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**THE EFFECTS OF GAP POSITION AND DISCOURSE INFORMATION IN
THE ACQUISITION OF PURPOSE CLAUSE CONSTRUCTIONS
BY SECOND LANGUAGE LEARNERS**

MALCOLM A. FINNEY

**Thesis submitted to the School of Graduate Studies and Research
in partial fulfillment of the requirements for the
Ph.D. degree in Linguistics**

Université d'Ottawa/University of Ottawa

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To Minette and Malcolm (jr), the pride and joy of my life.

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TABLE OF CONTENTS	PAGE
ACKNOWLEDGEMENTS.....	i
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
ABSTRACT.....	ix
CHAPTER I: INTRODUCTION.....	1
1.1 Opening Statement.....	1
1.2 Goals of the Dissertation.....	3
1.3 Outline of the Dissertation.....	7
CHAPTER II: GRAMMATICAL THEORY MARKEDNESS AND LANGUAGE	
ACQUISITION.....	12
2.1 Contrastive Analysis Vs. Creative Construction.....	12
2.2 A Critical Period for Language Acquisition?.....	15
2.3 The Theory of Universal Grammar and L1 Acquisition..	18
2.4 Accessibility of Principles and Parameters of UG in	
L2 Acquisition.....	19
2.4.1 Introduction.....	19
2.4.2 UG is <i>not</i> Directly Accessible.....	20
2.4.3 UG is Accessible.....	25
2.5 UG, Parametric Variation and Markedness.....	33
2.5.1 Markedness and Parameter Setting.....	33
2.5.2 Markedness and Parameter Setting in L1	
Acquisition.....	37
2.5.3 Markedness, Parametric Variation and L2	
Acquisition.....	38

2.5.4 The Subset Principle, Markedness and L2	
Acquisition.....	41
2.6 Conclusion.....	44
CHAPTER III: PURPOSE CLAUSE CONSTRUCTIONS AND LANGUAGE	
ACQUISITION.....	47
3.1 The Nature of PCs.....	47
3.1.1 Distinguishing between a PC and a Rationale	
Clause.....	48
3.1.2 Distinguishing between a PC and an Infinitival	
Relative.....	51
3.2 Restrictions on PC Matrix Verbs.....	53
3.3 The Syntax of PCs.....	54
3.1.1 Overt Movement Vs. Covert Operator Movement.....	54
3.3.2 The Derivation of PCs.....	56
3.4 Markedness and PCs.....	58
3.4.1 The Notion of Markedness and the Licensing of	
Object Gap.....	58
3.4.2 Markedness, Proper Government and OPCs.....	60
3.4.3 Control Principle, PCs and Semantic Markedness....	61
3.5 L1 Acquisition and PCs.....	63
3.5.1 Covert Operator Movement and L1 Acquisition.....	63
3.5.2 The Acquisition of PCs.....	65
3.6 PCs and L2 Acquisition.....	67
3.7 Conclusion.....	68

CHAPTER IV: THE EFFECTS OF DISCOURSE INFORMATION IN SENTENCE	
INTERPRETATION.....	69
4.1 Discourse Effects in Sentence Processing.....	69
4.2 The Effects of Discourse Information in the Positing of	
Object Gaps in the Processing of PCs.....	76
4.3 Discourse/Pragmatic Effects in L1 Sentence	
Interpretation.....	79
4.4 Discourse Effects in L2 Sentence Interpretation.....	82
4.5 Conclusion.....	83
CHAPTER V: THE STUDY.....	85
5.1 Introduction.....	85
5.2 Selection of Subjects.....	85
5.3 Hypotheses.....	86
5.4 Experimental Materials.....	89
5.4.1 Experiment I: Actout PCs with Gap/No Gap Lead.....	89
5.4.2 Experiment II: Grammaticality Judgement.....	93
5.5 Procedure.....	96
5.5.1 Actout Experiment.....	96
5.5.2 Grammaticality Judgement Task.....	97
5.6 Predictions.....	98

CHAPTER VI: RESULTS AND DISCUSSION.....	101
6.1 Results.....	101
6.1.1 Actout Experiment.....	101
6.1.1.1 Control Sentences.....	101
6.1.1.2 Experimental Sentences (OPCs).....	105
6.1.1.3 Discourse Effects in the Interpretation of OPCs.....	109
6.1.1.4 Verb Items and Errors.....	111
6.1.2 Grammaticality Judgement Task.....	115
6.2 Discussion.....	126
CHAPTER VII: SUMMARY AND CONCLUSION.....	140
7.1 Summary.....	140
7.2 Conclusion.....	144
7.3 Experimental Design.....	145
7.4 Future Research Plans.....	147
APPENDICES.....	148
Appendix I: Cloze Test.....	148
Appendix II: Actout Experiment.....	150
Appendix III: Grammaticality Judgement Task.....	156
REFERENCES.....	160

LIST OF TABLES

<u>TABLES FOR ACTOUT EXPERIMENT</u>	PAGE
Table 1: Percentages of Correct Control Sentences.....	102
Table 2: Percentages of Correct PCs.....	107
Table 3: OPC Scores (+/- Discourse Bias).....	110
Table 4: Verb Items & Total Number of Errors (DOPCs).....	111
Table 5: Verb Items & Total Number of Errors (POPCs).....	112
 <u>TABLES FOR GRAMMATICALITY JUDGEMENT EXPERIMENT</u>	
Table 6: Percentages & Means of PCs.....	116
Table 7: Percentages & Means of Embedded Wh-Constructions...	117
Table 8: Percentages & Means of Temporal Clauses.....	121
Table 9: Percentages & Means of Purpose-Like Constructions..	124
Table 10: Percentages & Means of Filler Sentences.....	125

LIST OF FIGURES

	PAGE
Figure 1: Percentages of PCs (Actout).....	109
Figure 2: Percentages of Embedded Wh-Constructions (GJ) ¹	119
Figure 3: Means of Embedded Wh-Constructions (GJ).....	119
Figure 4: Percentages of Temporal Clauses (GJ).....	122
Figure 5: Means of Temporal Clauses (GJ).....	122
Figure 6: Percentages of Bias/No Bias (Actout) for DOPCs....	129
Figure 7: Percentages of Bias/No Bias (Actout) for POPCs....	129
Figure 8: Percentages of PCs (GJ).....	131
Figure 9: Means of PCs (GJ).....	131
Figure 10: Percentages of PCs (Actout).....	133
Figure 11: Percentages of PCs (GJ).....	133

¹ GJ = Grammaticality Judgement Task.

ABSTRACT

This study appraises the effects of gap position and discourse information in the acquisition of purpose clause constructions (PCs) by adult native French speakers learning English as L2. PCs are generally of three types in English:

- i. John chose Mary_i [_{CP} [_{IP}PRO_i [_I, to [_{VP}to read]]]]
- ii. John_i chose a book_j [_{CP}⁰_j [_{IP}PRO_i [_I, to [_{VP}to read e_j]]]]
- iii. John_i chose Mary_j [_{CP}⁰_j [_{IP}PRO_i [_I, to [_{VP}to read to e_j]]]]

Experiments in L1 acquisition (Goodluck 1990a, 1991; Goodluck & Behne 1992) reveal children having no problems interpreting a PC with a subject gap only (SPC) - such as (i) - while a PC with an object gap (OPC) - as in (ii) and (iii) - has proved problematic to interpret, generally emerging late in a child's grammar, apparently because of the number of syntactic operations - including operator movement - involved in its derivation (Bach 1982, Chomsky 1982, 1986), plus lexically-specified restrictions on the matrix verb (only a few verbs admit PCs).

There are grounds for hypothesizing a late emergence of OPCs in English for French speakers. An OPC is not allowed in French and, in addition to the restrictions associated with the choice of matrix verb, is considered marked, typologically and semantically, relative to an SPC. Across languages, the presence of an OPC implies the presence of an SPC but not vice versa. An SPC is also argued to be unmarked in that it allows only a gap controlled by

the highest available element in the thematic hierarchy - Theme - and the marked option (OPC) makes allowance for selection of a second argument for an additional gap (Chierchia 1989).

Syntactically, though, only an OPC with a prepositional object gap (POPC), and not one with a direct object gap (DOPC), may be considered marked since prepositions are not proper governors in French. A POPC is thus expected to offer a special challenge initially to French speakers.

L1 acquisition studies argue for children's initial insensitivity to semantic/pragmatic and discourse information in sentence interpretation during the early stages of language development apparently lacking the ability to maximally utilize such information during the early stages of language development (Goodluck 1990b; Stevenson & Pickering 1987). The adult learner, though, is capable of utilizing discourse information in L1, and initial use of discourse information in L2 will support an L2 acquisition theory of adult learners having developed processing capacities that allow them to make early and efficient use of discourse information in L2. Initially ignoring such information will support a view of a parallel between L1 and L2 acquisition.

The primary experimental task comprises a number of actout sentences, including OPCs which are preceded either by a discourse (one sentence) designed to lead the subjects towards anticipating an object gap or by a discourse with no such lead. A supplementary task - Grammaticality Judgement - requires subjects to judge the acceptability of a number of constructions, including PCs.

Results of the actout experiment reveal no problems by both intermediate and advanced French subjects in interpreting SPCs and DOPCs while POPCs prove problematic for intermediate subjects. There are also some marginal effects of discourse information at both levels of proficiency. The Grammaticality Judgement results also reveal more SPCs judged acceptable compared to OPCs, with less POPCs judged acceptable compared to DOPCs at both proficiency levels.

Results reveal initial difficulty interpreting POPCs, providing clear support for the syntactic hypothesis that only constructions considered syntactically (or structurally) marked may create initial learning difficulty in L2 acquisition.

CHAPTER I

INTRODUCTION

1.1 OPENING STATEMENT

In language acquisition research, a lot of attention is focused on the development of a general theory that will explain the processes involved in the acquisition and development of language; a theory that will give an insight into linguistic competence and also into how a language acquirer utilizes linguistic input in generating language. This has not been an easy task, though, especially in second language (L2) acquisition studies, which have produced diverse and often conflicting results since researchers have to take into account a number of variables, including native language interference as well as other social and psychological factors, issues that are less relevant in first language (L1) acquisition.

In the acquisition of L1, the child is believed to be innately equipped with universal principles of grammar - Universal Grammar (UG) - that guide him in selecting appropriate values of parameters adopted by the language to which he is exposed, leading to a successful acquisition with apparently very little or no difficulty (Chomsky 1981, 1982, 1986). The extent to which this is true in L2 acquisition is the subject of much debate. There has been controversy as to whether principles of UG are still available and active in adult L2 acquisition, and, if they are, the extent to which they are accessible. This has raised many questions as to whether the human language mechanisms governing the acquisition of L1 and L2 are the same or different; if different, to what extent.

Some researchers, including Corder (1983) and Krashen (1981, 1985), argue for the full availability of UG in L2 acquisition, maintaining that both acquisition processes are basically the same. Others (Bley-Vroman 1989; Clahsen 1988; Clahsen & Muysken 1986, 1989; Meisel 1991; Schachter 1988), on the contrary, argue that UG is not accessible in L2 acquisition and that the processes involved in L1 and L2 acquisition are fundamentally different. A third group (Flynn 1988; Liceras 1981, 1988, 1989; Phinney 1987; White 1986, 1988, 1989, 1991) acknowledge some role played by UG in L2 acquisition, but suggest that conflicting values of parameters of principles of UG between L1 and L2 and markedness relations between these values could result in difficulty in resetting a parameter from L1 to L2 value.

The consensus in L2 acquisition studies is that it is only parameters for which the option adopted by L2 is considered marked relative to L1 that will be difficult to reset. However, there are a number of forms of markedness (including syntactic markedness) some of which may not bear relevance in L2 acquisition. It is quite plausible to reason that if UG does have an important role to play in language (L1 and L2) acquisition, then only parameter options that violate core constraints of UG - that is, those generating syntactically marked structures - may result in initial difficulty in resetting a parameter from L1 to L2 value.

The effect of the knowledge of a prior language, though, need not be all negative in L2 acquisition. Studies in adult sentence processing (Altmann 1988; Goodluck et al. 1992; Taraban &

McClelland 1988) have revealed an ability by adults to utilize contextual information (or discourse) in processing and interpreting sentences in L1. This ability could be useful to adult L2 learners particularly in the processing and interpretation of difficult constructions in L2.

1.2 GOALS OF THE DISSERTATION

The object of this study was to examine the effects of parametric variation between L1 and L2 and the resetting of a parameter from an unmarked L1 option to a marked L2 option, to determine whether constructions considered marked in any form would be initially difficult to comprehend, or whether only constructions considered syntactically marked (i.e. violating universal core constraints) would pose initial problems to L2 learners. The study further intended to determine whether cognitive capacities developed during the acquisition of L1 would be utilized in the interpretation of marked (and potentially difficult) constructions in L2. These issues are addressed by the study which appraised the acquisition of purpose clause constructions with an object gap in English by adult native French speakers.

There are 3 types of purpose clause constructions in English:

- (1) a. John chose Mary_i [___i to read]
- b. John_i chose a book_j [___i to read ___j]
- c. John_i chose Mary_j [___i to read to ___j]

(1a) is a Purpose Clause construction (henceforth PC) with a gap in the subject position of the subordinate clause that is coindexed with the matrix object. In (1b), the PC contains a gap in the subordinate subject position that is coindexed with the matrix subject as well as a gap in direct object position that is coindexed with the matrix object. (1c), like (1b), is a PC with an object gap except that the gap is the object of a preposition. The object gap in a PC is argued to be derived through covert A' movement of a null operator (0) to pre-sentential position of the subordinate clause, with the operator binding and governing the object gap (Bach 1982; Chomsky 1982, 1986), as in the following:

- (2) a. John_i chose a book_j [_{CP}0_j [_{IP}PRO_i [_{I'} to [_{VP}to read e_j]]]]
 b. John_i chose Mary_j [_{CP}0_j [_{IP}PRO_i [_{I'} to [_{VP}to read to e_j]]]]

There have been studies arguing that constructions involving operator movement are acquired late in L1 acquisition compared to the acquisition of overt Wh-movement (Chomsky 1969; Cromer 1987). With regards to the acquisition of PCs, studies further reveal no problems by children interpreting SPCs while a PC with an object gap (henceforth OPC) emerges late in a child's grammar (Goodluck 1990a, 1991; Goodluck & Behne 1992). This is apparently due to the fact that there are a number of grammatical operations involved in the derivation of an OPC (see (2a) and (2b)) in addition to the fact that there are restrictions on the choice of matrix verbs (only a limited class of verbs are allowed in PCs).

There are reasons to argue for a late emergence of OPCs in an L2 learner's grammar compared to SPCs. An SPC, not an OPC, is allowed in French. For example:

(3) a. Jean a choisi Marie pour lire le livre

(John chose Mary to read the book)

b.*Jean a choisi Marie pour chatouiller²

(John chose Mary to tickle)

c.*Jean a choisi Marie pour lire a

(John chose Mary to read to)

Further, in addition to lexically-specified restrictions associated with the matrix verb, an OPC is marked, typologically, relative to an SPC since across languages, the presence of an OPC implies the presence of an SPC but not vice versa. An OPC is further argued to be marked, semantically, relative to an SPC. An SPC is argued to allow only one gap controlled by the highest available element in the thematic hierarchy - theme - while an OPC, the marked option, makes allowance for a second argument (goal or agent) to be selected for an additional gap (Chierchia 1989).

² The presence of an object clitic occupying the object gap position makes this construction acceptable, though rare, in French. For example:

Jean a choisi Marie pour la chatouiller

An OPC with a gap in direct object position (DOPC), though, does not violate any syntactic constraint, since a verb is a proper governor in French. This is attested to by the fact that French allows direct object movement in other constructions, such as Wh-question formation and Relativization. A preposition, on the other hand, is not a proper governor in French and movement of the object of a preposition is generally not allowed in any construction since the resulting gap is not properly governed. Syntactically then, only an OPC with a prepositional object gap (POPC) could be considered marked, because its derivation violates a universal syntactic constraint on proper government³, and may thus pose a greater challenge to L2 learners compared to DOPCs.

A primary objective of the study, therefore, was to evaluate the acquisition of OPCs in English by native French speakers to determine whether OPCs in general would be initially difficult to interpret or whether only POPCs, which violate a syntactic constraint, would pose initial difficulty in L2.

Studies in L1 acquisition studies also suggest a general insensitivity by children to discourse and semantic/pragmatic information, apparently lacking the ability to maximally utilize such information in the processing of sentences (Goodluck 1990b; Stevenson & Pickering 1987). Unlike children, though, adults have demonstrated sensitivity to contextual information in L1 sentence processing and interpretation (Altmann 1988; Boland et al. 1989;

³ See Hornstein & Weinberg (1981), Kayne (1981) and van Riemsdijk (1978).

Goodluck et al. 1992; Taraban & McClelland 1988). That is, during the course of L1 acquisition, processing capacities are developed which are used in the comprehension and interpretation of sentences. This may prove to be a valuable tool in the processing and interpretation of rare and marked (and potentially difficult) constructions in a second language.

A second objective, thus, was to evaluate the effects of discourse information in sentence comprehension and interpretation in L2 to determine whether adult native French speakers' ability to fully utilize discourse information in their L1 would be exploited in their comprehension and interpretation of OPCs in English, or whether adult L2 learners would be initially insensitive to discourse information, as children are in L1 acquisition.

Lack of the use of discourse information in the interpretation of OPCs during the early stages of L2 acquisition could be interpreted as support for the claim of identical processes involved in the acquisition of both L1 and L2. On the other hand, processing capacities already developed during the acquisition of L1 could be utilized in L2 acquisition, in which case there would be initial use of discourse information regardless of proficiency level in L2.

1.3 OUTLINE OF THE DISSERTATION

Chapter 2 reviews Chomsky's theory of UG and the accessibility of principles and parameters of UG in second language acquisition. The debate continues as to whether such principles are still

available and accessible and the extent to which they are accessible in adult L2 acquisition. The chapter further discusses parametric variation and how markedness relations between options made available by parameters of UG affect the resetting of such parameters in L2. It is argued that if L1 adopts the unmarked and L2 the marked option, there will be initial difficulty in resetting the parameter from the L1 value to the L2 value.

Chapter 3 presents the literature on PCs and other related constructions (e.g. Rationale clauses and Infinitival Relatives), distinguishing PCs from these other constructions. The derivation of PCs is discussed with arguments advanced to support the position that OPCs, and particularly POPCs, are more marked relative to SPCs. Studies on the acquisition of operator movement (including OPCs) in L1 are presented, with results suggesting initial difficulty in the interpretation of such constructions. As in L1 acquisition, the acquisition of OPCs (especially POPC) by adult L2 learners whose L1 does not allow such constructions is also assumed to be late.

Children, it is suggested, may be insensitive to discourse information in interpreting sentences during the early stages of L1 acquisition. Adults though, studies reveal, do utilize such information in sentence interpretation in their native language. Chapter 4 discusses this issue, in an attempt to determine whether there are discourse effects in L2 sentence interpretation, and whether it is restricted to specific constructions and/or limited to certain levels of proficiency.

The study, including the different hypotheses tested, is presented in chapter 5. The primary experimental task comprised a number of act-out sentences, including OPCs which were preceded either by a discourse (one sentence) designed to lead the subjects towards anticipating an object gap or by a discourse with no such lead. In the gap lead condition, the verb in the preceding discourse was the same as the subordinate verb in the following OPC, and was used with a direct object or prepositional object argument depending on whether the OPC was a DOPC or POPC. For example:

(4) DOPCs: i) + BIAS

Sue likes hugging the family
Sue picks Tom to hug

ii) - BIAS

The family likes having fun
Sue chooses Tom to tickle

(5) POPCs: i) + BIAS

Mom likes reading to people
Mom chooses dad to read to

ii) - BIAS

The family likes singing
Mom picks dad to sing to

The typological markedness hypothesis predicted OPCs, in general, to be difficult to interpret, while the syntactic markedness hypothesis predicted only POPCs to be difficult for native French speakers since, unlike English, French does not have a rule that licenses prepositional object gaps. The degree of difficulty was further predicted to correlate with different levels of proficiency.

Discourse effects were also predicted to influence the interpretation of OPCs, though the level at which such effects would be evident would depend on whether processing strategies developed in L1 acquisition are initially employed in L2 acquisition.

A supplementary task - grammaticality judgement - required subjects to judge the acceptability of a number of constructions including OPCs, embedded Wh-constructions with both direct object (DO) and prepositional object (PO) gaps, and temporal clauses, which do not permit object gaps in English (or French). For example:

(6) Purpose Clauses

- a. Kelly picked Dad's red car to drive to school. (DOPC)
- b. David picked a friendly girl to dance with at the party. (POPC)

(7) Embedded Wh-Constructions

- a. Peggy wondered what Paul bought for his wife. (DO gap)
- b. Helen wondered what Bret stepped on in the kitchen. (PO gap)

(8) Temporal Clause Constructions

- a.*Mom drank the milk after pouring in a glass. (DO gap)
- b.*The teacher cleaned the board before writing on. (PO gap)

Results of the actout experiment, presented in chapter 6, revealed no problem at both intermediate and advanced levels in the

interpretation of SPCs and DOPCs, though POPCs proved to be difficult for the intermediate subjects. The data also revealed a marginal effect of discourse information. The grammaticality judgement task revealed SPCs to be judged acceptable most of the time compared to OPCs at both proficiency levels. There was hardly any difference, though, between scores for DOPCs and POPCs. Fewer embedded Wh-constructions with prepositional object gaps were also judged acceptable compared to constructions with direct object gaps at both levels. Subjects at both levels also correctly judged temporal clauses with direct object as well as prepositional object gaps unacceptable almost all of the time.

Overall results supported the hypothesis that SPCs would be easier to interpret compared to OPCs. There was further clear support for the syntactic markedness hypothesis that POPCs would be especially difficult for native French speakers particularly during the early stages of L2 acquisition.

CHAPTER II
GRAMMATICAL THEORY, MARKEDNESS AND
LANGUAGE ACQUISITION

2.1 CONTRASTIVE ANALYSIS VS. CREATIVE CONSTRUCTION

Prior to introduction of UG and its role in the acquisition of language, many linguists (including Lado 1967) subscribed to the view that the acquisition of a second language was greatly influenced by the linguistic properties of the learner's native language; that the sound patterns and syntactic structures of L1 were generally applied to L2 vocabulary, with the implication then that errors and areas of difficulty in L2 would be predictable by a contrastive analysis of L1 and L2. This argument was based mainly on the strong version of the Contrastive Analysis Hypothesis (CAH), which claimed that all Interlanguage (IL)⁴ errors could be predicted by a systematic comparison between the native language and the target language. This hypothesis viewed language acquisition as habit formation: That a set of language habits is developed during the acquisition of L1 which is transferred in an L2 environment; the learner becomes more proficient in L2 by realizing that L1 substitutions are inappropriate in L2, and the substitutions are modified to get closer to the L2 target. A weaker version of this hypothesis made allowance for the influence of other factors but maintained that a significant proportion of L2 errors stemmed from L1 interference. This version however made no prediction as to when and which errors would be made.

⁴ An intermediate grammar between L1 and L2.

The CAH came under severe criticism with the introduction of the theory of Universal Grammar (UG) and the notion of language being rule-governed and a creative process. The lack of predictive powers of the weaker version and the behaviouristic view of the strong version of L2 acquisition as habit-formation and were especially criticized. Further, not all errors in L2 could be attributed to L1 interference. There were some errors (notably overgeneralization) that could not be accounted for by contrastive analysis of L1 and L2. Moreover, most of these errors were common in L1 acquisition, and were also made by L2 learners of diverse L1 backgrounds and ages. This led to the proposal that the mechanisms governing both L1 and L2 acquisition were basically the same (Corder 1967, 1983; Dulay & Burt 1974; Krashen 1981). This approach to L2 acquisition - dubbed the Creative Construction Hypothesis - attributed very little or no impact of prior knowledge of a language on the acquisition of a second language. It viewed language acquisition (L1 and L2) as rule-formation rather than habit-formation; that L2 acquisition, like L1 acquisition, involves the testing of hypotheses and overgeneralization of rules, and that structures in L2 are constructed on the basis of L2 linguistic input alone.

Corder (1967, 1983) argued that errors classified as L1 interference in L2 development are the effects of testing L1 rules and hypotheses to determine those shared by both L1 and L2. L1 rules that are not applicable in L2 may result in initial interference-like errors, but the L2 learner will become aware that

some of these rules are not in operation in L2 and, like the child in L1 acquisition, will revise his hypotheses and rules to conform to L2 input data. Corder concludes that the procedure and strategies adopted in both L1 and L2 acquisition are fundamentally the same, and that, given motivation, acquiring a second language is inevitable if the learner is exposed to L2 data.

Zobl (1980a, 1980b, 1982), like Corder (1967), argues that both adult and child language acquisition basically involve the same process: the activation (or reactivation) of the human language mechanism, with the implication that both proceed through creative reconstruction. This assertion is based on three premises (Zobl 1980b:470):

- i. Structural properties of the L2 which give rise to developmental errors may also activate influence from the learner's L1 when an L1 structure is compatible with the developmental error.
- ii. General language acquisition principles promote transfer when an L1 structure more closely conforms to the linguistic parameters of the developmental acquisition principle than the L2 structure to be acquired.
- iii. Although there is a crucial degree of overlap between developmental and transfer errors with respect to the factors involved in their genesis, transfer errors may prolong restructuring of the rule underlying the error ...

Zobl maintains that errors classified as developmental or transfer in L2 acquisition derive from the same source - developmental processing strategies - and occur only when there is an overlap of developmental and transfer structures. Transfer-like errors, though, may persist in an L2 learner's interlanguage because of similarity between the errant structure and an L1 structure. Unlike Corder, Zobl acknowledges a role played by L1 in that some deviant developmental structures receive reinforcement from compatible L1 structures. This makes it more difficult for the L2 learner to acquire the target structure and may result in fossilization.

