

A study of markedness in second language acquisition

by

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Ph.D

University of Edinburgh

1986



To my parents

Declaration

I declare that this thesis has been composed by myself
and that the work involved is entirely my own.

A handwritten signature in black ink, reading "Maria Pavesi". The script is cursive and fluid, with the first name "Maria" and last name "Pavesi" clearly distinguishable.

Maria Pavesi

ACKNOWLEDGEMENTS

I am indebted to many people who helped in this study. I wish to thank the University of Edinburgh for providing financial support during the three years of my Ph.D. research.

I would particularly like to express my gratitude to my three main supervisors, Professor S. Pit Corder, Dr Alan Davies and Dr Jim E. Miller for their help, patience and encouragement through the various phases of the work.

This study would not have been possible without the cooperation of the Italian speakers in Italy and Edinburgh who helped by providing data. I wish to express my appreciation to all of them. My special thanks go to the headmaster and the English teachers of Liceo Scientifico 'M. Fanti', who assisted me with my fieldwork.

Dr Kenneth Hyltenstam of Stockholm University has kindly provided me with his oral elicitation material for relative clauses. I wish to express my gratitude to him for his solicitude and helpful suggestions.

Various staff members of the Departments of Linguistics and Applied Linguistics have advised and encouraged me. I would like to thank Dr Anne Anderson, Dr Ellen Bard, Sylvia Motherwell and, in particular, Irene MacLeod of the computer centre for her patience and assistance.

My fellow students have significantly helped and supported me. I would like to express my gratitude to Dr Helen Borland for sharing her ideas and experience with me. Dr John Maher, Bisimwa Ntahwakuderwa and, in particular, Regina Weinert have provided many stimulating discussions.

My sincere thanks go to friends and flatmates who gave me unfailing support through the years. My special appreciation to Dr Andrew Martin for his patient advice.

Finally, I am grateful to my typist, Margaret Love, for her patience and fine work.

ABSTRACT

This study was set up to investigate the role of markedness in the acquisition of a second language. The definition of markedness chosen was in agreement with that of the Prague School, and in particular with the work of Trubetzkoy (1939), Jakobson (1939) and Greenberg (1966).

Two areas of English were investigated: relative clauses and spatial prepositions. Two groups of Italian learners -- one formal, the other informal -- provided the cross-sectional data.

Our first group of hypotheses predicted that the acquisition of the two areas would proceed from unmarked to marked as defined by the Accessibility Hierarchy for relative clause formation (Keenan and Comrie, 1977, 1979) and by the structural markedness and semantic complexity of spatial prepositions (Clark, 1973; Traugott, 1974). It was further predicted that learners' interlanguage would exhibit a greater number of marked structures:

1. when learners were performing on a more formal task
2. if they had received formal exposure to the language.

The results of the investigation show first of all that markedness can be used as a valid predictor for the acquisition of relative clauses. As for spatial prepositions, markedness can account for the orders found only at a general level since other factors such as exposure conditions and mother tongue also seem to influence the process of acquisition. Second, in terms of task formality, learners performed better on more marked structures -- both relative clauses and spatial prepositions -- in the written (more formal) than in the oral (less formal) task. Third, evidence is provided showing that formal learners perform better than informal learners on some marked structures.

The results obtained are discussed in terms of markedness, discoursal modes, and the features of each language system involved. Implications for second language acquisition theory and language pedagogy are finally suggested putting particular emphasis on the relationship between markedness and input in the acquisition process.

LIST OF ABBREVIATIONS

AH	= accessibility hierarchy
CA	= contrastive analysis
CH	= complexity hypothesis
DO	= direct object
FLA	= first language acquisition
G	= genitive
IL	= interlanguage
IO	= indirect object
J-S	= Johnston and Slobin's
MDH	= markedness differential hypothesis
MT	= mother tongue
NL	= native language
NP	= noun phrase
O-C	= obligatory context
OO	= oblique object
RC	= relative clauses
S	= subject
SL	= second language
SLA	= second language acquisition
TL	= target language
T-L	= target-like
TM	= typological markedness
UG	= universal grammar

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CHAPTER 1 : INTRODUCTION

1.1.0

Rationale of the investigation

After the appearance of the pioneering papers by Corder (1967), Nemser (1971) and Selinker (1972) the past fifteen years have witnessed a great deal of research aimed at confirming the so called 'interlanguage hypothesis' (cf. Selinker, 1972).

Investigations on the linguistic aspects of IL have moved into two main, related directions. On the one hand much effort has been made to research the issue of systematicity in learners' language. Studies of various IL aspects such as negation, complementation and the copula have in fact shown that IL does not develop randomly but according to an underlying set of rules (e.g. Hyltenstam, 1977; Andersen, 1978; Borland, 1983).

