي ـــــــ من أجلها إلى الجزيرة مالطة.

وبعد شهر في المنفى ـــــــ النبأ بالإفراج عنهم والسماح لهم بالسفر حيث ـــــــ ـــــــ. وفعلا فقد ـــــــ ـــــــ الجزيرة و ـــــــ إلى باريس على متن باخرة. أمّا كيف ـــــــ السلطة البريطانية في مصر من الحجر الشديد إلى السماح لهم بالسفر فخلاصة القول أنّه تحوّل ضروريا ـــــــ ـــــــ بالثورة. أما الجنود البريطانيين فقد ـــــــ أنّهم ارتكبوا خطأ باغتيال الزعيم. وبعد أن ـــــــ ـــــــ لحكم المقاومة المصرية و ـــــــ عاجزين عن تسيير الأمور الداخلية لمصر، ـــــــ منح الشعب المصري استقلاله وحرّيته.

Sample (6): Free composition

إنّ للمجتمعين لمات شبهية بينهسا.
ساسها مختلط من كل شعب مثل اللاجئون
من فيتنام و بعض الدول الأخرة .
ولكن كذلك إنّ الأمريكيين يعتبرون أنفسهم الشرطة
العالمية وأهم الناس قويّاً ونفسيّةً . أما الاستراليون
فأعتقد أنّهم يعيرون أنّ ليس لدى دولتهم دور مهمّ
في السياسة العالمية وليس بنا القوّة للتداخل في
شؤون جيراننا ـ مثل اندونيسيا و ملازيا .
و أظنّ أنّ لكل شعب نفسية مختلفة للأمريكيين
شعور الوطنية الأقوى في العالم اليوم ولكنهم لا يعرفون
معالمات كثيرة عن العالم خارج حدودهم .
في رأيي اختلفت الشعبان اختلافا كبيرا . يعرف
الاستراليون أنّهم بهمن العالم كلّه والأمريكيون يعتبرون
بلدهم العالم كلّه .