Zobl further acknowledges that a parallel between L1 and L2 structures may result in facilitative (positive) transfer. That is, similarities between L1 and L2 structures may help the L2 learner go through the developmental stages more quickly and acquisition of the target structure is facilitated.

Theories of a parallel between L1 and L2 acquisition were also criticized because of the insignificant role they attribute to the influence of L1 in the acquisition of L2, and also because of other proposals advocating a critical period (in terms of age) for the acquisition of language (Lenneberg 1967; Johnson & Newport 1989).

2.2 A CRITICAL PERIOD FOR LANGUAGE ACQUISITION?

The Critical Period Hypothesis (CPH), proposed by Lenneberg (1967), argues that though humans are biologically endowed with the capacity for language, there is a critical period for optimal

acquisition of language, which ends at puberty - a period that coincides with the lateralization of the brain - after which language acquisition is not assured of guaranteed success.

Though the CPH was proposed primarily for first language acquisition, with evidence to support it being drawn from isolated cases in which a first language was being acquired by non-infants⁵, Johnson & Newport (1989) argue that the hypothesis is open to two interpretations (p.64). The first interpretation - The Exercise Hypothesis - implies that if the capacity for acquiring languages is activated prior to puberty, it will remain active for the acquisition of subsequent languages. The second interpretation - The Maturational State Hypothesis - implies that regardless of whether this capacity for language has been activated or not, it declines with maturation until the cutoff point - puberty. The exercise hypothesis predicts no effects of age of acquisition if a language has been acquired prior to puberty while the maturational state hypothesis does.

Johnson & Newport tested the effects of age in the acquisition of different aspects of L2 grammar to determine whether there is a critical period for successful acquisition of a second language. They further tried to determine whether the ability to successfully acquire language gradually declines with age or whether it is

⁵ Isabelle, the child of a deaf-mute, was introduced to language at age six and a half. Within two years she had acquired almost everything a child her age would have acquired. Genie, who was introduced to language at age 14, was much less successful and her competence was short of native-like. See Curtiss (1977) for details.

abruptly cut off after a particular period.

Results of a grammaticality task they administered showed a strong correlation between age and performance in L2. Subjects exposed to English between the ages of 3 and 7 performed almost as well as the native English-speaking controls, and there was a gradual decline from around age 8-10 years. Their results also revealed that L2 learners exposed to English after this age period performed poorer than those with early exposure to English, but there was no significant decline in performance correlating with increasing age of exposure to English.

This, Johnson & Newport conclude, supports the maturation version of the CPH, that the ability to successfully acquire a language declines with maturation (i.e. increasing age). Unlike Lenneberg's proposal that acquisition is guaranteed prior to puberty, they propose that this ability starts declining well before puberty (around age 8-10) and this decline is gradual rather than being abruptly cut off at a specific period.

While there has been evidence of IL errors as developmental, the influence of L1 has still been evident in L2 acquisition. It was also increasingly being acknowledged that adults are not nearly as successful as kids in the acquisition of a second language. A theory was needed, in line with UG and a generative approach, to account for both developmental and transfer-like errors as well as why adults are less successful in acquiring a language compared to children. Recent debates are now focusing on the role of UG in

(especially adult) L2 acquisition, and issues primarily addressed include the availability or non-availability of UG to adults in the acquisition of a second language; if available, the manner or form in which it is available and the extent to which it is accessible.

2.3 THE THEORY OF UNIVERSAL GRAMMAR AND L1 ACQUISITION

The theory of grammar, proposed by Chomsky (1965, 1981, 1982), claims that humans are born with an innate knowledge of universal principles of grammar - Universal Grammar (UG) - that enable a child to acquire any natural human language. Though the grammar of a language is generally very complex, the task of acquisition proceeds with apparently little or no effort, and is completed within a relatively short period. Thus, it seems logical to assume, Chomsky argues, that the child must be born with some innate mechanism that guides him to figure out the rules and principles governing the language of his community.

The child, according to Chomsky, approaches the task of acquiring a language equipped with principles of UG that limit or restrict the range of possible hypotheses during the course of acquisition, and guide him in hypothesizing a grammar for the language he is exposed to; and such a grammar is modified until it is compatible with adult grammar. The theory further predicts a successful acquisition of a first language in spite of the 'poverty-of-the-stimulus' phenomenon - the fact that the child has access to very limited data - and that acquisition progresses only through positive evidence of the existence (and not the non-

existence) of a structure in a language.

The acquisition of such rules and principles is an unconscious process, and every child, irrespective of social, cultural, or educational background, is expected to acquire linguistic competence - an implicit knowledge of the sounds, structures and meanings - of the language to which he is exposed.

2.4 ACCESSIBILITY OF PRINCIPLES AND PARAMETERS OF UG IN L2 ACQUISITION

2.4.1 Introduction

The idea that human beings are born with innate principles responsible for language acquisition leaves open the possibility for adults to be equipped with the capacity for language. A child eventually acquires a complex grammatical knowledge of L1. Adults, to some extent, in L2 acquisition, also arrive at a complex stage in L2 grammar in spite of very limited input data. However, the fact still remains that adult L2 acquisition, unlike L1 acquisition, very rarely results in native-like proficiency. Thus, the child, in L1 acquisition, innately equipped with principles of UG, successfully acquires a language with apparently very little or no difficulty while adult L2 acquisition does not always result in the successful acquisition of the target language.

This discrepancy between child and adult language acquisition has raised a number of questions about the nature of adult L2 acquisition in relation to UG. How similar or different is the human language mechanism for L1 and L2? Are there other learning

principles or systems other than UG that are employed in the task of L2 acquisition? If the adult L2 learner had access to UG in his acquisition of L1, how accessible is UG in his acquisition of L2?

One school of thought adopts the position that UG may be accessible only through L1, and that the adult L2 learner rather employs the use of other learning devices (Bley-Vroman 1989; Clahsen 1988; Clahsen & Muysken 1986, 1989; Meisel 1991; Schachter 1988, 1989). Another school of thought argues for the availability and accessibility of UG in L2 acquisition (Corder 1983; Flynn 1983, 1988; Krashen 1981, 1985; Liceras 1986; White 1988, 1989b, 1991), though the degree of accessibility varies from one researcher to another. Others acknowledge the availability and accessibility of UG to adult L2 learners, but argue that the task of acquisition may be shared by UG and other cognitive learning devices (Adjémian & Liceras 1984; Liceras 1985; Felix 1981, 1985, 1991).

2.4.2 UG is not Directly Accessible

Subscribers to this view argue that UG is not available in its entirety in adult L2 acquisition; that only principles and parameters of UG instantiated in the learner's L1 may be available and accessible in L2 acquisition. Other parameter settings not instantiated in the acquisition of L1 may remain dormant and inaccessible (Bley-Vroman 1988; Clahsen 1988; Clahsen & Muysken 1986, 1989; Meisel 1991; Schachter 1988, 1989).

Clahsen (1988) and Clahsen & Muysken (1986, 1989) propose that L1 and L2 acquisition and development are fundamentally different

because UG operates as a learning device in L1 but not in L2; that L1 acquisition and adult L2 acquisition are guided by distinct sets of principles. They maintain that the Language Acquisition Device (LAD), "a mental organ" responsible for the task of acquisition, guides the child in acquisition in fixing the parameters of UG at the appropriate values in which they are set in the language that the child receives input from, and this results in the acquisition of native grammatical competence. The LAD is however part of the child's biologically determined maturation, and ceases to be effective once the process of maturation is complete. As a result, the value of a parameter of UG not instantiated in L1 acquisition cannot be activated in adult L2 acquisition since parameter setting is a function of UG. UG is available to adults only in terms of accessing parameters already set at L1 values, but is inaccessible in the process of L2 acquisition to adults, who invoke the services of other general learning, nonlinguistic, problem-solving mechanisms. These mechanisms do not have access to UG and are therefore inappropriate for the task of language acquisition, resulting in differential outcomes for L1 and adult L2 acquisition.

This proposal is based on results of a study on the acquisition of word order in German by Clahsen & Muysken (1986). German is an SOV language though some constructions have a superficial SVO word order. The underlying position of the verb is sentence-final, but is moved to sentence-second position in certain environments that can be simplistically characterized as root environments. Children acquiring German as L1 correctly assumed an

SOV word order initially in German, though this assumption was overgeneralized to include constructions in which the verb is supposed to move to sentence-second position. L2 learners with an SVO L1 background as well as learners whose L1 has an SOV word order but without the verb movement rule (e.g. Turkish) initially assumed an SVO word order in German. Verb-positioning, Clahsen & Muysken argue, is determined by principles of UG, and children, guided by these principles, correctly assume the appropriate setting in German. Adult L2 learners, on the other hand, erroneously assume an SVO word order. The unavailability of UG in adult L2 acquisition, they claim, results in difficulty in acquiring the appropriate word order not only for adults with an SVO language background but also for adults with an SOV L1 that does not have the verb movement rule. This is also not the result of transferring the L1 word order into L2 because learners with a Turkish L1 background also initially assume an SVO word order in German. This, they argue, is the result of the use of general learning strategies for the task of language acquisition - a task that they are not specially equipped for.

Clahsen & Muysken (1989) argue that this does not imply that L2 errors are fossilized. At some point in L2 development, with increased proficiency, the learner may become aware of his errors, and may develop an alternate hypothesis or may modify his existing hypothesis by adding new rules to the initial hypothesis. This, they claim, does not involve parameter resetting, and by constant revision of hypotheses, the learner may eventually stumble onto (or

something close to) the correct hypothesis.

The view of the use of other learning devices in L2 acquisition is echoed by Schachter (1988, 1989) who argues that, instead of UG, adults may have a set of cognitive systems which have access to L1 knowledge, and which are used in the task of L2 acquisition, a task that they are not specifically designed for. L1 and L2 acquisition processes, she argues, employ distinct mechanisms, and the differences between the two are very obvious.

L1 acquisition, Schachter points out, generally results in native-like proficiency and a complete mastery of the language, while the vast majority of L2 learners, no matter how proficient, stop short of complete success and native-like competence. L2 speakers, Schachter argues, rather than attaining grammatical competence, attain communicative capability - the ability to communicate "needs, desires, opinions, attitudes, and to understand those of others" (p.224). If the same mechanisms are involved then L2 acquisition should be as complete and as successful as L1 acquisition. In addition, L1 acquisition is fairly constant in terms of manner and rate of acquisition regardless of language type, and social/educational background, while there is a large degree of variation in L2 acquisition, in relation to language type, degree of success, and amount of time spent in acquisition.

The L2 learner also has prior knowledge of a language - L1 - which may facilitate or hinder production in L2 depending on the similarities and differences of parameter setting adopted by L1 and L2. Where parameter setting is the same, acquisition may proceed

faster, while conflicting settings of a parameter may result in a setback. In addition, fossilization generally occurs in L2 acquisition - the recurrence of errors (phonological, grammatical, etc.) in a L2 learner's speech that the speaker seems incapable of overcoming - a phenomenon that is non-existent in L1 acquisition.

A similar position is adopted by Bley-Vroman (1989:50), who proposes the Fundamental Difference Hypothesis that "the function of the innate domain-specific acquisition system is filled in adults ... by ... native language knowledge and by a general abstract problem-solving system". He asserts that in L1 acquisition, the language acquisition device contains principles of UG and a definition of possible grammar, and a way of arriving at a grammar based on available data. In L2 acquisition, however, principles of UG are no longer available to the learner, but may be reconstructed by an observation of L1, and the learner may further presume certain features of L1 to be universal. That is, a kind of "surrogate" (p.52) for UG is constructed from knowledge of L1.

Meisel (1991), like Clahsen (1988), Clahsen & Muysken (1986, 1989), and Schachter (1988, 1989), supports the view of adult L2 learners invoking the services of some language device other than UG when faced with the task of acquisition. He proposes that humans are equipped with a "Language Making Capacity" of which UG is an important part in the acquisition of L1 but argues for the existence of another learning device - "a language-specific learning system". This system is distinct from, but related to, UG, and is also designed for the processing of linguistic input,

since it contains "developmental principles and acquisitional strategies" (p.242). The difference between L1 and adult L2 acquisition is that the child has access to both UG and the learning system, while the adult has access to only the learning system. UG, Meisel argues, is responsible for implicit knowledge of the formal properties of a possible human language while the other learning system comprises language-specific operating principles and guides the learner in devising language-specific strategies that enable the L2 learner to acquire some knowledge of L2 grammar. These operating principles, unlike principles of UG, do not constrain the range of possible hypotheses that the learner may formulate, and is responsible for the great degree of variation in the pattern of L2 errors.

2.4.3 UG is Accessible

Proponents of this position argue for the availability and accessibility of principles and parameters of UG in adult L2 acquisition, though opinions vary as to the degree of accessibility of such principles and parameters.

Corder (1983) proposes that L2 acquisition involves a process of forming and restructuring rules and hypotheses (including those of L1) until the target form is acquired. The starting point for L2 acquisition, Corder maintains, is UG as is evident in a large number of pidgin-like errors (absence of morphological markings, copula, auxiliaries, articles, etc.) during the early stages of L2 acquisition, typical of errors in L1 acquisition. What is generally

referred to as "transfer" or "interference" errors, Corder argues, are simply "borrowings" - a communicative strategy - utilized by the L2 learner to convey information that he is incapable of expressing using L2 rules because of low proficiency in L2 at that point in time. Rather than a "learning process", he claims that this is a "performance phenomenon" (Corder 1983:92) that gradually disappears with increasing proficiency. He does acknowledge some influence of L1 but only in the rate or speed of acquisition of L2.

Krashen (1981, 1985) argues that principles and parameters of UG are readily available and utilized in the acquisition of L2 as it is in L1 acquisition, and there is no serious influence of knowledge of L1; that negative influence of L1 in the acquisition of L2 is mostly evident in a foreign environment, that is, the acquisition of a *foreign* language. Second language acquisition in a natural environment, he argues, is not significantly affected by the influence of L1. He proposes the Input Hypothesis (Krashen 1985:3) that:

Though there may be individual variation 'on the surface' ... deep down, the 'mental organ' for language produces one basic product, a human language, in one fundamental way.

Krashen argues that L1 may be substituted for L2 as an "utterance initiator" (Krashen 1981:67), when the L2 learner, during the early stages of acquisition, is compelled to produce structures that his linguistic competence in L2 is yet incapable of generating. L1 interference is thus an indication of very low proficiency, compared to the "silent period" sometimes observed in

child L2 acquisition. L1 interference, according to Krashen, becomes less evident with increasing proficiency in L2.

Other researchers (Adjémian & Liceras 1984; Flynn 1983, 1988; Liceras 1981, 1985, 1986; White 1988, 1989b; Zobl 1983) acknowledge the availability of UG in adult L2 acquisition, though they stop short of claiming that the processes of L1 and L2 acquisition are identical.

Flynn (1983) points out that the fact that human beings are born equipped with innate principles of grammar responsible for language acquisition implies that adults are innately endowed with the ability to acquire a language. She acknowledges, though, that the end results of L1 and L2 acquisition are not always identical; while the child is guaranteed of a successful acquisition the adult is not. Flynn therefore suggests that though adults may have access to principles of UG, there is the possibility of some of these principles becoming inactive over time, similar to some biological phenomena in human beings.

Though it is generally acknowledged that there is a wide degree of variation in terms of success and length of acquisition in L2 acquisition, and that unlike L1 acquisition, the acquisition of L2 stops short of native-like proficiency, some researchers (including White 1988, 1989b, 1991; Zobl 1983) maintain that the L2 learner's attained linguistic knowledge far surpasses his input data, and some L2 learners do acquire a reasonably high level of L2 grammar within a relatively short period. That is, there is no balanced relationship between level of L2 proficiency and input

data, and the fact that adult L2 learners, like children in L1 acquisition, are capable of developing a complex grammar from limited input data could be interpreted as evidence of some role played by UG in second language acquisition. The poverty-of-the-stimulus phenomenon in L1 acquisition maintains that the child eventually attains the complex linguistic competence of an adult in spite of limited input data. This, according to White (1988:145), can be equated to what she dubs "the L2 Projection Problem" - that the L2 learner likewise attains a complex knowledge of the language in spite of being exposed to very limited data.

White (1988) conducted an experiment in which she appraised sensitivity to UG constraints (including subadjacency) in English by adult French native speakers. Subadjacency, a constraint on movement, restricts the number of bounding nodes that a moved element can cross to only one, where bounding nodes are NP, PP, and S in English, and NP, PP, and S' in French. Results of White's experiment reveal that native French speakers with higher levels of proficiency in English demonstrated sensitivity to what constitute bounding nodes in English, an indication of the operation of UG in adult L2 acquisition.

White (1991) further maintains that processing strategies reflect the learner's performance (use of language) rather than competence (the creation of a grammar). According to White, the conclusion by Clahsen & Muysken (1986) that UG is inaccessible to adult L2 learners is based on the false premise that processing strategies adopted by their adult L2 learners was a reflection of

their competence in L2; that Clahsen & Muysken erroneously assume that production and comprehension are guided by the same principles. Production errors do not necessarily imply lack of comprehension, because the underlying grammar generating the different structure with regards to word order may have been internalized while production may have been delayed.

Prior knowledge of L1 by the L2 learner, White acknowledges, rules out an identical process operating for both L1 and L2 acquisition. While the role of UG is direct in L1 acquisition, the relationship between UG and L2 may be mediated by L1 in L2 acquisition. She concludes that to claim that UG is inaccessible in L2 acquisition or that both processes are identical is misleading because there are similarities as well as differences between L1 and L2 acquisition. It is however important to note that the role of UG is just one component, interacting with other factors in acquisition theory, and the lack of success in L2 acquisition may be the result of the influence of these other factors rather than the nonexistence of UG.

Felix (1988), like White, decided to empirically test whether adult L2 learners still have access to principles of UG such as the ECP, Binding Principles, Subjacency, and Case Assignment, which have parameters set at different values for different languages. His assertion was that an adult L2 learner faced with conflicting values of a parameter between L1 and L2 will be able to reset the parameter at the value appropriate for L2 grammar only if they have access to principles of UG. He tested the intuitions of native

German speakers who acquired English as L2 about the grammaticality of such constructions in English some of which have parameters set at confliction values for English and German.

The judgements of the subjects suggest knowledge of the values of the parameters in English even when they conflict with values in German which, Felix concludes, can only be attained through access to UG since they are not explicitly taught in classrooms, and cannot have been transferred from L1.

Though Felix (1985, 1988) argues for the availability of principles of UG to adult L2 learners, he acknowledges that L1 and L2 acquisition do not proceed in the same manner. He claims that L1 acquisition is guided by a Language-Specific Cognitive System (LSCS) which contains abstract principles of grammar that guide the child in selecting the appropriate values of parameters operating in L1. The task of this system is specifically restricted to the processing of linguistic data during the course of acquisition. Felix further proposes another cognitive subsystem - the Problem Solving Cognitive System (PSCS), whose primary function is general problem solving tasks. This system is fully developed in adults and competes with the LSCS in adult L2 acquisition. The adult, unfortunately, is incapable, consciously or unconsciously, of excluding this system from the task of acquisition. That is, an inappropriate system is partially utilized in a task that it is not specifically suited for, and is responsible for the disparity between L1 and L2 acquisition.

Felix (1991) concedes that UG may be accessible in both L1 and L2 acquisition, but that it "operates in different ways and under different limitations in these two types of learning processes" (p.96). He suggests that, in adult L2 acquisition, UG may be accessible in some domains but not in others; in effect, UG is only partially accessible to adults learning a second language. Where UG does not operate, he maintains, the target rules generating a particular structure in L2 are not acquired, and fossilization occurs. Principles that reveal more abstract and invisible properties of a language (e.g. ECP or Subjacency) may be accessible in adult L2 acquisition, while structural domains "in which surface structure clues tend to obscure deeper regularities " (Felix 1991:99), such as word order, may not be accessible.

Tsimpili & Roussou (1991), like Felix (1991), support the view that only some aspects of UG may be available to the adult language learner. They take a new approach to parametric variation and adopt the proposal (after Borer 1983) that parameters are associated with lexical items, specifically functional categories, rather than with principles of UG. They argue that functional categories form an independent component of UG - the UG lexicon (p.151), and that it is this component, not principles of UG, that becomes inaccessible to the adult L2 learner. This nonetheless implies that parameter-resetting is absent in L2 acquisition. Parametric variation between L1 and L2 will result in the transfer of the L1 value to L2, at least in the initial stages of L2 acquisition, since the UG lexicon, responsible for parameter-

resetting, is not accessible to adults. The eventual adoption of the correct L2 value at an advanced stage in L2 acquisition is attributed to the "general learning mechanisms correctly analyzing the input data" at that stage (Tsimpli & Roussou 1991:152). Principles of UG, they maintain, are available and utilized in L2 acquisition, and they make allowance for grammatical options not present in the L1 grammar to be adopted by the L2 learner.

This proposal, Tsimpli & Roussou claim, accounts for the deficiency in L2 acquisition - that is differential rates in acquisition and levels of proficiency - and also for the similarities between the processes of L1 and L2 acquisition in relation to principles of UG.

The proposals of Felix (1991) and Tsimpli & Roussou (1991) are different in one major aspect. Felix makes allowance for the accessibility of some principles and parameters associated with UG in adult L2 acquisition which does not rule out the resetting of values of parameters in instances where L1 and L2 have adopted different values. Tsimpli & Roussou, on the other hand, maintain that principles of UG are inaccessible to the adult language learner thus ruling out parameter-resetting in the acquisition of L2 by adults.

The idea of other cognitive learning devices being involved in the process of L2 acquisition is supported by Adjémian & Liceras (1984) and Liceras (1985, 1988) who propose that the organization of the L2 learner's IL may involve an interaction of UG and other cognitive capacities of the learner - such as attained linguistic

knowledge and metalinguistic abilities - which may influence the resetting of a parameter in case of parametric variation.

Liceras (1985, 1988) conducted an experiment involving the acquisition of restrictive relativization and extraction of an NP dominated by a PP by native English speakers learning Spanish as L2. She argues that the learners' attained linguistic knowledge gives them the ability to make a systematic comparison between the target construction and the same type of construction in other languages (including L1) that they have knowledge of. For example, they are aware of the two options (pied piping and preposition stranding) for Wh-movement allowed by English and maybe knowledge of obligatory pied piping in other languages (eg. Portuguese, French, Italian) as it is in Spanish.

The subjects' judgements of restrictive relativization in Spanish, Liceras suggests, may also be influenced by the metalinguistic ability to make a systematic comparison between the target construction (non-oblique relativization) and other related syntactic construction (eg. free relatives) in the target language (Spanish) as well as other languages known by the learner. These factors, Liceras concludes, all have a part to play in the interpretation of sentences in a nonnative language.

2.5 UG, PARAMETRIC VARIATION AND MARKEDNESS

2.5.1 Markedness and Parameter Setting

The concept of markedness and parameter setting is often linked with Chomsky's theory of Universal Grammar (UG), and the

notion that human beings are born with an innate knowledge of universal principles of grammar and are predisposed to acquire any natural human language. According to Chomsky (1982:3-4), the theory of UG is based:

on a number of fundamental principles that sharply restrict the class of attainable grammars and narrowly constrain their form, but with parameters that have to be fixed by experience. If these parameters are embedded in a theory of UG that is sufficiently rich in structure, then the languages that are determined by fixing their values one way or the other will appear quite diverse, since the consequences of one set of choices may be very different from the consequences of another set ...

Contrary to the previous assumption that universal principles were invariant across languages, Chomsky (1986) maintains that UG comprises various subsystems of principles most of which are associated with parameters that may vary from one language to another and are fixed by experience. That is, some principles may have a limited number of options made available by UG, and languages may employ one option or another.

Fixing the parameters of UG in one of the available options leads to the development of core grammar which is what a language ideally should conform to. UG however makes allowance for the extension of core grammar to a "periphery", which contains rules that relax core grammar constraints, and constitutes elements in a language that are not accounted for by core grammar. Core grammar rules are expected to generate structures that are preferred and optimally accessible. Such structures are considered "unmarked" and do not violate universal syntactic constraints. Peripheral

grammar is argued to generate "irregular" constructions or structures that may violate core constraints but are made acceptable in a language as a result of the application of marked language-specific rules. That is, according to syntactic markedness, therefore, marked and unmarked structures are determined by complexity of structures in relation to universal constraints.

The association of unmarked and marked structures with core grammar and peripheral grammar respectively may not always be as clear cut, as suggested by Liceras (1988), who argues for two possible interpretations of syntactic markedness. According to incore markedness, both unmarked and marked options are generated by core grammar and L1 learners may therefore not be aware of the marked status of the marked option. An outcore notion of markedness implies that only the unmarked option is generated by core grammar. In terms of L2 acquisition, incore markedness predicts that if both unmarked and marked options are present in L1 grammar, both forms may be initially assumed in L2 grammar since no extra mechanism was required to generate the marked form during L1 acquisition. Conversely outcore markedness predicts that if both options are present in L1, since the marked option is generated by additional non-core grammar rules, positive evidence of its existence was required during L1 acquisition. The L2 learner may therefore be aware of its marked status and only the unmarked may be initially assumed in L2.

Syntactic markedness should also be distinguished from other notions of markedness in which unmarked and marked items are not necessarily generated by core and/or peripheral grammar. One such notion of markedness generally discussed in L2 acquisition research is an implicational series in which unmarked options are believed to be present in the grammar of almost every language and marked options are adopted by fewer languages. This is a typological definition of markedness which considers an item more marked relative to another item if its presence in a language implies the presence of the other item, but not vice versa. In terms of L2 acquisition difficulties, only areas of L2 which differ from L1 and are more marked than L1 will be difficult. Areas of L2 that are different from L1 but are not more marked should not be difficult.