On the other hand, researchers have been concerned to demonstrate that SLA proceeds along a similar line to that followed by FLA. Learning a second language involves a process of 'creative construction', which is a gradual organization of the input according to internal mechanisms of a supposedly innate nature (Dulay, Burt and Krashen, 1982:11). We would then expect to find universals of SLA (Gass, 1984): that is, commonalities in learners' IL development irrespective of MT or learning context differences (cf. Dulay and Burt, 1973, 1974; Krashen 1981; Appendix A1). Research into IL development does actually confirm this.

Despite the controversy concerning morpheme orders and apparent discrepancies (e.g. Lightbown, 1983), the sequence of accuracy/acquisition for these structures appears fairly robust (cf. Allwright, 1984). The same can be said about two widely investigated IL syntactic areas: negation and interrogation (see Appendix A1).

These results, however, concern only the description of IL: they deal with what, when, and how (Rutherford, 1982:85). They certainly

do not address the issue of why language acquisition proceeds the way it does, nor do they look for factors which may predict its development.

It is therefore necessary to go beyond the mere description of the various events occurring in SLA. Several attempts have been made to explain or predict IL development, at least partially (see the introduction in Rutherford, 1982).

It is precisely from this perspective that the present study was conceived. Among the possible candidates for explanation and/or prediction in SLA we intended to explore the notion of markedness. The approach to markedness chosen for the investigation was the one which emerged from the Prague School (Trubetzkoy, 1939; Jakobson, 1939) and was later developed in Greenberg (1963, 1966). In its original form markedness was conceived as involving the addition of a feature -- i.e., the presence versus the absence of a mark. If phenomenon A has all features of phenomenon B plus one, A is marked, B unmarked. Also, a category is marked for X if X is always present. A category is unmarked for X if X may or may not be present. In later developments (Greenberg, 1963, 1966) other criteria have been included in the definition of markedness, most importantly that of universal implication: if a language exhibits A, it will also exhibit B, but not vice versa.

Markedness applies to pairs of correlated elements, of which one is marked, the other unmarked. It can also apply to a series of correlated elements, each more marked than the preceding one. We then have a scale or a hierarchy of markedness.

1.1.2 The features investigated

Two areas have been chosen for the investigation of the acquisition of English by Italian speakers. They were the six relative clause types in the Accessibility Hierarchy for relative clause formation (see 2.1.0) and a subgroup of nine spatial prepositions chosen

on the basis of Clark's (1973) Complexity Hypothesis (see 2.3.6). Both areas were chosen because they could be readily analyzed and described in terms of markedness. The investigation of the acquisition of relative clauses also provided the opportunity to replicate Hyltenstam's (1984) study on the acquisition of Swedish relativization. Spatial prepositions were also included because we wished to extend the study of markedness to a lexical set as most studies on the topic had been restricted to syntax and morphology (Kellerman, 1979; Rutherford, 1982).

For both areas we have markedness hierarchies, which include structures of increasing complexity. In the case of relative clauses we relied on a universal implicational hierarchy (Keenan and Comrie, 1977), for spatial prepositions we used various markedness criteria, such as formal marking and neutralization (see 2.1.1).

1.1.3 Context and nature of the investigation

The investigation of the acquisition of English relative clauses and spatial prepositions was carried out partly in Carpi (Mo) - Italy and partly in Edinburgh. The informants were all Italian speakers. They were divided into two groups: the first was composed of formal learners, the second of informal learners. Thus the investigation, which was intended to deal mainly with the route of SLA, indirectly also deals with the rate of acquisition, in as much as a comparison of learning settings is carried out.

1.1.4 Explanation and prediction

Earlier, when we mentioned the need for SLA research to go beyond description, we referred to both explanation and prediction. No clear distinction was made between the two. In the relevant literature the two terms often seem to be used interchangeably, but in this section we wish to clarify the use we will make of them in our investigation.

At least initially markedness was thought of as an explanation for SLA. It supposedly explained why IL development proceeds the way it does. Feature A is learnt before feature B because A is unmarked and B is marked.

However, it should be emphasized that finding a correlation between two observations, namely 'A is learnt early' and 'it is marked' does not imply the existence of a relationship of causality. If the correlation is high, we may make predictions. We may in this case predict acquisition on the basis of markedness (Hyltenstam, 1984 ; Ferguson, 1984), which is different from explaining the former with the latter. From this perspective an explanation for both acquisition and markedness must be found. The explanation is likely to draw on the nature of the human mind, and for this reason, be very complex (Comrie, 1981).

This is in fact the perspective adopted for the present research. Markedness will be tested as a predictor of IL development since we see markedness as the outcome of possibly very different phenomena representing different kinds of extralinguistic and possibly linguistic complexity.

We are aware, however, of a 'weak' definition of explanation. From that point of view, explanation is not an all-or-nothing process: it can operate on different levels of generality. As mentioned above, what we take as explaining a series of phenomena itself needs to be explained.

"Any explanation necessarily pushes the problem one stage further since the explanation itself then becomes an object requiring explanation."

(Comrie, 1981:25)

In this perspective markedness may be seen as an explanation of SLA. It is not the final cause of IL development but offers an interim framework of reference. When adapted in the thesis, the term explanation must be interpreted in the sense just described.

1.2.1 Structure of the thesis

Altogether the thesis contains nine chapters. In Chapter 2 the notion of markedness as it is going to be used in the thesis is presented and discussed. A review of the relevant literature in SLA follows. This review is organized both chronologically and thematically, giving special emphasis to the relations between markedness and transfer, and markedness and input. In Chapter 3 the two areas of English language chosen for investigation are described and analyzed in terms of markedness. A comparison with Italian is also made. This description is followed by a review of the related acquisitional literature. In the second part of this chapter, the general aims of the study are stated, together with the independent variables investigated. Finally, the specific hypotheses are listed. In Chapter 4 the methodology used in the study is discussed. The structure and the results of the pilot study are presented, followed by a description of the main investigation and the participating subjects. The motivation for an additional study, its nature and results are presented in the next section. Finally, scoring criteria are given. Chapter 5 and Chapter 6 present respectively, the results for relative clauses and for spatial prepositions. Chapter 6 also considers different Performance Analyses and gives an IL oriented perspective. Chapter 7 contains a discussion of the results in relation to the relative clause hypotheses. In Chapter 8 the results for spatial prepositions are discussed in the light of both the hypotheses set out at the beginning of the investigation and of different and complementary perspectives which emerged in the course of the study. The final chapter, Chapter 9, contains a brief summary of the findings of the investigation. The implications of the study for the role of markedness in SLA and the implications for language teaching are also discussed.

CHAPTER 2 – MARKEDNESS AND SECOND LANGUAGE ACQUISITION :
A SURVEY OF THE LITERATURE

2.0 In the first part of this chapter a brief description of the notion of markedness will be presented. The notion is the one introduced by Trubetzkoy (1939) and Jakobson (1939) within the Prague School, which was later developed by other linguists, especially Greenberg (1966).

A review of the literature of markedness in SLA will follow. Two perspectives have been chosen for the review: 1. an historical perspective, 2. a thematic perspective, which includes issues such as the relationship between markedness and transfer, and that between markedness and input.

2.1.1 The notion of markedness

In recent years SLA researchers have turned to linguistic markedness in an attempt to account for the development in a second language. As it was originally formulated by Trubetzkoy (1939) and Jakobson (1939) a markedness relationship involves a binary opposition. Within a pair of conjugated elements bound in an asymmetrical and hierarchical relationship (Waugh, 1982) one is unmarked and the other marked. The unmarked member is the more basic, the more neutral or central one of the opposition. It is the element which possesses fewer features, conveys less information, and is, so to speak, "included" or "implied" in the marked one. The marked member, on the other hand is the less basic or central one. It is characterized by a greater number of features thus conveying more information, and it includes or "implies" the unmarked member. More specifically, according to Jakobson, if phenomenon A has all features of phenomenon B plus one, then A is marked and B is unmarked. Voiced consonants are more marked than the corresponding unvoiced ones: /b/ is more marked than /p/ because of the addition of the feature 'voicing'.

The concept of markedness was first applied to phonology. Jakobson (1939), in his seminal paper "Signe Zéro", extends this fundamental notion of presence vs. absence of a feature to the areas of morphology and semantics. An example of the dichotomy unmarked/marked in English morphology is the opposition between the singular and the plural, where the addition of the morpheme -s formally signals the marked term. The unmarked term, usually signalled by the absence of the 'mark' -- therefore 'zero sign' -- has nonetheless a definite function or meaning. 'Author', the unmarked term in the pair 'author' 'authoress', has its own meaning -- male author -- which is in contrast to the meaning of 'authoress' -- female author. Yet 'author' is also used for both sexes, thus, at times at least, neutralizing the distinction between the two.

But how do we know which element is marked and which is unmarked if there is no obvious marking or obvious 'implicans' 'implicatum' relationship? Several criteria have been proposed to detect markedness relationships. They are particularly useful when there is no 'mark' to indicate the nature of the relationship under scrutiny. There is however a serious problem in isolating and evaluating such criteria. From one perspective one may want to predict the occurrence of a certain phenomenon (A) on the basis of markedness relationships. From another perspective the same phenomenon (A), about which predictions were made, is used to determine markedness. Order of acquisition is one of the ambivalent cases, frequency is the other. On the one hand (and this is in fact the position held by Jakobson, 1968) relative order of acquisition is used to determine the degree of markedness of a structure: early acquired: unmarked, late acquired: marked. On the other hand we may want to use markedness as a prediction in language acquisition. We then need a definition of markedness which is independent of acquisitional considerations.