Typological markedness is thus determined by presence/absence of a structure in a language or among languages, or frequency of use across languages and not necessarily with complexity of syntactic structure. It is different from syntactic markedness, by which unmarked structures obey universal grammatical constraints, as opposed to marked structures which violate some core syntactic constraints, but can be accounted for in a language through the application of peripheral language-specific rules.⁶

The different notions of markedness have often been used in L2 acquisition studies to predict the order of acquisition, possible areas of difficulty in L2, and the probability of transfer in L2

⁶ See Rutherford (1982) for a discussion on other forms of markedness including discourse and psycholinguistic markedness.

acquisition. The general trend is for the marked option to be considered more restricted and more difficult to acquire compared to its unmarked counterpart, and for the probability of transfer to be higher for marked than for unmarked options.

2.5.2 Markedness and Parameter Setting in L1 Acquisition

Chomsky (1981, 1982, 1986) proposes that the child approaches the task of language acquisition equipped with principles of UG and an associated theory of markedness which serves two functions (Chomsky 1982:8):

It imposes a preference structure on the parameters of UG, and it permits the extension of core grammar to a marked periphery. Experience is necessary to fix the values of the parameters of core grammar. In the absence of evidence to the contrary unmarked options are selected.

The claim thus is that the child in L1 acquisition is predisposed to initially assume the unmarked option of a parameter, in spite of evidence of the marked option in the language, since the unmarked value is considered more accessible. The marked option will later be acquired after positive evidence of its existence in the language.⁷ The implication then is that the marked option of a parameter will neither be realized before nor at the same time as the unmarked option. That is, the marked option is expected to emerge late in a child's grammar. The issue thus in

⁷ Some parameters of UG may have options that could be said to be mutually exclusive in the sense that one option does not subsume the other.

language acquisition is not one of acquiring rules, but of fixing parameters appropriate for the language in question.

2.5.3 Markedness, Parametric Variation and L2 Acquisition

According to Chomsky (1981, 1982), the choice of options made available by some parameters of UG may differ from one language to another. The L2 learner may be confronted with conflicting values of a parameter, if his L1 and the target language have adopted different options of that parameter, and it has been suggested that parametric variation between L1 and L2 and markedness relations may affect the initial setting of parameters in L2, and this may be a source of difficulty in L2 acquisition (Flynn 1988; Liceras 1981, 1988, 1989; Phinney 1987; White 1986, 1988, 1989b, 1991).

Flynn (1988) proposes that L2 learners initially assume principles of L1 in constructing L2 grammar. Where the principle involves parameters with a number of options, differences in the values selected by L1 and L2 are recognized during the early stages of acquisition. Where L1 and L2 adopt the same value of a parameter, acquisition is facilitated; where different values are adopted, acquisition is initially disrupted, and the L2 learner later eventually assigns the value appropriate for L2 grammar. According to Flynn, difference in parameter value between L1 and L2 does not result in perpetual difficulty in adopting the L2 value. The acquisition of the L2 value is delayed only temporarily for the L2 learner to become aware that a new value has to be assigned that conforms to L2 grammar.

White (1986, 1988, 1989b) maintains that where L1 and L2 have adopted conflicting values of a parameter, there is evidence of some of these parameters being reset in L2 acquisition, contrary to the notion that UG is not accessible in adult second language acquisition. She proposes that where L1 and L2 adopt different values of a parameter, there will be transfer of the L1 value until the learner realizes, on the basis of L2 data, that the L1 setting is not appropriate. Where L1 has the marked setting and L2 the unmarked, the marked form may occur and even persist in early interlanguage, since the learner may not immediately notice its absence in L2 grammar.

Phinney (1987) and Liceras (1989), on the contrary, argue that if L1 adopts the marked value, and L2 the unmarked, the initial assumption is not necessarily unmarked. However, evidence of the unmarked setting will be readily available in L2 input data, and its acquisition will proceed without much difficulty. Conversely, resetting the parameter from the unmarked value in L1, to the marked value in L2 will result in difficulty and delay in acquisition.

The assertion, though, that acquisition of a difficult and late acquisition of a marked L2 value was not supported by results of an experiment conducted by Liceras (1988) involving the acquisition of nonoblique relativization in Spanish by adult native English speakers. In nonoblique relativization, English has the option of using the complementizer *that* or a relative pronoun (*who(m)*, *which*) or a null relative ($\emptyset$). In Spanish, the use of the

complementizer *que* is obligatory. Liceras argues for a universal rule of deletion in COMP; that after a Wh-phrase is moved to the left of the complementizer in relativization, elements in COMP may freely delete. This free (optional) deletion in COMP is argued to be unmarked since it is a universal rule generated by core grammar. Spanish adopts the marked form - obligatory deletion - followed by insertion of the complementizer *que* (an obligatory process also). In the acquisition of nonoblique relativization in Spanish, Liceras's results show that obligatory *que* is initially assumed by native English speakers.

Further experiments by Liceras (1988) on the acquisition of extraction of an NP dominated by a PP in Spanish by adult native speakers of English produced a similar result. Extraction of an NP dominated by a PP (preposition stranding) is argued to be marked, syntactically, relative to extraction of the entire PP (pied piping) since the former violates a universal syntactic constraint (Hornstein & Weinberg 1981; Kayne 1981; Van Riemsdijk 1978). Both options are allowed in English while pied piping is obligatory in Romance languages (including Spanish). If the unmarked setting is initially assumed in L2, then native English speakers, regardless of the options available in English, should initially and rightly assume only pied piping in Spanish. Results, Liceras claims, did not support this assumption. In spite of its marked status and absence in Spanish, about half the total of beginner English subjects judged sentences with stranded prepositions in Spanish acceptable about 40% of the time.

Her results, Liceras concludes, support an incore notion of markedness; that native English speakers are not aware of the marked status of preposition stranding and the initial assumption is that both options (pied piping and preposition stranding) are allowed in Spanish. Outcore markedness would have predicted an initial assumption of the unmarked option only - pied piping - which would have been confirmed by the input data.

2.5.4 The Subset Principle, Markedness and L2 Acquisition

The subset principle suggests that the acquisition of values of parameters is associated with the theory of markedness and a subset/superset relationship between values; that is, the values are arranged in a markedness hierarchy with the most restricted subset being the least marked and each successive set requiring additional information for the parameter to be set (Berwick 1985; Wexler & Manzini 1987).

According to the subset principle, if value X of a parameter is contained in value Y, then there is a subset/superset relationship between X and Y, with X being a subset of Y; that is, every concept that X contains is contained by Y, but not vice versa. In terms of markedness hierarchy, X, the more restricted value, is the unmarked setting and Y is the marked.

In terms of language acquisition, Berwick (1985) proposes that the acquisition procedure initially selects the most restricted possible language that is consistent with available input; that is, the narrowest (unmarked) value of a parameter is initially

hypothesized. Thus, if the unmarked option is initially assumed, but the language adopts the marked option as well, there will be positive evidence of structures generated by the marked option that are not present in the unmarked option. Initially assuming both unmarked and marked values will require negative evidence (i.e. overt correction) to become aware that certain structures generated by the marked option are not present in the language. The implication, in terms of L1 acquisition, is that the unmarked option, the more restrictive of the two values, has to be initially assumed, for acquisition to proceed without any influence of negative evidence, since L1 acquisition is argued to proceed only through positive evidence. The Subset Principle, Berwick thus maintains, is a necessary condition for *positive evidence only* acquisition.

Predictions of the subset principle in L2 acquisition become complicated because of the fact that an option of a parameter has already been adopted by L1, which may include the superset (or the marked) value. The L2 learner may project one of two hypotheses. He may completely ignore the L1 value and proceed developmentally, as in L1 acquisition, in assuming the most restrictive set - the subset - until there is positive evidence of the superset in L2. Conversely, he may initially assume the L1 value, regardless of the L2 value.⁸ If the first hypothesis is assumed by the L2 learner, acquisition will proceed naturally from the subset to the superset.

⁸ A third possibility is that the L2 learner may assume a value not predicted by the subset principle and not adopted by either L1 or L2, but is constrained by UG (see White 1989b).

The same result will be achieved if L1 adopts the subset and the learner assumes the second hypothesis. If L1 adopts the superset, however, and L2 the subset, there will be conflict and negative evidence will be required to reset the parameter from the superset to the subset. Results in subset/superset relationship in L2 acquisition studies however support the second hypothesis (Liceras 1988; White 1989a; Zobl 1988).

Liceras (1988), discussing extraction from within a PP, points out that, in terms of a subset/superset relationship, L2 learners of Spanish should have initially assumed the subset (unmarked) value - pied piping only. This prediction is not supported by her results. A large number of native English speakers in the beginning stages of learning Spanish as L2 initially assumed the superset (i.e. both pied piping and preposition stranding).

Zobl (1988) also found no evidence of the operation of the subset principle during the early stages of the acquisition of English by native Japanese speakers. English, a configurational language, has a strict word order hierarchy with the requirement that a verb c-commands its arguments. In addition, English further obeys the strict adjacency condition that nothing should intervene between the verb and its arguments. A nonconfigurational language like Japanese, however, has free word order with no c-commanding restriction between the verb and its arguments. A configurational language, with more constrained and restrictive requirements, adopts the subset of the configurationality parameter while a nonconfigurational language, with more relaxed conditions, has the

unmarked. Results of Zobl's experiment reveal that Japanese speakers initially assumed the superset - a nonconfigurational type of VP - with the subset eventually acquired as a result of increasing evidence that it is the form adopted by English.

Similar to Zobl's (1988) experiment, White (1989a) studied the subset principle and the adjacency condition in L2 acquisition. English adopts the subset - strict adjacency - which is obligatory and more restrictive while French adopts the superset which allows both adjacency and non-adjacency. In White's experiment, French subjects, in the early stages of L2 acquisition, accepted sentences that obey as well as those that violate strict adjacency.

L2 learners, the above experiments suggest, do not necessarily initially assume the subset and are likely to assume the value adopted by L1, thus rendering the subset principle inapplicable in L2 acquisition. The parameter, however, may be reset from the superset to the subset value which cannot be achieved by positive evidence, since this involves the learner noticing the *absence* of a structure in L2. That is, unlike L1 acquisition which is argued to proceed only through positive evidence, the adult L2 learner apparently benefits from negative evidence as well.

2.6 CONCLUSION

To conclude that the processes involved in L1 and L2 acquisition are identical will be ignoring some shortcomings in L2 acquisition such as fossilization, and the wide degree of variation in length of, and eventual success in, acquisition. On the other

hand the claim that the mechanisms governing L1 and L2 acquisition are fundamentally different will be precluding the fact that adult L2 learners have demonstrated sensitivity to some UG constraints applicable in L2 but not L1. Thus while the two processes cannot be claimed to be identical, there is evidence of a number of similarities. L1 and L2 acquisition may derive from the same source - UG - and differences may arise in the setting or resetting of parameters. Whereas the child has to rely on positive evidence from his input data, the adult L2 learner is already familiar with values of some parameters adopted by his L1, and acquisition may be facilitated or impeded depending on whether L1 and L2 adopt the same value or conflicting values of a parameter.

Knowledge of a prior language (L1), thus, may facilitate acquisition in areas where L1 and L2 adopt the same value of a parameter. In addition, cognitive capacities developed during the course of L1 acquisition, may be available and utilized in the processing and comprehension of sentences in L2.

In adult L2 acquisition, then, the learner, unlike the child in L1 acquisition, had already internalized a grammar - L1 grammar - with parameters set at the appropriate values for L1. In the acquisition of L2, he may be faced with some parameters whose values conflict with those of L1. He may initially ignore the values adopted by L1 and adopt the L2 values based on evidence of their presence in the input data, or he may assume that the values of parameters in L1 are the same in L2. Further, on the realization that some parameters are set at different values in L2,

the crucial question is whether he will proceed with acquisition of the L2 values without any further difficulty, or whether parametric variation and markedness relations between options selected by L1 and L2 may result in difficulty in the acquisition of the L2 values.

The consensus in L2 acquisition studies is that acquisition will be late and difficult if L2 adopts the marked option of a parameter and L1 the unmarked. This is however primarily applicable to syntactic markedness and may not be relevant to other notions of markedness by which a structure considered marked does not necessarily violate universal constraints, and does not require a parameter of UG to be reset to include the marked value. If UG has an important role to play in acquisition, then it is plausible to conclude that only marked structures that violate core UG constraints, structures that require resetting a UG parameter, may be initially difficult to acquire.

CHAPTER III
PURPOSE CLAUSE CONSTRUCTIONS AND
LANGUAGE ACQUISITION

3.1 THE NATURE OF PCs

A PC generally contains one obligatory gap - at subject or object position. If it contains two gaps, the obligatory gap has to be in object position. In the following PCs⁹:

- (9) a. John chose Mary_i [___i to read]
 b. John_i chose a book_j [___i to read ___j]
 c. John_i chose Mary_j [___i to read to ___j]
 d. John chose a book_i [for Mary to read ___i]
 e. John chose Dave_i [for Mary to read to ___i]
 f. *John chose a book [for Mary to read it]
 g. *John chose Mary [for Dave to sing to her]

(9a) contains a subject gap only, while (9b) and (9c) contain subject as well as object gaps. (9d) and (9e) contain object gaps only¹⁰, while in (9f) and (9g), there are no gaps, thus rendering the constructions ungrammatical.

A PC should be distinguished from related constructions (e.g. rationale clauses and infinitival relatives) described below.

⁹ Throughout this thesis, the term *purpose clause (PC) constructions* is used to refer to only these constructions.

¹⁰ Jones (1985; 1991) analyses the sequence for Mary in these constructions as a PP in the matrix clause rather than a Complementizer + Subject sequence in the subordinate clause.

3.1.1 Distinguishing between a PC and a Rationale Clause

A rationale clause (RATC)¹¹, unlike an SPC, may have an overt or implied in order phrase in the construction and the subject gap need not be obligatory; it may be replaced by a lexical subject. The gap in an SPC is further controlled by the matrix theme while in a RATC it is controlled by the matrix agent. For example:

- (10) a. Fred_i bought a new car [(in order) ___i to please his wife]
 b. John_i invited Mary over [(in order) ___i to talk to her]
 c. Fred spent his vacation in France [(in order) for his wife to learn French]
 d. John invited Mary over [(in order) for Paul to talk to her]

In addition, though PCs may permit object gaps, they are prohibited in RATCs (Bach 1982; Browning 1987). For example:

- (11) a. John_i chose a blue book_j [___i to read ___j]
 b. John_i chose Fay_j [___i to read to ___j]
 c.*John_i invited Fay_j to the dance [(in order) ___i to please ___j]
 d.*John_i invited Fay_j over [(in order) ___i to talk to ___j].

It has also been proposed that a major difference between a PC and a RATC is that the former is VP-internal while the latter is

¹¹ A rationale clause is sometimes referred to as an in-order-to clause.

VP-external (Bach 1982; Browning 1987; Chierchia et al. 1989; Chomsky 1982; Faraci 1974; Jones 1985, 1991)¹². As a result, only a RATC and not a PC may be preposed. For example:

- (12) a. [(In order) ___i to please his wife], Fred_i bought a new car
 b. [In order ___i to talk to her], John_i invited Fay over
 c.*[___i to read], John chose Mary_i
 d.*[___i to read ___j], John_i bought a book_j
 e.*[___i sing to ___j], John_i chose Mary_j

Secondly, when used in the same construction, an embedded PC invariably occurs before an embedded RATC (i.e. the PC is always closer to the matrix verb). For example (Browning 1987:85-86):

- (13) a. Marc bought Fido [__ to play with __] [(in order) __ to please Anita]
 b.*Marc bought Fido [(in order) __ to please Anita] [__ to play with __]
 c. Ben took Alice to Boston [__ to amuse herself] [__ to please himself]
 d.*Ben took Alice to Boston [__ to please himself] [__ to amuse herself]

¹² There is some disagreement as to whether a PC is an argument or an adjunct. Bach (1982) argues that verbs like *choose/pick* subcategorize for a PC, while Browning (1987) argues for PCs in general to be VP-internal adjuncts. This difference in opinion, though, is not relevant for the purpose of this dissertation.

Further support for the VP-internal/VP-external distinction is derived from the fact that only RATCs but not PCs may be stranded by VP-deletion, VP-preposing, and in tough constructions. For example (Browning 1987:86):

- (14) a. ?John bought Moby Dick to read and Fred did, too, to keep on his shelf
 b. ?His mother sent John to pick up the laundry and then his father did, too, to buy some pizza
 c. John dove from the cliff in order to impress Mary and then Fred did, too, in order to get away from her
- (15) a. *John said he'd buy it to read and buy it he did, to read
 b. *John's mother said she'd send him out to pick up the laundry and send him out she did, to pick up the laundry
 c. ?John said he'd jump off the cliff in order to impress Mary and jump off the cliff he did, in order to impress Mary
- (16) a. *Buy it though John may to read, he'll never get past the first chapter
 b. *Send John though mom may to pick up the laundry, he'll never make it past the corner bar
 c. Dive off the cliff though John may in order to impress Mary, he'll still never be as handsome as Bob

Further, RATCs but not PCs may be stranded in pseudocleft constructions. For example (Browning 1987:87):

- (17) a. *What John did to read was buy it
 b. *What mom did to pick up the laundry was send John
 c. What John did in order to impress Mary was dive off the cliff

3.1.2 Distinguishing between a PC and an Infinitival Relative

A PC should also be distinguished from an infinitival relative construction (IR), such as the following:

- (18) a. A man_i [___i to talk to her] would be John.
 b. A man_i [___{arb} to talk to ___i] would be John.

The following construction:

- (19) John_i bought a book_j [___i to write notes on ___j]

could be a PC or IR depending of the semantic interpretation. According to the PC reading, *John* bought a book for the purpose of taking down some notes, while the IR reading is that the book that *John* bought is one that is generally used (in society) to write notes in. A distinction however between a PC and an IR is that, unlike a PC which is the predicate of a full NP, an IR is the complement of a head N' (Jones 1988, 1991; Kirkpatrick 1982). That

is, a PC modifies an NP while an IR modifies the head of an NP. They are assigned the following structures by Jones (1988:79):

- (20) a. IR: ... [NP ... [N,N'_i [IR]_i]] ...
 b. PC: ... NP_i ... [PC ... e_i ...] ...

Thus, in (19), if the matrix object *a book* is replaced by the pronominal *it*, as in:

- (21) He_i bought it_j [___i to write notes on ___j]

the only reading possible is a PC interpretation. Support for this analysis is drawn from the fact that PCs but not IRs may occur with a nominal or pronominal NP. For example (Jones 1988:80):

- (22) a. [A [man_i [___{arb} to talk to e_i]]] came along. (IR)
 b. *[John_i/He_i [___{arb} to talk to e_i]] came along. (IR)
 c. They brought [a man]_i along [___{arb} to talk to e_i]. (PC)
 d. They brought John_i/him_i along [___{arb} to talk to e_i]. (PC)

That is, the object gap in the IR in (22a) is controlled by the N' *man* and not the full NP *a man*. This is attested to by the ungrammaticality of (22b), where the object gap is controlled by a full NP - *John/He*. In the PCs in (22c) and (22d), the object gaps are controlled by the NPs *a man* and *John/He* respectively.

The antecedent of the object gap in a PC is further subject to some semantic restrictions - the NP in the matrix clause that it is coindexed with has to bear the Theme argument. An IR however has no such semantic restriction.

3.2 RESTRICTIONS ON PC MATRIX VERBS

Another significant property of PC constructions compared to other related constructions (including RATCs and IRs) is that in a PC construction, but not in other types of constructions, a potential matrix verb has lexically-specified restrictions. That is, the choice of a matrix verb is restricted to only a few classes of verbs (Bach 1981; Browning 1987). Bach (1981:38) points out that PC matrix verbs are generally restricted to verbs belonging to the following categories:

- I. The verbs Have and Be;
- II. Transitive verbs which involve continuance or change in states of affairs;
- III. Verbs of choice and use.

This is demonstrated by the following examples:

- (23) a. John read a book (in order) to review it. (RATC)
- b. *John read a book to review. (PC)
- c. John visited Mary (in order) to talk to her. (RATC)
- d. *John visited Mary to talk to. (PC)

Further evidence revealing the restrictive nature of the matrix verb of a PC is illustrated by the following example which could have an IR but not a PC interpretation (Bach 1981:36):

(24) I saw the book [__ to give to your sister]

As the examples in (22) demonstrate, a PC but not an IR may occur with a pronominal NP. Replacing the matrix object NP *a book* with the pronominal *it* renders the sentence ungrammatical:

(25) *I saw it [__ to give to your sister]

This illustrates the fact that the verb *see* may be the matrix verb of an IR but not a PC; and this restriction on PC matrix verbs is sometimes used as further support for the analysis of a PC being VP-internal as opposed to a RATC being VP-external.

3.3 THE SYNTAX OF PCs

3.3.1 Overt Wh-Movement Vs. Covert Operator Movement

The rule of overt Wh-Movement, an instance of move-alpha, involves the extraction and leftward movement of a Wh-element to the (SPEC)ifier position of the (COMP)lementizer, leaving behind a gap that must be bound by an antecedent. Such a movement is generally considered obligatory and, like other instances of move-alpha, has to satisfy certain conditions on movement.

There are other instances of move-alpha that are covert - movement involving not an overt Wh-phrase but a null operator - and these include the movement operations in what is generally referred to as tough constructions and in purpose clause constructions in which there is an object gap. In the following constructions:

(26) a. The men are too stubborn to talk to Bill

The men_i are too stubborn [___i to talk to Bill]

b. The men are too stubborn to talk to

The men_i are too stubborn [___{arb} to talk to ___i]

there is a subject gap in the subordinate clause that is coindexed with the matrix subject *the men*. In (26b), there is a subject gap in the subordinate clause which lacks an antecedent within the construction, and an object gap that is coindexed with the matrix subject *the men*.

According to Chomsky (1982), the subject gap in (26a) is PRO, and it is bound and controlled by the matrix subject, and is assigned the following structure:

(27) The men_i are too stubborn [_S [_S PRO_i to talk to Bill]]

The subject gap in (26b) is also PRO but with an arbitrary interpretation since it lacks a referent within the sentence. The object gap in (26b), Chomsky argues, is a variable bound by a null

operator (0). Unlike overt Wh-Movement, this operator is semantically empty thus making the trace a free variable, not assigned range by its operator in the embedded clause. Chomsky further proposes that at LF a variable not assigned range by its operator must be assigned a value by a c-commanding antecedent that A-binds it. This enables the *men* to bind (non locally) the object gap even though it is not a trace of the *men*. The relation between the null Operator and the object gap is alpha-movement and must satisfy all conditions on movement including Subjacency and Proper Government. (26b) is assigned the following structure:

(28) The men_i are too stubborn [_S, 0_i [_SPRO_{arb} to talk to t_i]]

3.3.2 The Derivation of PCs

A parallel is generally drawn between the derivations of tough constructions and PC constructions, with the following structure generally adopted for a SPC (Bach 1982; Browning 1987; Chomsky 1982, 1986):

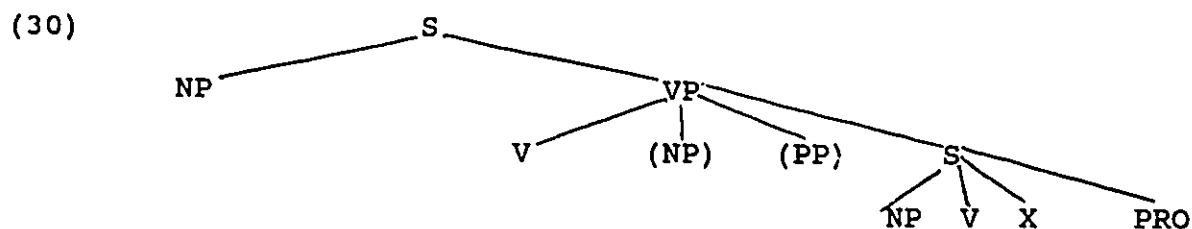
(29) John chose Mary_i [_{CP}[_{IP}PRO_i [_I, to [_{VP}read]]]]

That is, there is a gap in the subject position of the subordinate clause - PRO - that is bound and controlled by the matrix object with which it is coindexed.

Though there is a general consensus that the subject gap in a SPC is PRO, there is some controversy as to how an OPC is derived.

According to the projection principle, a VP is required to have a subject position, and a more traditional analysis of an OPC generally includes a subject gap.

An earlier analysis of a PC object gap was that it was PRO (Chomsky 1977; Solan 1978). Solan proposes the following underlying structure for OPCs:



A more conventional and more recent analysis of an OPC is that it involves covert A'-movement, resulting in the creation of A'-chains headed by a null operator. The subject gap is PRO and it is controlled by the matrix subject. The gap in object position, as in tough constructions, is argued to be derived by covert movement of a null operator (0) to pre-sentential position of the clausal complement, with the operator binding and governing the object gap, as in the following (Bach 1982; Browning 1987; Chomsky 1982, 1986):

- (31) a. John_i chose a book_j [_{CP}⁰_j [_{IP}PRO_i [_I,to [_{VP}read e_j]]]]¹³
 b. John_i chose Mary_j [_{CP}⁰_j [_{IP}PRO_i [_I,to [_{VP}read to e_j]]]]

¹³ i.e. to is a tense marker, being an element of INFL.

The lexical properties of the verb *read* in (31a) and the second preposition *to* in (31b) require an NP object. Chomsky (1982) rejects the earlier proposal that the object gap is PRO because it is governed by the verb *read* and the preposition *to* in (31a) and (31b) respectively. Chomsky further argues that though it is coindexed with *John*, it is not a trace resulting from NP-movement because *John* is in an argument (theta) position (*John* is an argument of *chose*), and NP-movement is to a non-argument position. The object gap has to be a variable (a Wh-trace), and, as such, must be bound by an element in a non-argument position. The trace further has to be assigned a value by a c-commanding antecedent, and is therefore bound (non locally), through lexical linking, by the matrix clause object, with which it is coindexed. This proposal, to a large extent, is supported by Bach (1982) and Browning (1987)¹⁴.