The position adopted in this thesis, and the only one which seems to avoid the danger of circularity, is to separate 'structural criteria' from 'non-structural' ones. With 'structural' criteria we refer to those which rely on the structural organization of (the) language.

- (i) Addition of a feature. The marked structure is the one which carries the formal marking. The past in English is usually marked by -ed, the suffix is not used for the present tense.
- (ii) Syncretism. Categories which are distinguished in the unmarked member are not in the marked one. In the English pronoun system the unmarked status of the singular is signalled by the distinction between genders in the 3rd person (i.e., 'she', 'he', 'it'), distinction which is syncretized in the plural (i.e., 'they').
- (iii) Neutralization. Whenever the distinction between the two members of the pair is neutralized by the context, it is the unmarked term which occurs. Within the pair 'actor' 'actress' when no specification of sex is required, 'actor' is used.
- (iv) Universal implication. If the presence of one structure in natural languages implies the presence of another structure, but not vice versa then the former is marked and the latter unmarked. If a language has a dual (marked), it will also have a plural (unmarked), but not vice versa. (We will return on the issue of the universal dimension of markedness later.)
- With 'non-structural' criteria we refer to those criteria which are not intrinsic in the organization of the linguistic system.
- (v) Frequency. The more frequent member of an opposition is unmarked, the less frequent is marked. In Italian the present tense is much more frequent than the future one, therefore, in the same language, the present is unmarked and the future is marked.
- (vi) Order of acquisition. The sounds, structures or items which occur early in child language are unmarked, those which occur late are marked. Children use coordination before they use subordination. Coordination is thus less marked than subordination.

According to Jakobson and the proponents of his theory of markedness all criteria have the same weight (see in particular Greenberg, 1966).

They are all 'effects' (Waugh, 1982) or 'symptoms' (Greenberg, 1966) of the preexisting relationship of markedness.

It seems to us, however, that whereas the first four criteria presented above are likely to be consistent and not easily modified by other factors, the last two may not be consistent and may be easily influenced by other phenomena. The past tense in English is always morphologically marked as opposed to the present but in at least certain kind of fiction it is probably much more frequent than the latter. However, even in those cases we would never doubt the marked status of the past if compared to the present.

"If (...) it should happen that the marked term is indeed more frequent in given texts than the unmarked, this should not be taken as evidence that the markedness values are false or uncertain, but rather that text frequency is due to the interaction of a variety of factors, only one of which is markedness."

(Waugh, 1982:303)

From this perspective, Cook (1985a, 1985b) distinguishes -- within a theory of first language acquisition -- acquisition from development, where the first is an idealization of the second when all extralinguistic constraints are neutralized. Acquisition is

"the abstract 'pure' process by which the child learns language, considered in isolation from other aspects of the child's life and development (is) the 'messy' historical process by which language develops (...), influenced by social interaction, by cognitive stage, (...) by processes of maturation and features of the situation."

(Cook, 1985 b:1)

Thus, if a feature is early or late to appear in learners' speech, this does not in itself prove that that feature is unmarked or marked. As for frequency, there could be other factors which influence development. If, however, we have already established the degree of markedness of the various features, then we can test whether acquisition or development (using Cook's terminology) proceeds from unmarked to marked.

2.2.0 Survey of the literature on markedness in second language acquisition

In this survey of the literature we will mostly review work done within the framework of the original notion of markedness. Recently SLA research has moved towards the notion of markedness contained within the theory of Universal Grammar (UG) (Chomsky, 1981), thus using concepts such as core, periphery, and parameter setting, and starting from the assumption that there are innate language specific structures which account for language acquisition (see Cook, 1985a). The issue of innateness is a central one in any theory of language acquisition. Obviously all researchers believe in the participation of innate structures in language development. The debate revolves around the question of establishing which structures are innate. Whereas a UG theory puts forwards the strong claim that there are language specific structures, or a 'mental organ' at the origin, the position adopted here does not make any strong claims pertaining to the starting point for markedness. We assume the existence of innate cognitive structures, some of which may turn out to be language specific (see Comrie, 1981:24-25 for a discussion of the related issue of language universals and innateness).

Studies which were conceived within the framework of UG are included whenever the phenomena they deal with can be described in terms of traditional markedness.

2.2.1 A historical perspective

The first systematic attempt to relate markedness to SLA was made by Eckman (1977), who used the notion to make contrastive analysis (CA) a more powerful tool for the prediction of difficulty in a SL. On the one hand Eckman claims that comparison between NL and TL is essential to individuate problematic areas for acquisition. On the other hand, such a comparison -- which by itself had already been proved inadequate -- needs to be supplemented by considerations of relative degree of difficulty, i.e., typological markedness.

"A phenomenon A in some language is more marked than B if the presence of A implies the presence of B, but the presence of B does not imply the presence of A."

(Eckman, 1977:320)

Such a definition of markedness is then used to make specific predictions about the difficulty encountered by a learner acquiring a SL structure:

- (a) Those areas of the TL which differ from the NL and are more marked than the NL will be difficult.
- (b) The relative degree of difficulty of the areas of the TL which are more marked than the NL will correspond to the relative degree of markedness.
- (c) Those areas of the TL which are different from the NL, but are not more marked than the native language will not be difficult.

(Eckman, 1977:321)

Thus, just as the presence of passives with agents in a language implies the presence of passive without agents (e.g. the door was closed vs. the door was closed by the janitor), but not vice versa, so we would expect speakers of languages which have only agentless passives to encounter difficulty when learning a TL which has both types of passives. No difficulty is predicted, however, for speakers of a language which exhibits both structures when learning the same target language or a language which only has agentless passives.

Eckman applies his Markedness Differential Hypothesis (MDH) to an area of phonology and one of syntax. We will briefly touch only on the second. Using Schachter's (1974) data on ESL learners' relative clauses spontaneous production, Eckman finds support for his interpretation of Schachter's results: 1. learners exhibit difficulty only in those areas which are involved in a markedness relationship, 2. the degree of difficulty is proportional to the distance between the unmarked NL structure(s) and the corresponding one(s) in the TL;

that is, difficulty increases according to how relatively less marked the NL is if compared to the TL for the particular area investigated. Thus branching direction (left or right) in relative clauses is not found to be a source of error for speakers of languages which adopt the opposite strategy from English as no markedness relationship holds between the two alternative strategies. The pattern of pronoun retention versus pronoun deletion is on the contrary found to affect degrees of difficulty. Learners whose MT mostly differs from English along this parameter -- learners therefore whose MT is in this area unmarked relatively to English -- produce more errors than learners whose MT is less distant from English and which, consequently, exhibit a smaller number of unmarked features.

Several criticisms have been aimed at Eckman's MDH. Kellerman (1979) shows that on the basis of a later Keenan and Comrie's (1977) description of the MTs included in Schachter's investigation, Eckman's claim that degree of difficulty mirrors the degree of distance between the TL and the NL in terms of markedness is inaccurate. Persian speakers produced more errors involving pronoun retention than any of the other language groups. Eckman's discussion of Persian relative clauses draws on Keenan and Comrie's earlier work where Persian among the MTs investigated in Schachter's study is reported as having the greatest number of NP positions requiring a pronoun copy. According to this first description Eckman's predictions are correct. Keenan and Comrie's 1977 version of the AH of relativization, however, presents a different picture. Arabic allows pronoun retention in more NP positions than Persian. The Arabic group then should exhibit the greatest degree of difficulty with pronoun deletion in English relatives; yet it does not. The MDH does not constitute an adequate predictor for the degree of difficulty encountered by the learner.

A similar criticism may be found in Kean (1984) although no empirical evidence from SLA research is provided to support it. More generally, Kean questions the validity of the use of implicational universals in definitions of markedness. On the grounds that the well-known implicational universal "if a language has voiced stops it will also have voiceless ones but not vice versa" appears to have exceptions

among some Australian languages, the universal is rejected. The fact that an implicational universal may turn out to be an implicational tendency (Comrie, 1981) is used to dismiss the related theory of markedness. "Implicational universals are therefore inadequate as expression of segmental oppositions within and across languages and cannot be taken to be a grammatical theory of markedness" (Kean, 1984: 9).

Kean's position seems to us difficult to maintain. It is not clear why the inadequacy -- inadequacy on which there is not unanimous agreement -- of a statement should have such far-reaching consequences. As suggested by Jakobson (1963), in the course of research it must be expected that many universals will reveal themselves universal tendencies (implicational tendencies are to universal tendencies what statistical universals are to absolute universals) and new absolute universals will be discovered thus supplementing the original body of cross-linguistic generalizations. In any way it seems very unlikely at the present that many exceptionless universals will be found outside the realm of formal universals (see for example Comrie, 1981 for a distinction between formal and substantial universals).