3.4 MARKEDNESS AND PCs

3.4.1 The Notion of Markedness and the Licensing of Object Gaps

A number of proposals have been advanced in the literature which suggest that subject or direct object extraction does not violate any syntactic constraint, while extraction from a PP violates universal syntactic constraints, but are allowed in some languages as a result of the application of some marked language-specific rules (Van Riemsdijk 1978; Hornstein & Weinberg 1981;

¹⁴ See Jones (1988, 1991) for an alternate analysis. Jones argues that a PC is a bare VP without any syntactic subject position corresponding to the missing subject (PRO).

Liceras 1988; Kayne 1981).

A universal constraint on movement - Subjacency - restricts the number of bounding nodes a displaced constituent can move across to only one. Van Riemsdijk (1978) argues that PPs are bounding nodes in a number of languages including English and French, and extraction from a PP is possible in English because the PP contains a COMP position which acts as an "escape-hatch" to which an NP extracted from a PP is attached before another cycle of movement is initiated. This COMP position in PP is absent in languages that prohibit extraction from within a PP (e.g. Romance languages). Phrase structure rules generating PPs with COMPs, Van Riemsdijk concludes, are more marked relative to phrase structure rules generating PPs without COMPs.

Hornstein & Weinberg (1981) propose a marked language-specific rule of syntactic reanalysis to account for extraction from within a PP in languages such as English and Dutch. The Empty Category Principle (ECP) requires an empty category to be properly governed where a proper governor is a c-commanding head with the features [+N] or [+V], that is nouns, verbs, and adjectives, but not prepositions (Chomsky 1981). Hornstein & Weinberg propose that in English, the verb and a following preposition may undergo a language-specific rule of reanalysis to form a complex verb. The application of this rule creates the environment for an NP as the object of the preposition involved in the reanalysis to become governed by a "complex verb", thereby ensuring proper government, and preventing a violation of the ECP. This reanalysis rule is

language-specific and marked, and is generally not applied in Romance languages.

Kayne (1981) modifies the reanalysis proposal by arguing that amalgamation of two constituents into one is possible only for lexical categories that assign case in the same way. The difference between English and French, he claims, is that V and P govern structurally and assign case in the same way in English while they do not in French.

The underlying theme binding these different proposals is that French, unlike English, does not have a syntactic rule that licenses the extraction of an NP dominated by a PP. Such rules are however language-specific and make acceptable structures that violate universal syntactic constraints.¹⁵ This therefore makes extraction from within a PP a syntactically more marked phenomenon, compared to subject or direct object extraction which do not violate any universal constraints.

3.4.2 Markedness, Proper Government and OPCs

According to the definition of typological markedness, a phenomenon is considered more marked than another if its presence in a language implies the presence of the other, but not vice versa. In this respect, OPCs may be considered typologically more marked relative to SPCs, since, across languages, the presence of an OPC (with both direct and prepositional object gaps) implies the presence of a SPC, but not vice versa.

¹⁵ Such as proper government, subjacency, ECP, etc.

Though a PC with a direct object gap (DOPC) is not allowed in French, it does not violate any syntactic constraint, since the object gap is properly governed by the verb. In a PC with a prepositional object gap (POPC), the object gap is governed by a preposition which is generally not a proper governor but is licensed as one through the application of some marked syntactic rules in some languages (including English). Other languages, especially Romance languages (including French), do not have such rules. A preposition is not a proper governor in such languages and, as such, a prepositional object gap is not properly governed. This position is reinforced by the fact that direct object extraction is allowed in other constructions in French, such as Wh-question formation and Relativization, while extraction from within a PP is generally not allowed in any type of construction, except in a few restricted cases.¹⁶ Thus only a POPC, not a DOPC, could be considered a syntactically marked construction.

3.4.3 Control Principle, PCs and Semantic Markedness

As is usually the case with other control constructions, the controllers of both the subject and object gaps in a PC are generally overt arguments of the matrix verb. Even verbs that are

¹⁶ In some dialects of colloquial French, a preposition may be stranded, generally at the end of relatives, clefts and topicalized structures. For example:

i. Les gens que tu travailles pour ...
The people that you work for ...

ii. C'est lui que j'aime parler avec
It's him that I like to talk with

optionally transitive or intransitive are used only transitively (i.e. with an overt object). For example (Chierchia et al. 1989):

- (32) a. I am hiring him.
 b. I am now hiring.
 c. I hired him_i [___i to go over the reports].
 d. I hired him_i [for John to work with ___i].
 e. I_i hired him_j [___i to work with ___j].
 f. *I hired [___{arb} to go over the reports].
 g. *I hired [for John to work with ___{arb}].
 h. *I_i hired [___i to work with ___{arb}].

A gap with an implicit controller, however, is not impossible in a PC, though it is less common and frequent:

- (33) This book_i is available [___{arb} to read ___i].

The control properties, according to Chierchia et al., are thematically governed. There is generally one obligatory gap (the subject gap for a SPC and the object gap for an OPC) which is invariably controlled by the theme argument (the highest element in the thematic hierarchy) of the matrix verb. This is seen in (32c,d,e) where the obligatory gaps are controlled by the matrix theme *him*. (32f,g,h) are PCs containing no matrix theme argument and are therefore ungrammatical. In (33), the obligatory gap is also controlled by the matrix theme *this book*, which in this case

is the subject of the main verb. The non-obligatory gap in (32e) is controlled by the matrix agent.

Chierchia et al. propose a control principle for purpose clause constructions (p.154) paraphrased as:

First select the argument with the highest available theta-role (theme) in the hierarchy as a controller. If an argument assigned Theme has already been selected (the same argument cannot be selected twice), select an argument with the next highest theta-role (i.e. goal or agent).

Thus, it is not possible for a PC with only one gap to have that gap controlled by an argument other than theme. Chierchia et al. propose that the unmarked option of the control principle generates a constraint on meaning that the highest available thematic role be selected, while the marked option makes allowance for selection of a second argument with the next highest available role -goal or agent - for a second gap if Theme has already been selected. This implies therefore that the unmarked option allows only a SPC while the marked option makes allowance for an OPC.

3.5 L1 ACQUISITION AND PCs

3.5.1 Covert Operator Movement and L1 Acquisition

Children, as early as age three, have been argued to demonstrate knowledge of rules generating overt Wh-Movement in English (De Villiers et al. 1990; Goodluck et al. 1989). These studies provide evidence of children's knowledge of these rules and accompanying constraints, such as subjacency, at a very young age. Contrary to movement involving extraction of a Wh-phrase, which is

generally acquired fairly early in acquisition (around age three), constructions in which covert operator ($\emptyset$) movement is involved (such as tough constructions and OPCs) have proved problematic for children during the early stages of language development (Chomsky 1969; Cromer 1987; Goodluck 1990, 1991; Goodluck & Behne 1992; Solan 1977).

Chomsky (1969) conducted a study involving eager/easy constructions, such as the following:

(34) a. John is eager to please

John_i is eager [_{CP}[_{IP}PRO_i to please]]

b. John is easy to please

John_i is easy [_{CP} $\emptyset$ _i[_{IP}PRO_{arb} to please t_i]]

(34a) contains a subject gap - PRO - in the subordinate clause that is bound and controlled by the matrix subject *John*. The verb *please* is used intransitively and there is no movement involved in the construction. In (34b), the verb *please* is used transitively. There is a subject gap - PRO - in the complement clause that lacks an antecedent and is assigned arbitrary interpretation. There is also an object gap in the subordinate clause which is controlled by and coindexed with the matrix subject.

Chomsky (1969) reveals that children had no problems correctly interpreting the construction in (34a), but had problems correctly interpreting (34b) during the early stages of language development.

Solan (1977) also conducted a similar experiment with children aged three to five years using constructions similar to those used by Chomsky (1969). As in Chomsky's experiment, the children correctly acted out eager constructions frequently, but generally had problems with easy constructions.

3.5.2 The Acquisition of PCs

Similar results have been obtained in studies on the interpretation of other constructions involving the movement of null operators by Goodluck (1990a, 1991) and Goodluck & Behne (1992). They conducted experiments requiring children to act out sentences including PCs and their results revealed children having no difficulty interpreting a SPC, but had problems correctly interpreting an OPC (which involves operator movement). In the interpretation of OPCs such as:

(32) John_i chose Mary_j [_{CP}⁰_j [_{IP}PRO_i [_I,to [_{VP}read to e_j]]]]

there is the tendency for children to ignore the stranded preposition at the end of the construction and interpret the sentence as if the subordinate verb *read* is used intransitively, with the interpretation:

(36) John chose Mary to read.

in which 'Mary' is expected to do the reading; or the sentence is

considered incomplete, sometimes prompting them to ask questions such as:

(37) " ... to read to whom?"

That is, they expect 'Mary' to read to someone, as in:

(38) John chose Mary to read to Bill.

In a SPC, in standard GB theory, the subject gap - PRO - is regulated by control. There is no movement involved and the prediction is that children will not experience particular difficulty interpreting such constructions. In an OPC, the derivation of the object gap and the process of coindexation involves a series of grammatical operations including movement of a null operator and the coindexing of the object gap with its antecedent, combined with lexically-specified restrictions on the matrix verb, all of which the child's initial hypotheses may not be able to account for during the early stages of language development. Like easy constructions, they are predicted to be difficult to interpret during the early stages of language development, and are expected to emerge late in the child's grammar, usually between the ages of six and ten years (Goodluck 1990a, 1991; Goodluck & Behne 1992).

3.6 PCs AND L2 ACQUISITION

Studies discussed in the preceding section show that children generally have problems correctly interpreting an OPC in English, and its acquisition is late in L1 acquisition possibly because of a combination of the number of syntactic operations involved in its derivation and the lexical restrictions on the choice of matrix verb for such constructions.

There are reasons to assume that OPCs will emerge late in a native French speaker's English grammar as well. Proponents of a parallel between L1 and L2 acquisition (Flynn 1983; Krashen 1985) predict OPCs to be initially difficult to interpret during the early stages of L2 acquisition, since that is the case in L1 acquisition. Proponents of the position that UG is not accessible in L2 acquisition (Bley-Vroman 1988; Clahsen 1988; Schachter 1989), on the other hand, argue that only those parameters of UG instantiated in L1 will be accessible to the adult L2 learner. Extraction of an NP dominated by a PP is the marked option of the movement parameter and has not been instantiated in French as evident by the general absence of constructions with stranded prepositions. The implication then is that an adult L2 French learner of English may never acquire POPCs since it is argued that a parameter option not instantiated in the acquisition of L1 may remain dormant and inaccessible during the process of L2 acquisition. Though DOPCs are not present in French, extraction of a direct object is not prohibited since no syntactic constraint is violated. It is allowed in other constructions in French leaving

open the possibility of DOPCs to be acquired.

A more popular proposal is that the theory of UG makes allowance for different parameters to be adopted by different languages, and that parametric variation among languages and markedness relation between different options of a parameter may be a source of initial difficulty in L2 acquisition (Flynn 1988; Phinney 1987; Tsimpli & Roussou 1991; White 1988). Typologically and semantically, an OPC (both DOPC and POPC) is considered marked relative to an SPC. Syntactically, however, only a POPC is considered marked. Since extraction of prepositional object, not direct object, is the marked option of the movement parameter, and is further not allowed in French, only POPCs will be predicted to be initially difficult to interpret.

3.7 CONCLUSION

The present study is designed to address these issues by evaluating the acquisition and development of PCs with object gaps in English by native French speakers with different degrees of proficiency in English. The study intends to ascertain whether constructions considered marked in some form without necessarily violating constraints of UG will prove to be initially difficult to acquire or whether only marked constraints that violate UG constraints will be temporarily or permanently difficult. In the case of the former, OPCs in general will be initially difficult to interpret while in the case of the latter, only POPCs will create initial difficulty.

CHAPTER IV
THE EFFECTS OF DISCOURSE INFORMATION IN
SENTENCE INTERPRETATION

4.1 DISCOURSE EFFECTS IN SENTENCE PROCESSING

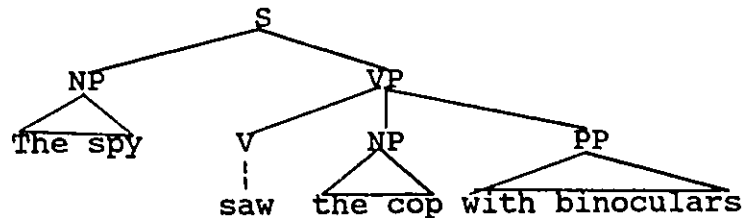
In recent psycholinguistic studies, a number of researchers have focused on the effects of discourse in on-line sentence processing, to determine whether the initial processing of a string of words is purely syntactic as suggested by the Minimal Attachment Strategy (Ferreira & Clifton 1986; Frazier & Fodor 1978) or whether initial processing is influenced by semantic/pragmatic information - such as discourse - (Altmann 1988; Boland et al. 1989; Taraban & McClelland 1988).

Proponents of the Minimal Attachment Strategy (MAS) argue that the human sentence parsing device goes through two syntactic steps in assigning phrase structure to word strings: First assign lexical and phrasal nodes to a group of words within the lexical string (about six words), and then higher nodes are added to link the phrasal nodes into a complete phrase marker. That is, a sentence like:

(39) The spy saw the cop with binoculars.

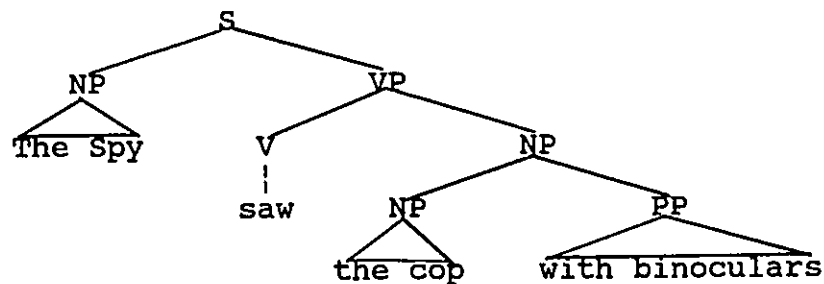
will be initially assigned the following minimal attachment structure:

(40)



That is, *the cop* is a simple NP that is the direct object of the verb *saw*. The PP *with binoculars* is attached to the VP node with the interpretation that the spy used binoculars to see the cop. In a nonminimal attachment structure, *the cop* is the head of a complex NP under which the PP *with binoculars* is projected. That is, the PP refers to *the cop* and not to *the spy*, and the interpretation is that the cop that the spy saw had some binoculars. This structure creates an extra node and thus goes against the MAS:

(41)



Ferreira & Clifton (1986) conducted an experiment involving the parsing of structurally ambiguous sentences to determine whether contextual information (or discourse) was used in the initial processing or whether the first parse was purely syntactic (employing the MAS). Sentences of the following types:

- (42) a. The editor played the tape agreed the story was big
 b. The editor played the tape and agreed the story was big

- (42) a. The editor played the tape agreed the story was big
 b. The editor played the tape and agreed the story was big

- (43) a. Sam loaded the boxes on the cart before his coffee break
 b. Sam loaded the boxes on the cart onto the van

were presented to subjects preceded by discourse information that was either neutral, or was biased in favour of a particular interpretation, according to the following four conditions:

- (44) a. Discourse leading towards a non-minimal attachment analysis (NMA) followed by a construction with a NMA;
 b. Discourse leading towards a minimal attachment analysis (MA) followed by a construction with a MA;
 c. A neutral discourse followed by a construction with a NMA;
 d. A neutral discourse followed by a construction with a MA.

In (42b), the sequence *played the tape* is just a VP attached to the S, with the NP *the editor* being the simple subject of the verb *played*. In (42a), the NP *the editor* is the head of a complex NP subject of the verb *agreed*, and the sequence *played the tape* is a complement (a reduced relative) of *the editor*. The structure for (42b), an active compound sentence, would require fewer nonterminal nodes conforming to the MAS, compared to (42a), a reduced relative clause construction, which requires more nonterminal nodes and thus conflicts the MAS.

In (43a), the NP *the boxes* is a simple NP that is the direct object of the verb *loaded* and the PP *on the cart* branches off the VP. In (43b), the PP *on the cart* is part of a complex NP headed by the NP *the boxes*, and it is the second PP *onto the van* that is attached to the VP. (43a) thus has the structure in (40) and conforms to the MAS while (43b) has the structure in (41) and conflicts with the MAS.

According to the MAS, the parser will initially assume a Minimal Attachment structure in the processing of the sentences in (42) and (43). This assumption will be confirmed in (42b) and (43a). The introduction of the verb *agreed* in (42a) and the preposition *onto* in (43b) will reveal a non-minimal attachment structure for these sentences, and a reanalysis should result in slower reading times for these sentences.

If discourse information is available in the initial parse of a sentence, faster reading times should be recorded for conditions (44a) and (44b), and slower reading times for (44c) and (44d). A faster reading time should be recorded for (44a) compared to (44c), and also for (44b) compared to (44d). A faster reading time should also be recorded for (44d) compared to (44c), since there is no discourse bias and (44d) has the preferred analysis structure.

Results reveal that non-minimal attachment sentences took longer to read compared to minimal attachment sentences, but there was no significant difference as a result of discourse bias. This, Ferreira & Clifton claim, confirms the proposal that discourse or semantic/pragmatic effects do not influence the initial processing

of a sentence.

Ferreira & Clifton's conclusion is rejected by Taraban & McClelland (1988) who claim that thematic role expectations do play a role in the initial processing of an utterance. In an experiment they conducted, minimal and nonminimal attachment structures with a lexical bias towards a nonminimal attachment of the PP were presented to subjects in a self-paced word-by-word reading task, and reaction times were recorded after the critical word (the noun in the PP) and the next few words. Examples of such sentences are:

- (45) a. The reporter exposed corruption in the article.
 b. The reporter exposed corruption in the government.

By reversing the expectation in favour of a nonminimal attachment interpretation, faster reading times should be recorded for nonminimal attachment structures (Verb Phrase Attachment) than for minimal attachment structures (Noun Phrase Attachment) if semantic and discourse information is used in the initial processing. This was confirmed by their results.

Their results also reveal no significant effect of minimal attachment, and they conclude that a minimal attachment analysis may be favoured if discourse contents favour that interpretation. Taraban & McClelland do not rule out the role of syntactic constraints in the initial processing of a sentence, but rather stress the importance of the role of discourse content and plausibility/implausibility in the initial processing.

Taraban & McClelland's position is supported by Altmann (1988) who conducted a study using sentences of the following types:

(46) a. Complement Target Sentence

The psychologist told the woman that he was worried about her marital problems.

b. Relative Target Sentence

The psychologist told the woman that he was worried about to visit him again.

These sentences were preceded by contextual information of the following types:

(47) a. Complement-Supporting Context: "minimal inferencing"

A psychologist was counselling a man and his wife. He was worried about one of the pair but wasn't concerned about the other.

b. Relative-Supporting Context; "minimal inferencing"

A psychologist was counselling two wives. He was worried about one of the pair but wasn't concerned about the other.

c. Complement-Supporting Context: "inferencing"

A psychologist was counselling a man and his wife. He was particularly concerned with the problems of one of the pair but wasn't concerned about the other.

d. Relative-Supporting Context: "inferencing"

A psychologist was counselling two wives. He was particularly concerned with the problems of one of the pair but wasn't concerned about the other.

The contexts in (47a) and (47c), as preceding discourse, are appropriate for the complement target sentence type, which has a MA structure, while the contexts in (47b) and (47d) are appropriate for the relative target sentence type, which has a NMA structure.

Altmann points out that a syntactic-first-parse model predicts a longer processing time for relative target sentences than for complement target sentences. Altmann's results reveal that when

relative target sentences (i.e. a NMA structure) are preceded by appropriate discourse, there is no significant difference in processing time compared to the processing of complement target sentences (a MA structure) preceded by appropriate discourse. This, Altmann concludes, suggests an interaction of syntactic and contextual information in the initial processing of a sentence.

In Altmann's experiments, however, only global reading times were recorded. Unlike on-line reaction times, a global reading time records only the cumulative time taken in the processing of a sentence and does not capture fluctuations in reading times at critical positions (structural or semantic) within the sentence.

4.2 THE EFFECTS OF DISCOURSE INFORMATION IN THE POSITING OF OBJECT GAPS IN THE PROCESSING OF PCs

In simple Wh-movement, such as question-formation, a Wh-phrase is moved to sentence-initial position leaving behind a trace (or gap). In the on-line processing of such construction, at a potential gap site (usually after a verb or a preposition), the Sentence Processing Mechanism (the parser) may posit a gap which may be a true gap (as in (48)) or a false gap (*) if the potential site is filled by a lexical item (as in (49)):

- (48) a. What did John put on the table?
 b. What did John put the book on ?

- (49) What did John put * the book on * the table for ?

Anticipating and positing a gap after the verb or the preposition will be reinforced in (48). In (49), the parser will encounter a lexical item after these positions - *the book* after the verb and *the table* after the preposition - and this may result in a temporary setback in the processing of the sentence (Stowe 1986; Bourdages 1990; Goodluck et al. 1992).

Goodluck et al. (1992) extended the study of false gap effects on Wh-constructions to the on-line processing of OPCs¹⁷ in English, in experiments involving 32 adults and 20 children (aged 9-11), all native speakers of English. In the following examples:

- (50) a. John_i chose a book_j [PRO_i to read ___j to the kids]
 b. John_i chose Mary_j [PRO_i to read to ___j at Summer camp]

there is an object gap that is coindexed with the object of the matrix clause. This gap position could however be filled by a lexical NP as in:

- (51) a. John_i chose a book_j [PRO_i to read *__ a story from ___j to the kids]
 b. John chose Mary_i [PRO_i to read to *__ the kids at Summer camp]

Goodluck et al.'s (1992) experiment was a self-paced reading task in which subjects were presented, on a computer screen, with

¹⁷ Only POPCs were used in this experiment.

sentences, including PCs, preceded by discourse information as in the following example¹⁸:

(52) Discourse: The English class organized a writing contest.

Everybody was expected to write a letter to a friend. The letter had to be addressed to someone in the class.

PC: Phil chose his best friend to write to Mary.

The discourse information was designed to prime an object gap reading of the PC by using the same verb and preposition in the discourse in the PC as well.

Reaction times were recorded from the matrix verb position to the second preposition in the PC. Results reveal significantly elevated reaction times for the adults at the position of the second preposition upon the introduction of the lexical NP *Mary*, while there was no such elevation for the children. That is, adults demonstrated sensitivity to a potential object gap as evident in their elevated reaction times at that position while no such sensitivity was demonstrated by children. This could be interpreted not only as adult native English speakers' knowledge of operator movement and awareness of object gaps in OPCs, but the anticipation and positing of object gaps may have been triggered by the preceding discourse information leading them to expect one.

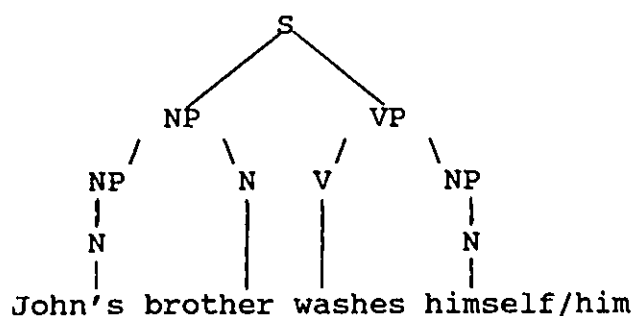
¹⁸ The discourse sentences were presented sentence by sentence and the PCs word by word on the screen. A scroll button is depressed for a new sentence/word to appear on the screen.

4.3 DISCOURSE/PRAGMATIC EFFECTS IN L1 SENTENCE INTERPRETATION

Recent studies in first language acquisition and development (including Stevenson & Pickering (S&P) 1987) have produced results which suggest that children may be insensitive to pragmatic and discourse information, apparently lacking the ability, during the early stages of language development, to maximally utilize such information in the interpretation of a sentence. The syntactic component of the language processor, it is argued, is one of the earliest to develop, and discourse effects occur late in a child's grammar because discourse and pragmatic information is utilized at a much later stage in the processing and interpretation of a sentence.

S&P studied the use of syntactic and semantic constraints, and pragmatic information, by children aged 5 and 6 years, in their interpretation of pronouns. Children up to age 10, they observe, still make syntactic errors in interpreting coreference agreement for pronouns, and their experiment was designed to determine whether the children will exploit other sources of information, other than syntactic, - such as gender or pragmatics - in determining the antecedent for pronouns. Sentences in the experiment were of the following type with the accompanying structure:

(53) John's brother washes himself/him



Principle A of the binding theory requires an anaphor (a reflexive or reciprocal) to be bound within its governing category. Thus, the reflexive *himself* in (53) is bound within the clause by an antecedent - the NP *John's brother* - that governs it. Principle B of the binding theory requires a pronominal to be free within its governing category. The only NP antecedent within the clause that does not govern the pronominal *him* is *John*.

S&P manipulated the gender and plausibility of the antecedents in their experiment to determine whether this would influence the children's choice of antecedent. The target sentences were either preceded by a high plausibility, a low plausibility context, or no context at all. Here is an example of a high plausibility context:

High Plausibility Context

Same Gender

Different Gender

High Plausibility Target

Peter looks around.

Peter looks around.

John's big brother lifts him.

John's big sister lifts him.

Low Plausibility Target

Peter looks around.

Peter looks around.

David's little brother lifts him. David's little sister lifts him.