Even within an implicational tendency we may have a markedness opposition. The most frequent phenomenon, which is also usually the implied one, is less marked than the less frequent phenomenon, which is also usually the implying one. The fact that a few exceptions were identified for the implicational universal mentioned above does not disprove that a markedness relationship between voiceless and voiced stops -- respectively less and more marked -- can still be established for most human languages. Secondly, and more importantly, it certainly does not disprove that markedness oppositions can be based on implicational universals and that these oppositions can be used as predictors in SLA. We may simply have to restrict or redefine the area in which universal relationships apply.

2.2.2 Inter- and intra-linguistic criteria

If on the one hand we still assume that implicational universals are valid indicators of markedness oppositions, on the other, it is obvious that their predictive power within SLA research is quantitatively limited (Kellerman, 1979; Kean, 1984). Even if the number of implicational universals (or implicational tendencies) were to increase sensibly, it would still be very small in comparison to all the aspects of a TL the learner has to acquire. That is, typological markedness appears adequate to cover only a limited number of language phenomena: namely, aspects of phonology, syntax and possibly semantics which are liable to cross-linguistic generalizations. There are other phenomena whose degree of markedness can only be established within the language system they belong to -- e.g. some morphology features, word order, lexical sets. A more flexible definition of markedness is required which allows for a wider inclusion of SLA phenomena.

Rutherford (1982) presents such a wider definition of markedness. Within the framework of the Prague tradition and in particular of Greenberg's approach (through Clark and Clark (1978)'s interpretation), various criteria to detect markedness are added to universal implications and typological distributions. For example, Rutherford discusses Fathman (1975, reported in Rutherford, 1982)'s results on a group of paired structures using criteria such as phonological and semantic complexity and syncretism to discriminate between the marked and the unmarked term. Singular subject pronoun he is found to be acquired before plural subject pronoun they as a consequence of the singular being unmarked and the plural marked (Greenberg, 1966). The acquisition of on before under is consistent with Clark (1973)'s description of prepositions in terms of semantic features: under is more complex than on.

Rutherford (1982) interestingly also introduces Givón (1979)'s definition of markedness based on discourse presupposition. The greater the presupposition load of a structure, the more marked it will be. A WH- question is more marked than a Y-N one as it presupposes the latter but the opposite is not true. When did Mark arrive?

presupposes did Mark arrive?. In other words, the presupposition load of the WH- structure is much greater than that of the Y-N structure.

Thus IL development sequences are hypothesized to be informed by considerations of discourse presupposition. Whereas Rutherford's suggestion is very interesting, in the paper it unfortunately remains little more than a suggestion and, to my knowledge, it has not been followed by empirical research.

Some empirical research has however appeared from the perspective of a wider (i.e., not only typological) definition of markedness. Here we will mention Zobl (1984a) and Berent (1985). Other studies are reviewed in later sections. Zobl (1984a) set out to study the acquisition of gender in English possessive determiners within the framework of the wave model of linguistic change and the related notion of markedness. He found an acquisitional implicational scale where HUMAN \supset NON-HUMAN (that is, human implies non-human). If learners supplied the correct possessive marker (his or her) in human environments -- e.g. his/her mother -- they would also do so in non-human environments -- e.g. his/her watch, but not vice versa. Zobl, on the basis of Gruber (1976, reported in Zobl 1984a), gives independent linguistic evidence for a similar implicational order in terms of markedness where HUMAN \supset ANIMATED \supset CONCRETE nouns. All three types of nouns share the feature [+CONCRETE] but human and animate also have the feature [+ANIMATE] and finally only human nouns have the feature [+HUMAN] : thus, HUMAN is the most marked term of the scale.

The choice of the possessive determiner in these learners' IL also leads to results informed by a markedness relationship. His, the masculine determiner, which is also the unmarked member of the pair (Greenberg, 1966) is exhibited much more frequently than her, the feminine form, which is also the marked member of the pair.

Berent (1985) studied the production and comprehension of real, unreal and past unreal conditional types. According to Berent real conditionals are less marked than unreal conditionals as a consequence of the unmarked status of the indicative versus the conditional mood

and of the present versus the past tense (Greenberg, 1966). Unreal conditionals are in turn less marked than past unreal conditionals as the verb forms of the latter exhibit more "morphological material" (cf. Comrie, 1976) and are periphrastic formations (Greenberg, 1966).

The study shows that the order of difficulty in production agrees with the degrees of markedness. Learners find real conditionals easier than unreal conditionals, which are in turn easier than past unreal conditionals. These results are however mitigated by the conflicting findings emerging from the comprehension task. The inferences associated with real conditionals were in fact unexpectedly more difficult to judge than those associated with either unreal or past unreal conditionals.

One of the dangers that researchers may run into when applying a wide definition of markedness is that of "ad hoc" or inappropriate explanations. Some of Rutherford's analyses, for example, do not stand up to a close inspection. His discussion of WH- question development as reported in Dulay and Burt (1978, reported in Rutherford, 1982) makes use of the notion of markedness without considering another productive process in SL development, namely, routine learning (Kean, 1984). Rutherford observes the early occurrence of inversion in simple WH- questions with a singular subject What's that?, and the persistence of inversion in embedded questions. Inversion with plural subjects What are those? is on the contrary late acquired in simple WH- questions and is dropped early in embedded ones. No appeal to the marked status of plural versus singular is necessary. As the singular WH- questions reported in this paper are in their contracted form, it is obvious that the learner is treating them as holophrastic units: they are memorized early and generalized to inappropriate contexts -- i.e., subordination in embedded questions.

In a similarly unconvincing way, Rutherford accounts for the occurrence of questions where the tense is carried by the finite verb rather than by the auxiliary do (e.g. Do you saw three feet?, Do you bought this too? with an appeal to the complexity hypothesis (Clark, 1973). "One more rule - viz., movement from lexical verb to auxiliary -

is needed (...) to obtain the target form" (Rutherford, 1982:95). The same phenomenon can be equally satisfactorily accounted for by attributing to do the function of an interrogative particle rather than that of an auxiliary (Appendix A1). The structure of the declarative sentence is maintained and the interrogative mode is signalled by a preposed indicator. This interpretation is in fact preferable because it is consistent with other data on IL question formation. Wode (1981) reports utterances such as Do crickets can fly? where no movement of tense is required. War (1984) also reports utterances such as Why do he is go?. In both cases it is clear that do does not function as an auxiliary. Rutherford's interpretation that the learner has failed to apply the rule of tense movement is thus inadequate. This does not however dismiss the possibility for a markedness relationship to account for the occurrence of IL questions which are declarative word order utterances preceded by an interrogative particle (see Appendix A1.3.1. Particles are second only to intonation as means of signalling interrogation among human languages, and from the perspective of typological markedness are thus a relatively unmarked device.

Despite the potential dangers of a wide approach to markedness -- i.e., inappropriate applications of the notion to IL phenomena --, its advantages are noteworthy in as much as it draws attention to individual language systems. In early SLA research the domain of markedness was identified with typological distributions and universal implications, thus overlapping with that of language universals. The appeal to the other criteria proposed by Jakobson and Greenberg allows for the possibility of analysing in terms of markedness areas which fall beyond the scope of language universals or which have not yet been analyzed in those terms. This applies in particular to the field of lexis. In all areas, moreover, different markedness relationships may hold according to different languages (cf. for example, Comrie, 1976 about aspect in different languages).

The considerations made in this section uncover a major problem for any approach to SLA in terms of markedness. Different linguistic areas may require different criteria for determining markedness. In the present state of knowledge, in spite of the very strong intuitive

appeal of the notion of markedness there is no single criterion or even combination of criteria which is capable of identifying more than a few markedness oppositions. Such a diversification may be due to the modular organization of human language. Thus different approaches may be necessary depending on which language subparts are being investigated. Moreover, as markedness itself is the outcome of possibly very heterogeneous phenomena, it is not surprising that its manifestation may vary from case to case. This however leads us to the general issue of variability in observed phenomena. To what extent is differentiation an intrinsic characteristic of markedness and to what extent is it a simple reflection of the observer's insufficient knowledge?

2.2.3 Markedness and transfer

When discussing the MDH, we have reported some of the criticisms which have been moved against it. However, we did not mention a limitation which, in our opinion, is the major one in Eckman's (1977) framework. His prediction that structures equally marked in NL and TL will not originate any difficulty seems too strong. Put in other terms, the MDH predicts that learners will achieve immediate target-like competence in L2 marked structures provided the same structures are equally or more marked in the L1. This hypothesis is in conflict with the Creative Construction Hypothesis (Dulay and Burt, 1974, 1977) since it predicts that some learners will not recreate the TL rules. As in CA, learning is hypothesized to follow a different route depending on the structure of the NL -- in this case depending on the degree of markedness of the NL in relation to the TL.

However much research in SLA has shown that the acquisitional sequences for certain features is similar across learners -- cf. for example morpheme studies (e.g. Dulay and Burt, 1973, 1974; Bailey, Madden and Krashen, 1974; Krashen, Sferlazza, Feldman, and Fathman, 1976) and studies on environmental constraints on the suppliance of certain structures (e.g. Borland, 1983; Hyltenstam, 1977). Also the results of investigations which did not specifically aim at testing

a markedness hypothesis suggest that marked phenomena are not immediately mastered even by those learners whose MTs possess phenomena marked to a similar degree. Learners are reluctant to accept translations of NL idiomatic expressions even though these are acceptable in the TL (Kellerman, 1977). Also, learners tend to accept only the basic or core meanings of TL expressions which are always translatable into their mother tongue (Kellerman, 1978). Investigations on the acquisition of interrogation and negation indicate that learners revert to unmarked patterns when acquiring these structures in a relatively marked TL although their MT exhibits a similar degree of markedness (Appendix A1). Studies on the suppliance of the copula in obligatory contexts show that at least at the initial stages of IL development learners tend to delete it even when both MT and TL exhibit the feature (Borland, 1983).