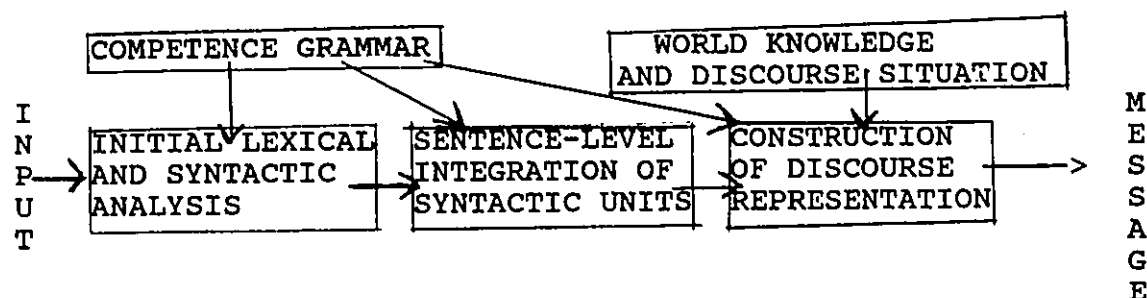
The children were asked to act out the situations described by these sentences using dolls. For reflexive sentences, there is only one correct antecedent - within the clause - regardless of context or plausibility, which is not the case for pronouns. The antecedent may be within the clause or external to the clause.

In their interpretation of reflexives, the children generally used syntactic constraints to select an antecedent, regardless of gender or plausibility. For the pronouns, there were fewer selections of an antecedent external to the clause by younger children compared to older children. Where syntactic constraints compelled them to select a sentence internal antecedent, they mostly did. Further, additional gender or plausible pragmatic information did not affect the frequency of the choice syntactically constrained sentence internal antecedents.

S&P conclude that syntactic knowledge develops independently of semantic or pragmatic knowledge during the early stages of

language development, and the ability to maximally integrate all these different sources of information comes late in language development.

Following Forster's (1979) Language Processing Model which suggests that the different processors - lexical, syntactic, and message - are not only autonomous in their operations but that the syntactic analysis of a sentence is completed before pragmatic and discourse information is utilized, Goodluck (1990b) proposes a model for L1 acquisition that predicts the following sequence of processing:



Children, Goodluck argues, are equipped with this sentence processing device, but "adult-like ability to integrate pragmatic and discourse-based information into the syntactic parse of a sentence develops only in the school years" (p. 369).

4.4 DISCOURSE EFFECTS IN L2 SENTENCE INTERPRETATION

L1 acquisition studies reveal children's insensitivity to discourse information, during the early stages of language development, in the interpretation of sentences. In adult second language acquisition, the situation is different. Though the adult

L2 learner may be in the early stages of L2 acquisition, unlike the child in L1 acquisition, he is already capable of utilizing such information in the interpretation of a sentence in his L1, as an adult native speaker of that language. An important question then is whether adult L2 sentence interpretation will proceed in the same manner as in L1, in not utilizing discourse information during the early stages of L2 acquisition, or whether the ability to utilize such information in sentence interpretation in a prior language (L1) will enable the adult L2 learner to do likewise in the processing of L2. That is, in the interpretation of OPCs, will discourse information preceding an OPC leading them to expect an object gap in the construction lead them to anticipate an object gap in the OPC, or will there be no gap expectation in spite of discourse bias leading them to expect one?

4.5 CONCLUSION

Adults, sentence processing studies show, have developed cognitive capacities that enable them to utilize discourse information in processing and interpreting sentences in their L1. This ability could be valuable in L2 acquisition in that it could be exploited in the processing and interpretation of L2 constructions. Initial use of discourse information by adult L2 learners would support a theory of L2 acquisition in which adult learners have developed processing capacities that allow them to make early and effective use of discourse information. Conversely, lack of use of discourse information initially by adult L2 learners

would support a view of L2 acquisition that is parallel to L1 acquisition. The design additionally allowed us to see if discourse could act as a springboard for the development of rare and typologically or syntactically marked constructions during the acquisition of L2.

The actout experiment, discussed in the following chapter, appraised the effects of discourse information by adult native French speakers in the interpretation of OPCs in English.

CHAPTER V

THE STUDY

5.1 INTRODUCTION

The experiments in this study were designed to evaluate adult native French speakers' knowledge of the rules generating OPCs in English, and the effects of discourse in the interpretation of such constructions. Two experimental tasks were administered - Actout and Grammaticality Judgement. The study evaluated the knowledge of operator movement in PCs in English and the effects of discourse in the interpretation of such constructions by French speakers of two different levels (intermediate and advanced) of proficiency. The study further assessed French speakers' judgement of PCs and other related constructions to determine whether they are aware of the constraints licensing object gaps in English.

5.2 SELECTION OF SUBJECTS

A total number of 34 adult native French speakers participated in both the actout and grammaticality judgement tasks. They were divided into two subgroups based on their level of proficiency in English - 16 at the intermediate level and 18 at the advanced level. A cloze test¹⁹ was administered to each potential subject, prior to the start of the experiments, to determine proficiency levels. Scores for subjects at the intermediate level ranged between 45%-70% while scores for advanced subjects were between

¹⁹ See appendix.

80%-100%.²⁰ A total number of 23 adult native English speakers had earlier participated in another study that included the sentence types in the actout experiment.

All the subjects, at the time of testing, were students at the University of Ottawa, and most of the French subjects were obtained from the Centre for Second Language Learning at the University of Ottawa.

Participation in the experiments was voluntary and every subject received the sum of \$10 for writing the cloze test, and the names of subjects who participated in the subsequent experiments were entered in a draw in which one in 20 won a \$100 prize.

5.3 HYPOTHESES

Results of experiments by Goodluck et al. (1992)²¹ revealed sensitivity by adult native English speakers to the possibility of object gaps in PCs, though the design of the experiment did not allow us to conclude that there would be such sensitivity without a discourse context that promotes the presence of an object gap. Nevertheless, adult native speakers of English, accustomed to positing object gaps in PCs, were predicted to encounter no difficulty interpreting OPCs (DOPCs and POPCs) in English.

²⁰ 38 potential French subjects wrote the cloze test. One subject had a score in the seventies and was not invited to participate in the experiments. Three others either backed out of the study or could not be contacted for an appointment to do the experiments.

²¹ Discussed in chapter 4.

With regards to the projection and interpretation of OPCs in English by native French speakers learning English as L2, three hypotheses were evaluated.

I. Typological Markedness Hypothesis

Typologically, an SPC is considered unmarked relative to an OPC (both DOPC and POPC) since, across languages, the presence of an OPC in a language implies the presence of an SPC but not vice versa. The L1 of the subjects - French - allows the unmarked value (SPC) but not the marked value (OPC). In L2 - English - both the unmarked and marked values are allowed. This knowledge might lead them to initially anticipate and project only subject gaps in PCs. This hypothesis thus predicted difficulty for French L2 learners acquiring the marked value, with the expectation that the acquisition and interpretation of OPCs (both DOPC and POPC) in English by the French subjects would be late and difficult²².

II. Syntactic Markedness Hypothesis

Syntactically, only a construction with a gap as the object of a preposition is considered marked, since a preposition is made a proper governor in some languages (including English) through the application of some marked syntactic rules which are generally absent in Romance languages (including French), ruling out a preposition as a proper governor in such languages. French

²² A similar prediction is made by the semantic approach to PCs. OPCs in general are considered semantically more marked relative to SPCs.

speakers are further familiar with direct object gaps in other constructions (e.g. Wh-movement, Relativization, etc.) in French, and are aware that prepositional object gaps are generally not allowed in French.

This hypothesis thus predicted POPCs (which violate proper government in French) to be especially difficult to interpret, compared to SPCs and DOPCs, in the early stages of L2 acquisition. That is, unlike the typological markedness hypothesis which predicted initial difficulty for both DOPCs and POPCs, the syntactic hypothesis predicted difficulty only for POPCs.

III. Discourse Hypothesis

Studies in first language acquisition suggest that children, during the early stages of language development, may be insensitive to discourse information in the interpretation of sentences in English and that such information is utilized only at a much later stage in language development. The L2 learner, like the child in L1 acquisition, may ignore such information during the early stages of L2 acquisition, which would support theories that advocate a parallel between L1 and L2 acquisition. If this is the case, then the effects of discourse should be relatively absent or less evident in the early stages of L2 acquisition, and should become more evident at a later stage in L2 development.

Alternatively, the adult L2 learner is capable of utilizing discourse information in processing and interpreting sentences in his L1, and this ability might be manifest in the processing of

sentences in L2. That is, processing strategies developed in interpreting sentences in L1 might be exploited in the acquisition of L2, in which event, discourse information leading towards the expectation of an object gap in a PC in English might influence a French speaker's anticipation of such a gap. If this is the case, then effects of discourse in sentence interpretation in L2 should not be significantly different between less proficient and more proficient L2 learners.

Discourse effects were also predicted to be higher for POPCs, which were expected to pose a greater challenge to native French speakers compared to DOPCs, since they are syntactically marked, in addition to being typologically marked.

5.4 EXPERIMENTAL MATERIALS

5.4.1 Experiment I: Actout PCs with Gap/No Gap Lead

This was the primary experiment and it tests French subjects' knowledge of the different types of PCs in English in an actout experiment involving a doll family comprising a dad, mom, son, and daughter. A second goal of this experiment was to evaluate the effects of discourse in the interpretation of such constructions. Examples of the sentence types used in the actout experiment are given in (1a-h):

(55) a. SPCs with Verbs Choose/Pick

Sue chooses Tom to sing to dad

b. Complement to 'Tell/Ask' Active Sentences

Dad asks mom to dance with Tom

c. Complement to 'Tell/Ask' Passive Sentences

Tom is told by Sue to run up to mom

d. Complement to 'Tell/Ask' with Intransitive Prepositions

Sue likes running and jumping

Sue tells Tom to RUN around

e. DOPCs with Verbs Choose/Pick - Gap Lead

Sue likes hugging the family

Sue picks Tom to hug

f. DOPCs with Verbs Choose/Pick - No Gap Lead

The family is very affectionate

Mom chooses Sue to kiss

g. POPCs with Verbs Choose/Pick - No Gap Lead

Mom likes reading to people

Mom chooses dad to read to

h. POPCs with Verbs Choose/Pick - No Gap Lead

The family likes singing

Mom picks dad to sing to

Three tokens of each of the above sentence types were presented to the subjects. (55a-d) were control sentences and (55e-h) were experimental sentences.

SPCs, allowed in French, were not expected to be difficult to interpret at any level of proficiency in English. The same was expected for the active and passive sentence types. Passive sentences additionally allowed us to check for sensitivity to gaps in direct object position, independently of performance in the OPCs.

The constructions with intransitive prepositions (in 55d) were especially designed to verify that, in interpreting PCs, subjects were not merely assuming the subject and object of the matrix clause to be the subject and object of the subordinate clause respectively. This strategy would work for OPCs (55e-h) but not for the construction type in (55d) where such a strategy would result in the preposition being assigned a transitive reading with the erroneous interpretation that *Sue* and *Tom*, the subject and object of the matrix clause, are the subject and object of the subordinate clause respectively (i.e. *Sue* running around *Tom*).

Some constructions with stranded prepositions may be ambiguous in the sense that the stranded preposition may be open to either a transitive or intransitive reading. For example, the sentence:

(56) *Sue chose Tom to run around*

could be interpreted as either *Sue* choosing to run around *Tom* or

Sue choosing *Tom* to run around. This ambiguity is usually resolved by stress assignment. A relatively stronger stress on the verb preceding the stranded preposition ensures a transitive (i.e. the first) interpretation of the preposition. On the other hand, primary stress on the stranded preposition ensures an intransitive reading of the preposition (i.e. the second interpretation). To neutralize the effect of stress assignment being a clue to the intransitive nature of the prepositions in sentences of the type in (55d), the subordinate verb, and not the following preposition, was stressed during the recording of the test sentences. Sentences of the type in (55d) further contained subordinate verbs that were previously mentioned in a preceding discourse sentence. In addition, the same subject was used for both the sentence with the intransitive preposition and the preceding discourse. By association, this could lead to an interpretation of the matrix subject as the subject of the subordinate verb, further promoting a transitive reading of the preposition.

The test sentences also included OPCs (55e-h), half of which were preceded by a one-sentence discourse designed to lead the subjects towards anticipating an object gap (as in (55e) and (55g)) and another half preceded by a one-sentence discourse designed to be neutral as far as the position object gaps was concerned (as in (55f) and (55g)). In the gap lead context, the verb in the preceding discourse was the same as the subordinate verb in the following OPC, and was used with a direct or prepositional object argument depending on whether the OPC that followed was a DOPC or

POPC. Furthermore, the control properties of the *ing* complement in the gap lead sentences assign the subject NP of the lead sentence the role of subject of the following OPC, and, by hypothesis, might promote assignment of the subject of the preceding discourse as subject of the following OPC and the object of the discourse to the object gap position of the OPC. In the no gap lead discourse, the ing construction could be interpreted as nominal and thus the subject control reading is not forced.

5.4.2 Experiment II: Grammaticality Judgement

In a supplementary experiment - a grammaticality judgement task - subjects had to judge the grammaticality of a number of constructions including PCs, embedded Wh-constructions (with subject, DO and PO gaps), and temporal clause constructions, which do not allow DO or PO gaps in English or French. A grammaticality judgement task, like the actout task, gives an indication of the learner's linguistic competence since it is primarily a comprehension task. It has been used by a number of researchers (including Bley-Vroman et al. 1988; Liceras 1985, 1986; Schachter 1989; White 1986, 1988) to determine whether L2 learners with varying degrees of proficiency in L2 could distinguish between structures generated by UG and those violating UG constraints. One of the issues addressed in this study was whether French speakers were aware of the syntactic rules licensing gaps in PCs, embedded Wh-constructions and temporal clauses, along with the accompanying constraints (syntactic and lexical) in English. The grammaticality

judgement task used in this study was designed to provide some answers to some of these issues. The following are examples of sentence types used in this task:

(57) a. Purpose Clause Constructions

- i) John chose Mary to hug Sue (SPC)
- ii) Frank chose his baby sister to cuddle (DOPC)
- iii) David picked a friendly girl to dance with at the party (POPC)

b. Embedded Wh-Constructions

- i) Marie forgot who baked the cake (Sub gap)
- ii) Peggy wondered what Paul bought for his wife (DO gap)
- iii) Dad wanted to know who Greg ran away from (PO gap)

c. Temporal Clause Constructions

- i) Jack had dinner before doing some reading (Sub gap)
- ii)*Mom drank the milk after pouring in a glass (DO gap)
- iii)*Tom lost the ball while playing with in the park (PO gap)

d. Purpose-Like Constructions

- i)*Penny tried her older sister to phone Bob. (Sub gap)
- ii)*Eric decided Betty's classmate to invite to the party. (DO gap)
- iii)*Sally expects Norm to sing with at the concert. (PO gap)

e. Filler Constructions

- i)*My cousin very much the girl next door likes{Word Order}
- ii)*The teacher expelled the problem to the student{Lexical}
- iii)*The money was hided in the top drawer{Morphological/Agr}

Four tokens each of fifteen sentence types in (57) were presented to the French speaking subjects, to evaluate their judgements of PCs compared to other constructions with similar or more restricted constraints connected with gap position. Both PCs and embedded Wh-constructions allow gaps in subject, DO and PO positions while a gap in temporal clauses is restricted to subject position only. As with OPCs, temporal clauses with direct object and prepositional object gaps are not acceptable in French. OPCs are however acceptable in English while temporal clauses with object gaps are not. Acceptance of OPCs by French subjects should imply acquisition of the rules governing extraction in such constructions, rules that are not applicable to temporal clauses. Temporal clauses were therefore included in this task to ensure that constructions with direct and/or prepositional object gaps were not being indiscriminately awarded scores.

The sentence types in (57d) were ungrammatical, violating the lexical restrictions on matrix verbs for PCs. These were included to ascertain that subjects were aware of such restrictions in PCs. Sentences of the types in (57e) were filler sentences included in the experiment as distractors and also to equalize the number of grammatical/ungrammatical sentences according to the rules of adult

English grammar.

5.5 PROCEDURE

5.5.1 Actout Experiment

For the actout experiment, sentences were presented by audio tape in a random order to subjects who had approximately ten seconds to act out what they heard on the tape. Test sentences were prerecorded on audio cassettes by a native speaker of Canadian English, and prior to the experiment, subjects were informed that sentences would be repeated at their request. Four different questionnaires were used with sentences being presented in two parts: Part 1 comprised sentence types (55a) to (55c), presented in three blocks, each block containing one token of the three sentence types. The order of sentences in each block was different from the order in an adjacent block. For all four questionnaires, part 1 was presented in the same order. Part 2 comprised sentence types (55d) to (55h) also organized in three blocks, each block containing one token of the five sentence types. As in Part 1, the order of sentences in each block was different from the order in an adjacent block. The tell construction with an intransitive preposition was inserted in the second position of each block. In addition, each of the four questionnaires started with a different sentence corresponding to one of the following conditions:

- | | |
|-------------------------------|--------------------------|
| (58) a. DOPC with no gap lead | c. POPC with no gap lead |
| b. DOPC with gap lead | d. POPC with gap lead |

This was to guard against the interpretation of the first sentence type encountered influencing the interpretation of the rest of the sentences in the experiment.

Prior to the start of the experiment, subjects were introduced to the names of the doll family (the parents dad and mom, and the children Tom and Sue). Subjects were further given two sentences (not of the experimental types) to practice with.

5.5.2 Grammaticality Judgement Task

In the grammaticality judgement task, test sentences were presented in random order to native French speaking subjects at both intermediate and advanced levels of proficiency in English. A total number of 60 sentences were presented to the subjects in twelve blocks, each block containing five sentences - one token from each construction type in (57). As in the actout experiment, the order of the sentence types in each block was different from the order in an adjacent block. Two questionnaires were used with the order of sentences in one being the reverse of the other. Subjects were instructed to judge the acceptability of the sentences, each printed on a separate page, by ranking them on a scale 0 - 5. Subjects were instructed to award the score 5 to sentences they judged completely acceptable and 0 to sentences judged completely unacceptable. They were further instructed to award a score between 0 and 5 to sentences that in their judgement fell between completely acceptable and completely unacceptable. In addition, they were required to provide what they thought was the

correct (or a preferred) version for each sentence ranked lower than 5. This correction was to pinpoint the reason why a sentence is scored lower than 5, which could be the result of gap position (subject, DO or PO) for a particular structure or some other reason²³. This correction was done only after judgement had been made for all the sentences in the experiment in order for the corrected version of a previous sentence not to affect judgement of later sentences.

5.6 PREDICTIONS

For the actout experiment, subjects at both levels of proficiency were expected to correctly act out sentence types (55a) to (55d). They were further expected to encounter less problems correctly acting out DOPCs compared to POPCs. An incorrect interpretation of OPCs even when a preceding discourse leads towards expectation of an object gap could be interpreted as insensitivity to discourse information in the interpretation of such constructions. The ability to utilize discourse information in L2 sentence interpretation was not expected to vary between levels of proficiency in L2 if processing capacities developed in L1 are readily accessed and utilized in the interpretation of sentences in L2. Conversely, such effects might be less evident at the intermediate level than at the advanced level if L2 acquisition

²³ A sentence scored less than 5 as a result of reasons other than gap position (e.g. tense, choice of adjective, pronoun etc.) is awarded the score 5. 16.7% of the total number of responses were affected by this decision.

proceeds in a similar manner as L1 acquisition in which discourse effects are not evident until much later in language development.

For the grammaticality judgement task, SPCs are allowed in both French and English, and subjects at both levels of proficiency were expected to correctly judge such constructions acceptable. Both DOPCs and POPCs are not allowed in French and are further considered more marked, typologically, relative to SPCs. A DOPC, though, unlike a POPC, does not violate any syntactic constraint; the gap in object position is properly governed. Further, subjects are familiar with direct object gaps in other constructions involving movement in French. POPCs, syntactically marked, were predicted by the syntactic markedness hypothesis to be judged less acceptable than DOPCs.

For embedded Wh-constructions, subjects at both levels were expected to correctly judge sentences with both subject and direct object gaps acceptable, since they are allowed in French as well as in English. Constructions involving stranded prepositions violate a syntactic constraint in French, and are generally not allowed in any construction (including Wh-constructions). In addition, such constructions can be restructured with the preposition preposed together with the following NP (pied piping), and this could lead to a relatively high number of such constructions judged not acceptable.

For the temporal clause constructions, subjects at both intermediate and advanced levels of proficiency in English were predicted to correctly judge sentences with subject gaps acceptable

since they are allowed in both English and French and sentences with direct object and prepositional object gaps ungrammatical.

CHAPTER VI

RESULTS AND DISCUSSION

6.1 RESULTS

6.1.1 Actout Experiment

With respect to the overall performance (i.e. total number of correct actouts for all the sentences in the experiment), both native English speakers and advanced French subjects were more successful scoring 94.4% and 94.0% respectively, compared to the intermediate French subjects who recorded an overall score of 82.3%. According to an anova test, there was a significant overall difference between levels of proficiency (intermediate/advanced) for correct responses²⁴ ($F(1,32) = 13.53, p < .001$).

6.1.1.1 Control Sentences

The control sentences comprised SPCs, active and passive constructions, and constructions containing intransitive prepositions. For example:

- | | |
|--|---------------|
| (59) a. Sue chooses mom to sing to dad | (SPC) |
| b. Dad asks mom to dance with Tom | (ACTIVE) |
| c. Tom is told by Sue to run up to Mom | (PASSIVE |
| d. Sue likes running and jumping | (INTRANSITIVE |
| Sue tells Tom to RUN around | PREPOSITION) |

Results are tabulated as follows:

²⁴ i.e. For all sentence types combined.

Table 1: Percentages of Correct Control Sentences

TYPE:		SPC	ACTIVE	PASSIVE	INTRAN	TOTAL %
%	NATIVE	98.6	100.0	97.1	91.3	96.75
	INTER	95.9	97.9	83.4	89.6	91.7
	ADV	98.2	96.3	98.2	87.1	95.0

Overall scores recorded for the control sentences were very high for the native English speakers as well as for the French subjects at both intermediate and advanced levels. Over 90% of the control sentences were acted out correctly by all three groups, with differences in scores between the English and the advanced French subjects (less than 2%) as well as between levels of proficiency (a little over 3%) being negligible.

There was not much variation in scores between the different sentence types for the English subjects, with scores of over 90% recorded for every construction type, which was expected since they were native speakers of English.

For the French subjects, SPCs were acted out correctly nearly all of the time at both levels of proficiency, with scores recorded (over 95%) being very close to that of the English subjects, and only a minuscule difference (less than three percentage points) in scores between proficiency levels. An anova test revealed no significant difference ($p > .4$) between levels of proficiency.

This is not surprising, though. The French subjects, regardless of proficiency level in English, were not expected to

encounter any difficulty interpreting SPCs. In addition to being considered unmarked typologically, semantically, and syntactically, an SPC is allowed in both English and French. There is no movement involved in its derivation and was predictably easy to interpret, as was confirmed by the data.

Similar results were recorded for active sentences. Both intermediate and advanced subjects performed almost as well as the English subjects, recording scores in the high nineties. Further, there was hardly any difference (1.6%) between proficiency levels.

An analysis of passive sentences, compared to their active counterparts, revealed some decline at the intermediate level, though scores recorded were still respectable - over 83% - at both levels of proficiency. There was however a fairly wide margin between proficiency levels (14.8%). The scores recorded for the advanced subjects, like their scores for active sentences, were in the high nineties, even slightly higher than scores recorded for the English subjects. At the intermediate level, though, the score for passive constructions, compared to their score for active sentences, dipped almost fifteen percentage points to the low eighties.

An anova test however revealed no significant effect of proficiency level with regards to active/passive constructions, though there was an interaction for level of proficiency by construction type ($F(1,32) = 4.42, p < .05$). In spite of the decline at the intermediate level, the passive score recorded at that level was still fairly high.

Errors for passive constructions (usually by intermediate subjects) generally involved swapping the thematic roles of the NPs in the construction. That is, the initial NP (the D-Structure object) is interpreted as the agent NP while the NP in the by-phrase is assigned theme²⁵.

There was a slight decline in scores for constructions containing intransitive prepositions compared to scores for SPCs and active sentences. Scores were however still impressive - in the high eighties for the French subjects at both levels of proficiency. Interestingly, this was also the control sentence type that the native English speakers recorded their lowest score - 91.3% - less than two percentage points higher than the score for the advanced French subjects. As with SPCs and active sentences, there was hardly any difference (less than 3%) in performance between levels of proficiency ($p > .7$).

A major source of error involved making both the subject and object of the matrix clause the reference of the subordinate subject PRO. Eighty percent (4/5) and 85.7% (6/7) of errors in such constructions were of this nature. That is, a sentence like:

(60) Tom asks Sue to dance around

would be interpreted as *Tom* asking *Sue* to dance around with him. This is especially the case with the verb *ask*. Each of the four

²⁵ 87.5% (7/8) of errors for passive constructions at the intermediate level was of this nature.

different questionnaires used in the experiment contained three tokens of constructions with intransitive prepositions - two with the matrix verb *tell* and one with the verb *ask*. That is, there were twice as many sentences with *tell* compared to *ask*. In spite of this, 60% (9/15) of the total number of errors made by both English and French subjects for constructions with intransitive prepositions was for sentences with the matrix verb *ask*. A plausible explanation for this could be the fact that a subordinate clause containing a subject PRO with *ask* as the matrix verb may be coreferential with a matrix subject or direct object depending on whether or not the matrix clause has a direct object. For example:

- (61) a. Tom asked Sue_i [PRO_i to dance around]
 b. Tom_i asked [PRO_i to dance around]

The results in general indicated that the native English speakers as well as the French subjects at both proficiency levels did not experience any difficulty correctly acting out the control sentences, and their performances were predictably good.

6.1.1.2 *Experimental Sentences (OPCs)*

The experimental sentences comprised OPCs (both DOPCs and POPCs) which were preceded by a one-sentence discourse designed to be neutral or expected to lead the subjects towards anticipating a construction with an object gap, as explained in chapter 5. For example:

- (62) a. Sue likes hugging the family (DOPC - GAP LEAD)
Sue picks Tom to hug
- b. The family likes having fun (DOPC - NO GAP LEAD)
Sue chooses Tom to tickle
- c. Mom likes reading to people (POPC - GAP LEAD)
Mom chooses dad to read to
- d. The family likes singing (POPC - NO GAP LEAD)
Mom picks dad to sing to

As in the acting out of control sentences, both the English and advanced French subjects correctly acted out the experimental sentences most of the time, consistently scoring over 90% on both DOPCs and POPCs. However there was a major difference in performance between levels of proficiency, especially for POPCs. The margin of difference between intermediate and advanced subjects was very small for DOPCs but fairly substantial for POPCs. In fact DOPC scores at both proficiency levels were not that much different from SPC scores. This is shown in table 2:

Table 2: Percentages of Correct PCs

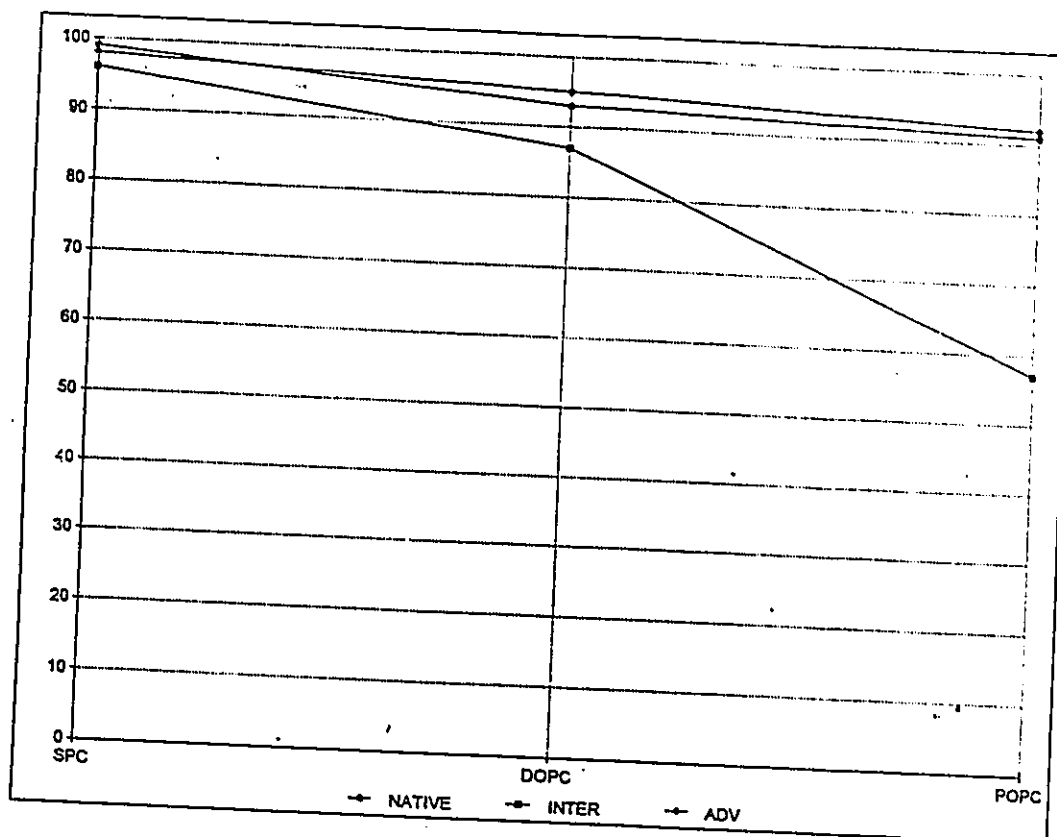
TYPE:		SPC	DOPC	POPC	OPC TOTAL
% CORRECT	NATIVE	98.6	92.8	91.3	92.1
	INTER	95.9	86.7	56.7	71.7
	ADV	98.2	94.8	92.1	93.5

Actout results of control sentences (with the exception of passive constructions) revealed hardly any difference between the English and French subjects at both levels of proficiency, with the intermediate subjects even outscoring their advanced counterparts in constructions involving active sentences and intransitive prepositions. But as table 2 reveals, the percentage of correct responses for OPCs in general dropped dramatically at the intermediate level. No such drop was recorded for the English or advanced French subjects, whose OPC scores were still over 90%, not much different from their scores for SPCs and other control sentences. The OPC score for the intermediate subjects, on the other hand, fell 20% lower than their overall score for the control sentences, and more than twenty percentage points lower than the OPC score for their advanced counterparts. A statistical analysis (anova) revealed a significant effect of level of proficiency (intermediate/advanced) on the number of correct responses for OPCs ($F(1,32) = 15.91, p < .001$).

The breakdown of OPCs into DOPCs and POPCs revealed a more striking difference between proficiency levels. The intermediate

level's score for DOPCs (86.7%) was very respectable, less than three percentage points lower than their score for constructions with an intransitive preposition and even higher than their score for passive sentences. Further, it was only about ten percentage points lower than their scores for SPCs and active sentences. The picture is however quite different for POPCs. Both the English and advanced French subjects' POPC scores were over 90%, almost the same as their DOPC scores (less than three percentage points difference for both groups), and not much different from their scores for the other control sentences. The intermediate subjects, on the other hand, correctly interpreted POPCs barely half of the time - 56.7% - 30% lower than their score for DOPCs. Further, the widest margin of difference between levels of proficiency for all sentence types in the experiment was recorded in the acting out of POPCs, with the advanced subjects scoring over 35% better than their intermediate counterparts. This difference is captured in the following graph:

Figure 1: PC Actout (Percentages)



A statistical analysis of OPCs further revealed a very significant effect of condition (DOPC/POPC) ($F(1,32) = 15.51, p < .001$), and also a significant level of proficiency by condition interaction ($F(1,32) = 13.30, p < .001$).

6.1.1.3 Discourse Effects in the Interpretation of OPCs

As mentioned earlier, half the total number of OPCs in the actout experiment were preceded by a one-sentence discourse designed to lead the subjects towards expecting an object gap while the other half had no such lead. Table 4 gives a breakdown of the scores in relation to +/- discourse bias:

Table 3: OPC Scores (+/- Discourse Bias)

TYPE:			DOPC	POPC
% CORRECT	NATIVE	+ BIAS	94.2	91.3
		- BIAS	91.3	91.3
	INTER	+ BIAS	88.9	60.0
		- BIAS	84.5	53.3
	ADV	+ BIAS	96.5	96.5
		- BIAS	93.0	87.8

There was hardly any effect of discourse for the English control subjects. This is not surprising, however, since they performed well on all construction types. For the French subjects, discourse effect was slight for DOPC and increased for POPCs at both proficiency levels. Differences in percentage scores for +/- bias sentences were only 4.4% and 3.5% for DOPCs at the intermediate and advanced levels respectively and up to 6.7% and 8.7% for POPCs. A statistical analysis revealed a significant effect of bias on the correct responses of OPCs ($F(1,32) = 5.62$, $p < .03$), but bias did not interact significantly with level (intermediate/advanced, $p > .9$) or with condition (DOPC/POPC, $p > .4$).

6.1.1.4 Verb Items and Errors

Results of the actout experiment further revealed no relationship between verb items and errors. As the data indicate, there were far fewer errors for verbs in DOPCs compared to verbs in POPCs. Errors in general, however, seemed to be distributed fairly evenly across verb types. A total number of 12 verbs (6 for DOPCs and 6 for POPCs) were used in the experiments and tables 4 and 5 give a breakdown of verb items and the total number of errors recorded (in brackets) in the sentences in which they were used for DOPCs and POPCs respectively:

Table 4: Verb Items and Total Number of Errors for DOPCs

VERB	CONTROL	INTER	ADV	TOTAL
bump	-	3	1	4
cuddle	-	-	-	-
hug	-	3	1	4
kiss	-	1	-	1
lift	-	2	1	3
tickle	1	3	3	7

Table 5: Verb Items and Total Number of Errors for POPCs

VERB	CONTROL	INTER	ADV	TOTAL
climb onto	1	9	3	13
jump over	-	8	4	12
leap over	2	8	2	12
read to	-	9	-	9
run after	-	4	1	5
sing to	-	7	-	7

Errors for DOPCs invariably involved the subordinate verb being assigned an intransitive reading, with the PRO subject of the subordinate clause being coreferenced with the matrix object. That is, a sentence like:

(63) Sue chooses Tom to tickle

would be interpreted as *Tom* doing the tickling, with the object of the tickling varying from one member of the family to another. An interesting occurrence was that at the intermediate level, the other NP mentioned in the sentence (the matrix subject) would usually be interpreted - two-thirds of the time (8/12) - as the implied object of the verb. That is, *Sue* choosing *Tom* to tickle *Sue*. At the advanced level, errors generally involved the implied

object of the verb being someone not mentioned in the sentence (5/6). That is, a sentence like (63) would involve Sue choosing Tom to tickle another member of the family; or in a few cases, Tom tickling everyone. This could have been the result of greater sensitivity to discourse information by advanced learners, since some of the preceding discourse sentences without a gap lead had *the family* as the subject NP in the same construction as a nominal whose verbal form is used as subordinate verb in the following OPC. For example an OPC like (63) would have the nominal *tickling* in its no gap lead discourse, as in:

(64) The family likes tickling.

Selecting an external referent for PRO have also been reported in L1 acquisition studies on the interpretation of anaphors and pronominals in embedded sentences (see Goodluck 1987); that there was a greater tendency by older children, compared to younger children, to select a referent outside the sentence for pronouns and null NPs.

Another interesting point to note is that though a very high percentage of DOPCs were acted out correctly at both proficiency levels, a number of subjects, especially at the advanced level (7/18), remarked either during or at the end of the experiment that the DOPCs were ambiguous and open to two possible interpretations - the transitive reading which is the correct interpretation (i.e. Sue choosing Tom for the purpose of tickling Tom) or the erroneous

one mentioned above - an intransitive interpretation of the verb (Sue choosing *Tom* for the purpose of *Tom* doing some tickling).

For POPCs, most of the errors - 48.7% (19/39) at the intermediate level and 66.7% (6/9) at the advanced level - consisted of the verb being interpreted as intransitive with the following preposition ignored. The matrix object is generally interpreted as being coindexed with the subject PRO of the subordinate clause. That is, sentences like:

- (65) a. Mom chooses dad to read to
 b. Sue picks Tom to jump over

were usually interpreted as *mom* choosing *dad* to read, and *Sue* picking *Tom* to jump. Occasionally at the intermediate and advanced levels respectively - the other NP mentioned in the sentence (i.e. the subject of the matrix clause), or any other member of the family not mentioned in the sentence, would be interpreted as the implied object of the preposition (38.5% (15/39) and 33.3% (3/9)). That is, sentences like (65a) and (65b) would be interpreted as *mom* choosing *dad* to read to *mom* or some other member of the family, and *Sue* picking *Tom* to jump over *Sue*, or something else, or some other member of the family. In a few instances (5 out of 34 subjects), a POPC actout would be preceded by questions such as:

- (66) a. to read to who(m)?
 b. to jump over what/whom?

In isolated cases (2 occurrences), and only at the intermediate level, there would be no actout, with a following remark that the sentence was incomplete or did not make sense.

6.1.2 Grammaticality Judgement Task

This was a supplementary experiment evaluating subjects' acceptability of PCs compared to other related constructions including embedded Wh-constructions and temporal clauses. These construction types plus other filler ungrammatical sentences were presented at random to the French subjects, who were instructed to award a score within the range 0 to 5 to each sentence, as described in chapter 5.

PCs of the following types were used in the experiment:

- (67) a. John chose Mary to hug Sue. (SPC)
 b. Kelly picked dad's red car to drive to school. (DOPC)
 c. Peter chose a high stool to jump over. (POPC)

Results revealed that SPCs were correctly judged acceptable (scored 5) more often than OPCs at both levels of proficiency - about twenty percentage points difference for both groups. Results further revealed that a slightly higher percentage of DOPCs were judged acceptable than POPCs. The means also indicated a similar trend. The mean score of acceptability was also higher for SPCs compared to both DOPCs and POPCs. This is shown in table 6:

Table 6: Percentages (Judged Acceptable) and Means of PCs

	SPC		DOPC		POPC		OPC TOTAL	
	%	MEAN	%	MEAN	%	MEAN	%	MEAN
INTER	89.1	4.7	71.9	4.2	68.8	4.3	70.4	4.25
ADV	76.4	4.4	54.2	3.6	56.9	3.6	55.6	3.6

An anova test on the overall PC grammaticality judgement results revealed a significant effect of condition (SPC/DOPC/POPC) ($F(1,32) = 9.92, p < .001$), but level of proficiency did not significantly interact with condition (intermediate/advanced $p > .8$). An anova test on just the OPCs, however, revealed no significant effect of condition (DOPC/POPC $p = 1$), or level by condition interaction ($p > .5$). That is, there was a main effect of condition (SPC/DOPC/POPC) but no difference between the two OPC conditions. In addition, the overall means for DOPCs and POPCs at both levels of proficiency were virtually identical.

Another surprising occurrence in the judgement of PCs was the fact that the intermediate subjects judged more sentences correct compared to their advanced counterparts for all three types of PCs. This difference in performance was significant ($F(1,32) = 4.80, p < .04$), though, as mentioned earlier, there was no level by condition interaction.

The embedded Wh-constructions used in the grammaticality judgement task included sentences of the following types:

(68)

- a. Kate wanted to know what killed the cat. (SUBJECT GAP)
- b. Jane didn't remember who the president invited. (DO GAP)
- c. Helen wondered what Bret stepped on in the kitchen. (PO GAP)

Results for the embedded Wh-constructions are presented in table 7:

Table 7: Percentages (Judged Acceptable) & Means of Embedded Wh-Constructions

	SUB GAP		DO GAP		PO GAP	
	%	MEAN	%	MEAN	%	MEAN
INTER	92.2	4.8	82.8	4.6	45.3	3.7
ADV	86.1	4.8	84.7	4.6	56.9	4.0

Constructions with a subject gap were judged acceptable the highest, closely followed by constructions with a direct object (DO) gap, with constructions with a prepositional object (PO) gap coming in at a distant third. This was true at both levels of proficiency. The means for these constructions also showed a corresponding trend for both groups.

The advanced subjects outscored the intermediate subjects this time, on constructions with DO and PO gaps. Percentage and mean scores for constructions with subject and DO gaps were very high at

both proficiency levels (over 86% for subject gaps and over 82% for DO gaps), and the difference in scores between proficiency levels was very low (4% or less) for both sentence types. Mean scores recorded for both sentence types were also 4.6 or higher at both levels of proficiency. This was not surprising, though, since both sentence types are allowed in French as well.

As with PCs, embedded Wh-constructions with a PO gap came in a distant third, with both groups recording scores more than 27% lower than scores for sentences with subject or DO gaps. This was the widest margin of difference recorded for the different types of embedded Wh-constructions at both proficiency levels. Mean scores of 4.0 or lower were also recorded for sentences with PO gaps at both levels. This difference in scores was especially striking at the intermediate level where less than half the total number of such sentence type was judged less than acceptable. The widest margin between levels of proficiency for embedded Wh-constructions (11.6%) was also recorded for sentences with PO gaps. This sharp decline in percentage and mean scores for sentences with PO gaps compared to other types of embedded Wh-constructions is captured by the following graphs:

Figure 2: Embedded Wh-Constructions (Grammaticality Judgement - Percentages)

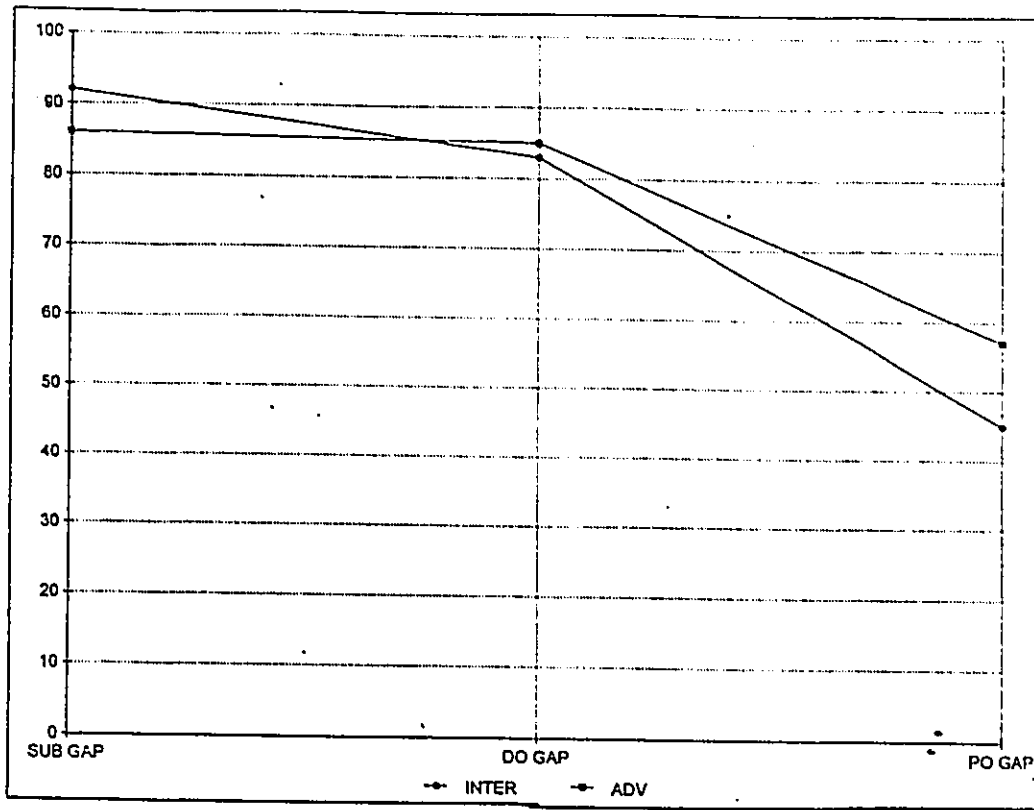
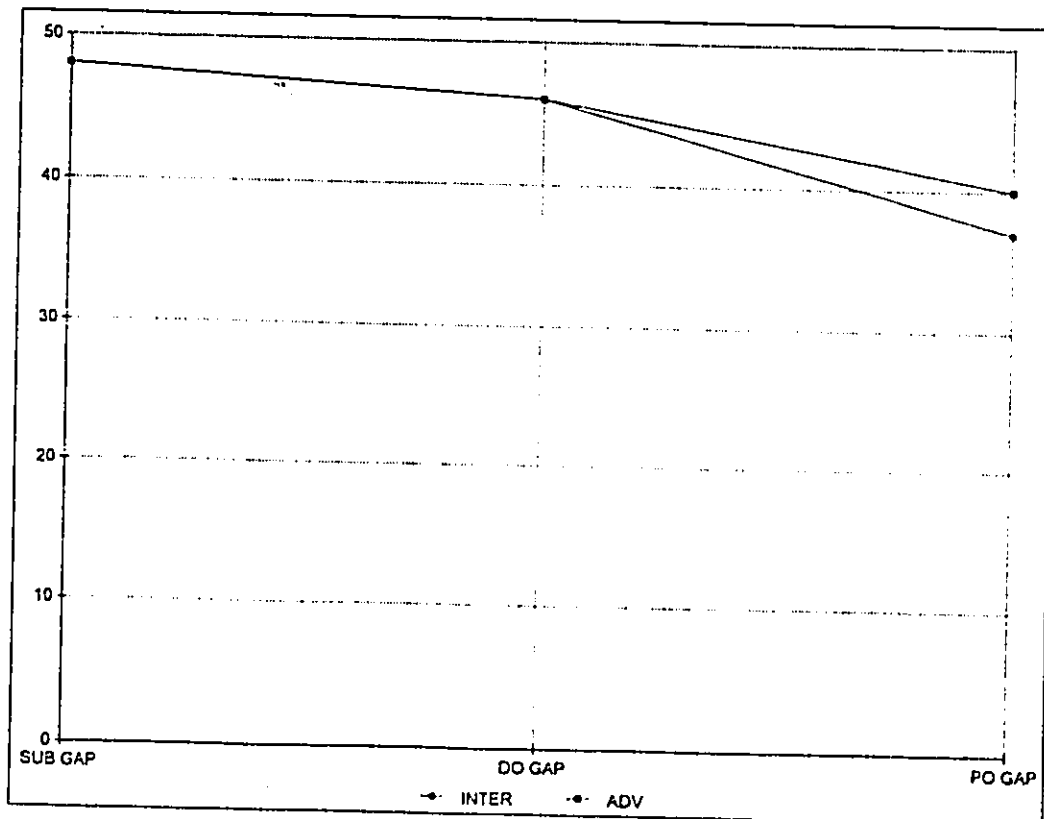


Figure 3: Embedded Wh-Constructions (Grammaticality Judgement - means)



An anova test revealed a significant effect of condition (SUB/DO/PO gap) ($F(1,32) = 36.36, p < .001$); level of proficiency did not interact significantly with condition ($p > .2$). A further analysis of DO/PO gaps revealed a significant effect of condition ($F(1,32) = 45.81, p < .001$) but no significant interaction between level and condition ($p > .3$).

Temporal clause constructions used in the grammaticality judgement task included sentences with subject, DO and PO gaps. Only the first but not the last two are allowed in English and French. These sentence types were included in the experiment to eliminate an overall tendency to judge all sentences with DO and/or PO gaps acceptable. The following are examples of such sentences:

(69)

- a. Jack had dinner before doing some reading. (SUBJECT GAP)
- b.*Mom drank the milk after pouring in a glass. (DO GAP)
- c.*Tommy lost the ball while playing with in the park. (PO GAP)

Subjects at both proficiency levels correctly judged temporal clauses with a subject gap acceptable and those with DO and PO gaps less than acceptable most of the time. Mean scores also reflected a corresponding trend. This is shown in table 8:

Table 8: Percentages (Judged Acceptable) & Means of Temporal Clauses

	SUB GAP		DO GAP		PO GAP	
	%	MEAN	%	MEAN	%	MEAN
INTER	79.7	4.5	29.7	3.5	35.9	3.4
ADV	81.9	4.7	1.4	1.7	0.0	1.3

Percentage scores recorded for sentences with subject gaps was high for both groups (hovering around 80%) but dropped dramatically for sentences with DO and PO gaps. Mean scores were also impressive for sentences with subject gaps (4.5 or higher) and there was a similar drop for sentences with DO and PO gaps. This drop in percentage and mean scores was most notable at the advanced level where less than 2% of sentences with DO gaps and none with PO gaps received the maximum score, with mean scores of 1.7 or less for both sentence types. These drops are clearly displayed in the following graphs:

Figure 4: Temporal Clauses (Grammaticality Judgement - Percentages)

122

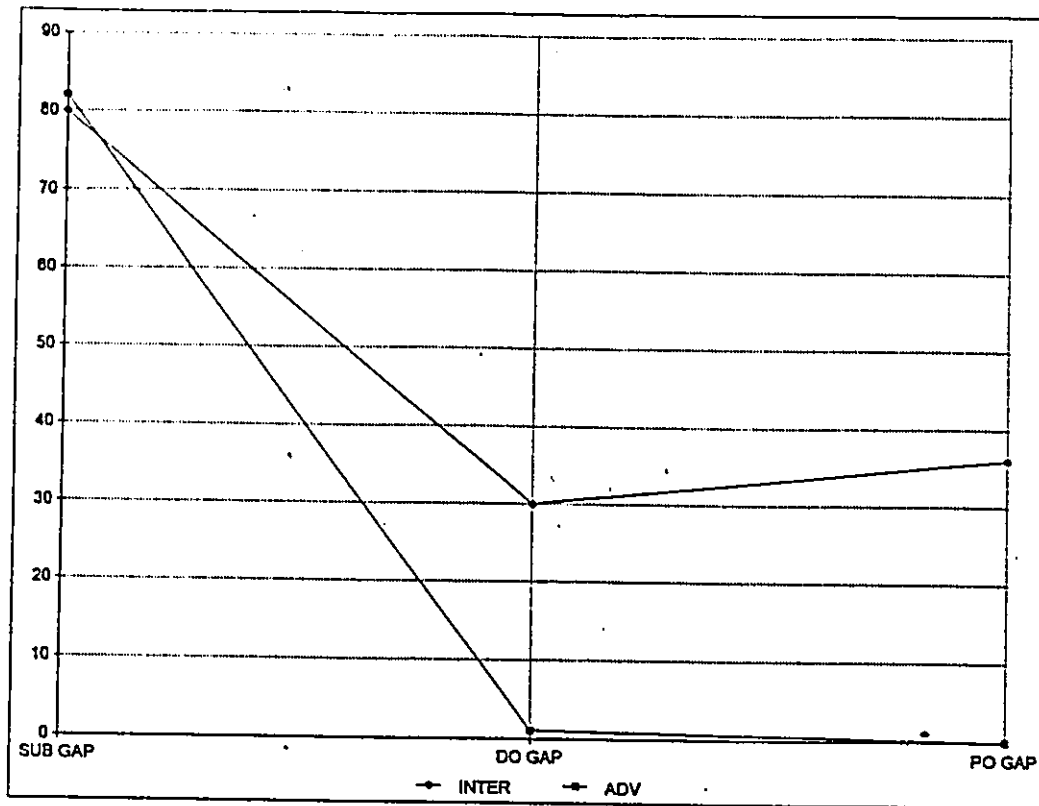
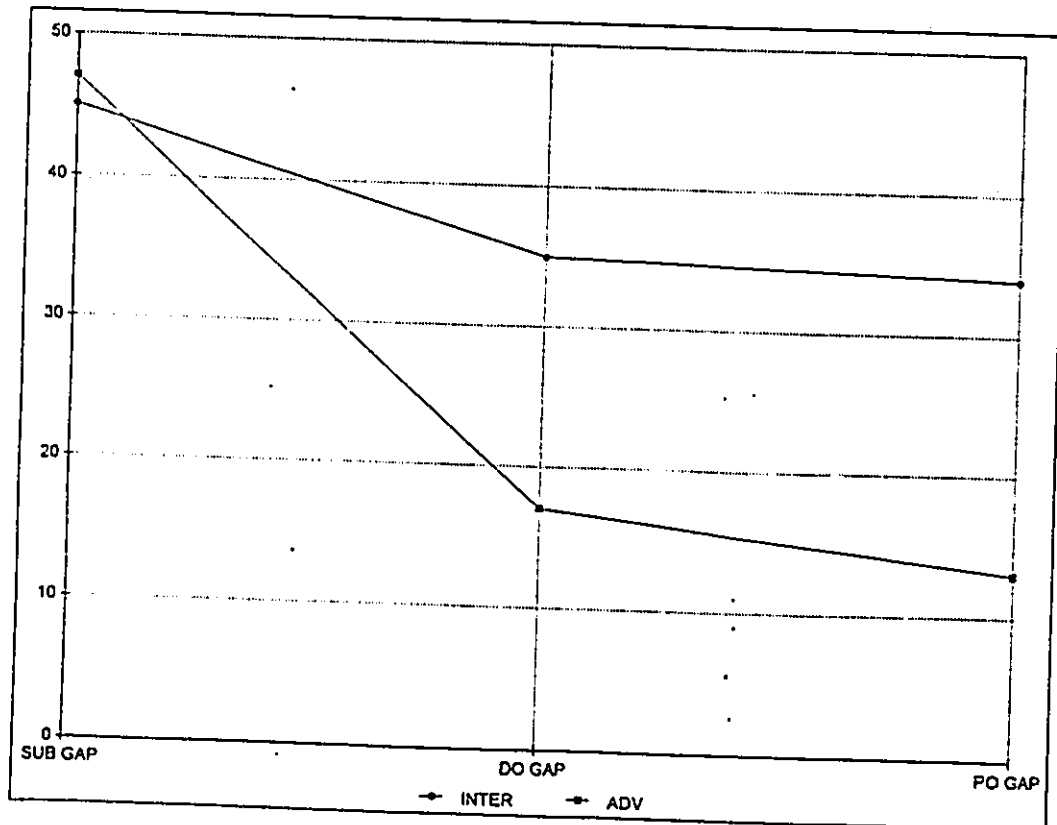


Figure 5: Temporal Clauses (Grammaticality Judgement - means)



An anova test revealed significant effects of level of proficiency on the total number of correct responses for temporal clauses ($F(1,32) = 13.18, p < .002$) and condition ($F(1,32) = 104.16, p < .001$). There was further a significant interaction of level by condition ($F(1,32) = 7.50, p < .002$). An analysis of just the temporal clauses with DO and PO gaps, though, revealed no effects of condition ($p > .6$) and no significant interaction of level of proficiency by condition ($p > .3$).

Constructions classified as purpose-like have the structure of PCs but contain verbs not allowed in PCs. Most of the verbs, in addition, subcategorize for an embedded sentence with a subject PRO rather than a direct object. They are ungrammatical in English (and French) regardless of the position of the gap (or gaps). As with the temporal clause constructions, their purpose was to ensure that scores were not indiscriminately awarded regardless of gap position, and were, in addition, aware of the lexical restrictions accompanying PC matrix verbs. The following are examples of such constructions:

- (70) a.*Penny tried her older sister to phone Bob. (SUBJECT GAP)
 b.*Patty hoped some friends to visit. (DO GAP)
 c.*Sally expects Norm to sing with at the concert. (PO GAP)

Results for the purpose-like constructions are shown in table 9:

Table 9: Percentages (Judged Acceptable) & Means of Purpose-Like Constructions

	SUB GAP		DO GAP		PO GAP	
	%	MEAN	%	MEAN	%	MEAN
INTER	25.0	2.6	10.9	1.9	12.5	2.1
ADV	12.5	1.5	2.8	1.0	0.0	0.6

Results were not surprising in that subjects at both levels of proficiency consistently judged most of these sentences less than acceptable. The mean scores were also very low, less than 3 for both the intermediate and advanced subjects.

The other filler sentences were all ungrammatical with the nature of the ungrammaticality being either word order, lexical or morphological/agreement. For example:

- (71) a.*My cousin very much the girl next door likes.(WORD ORDER)
 b.*The teacher expelled the problem to the student.(LEXICAL)
 c.*The money was hided in the top drawer.(MORPHOLOGICAL/AGR)

Results are presented in table 10:

Table 10: Percentages (Judged Acceptable) and Means of Filler Sentences

	W/O		LEX		MORP	
	%	MEAN	%	MEAN	%	MEAN
INTER	7.8	0.9	26.6	2.8	51.6	4.0
ADV	0.0	0.3	4.2	0.9	8.3	1.5

Sentences with wrong word order were judged less than acceptable most of the time (no such sentence received the maximum score from the advanced subjects). Mean scores of 1 or less were also recorded for both groups, with over 63% and 83% of such sentences receiving the minimum score (0) from the intermediate and advanced subjects respectively.

For sentences with wrong lexical substitution, the advanced subjects were apparently aware of the wrong verb since no such sentence received the maximum score, and a mean score of less than 1 recorded. The percentage of such sentences receiving the maximum score at the intermediate level was much higher but still less than 30%, with a mean score lower than 3.

Sentences with morphological errors mainly contained wrong tense marking, in most cases, overgeneralization of the regular past tense on irregular verbs. The advanced subjects correctly judged such sentences less than acceptable over 90% of the time, with a mean score of less than 2 recorded. The intermediate

subjects, however, judged such sentences acceptable a little over half of the time, with a very high mean score of over 4 recorded.

6.2 DISCUSSION

In the evaluation of the acquisition of marked constructions, two hypotheses - typological and syntactic - were tested in this study. The typological markedness hypothesis predicted OPCs (both DOPCs and POPCs) to be acquired late and thus difficult to interpret by native French speakers since such constructions are absent in L1 and are further considered typologically marked²⁶. The syntactic markedness hypothesis, on the other hand, predicted a late acquisition mainly for POPCs which, unlike DOPCs, violate a universal syntactic constraint; its object gap is not properly governed since a preposition is generally not a proper governor in French. Prepositional object gaps are argued to be licensed in some languages (including English) through the application of some marked syntactic rules, making a preposition a proper governor in such languages. Other languages, including French, have no such rules, making constructions with gaps governed by a preposition unacceptable in these languages. A combination of a prepositional object gap in POPCs in addition to lexically-specified restrictions associated with PCs was thus expected to make POPCs especially challenging and difficult to interpret for native French speakers, particularly during the early stages of L2 acquisition of a

²⁶ As mentioned earlier, the semantic markedness hypothesis also made this prediction.

language that allows such constructions.

Though DOPCs are considered marked, typologically (and semantically²⁷), relative to SPCs, there was little difference in scores between the percentages of correct responses for these two sentence types for the English subjects as well as the French subjects at both levels of proficiency as revealed in table 2. Further, across proficiency levels, the difference was also negligible. Though a DOPC is not allowed in French, both the intermediate and advanced French subjects had probably attained a level in English in which there had been enough evidence of its presence in the language that, in spite of its typologically (and semantically) marked status, such a construction was apparently not problematic to interpret.

Intermediate subjects, however did encounter difficulty interpreting POPCs compared to interpreting DOPCs and other constructions in the experiment. Advanced subjects, having had more exposure to English with enough positive evidence of the existence of POPCs in their input data, had eventually acquired POPCs and therefore did not experience many problems correctly interpreting such constructions. Thus, there is strong support for the syntactic markedness hypothesis that only items considered syntactically marked may pose initial problems in L2 acquisition.

A third hypothesis - the discourse hypothesis - predicted effects of discourse in sentence interpretation by L2 learners.

²⁷ A semantic analysis (see chapter 4) of PCs considers OPCs (both DOPCs and POPCs) more marked relative to SPCs.

Lack of such effects at the intermediate level only would support the view of a parallel between L1 and L2 acquisition since discourse effects are initially lacking also in the early stages of L1 acquisition. Conversely, evidence of discourse effects at both intermediate and advanced levels would confirm the hypothesis that the adult L2 learner's ability to use discourse information in his L1 may be exploited in interpreting sentences in L2 regardless of proficiency level. Discourse effects were further expected to be more pronounced for POPCs, which otherwise were predicted to be more difficult to interpret compared to DOPCs.

Discourse effect, though minimal in general, was higher for POPCs compared to DOPCs at both levels of proficiency, and as the following graphs demonstrate, both intermediate and advanced subjects demonstrated about the same sensitivity to discourse information, which ruled out a parallel process for L1 and L2 acquisition:

Figure 6: Actout Experiment - Discourse Bias vs. No Discourse Bias (Percentages) for DOPCs

129

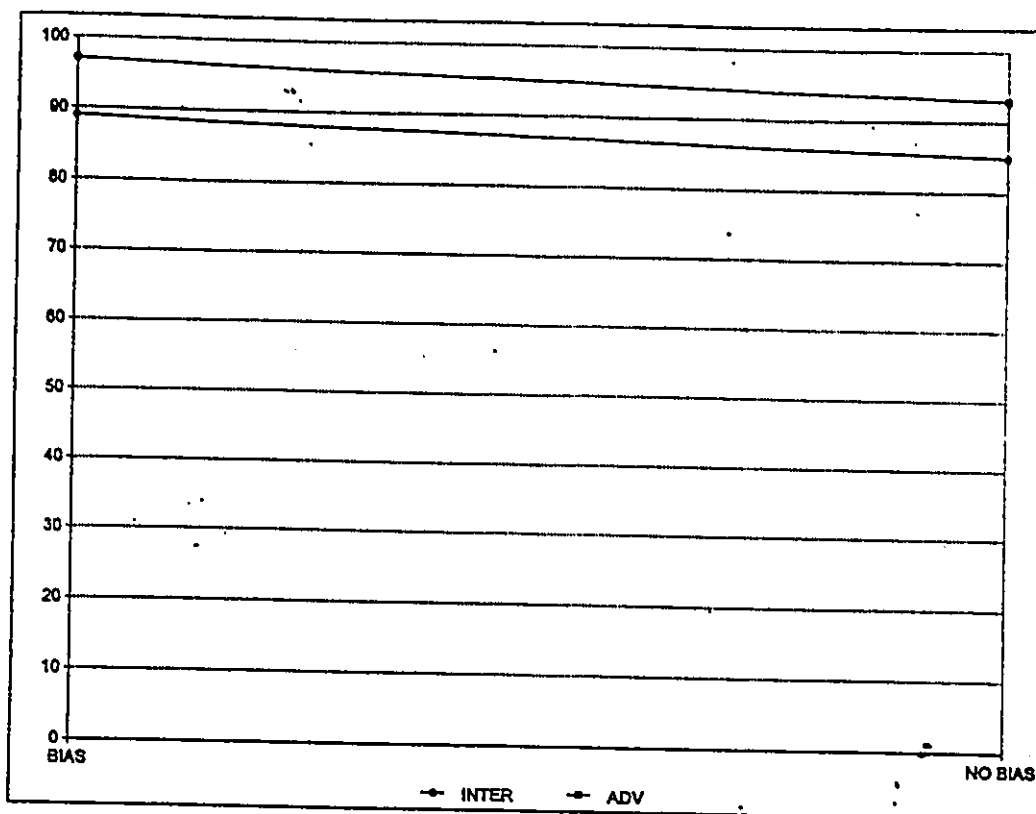
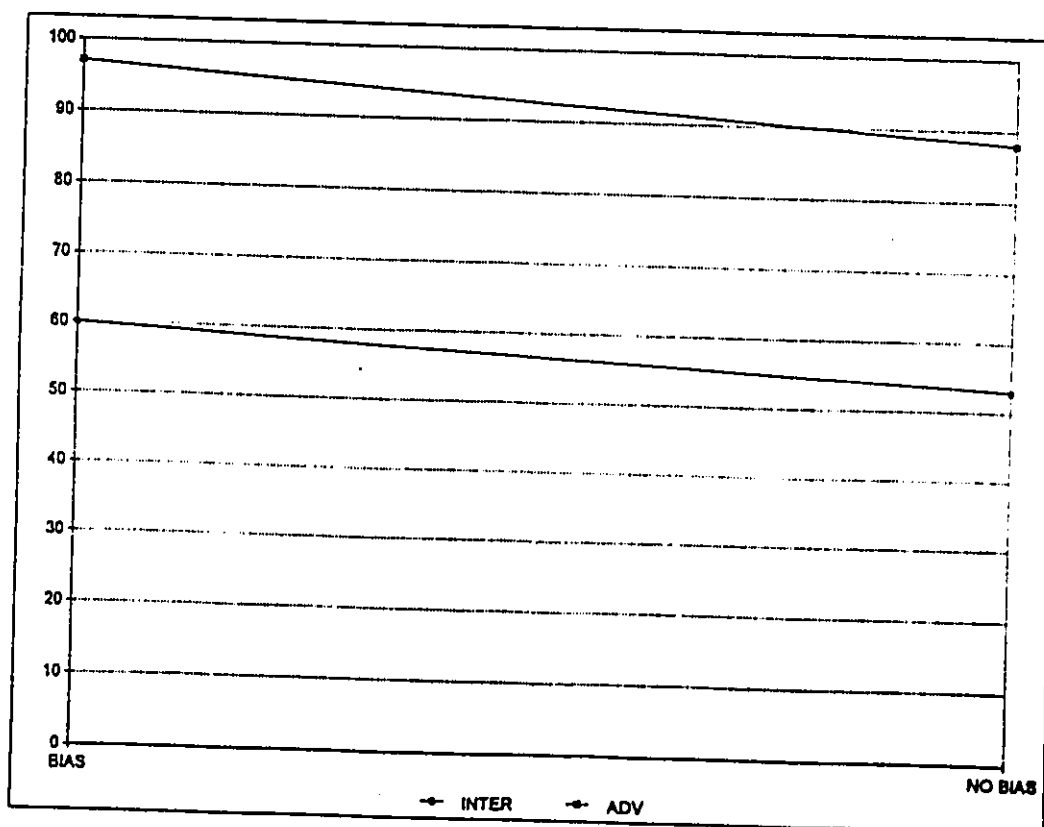


Figure 7: Actout Experiment - Discourse Bias vs. No Discourse Bias (Percentages) for POPCs



In L2 acquisition, the learner may be able to employ skills acquired in the process of L1 development to facilitate the comprehension of L2 input data. Prior knowledge of a language (i.e. L1) does have some effect, albeit a positive one in this instance, in attempting to process L2 input data. Results of the actout experiment indicate that processing capacities or strategies (such as use of discourse information in sentence processing) developed during the acquisition of L1 may be exploited in the L2 learner's attempt to process and interpret sentences in L2 regardless of proficiency level.

For the grammaticality judgement task, the expectation that SPCs would be judged acceptable most of the time was realized, with over 76% of such construction type judged acceptable by both groups, and mean scores of 4.4 or higher recorded. Acceptability scores, in terms of percentage (scores of 5) and means, were expected to be low for POPCs since, in addition to their absence in French, they are considered marked, syntactically, as opposed to DOPCs and SPCs. Percentage and mean scores for DOPCs, absent in French but not syntactically marked, was expected to fall somewhere between SPC and DOPC scores. There was hardly any difference, though, between DOPC and POPC scores at both levels of proficiency. This is demonstrated by the following graphs:

Figure 8: PC (Grammaticality Judgement - Percentages)

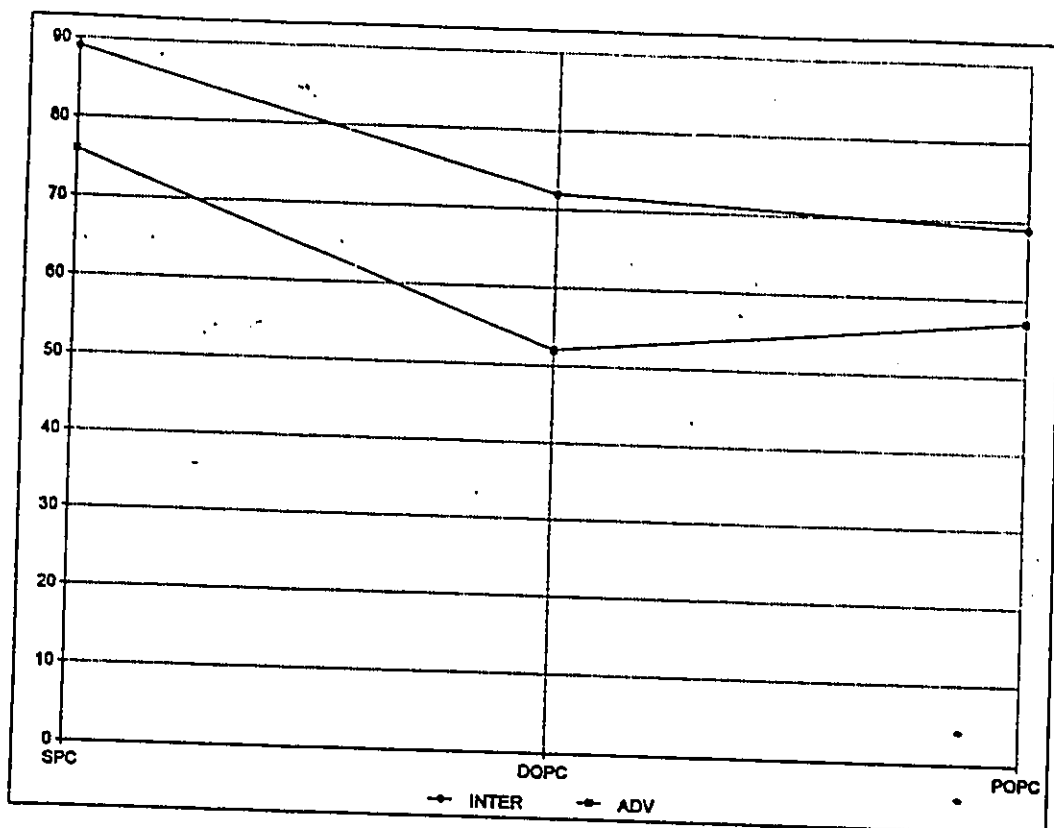
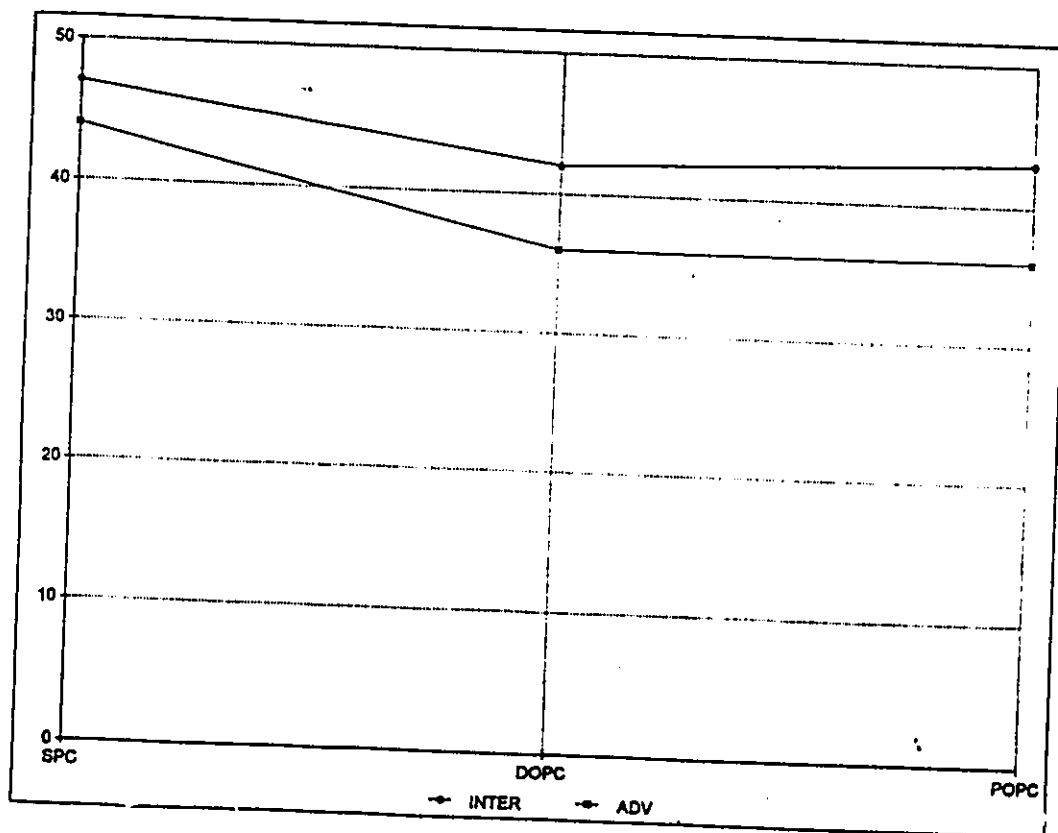


Figure 9: PC (Grammaticality Judgement - Percentages)



In addition, there was hardly any difference in mean scores awarded to DOPCs and POPCs by both intermediate and advanced subjects. A comparison of the PC graphs for both the actout and grammaticality judgement tasks revealed a sharp decline in percentage scores from DOPCs to POPCs in the actout task. No such decline was present in the grammaticality judgement task. These graphs are reproduced below for comparison:

Figure 10: PC (Actout - Percentages)

133

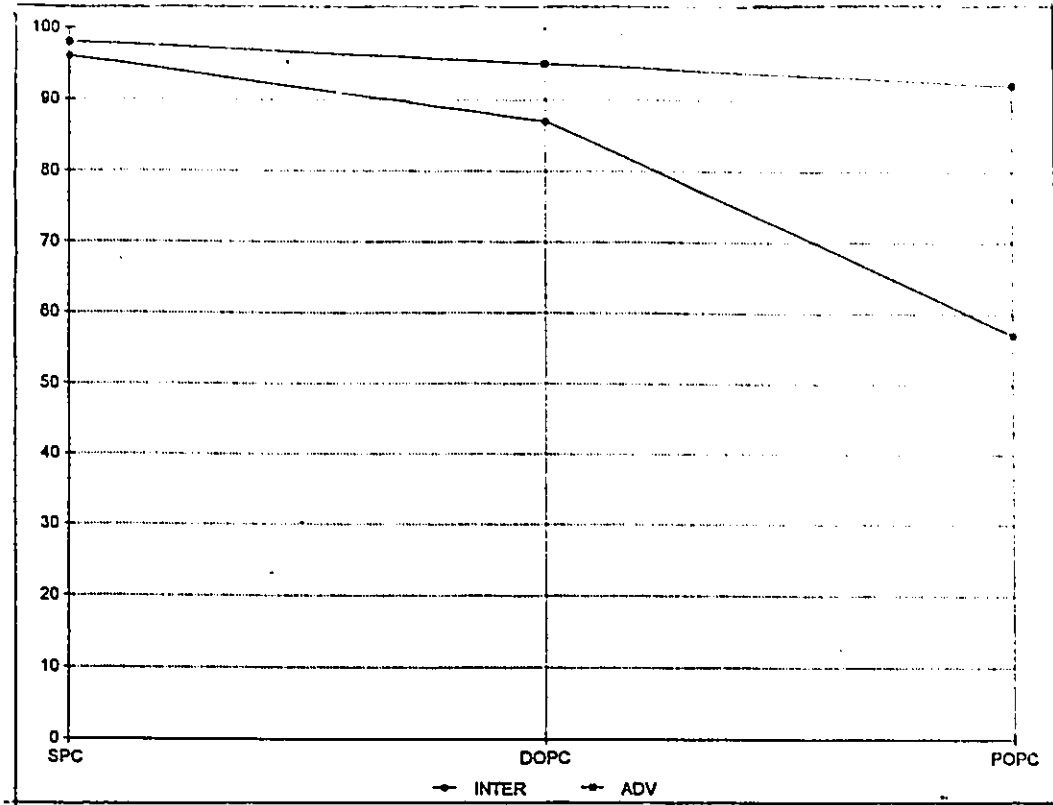
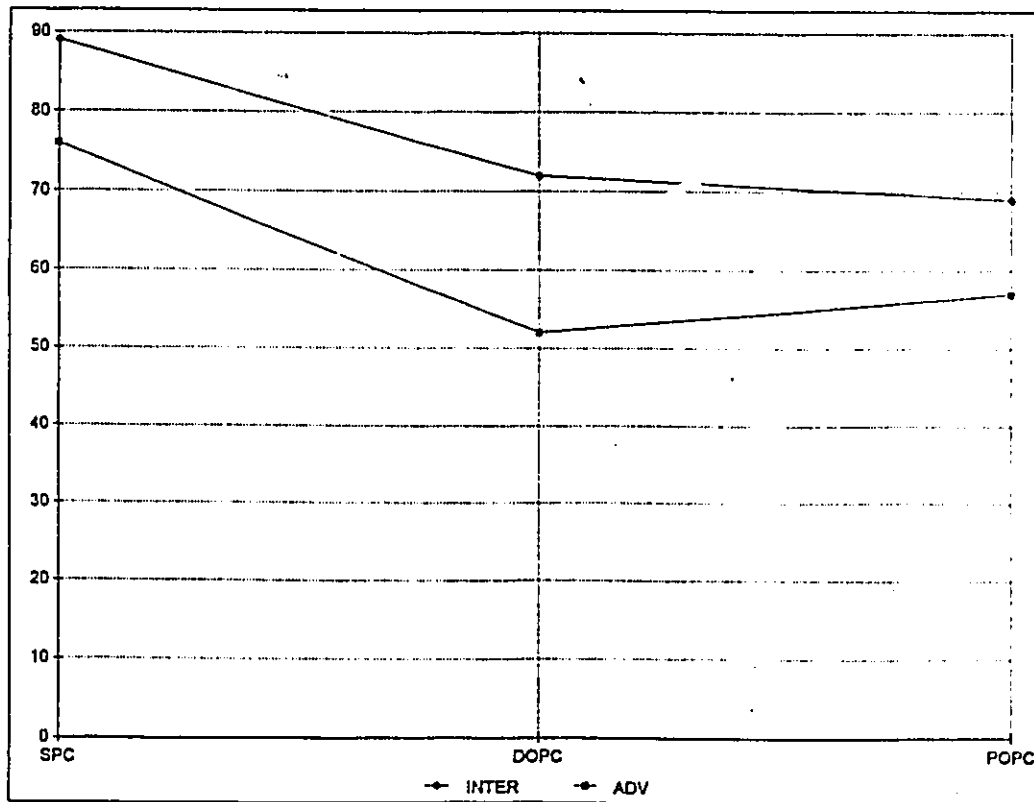


Figure 11: PC (Grammaticality Judgement - Percentages)



The relatively low acceptance percentage scores for DOPCs at both proficiency levels and POPCs at the advanced level could be due to the fact that, in addition to providing judgement on the acceptability of sentences, the subjects were further required to provide a better way of expressing sentences ranked lower than the maximum score (5) for the first half of the sentences in each questionnaire (i.e. 30). The rationale behind this decision was to verify that the reason for rejecting a sentence was because of gap position rather than other reasons (such as choice of tense, pronoun etc.).

DOPCs and POPCs could be rephrased as an SPC (i.e. with the object of the subordinate clause in situ) with only a shift in emphasis, as in (72b) and (73b)²⁸:

(72) a. Frank chose his baby sister to cuddle

b. Frank chose to cuddle his baby sister

(73) a. Peter chose a high stool to jump over

b. Peter chose to jump over a high stool

The awareness of another way of expressing DOPCs (and POPCs for that matter) without using an object gap could have led subjects at both proficiency levels to judge some of these constructions less than acceptable. As support for this assumption, a high number of

²⁸ In (72a) and (73a), the emphasis is on the person chosen by the matrix subject while, in (72b) and (73b), the emphasis is on the choice of action by the matrix verb.

corrected versions of OPCs at both levels generally contained an overt object as in (72b) and (73b), especially with the verb *choose*. In instances where the matrix verb was *pick*, a pronoun would be inserted after the subordinate verb in a DOPC and after the second preposition in a POPC, as in (74b) and (75b):

(74) a. Rob picked dad's red car to drive to school

b. Rob picked dad's red car to drive it to school

(75) a. David picked a friendly girl to dance with at the party

b. David picked a friendly girl to dance with him/her at the party

57.1% (4/7) and 28.6% (2/7) of corrected versions of DOPCs at the intermediate level and 64.3% (9/14) and 14.3% (2/14) at the advanced level were of the sentence types in (72b) and (74b) respectively; 36.4% (4/11) and 54.5% (6/11) of corrected versions of POPCs at the intermediate level and 47.1% (8/17) and 35.3% (6/17) at the advanced level were of the sentence types in (73b) and (75b) respectively.

In addition, as mentioned earlier, in spite of the very high percentage of correct responses in the actout experiment for DOPCs at both proficiency levels and for POPCs at the advanced level, some of the subjects remarked during or after the experiment that they would rather express OPCs such as those in (72a) and (73a) as the forms in (72b) and (73b) respectively.

Thus, though the subjects might have fully comprehended a sentence used in the experiment and could possibly use it in conversation, such a sentence could have been awarded a score lower than the maximum, if, in the subject's opinion, the sentence could be expressed in a better way. That is, some sentences scored lower than 5 might have been awarded the maximum score if the subjects did not have to provide an alternative. Thus, the grammatical judgement task was to some extent subjective and comparative, not necessarily always reflecting knowledge of internalized structures.

As mentioned earlier, the intermediate subjects correctly judged more PC (all three types) than their advanced counterparts. A possible explanation would be that the advanced subjects were just overly critical of PCs. For example, their acceptability score for SPCs, which is present in French also, was lower than the SPC score for the intermediate subjects.

Results for the embedded Wh-constructions revealed that subjects at both proficiency levels judged sentences with subject and DO gaps correct most of the time, while percentage scores of sentences with PO gaps was much lower. Unlike judgement of PCs, though, scores for embedded Wh-constructions for DO gaps were much higher compared to scores for constructions with PO gaps. This was not unexpected, however. DO gaps are allowed in such constructions in French and are not in any way considered marked. Embedded Wh-constructions with PO gaps, on the other hand, are not allowed in French where they violate a constraint on proper government. Even if they were understood by the French subjects, there was the

likelihood of such sentence types being rejected in favour of an alternative in which the preposition is not stranded (i.e. pied piping - the acceptable form in French), as was the case in the experiment. This lends further support to the syntactic markedness hypothesis that constructions considered syntactically marked are not only less likely to be understood but less likely to be accepted.

An analysis of results for judgement on temporal clause constructions further revealed no significant difference in judgement of constructions with DO and PO gaps as well as no significant difference in performance between proficiency levels. This indicates that subjects, at both proficiency levels, were aware of the violation of the constraint on extraction for a temporal clause.

In addition, if we assume a mean score 4 or more as marginal acceptability, 66.7% of intermediate subjects considered DOPCs okay compared to 46.7% for temporal clauses with DO gaps. Similarly, 73.3% of subjects considered POPCs okay compared to 46.7% for temporal clauses with PO gaps. The numbers are more striking at the advanced level. 35.3% and 47.1% of subjects awarded a mean score of 4 or more to DOPCs and POPCs respectively, compared to 5.9% and 0% for temporal clauses with DO and PO gaps respectively. For PO gaps in embedded Wh-constructions, which are allowed in English but not in French, 53.3% and 52.9% of intermediate and advanced subjects awarded a score of 4 or more to such constructions.

Results thus revealed that though subjects had other preferred ways of expressing OPCs, still over half the DOPCs and POPCs were judged acceptable by both intermediate and advanced subjects. That is, the subjects were aware, to some extent, of the grammaticality of DO and PO gaps in PCs, and the ungrammatical nature of such gaps in temporal clauses with DO and PO gaps, and were not just guessing or indiscriminately awarding scores to sentences in the experiment. This supports the conclusion that the subjects were aware of movement restrictions of the different constructions and were not awarding scores at random.

Judgement on the purpose-like constructions as well as on constructions with wrong word order or wrong lexical substitution revealed that subjects, at both proficiency levels, were apparently aware of the ungrammatical nature of these sentences, consistently judging them unacceptable. For constructions with irregular morphology, though, the intermediate subjects judged them acceptable more than half of the time. The intermediate subjects' knowledge of the irregular morphology of English is however expected to be lower compared to their advanced counterparts, as demonstrated by their performance on this sentence type. This was probably an indication of their lower level of proficiency in English, further justifying their placement under the intermediate category by the cloze test results.

A set-back in the grammaticality judgement task is that it was administered to only the native French speaking subjects. There were no native English speakers to act as a control group, which

would have further confirmed (or disconfirmed) the results of this experiment. It would thus be difficult to make systematic comparisons between the actout task, for which there was a native English control group and the grammaticality judgement task, for which there was no such group.

CHAPTER VII

SUMMARY AND CONCLUSION

7.1 SUMMARY

The purpose of this study was to evaluate the effects of gap position and markedness relations associated with such positions in the acquisition of PCs in English by adult native French speakers. There are three possible gap positions in PCs in English: Subject, direct object (DO) and prepositional object (PO) positions. French allows only one gap position - subject - in PCs. Across languages, the presence of PCs with DO and PO gaps (OPCs) implies the presence of PCs with subject gaps, but the reverse is not necessarily the case. That is, typologically, OPCs in general are marked relative to SPCs. Thus, a DOPC is assigned its marked status simply because of its presence in fewer languages compared to an SPC, and also because it selects a second argument in addition to theme (the highest argument on the thematic hierarchy)²⁹. A POPC, in addition to being typologically and semantically marked, further violates a syntactic constraint on proper government in some languages (including French), since its object gap must be governed by a preposition, but a preposition is not a proper governor in these languages. In other languages (including English), constructions with prepositional object gaps are generated through the application of a peripheral syntactic rule³⁰. Syntactically,

²⁹ See Chierchia (1989).

³⁰ See Hornstein & Weinberg (1981), Kayne (1981) and Van Riemsdijk (1978).

therefore, only a POPC is considered marked.

OPCs are thus unique in the sense that one half - DOPC - is marked only typologically and semantically while the other half - POPC - is additionally marked syntactically.

In terms of L2 acquisition, typological markedness predicts that differences between L1 and L2 will result in learning difficulties only in areas where L2, but not L1, adopts the marked value. Markedness, in this sense, means occurrence in fewer languages of the world and not necessarily a violation of a constraint of UG. In this respect, both DOPCs and POPCs, absent in French and typologically marked compared to SPCs, are predicted to be initially difficult to acquire by native French speakers. Syntactically, only a POPC, violating core constraints of UG, is marked and is predicted to initially create learning problems for native French speakers.

Results of the actout experiment provided overwhelming support for the syntactic markedness hypothesis. SPCs, present in French, and further considered unmarked, typologically, semantically and syntactically, were predictably easy to interpret by native French speakers at both intermediate and advanced levels of proficiency in English. Results further revealed that DOPCs were not difficult to interpret at both proficiency levels, in spite of its typological and semantic marked status. Only POPCs, syntactically marked, proved to be initially difficult to interpret, as evident in the relatively low scores recorded at the intermediate level in the acting out of such constructions. The POPC score at this level was

more than 30% lower than the DOPC score, and over thirty-five percentage points lower than the POPC score recorded at the advanced level - the widest margin of difference for construction types between levels of proficiency.

A second task in the actout experiment evaluated discourse effects in the interpretation of sentences by L2 learners. Results revealed some effects of discourse in sentence interpretation at both proficiency levels. That is, such information is readily available and utilized in L2 acquisition regardless of level of proficiency.

Results of the grammaticality judgement task revealed French speakers at both proficiency levels accepted SPCs most of the time, recording impressive percentage and mean scores. DOPC scores were surprisingly lower than expected at both levels of proficiency, and POPC scores, not unexpectedly, were also low at both levels.³¹ Compared to other ungrammatical constructions³² in English with DO and PO gaps, scores for DOPCs and POPCs were much higher.

Results of the grammaticality judgement task were, however, not as clear cut as the actout results. There was indeed evidence that syntactically marked constructions (POPCs and Wh-constructions with PO gaps) had a lower likelihood of being accepted compared to other sentence types. There was further evidence that subjects, at

³¹ See discussion in chapter 6 for possible reasons for the low DOPC scores at both levels and the low POPC score at the advanced level.

³² Temporal clauses and "purpose-like" constructions (see appendix).

both levels of proficiency, were aware of the constraints barring DO and PO gaps in temporal clauses and the lexical restrictions that are associated with PC matrix verbs. In the grammaticality judgement task, however, both DOPCs and POPCs were awarded relatively low scores compared to SPCs at both proficiency levels.

However, as mentioned earlier, a flaw in the grammaticality judgement task was that there was a lack of native English speaking control subjects and this makes it difficult to draw strong conclusions from results of this task.

In the actout task, on the other hand, subjects at both levels performed very well on DOPCs and only intermediate subjects seemed to have difficulty with POPCs. As mentioned earlier, though both experiments were primarily comprehension tasks, the format of the grammaticality judgement experiment made judgement subjective and relative. Subjects had the option of providing an alternate way of expressing constructions not awarded the maximum score and, as reported in chapter 6, the alternatives provided for OPCs, in most cases, conformed to PC structures acceptable in French. That is, the OPC test sentences could have been judged against the forms acceptable in French. Subjects had no such option in the actout experiment which was not judgement and, I would argue, reflected their grammatical competence in English as far as their knowledge of PCs was concerned.

7.2 CONCLUSION

The argument that parametric variation between L1 and L2 and the resetting of a parameter to include the marked value in L2 could create initial learning difficulty (Flynn 1988; Liceras 1988, 1989; Phinney 1987; White 1989) is supported by results of this study. Direct object extraction is allowed in constructions other than PCs in French, and the derivation of DOPCs in English involve such extraction. Native French speakers thus had no problems correctly interpreting a DOPC once there has been enough evidence of its existence in English. The derivation of a POPC, on the other hand, involves extraction of a prepositional object, the marked value of the movement parameter which is absent in French. Native French speakers, this study revealed, initially (i.e. at the intermediate level) had problems with POPCs in spite of evidence of their presence in English.

Because of the limitation of the experimental subjects to intermediate and advanced levels of proficiency in English (i.e. no beginners), we cannot positively conclude that structures that do not violate UG constraints but are considered marked because of frequency (or non-frequency) of occurrence across languages do not necessarily create initial learning problems compared to structures that are considered syntactically marked. What is evident, however, is that structures that are considered marked only typologically are much less difficult to interpret compared to structures that are additionally marked syntactically.

Discourse effects in the actout experiment were not restricted to the advanced level only which would have supported the view that there is a parallel process between L1 and L2 acquisition (Corder 1967, 1983; Dulay & Burt 1974; Krashen 1981, 1985). Results however revealed no significant difference in the use of discourse information by adult L2 learners at different levels of proficiency in English. That is, processing skills and strategies developed during the acquisition of L1 could be employed in the acquisition of subsequent languages by the adult L2 learner, something that is lacking in L1 acquisition. Thus, knowledge of a prior language (L1) does have some effect (a positive one in this study) during the process of acquiring a second language.

7.3 EXPERIMENTAL DESIGN

One of the primary goals in language (L1 and L2) acquisition research is to gain an insight into the linguistic competence of the learner. This is especially important in L2 acquisition studies, where researchers are trying to determine whether or not L2 learners' IIs are constrained by principles of UG.

Experimental designs generally involve production and comprehension tasks. A production task is however restricted in the sense that it could reveal only structures that have been acquired by the learner. Structures that are difficult for the learner can be avoided, but absence of a particular structure in a learner's data cannot be positively interpreted as ignorance of that structure. That is, a conclusion can be drawn only on

structures produced by the learner which may or may not include the target structures of the experiment. A comprehension task, on the other hand, enables the researcher to obtain information on structures that are or are not allowed by the L2 learner's IL grammar.

The two experimental tasks used in this study - actout and grammaticality judgement - were comprehension tasks designed to test L2 learners' knowledge of constructions with varying degrees of markedness. An advantage in using the actout task is that it provided information on structures that were unconsciously generated by the learner's grammar regardless of whether or not he was comfortable with such structures. The actout task additionally allowed us to determine, in this study, whether, and the level at which, processing strategies (such as use of discourse information) are utilized by L2 learners in interpreting otherwise difficult structures. That is, information was provided not only on the learners' competence but also his processing capacities.

It might be argued that in the actout task administered in this study, subjects were merely converting OPCs into structures allowed in French before acting out the sentence - that in effect what was being acted out was the revised and not the original structure. This however begs the question, because a structure absent in L2 grammar has to be part of the learner's IL grammar before it can be converted to a structure allowed by L1 grammar.

The grammaticality judgement task additionally allowed us to determine the L2 learners' knowledge of constructions generated by

UG and those violating UG constraints. The fact that they had the option of providing alternatives for the sentences might have undermined the effectiveness of their judgements. This, I believe, is the price to pay to ensure that it was indeed a violation of UG constraints that was responsible for the rejection of sentences.

7.4 FUTURE RESEARCH PLANS

This study has been limited to actout and grammaticality judgement tasks, administered to adult L2 learners because of time and financial constraints. An ideal experiment would involve three-way comparison data involving the interpretation of PCs by children in L1 acquisition, adult native English speakers and adult non-native English speakers.

The actout experiment is also an off-line task, and may not adequately tap the processing capacities of the subjects it is administered to. An additional on-line processing task involving PCs could further reveal not only awareness and anticipation of an object gap (real or false) by adult L2 learners, but also sensitivity to the different processing constraints that are argued to influence gap positing in sentence processing. This could shed some light on whether adult L2 learners are initially sensitive to L2 processing constraints or L1 constraints are transferred in the processing of L2 data.

APPENDICES

APPENDIX I: CLOZE TEST

INSTRUCTIONS: In the following passage 51 words have been omitted. Read the passage and insert whatever word makes sense according to the meaning of the passage. The word should be grammatically correct. Remember - insert only ONE word in each space.

Example: The boy walked across the street and bumped into a lamppost. He was shaken up a little, but he managed to continue walking.

PASSAGE

One of the dangers for a person who plans to spend any appreciable amount of time in another culture is the sense of confusion and misunderstanding that social psychologists call culture shock.

A person _____ enters a foreign culture ordinarily passes _____ three phases of adjustment. First, he _____ a spectator; he observes what is _____ on around him but does not _____. Second, he becomes personally involved in the _____ of the foreign culture and tries to _____ to terms with them. Finally, _____ he will have mastered the new situation and _____ get along smoothly in the new _____ or he will realize that his _____ culture is the only workable one for _____.

In the first phase, that of _____, the initial reaction to a new _____ is likely to be one of curiosity _____ delight. Everything looks interesting. However, a _____ weeks'

time changes one's perception of the _____. Living in a country is quite different_____visiting it. As the person _____, and he becomes uneasy and insecure_____he doesn't know the right_____of doing things.

Culture shock is precipitated by the distressing_____of uncertainty and anxiety that result from_____finding all the familiar symbols, signs, and cues that _____a person through his own culture. He_____himself having to use a_____ "design for living." He doesn't know what people_____ of him and what he should expect of_____. He is not at all sure _____to shake hands, how much to tip,_____to buy things he needs,_____what to say to waiters, and he _____that the social etiquette he has_____is no longer of use to him. _____shock is usually accompanied by a linguistic_____that makes it even more difficult to _____the cultural barriers. When I was_____ linguistic shock, English sentences would sound to_____like a long, unpronounceable string of harsh_____. At that time I deeply regretted the _____that I had chosen to learn English_____of some sensible language. I couldn't see why the_____people had to use these odd, barbaric utterances instead of speaking with normal human words like everyone else. I sometimes had the feeling that Americans spoke English in order to confuse unsuspecting foreigners.

APPENDIX II: ACTOUT EXPERIMENT**ACTOUT PURPOSE CLAUSE EXPERIMENT I****I. SPCs with choose and pick**

- a) Mom chooses Sue to read
- b) Tom picks dad to hug mom
- c) Sue chooses Tom to sing to dad

II. Complement to tell Active Sentences

- a) Mom tells dad to lift Sue
- b) Tom asks Sue to roll over
- c) Dad asks mom to dance with Tom

III. Complement to tell Passive Sentences

- a) Sue is told by Tom to jump up and down
- b) Dad is asked by mom to tickle Tom
- c) Tom is told by Sue to run up to Mom

IV. Complement to tell with Intransitive Preposition

- a) Mom likes hopping and skipping
Mom tells dad to **SKIP** around
- b) Sue likes running and jumping
Sue tells Tom to **RUN** around
- c) Tom likes dancing and playing
Tom asks Sue to **DANCE** around

V. DOPCs with *choose and tell*

+ Discourse Bias

- a) Dad likes cuddling people
Dad chooses Sue to cuddle

- b) Tom likes bumping other people
Tom picks mom to bump

- c) Sue likes hugging the family
Sue picks Tom to hug

- Discourse Bias

- a) The family likes having fun
Sue chooses Tom to tickle

- b) The family likes tests of strength
Dad picks mom to lift

- c) The family is very affectionate
Mom chooses Sue to kiss

VI. POPCs with choose and tell**+ Discourse Bias**

- a) Mom likes reading to people
Mom chooses dad to read to

- b) Tom likes climbing onto people's shoulders
Tom picks Sue to climb onto

- c) Sue likes leaping over the family
Sue chooses Tom to leap over

- Discourse Bias

- a) The family likes running
Dad chooses Tom to after

- b) The family likes jumping games
Sue picks Tom to jump over

- c) The family likes singing
Mom picks dad to sing to

ACT-OUT PURPOSE CLAUSE EXPERIMENT II**I. SPCs with *choose* and *pick***

Mom chooses Sue to read

Tom picks dad to hug mom

Sue chooses Tom to sing to dad

II. Complement to *tell* Active Sentences

- a) Mom tells dad to lift Sue
- b) Tom asks Sue to roll over
- c) Dad asks mom to dance with Tom

III. Complement to *tell* Passive Sentences

- a) Sue is told by Tom to jump up and down
- b) Dad is asked by mom to tickle Tom
- c) Tom is told by Sue to run up to Mom

IV. Complement to *tell* with Intransitive Preposition

- a) Mom likes hopping and skipping
Mom tells dad to **SKIP** around
- b) Sue likes running and jumping
Sue tells Tom to **RUN** around
- c) Tom likes dancing and playing
Tom asks Sue to **DANCE** around

V. DOPCs with *choose* and *pick*

+ Discourse Bias

- a) Sue likes tickling people
Sue chooses Tom to tickle

- b) Dad likes lifting people up
Dad picks mom to lift

- c) Mom likes kissing the family
Mom chooses Sue to kiss

- Discourse Bias

- a) The family is very affectionate
Dad chooses Sue to cuddle

- b) The family likes rough play
Tom picks mom to bump

- c) The family likes hugging and kissing
Sue picks Tom to hug

VI. POPCs with choose and pick**+ Discourse Bias**

- a) Dad likes running after people
Dad chooses Tom to run after

- b) Sue likes jumping over people
Sue picks Tom to jump over

- c) Mom likes singing to the family
Mom picks dad to sing to

- Discourse Bias

- a) The family likes reading
Mom chooses dad to read to

- b) The family likes jumping and climbing
Tom picks Sue to climb onto

- c) The family likes exercising
Sue chooses Tom to leap over

APPENDIX III: GRAMMATICALITY JUDGEMENT TASK**I. Purpose Clause Constructions with Subject Gap**

- a) Tom picked his younger brother to sing.
- b) John chose Mary to hug Sue.
- c) Steve picked a fat boy to work with Fred at the fair.
- d) Harry chose a tall boy to pose for the photographer.

II. Purpose Clause Constructions with Direct Object Gap

- a) Peter chose a new book to read.
- b) Kelly picked Dad's red car to drive to school.
- c) Rob picked their skinny nephew to push on the red swing.
- d) Frank chose his baby sister to cuddle.

III. Purpose Clause Constructions with Prepositional Object Gap

- a) David picked a friendly girl to dance with at the party.
- b) Sandy chose a huge bed to lie on.
- c) Tod picked their teacher's son to run against at the stadium.
- d) Pete chose a high stool to jump over.

IV. Embedded Wh-Constructions with Subject Gap

- a) Marie forgot who baked the cake.
- b) Billy wondered who walked into the room.
- c) Dale didn't remember what hit him in the playground.
- d) Kate wanted to know what killed the cat.

V. Embedded Wh-Constructions with Direct Object Gap

- a) Peggy wondered what Paul bought for his wife.
- b) Jane didn't remember who the president invited.
- c) Jamie forgot what Tammy had for dinner.
- d) Laura wanted to know who Annie tickled.

VI. Embedded Wh-Constructions with Prepositional Object Gap

- a) Dad wanted to know who Greg ran away from.
- b) Larry forgot who Cindy hopped towards in the playground.
- c) Julie didn't remember what Timmy jumped over.
- d) Helen wondered what Bret stepped on in the kitchen.

VII. Temporal Clause Constructions with Subject Gap

- a) Jack had dinner before doing some reading.
- b) Jill sprained her ankle while jogging around the block.
- c) Ted had a shower after cleaning the garage.
- d) Cathy watched a movie on TV before going to bed.

VIII. Temporal Clause Constructions with Direct Object Gap

- a) *Mom drank the milk after pouring in a glass.
- b) *Wendy peeled the potatoes before putting in the pot.
- c) *The waiter dropped the tray while carrying to the table.
- d) *Ben read the book before giving to Toby.

IX. Temporal Clause Constructions with Prepositional Object Gap

- a) *Mark hugged his grandmother after singing to on the balcony.
- b) *Tommy lost the ball while playing with in the park.
- c) *The teacher cleaned the blackboard before writing on.
- d) *Dave bumped his funny cousin after running towards.

X. Purpose-Like Constructions with Subject Gap

- a) *Penny tried her older sister to phone Bob.
- b) *May thought Maria to sing.
- c) *Jean suggested a shy kid to hug Carl.
- d) *Mary knew her blonde niece to skip towards Mike.

XI. Purpose-Like Constructions with Direct Object Gaps

- a) *Eric decided Betty's classmate to invite to the party.
- b) *Patty hoped some friends to visit.
- c) *Ray learned a bike to ride last summer.
- d) *The bossy player demanded defence to play.

XII. Purpose-Like Constructions with Prepositional Object Gap

- a) *Sally expects Norm to sing with at the concert.
- b) *Sarah promised her roommate to talk to.
- c) *Jackie planned the short clown to skip towards.
- d) *Leslie hopes the large table to hide under.

XIII. Word Order

- a) *My cousin very much the girl next door likes.
- b) *Getting Married next month the geography teacher is.
- c) *The new building down the street is located.
- d) *The lazy student his assignment on time didn't hand in.

XIV. Lexical

- a) *The teacher expelled the problem to the student.
- b) *The doctor will example the patient.
- c) *The hurricane instructed the buildings.
- d) *The Principal disciplined the naughty pupil.

XV. Morphological/Agreement

- a) *Bobby didn't wrote the letter to the Chairman.
- b) *The money was hided in the top drawer.
- c) *The bus will be arrived at noon.
- d) *The lady throwed the bag on the bed.

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