Hyltenstam's (1978a, 1984) general hypothesis that SL development proceeds from unmarked to marked (see below) allows for the possibility that a structure which is marked in both MT and TL will be realised as unmarked in the early stages of IL development. No mention is made about the speed with which learners go through the unmarked stage(s). Despite implicitly recognizing that similarity between the two languages may have an accelerating effect, it is stressed that the nature of the process remains importantly the same. It may be that speakers of a NL which supply the copula in all verbal environments (e.g. Italian) will acquire the English copula system quicker than speakers whose MT supplies the copula only in certain verbal environments (e.g. Russian). Yet, if both groups of learners exhibit an initial stage in their English IL where no copula is supplied, then the difference between their IL development is purely quantitative.

Hyltenstam (1984:43) presents a series of constellations in which all possible combinations between MT and TL are given, the outcome of all being an early IL characterized by unmarked structures (Figure 2.1).

Figure 2.1 : Markedness conditions in initial stages of IL under different L1/L2 conditions (Hyltenstam, 1984:43)

Row	Native language	Target language	Initial stages of interlanguage
1	Unmarked	Unmarked	Unmarked
2	Unmarked	Marked	Unmarked
3	Marked	Unmarked	Unmarked
4	Marked	Marked	Unmarked

The initial emergence of unmarked structures in the first two cases does not provide unambiguous evidence for the markedness hypothesis as transfer could be the determining factor for the occurrence of the unmarked pattern. (Similarly in the first and third constellation input cannot be ruled out as the reason of the emergence of the unmarked pattern in early IL.) The fourth constellation cannot be explained either by first language influence or by external factors. It is thus the type of evidence needed to fully substantiate the prediction that IL development entails movement from unmarked to marked.

In recent years SLA research has started to test this and related markedness hypotheses specifically. Hyltenstam's work itself provides support for his hypothesis. In a study on the acquisition of negation in Swedish some evidence is provided that preverbal negation -- a supposedly typologically unmarked pattern, see Appendix A1.1.1 -- is exhibited by learners whose MT has post-verbal negation -- the corresponding marked pattern -- when Swedish itself has post-verbal negation. Pronoun retention versus pronoun deletion in Swedish relative clause formation was investigated by Hyltenstam (1984) to test his markedness hypothesis on a wider basis. All learners, irrespective of the degree of markedness of their MTs, produced unmarked constructions at least in the initial IL stages.

Liceras (1983) from the perspective of UG follows a line similar to Hyltenstam's. In her study on the acquisition of Spanish relative clauses by English speakers she investigated a series of phenomena

which can be analyzed from the point of view of traditional markedness: preposition stranding, pronoun retention in the relative clause and the AH of relativization (for a fuller discussion see 3.1.0, 3.1.1 and 3.1.2 below).

Preposition stranding -- e.g. The man she went out with instead of The man with whom she went out -- is a very infrequent phenomenon among the languages of the world; it is almost exclusively limited to some Indo-European languages (van Riemsdijk, 1978). It must thus be considered a marked feature of English and Liceras hypothesized that it would not be transferred to her subjects' Spanish IL. Her pilot test and a previous study of hers (1981, cited in Liceras, 1983) confirmed her predictions. No preposition stranding was part of English speakers' Spanish IL. However, her hypothesis was not fully supported by the data of her 1983 study. Beginning students judged grammatically correct ~~Spanish relative~~ ^{this} clauses with preposition stranding almost 50% of the time. However, tendency was restricted to beginners as no intermediate or advanced learners exhibited it. Also, the beginners themselves did not strand prepositions in the other two production tasks. Although her findings cannot be interpreted as conclusive in support of the markedness hypothesis, it could be suggested that the judgement task did not provide valid indications of learners' competence. These beginning learners may have been asked to out-perform their competence on a task which was found to be the most difficult one for all three groups of learners. Judgement tasks, moreover, tend to give less reliable results. As they are very formal tasks, they tend to elicit an IL which is strongly influenced by both NL and TL (cf. Tarone, 1983).

The results for the remaining structures supported the predictions made on the basis of markedness. Resumptive pronouns, an unmarked strategy for relativization, were frequently produced and accepted, especially by beginners. The AH for relativization was generally found to be a good predictor of learners' difficulty. Learners at all levels tended to perform better on less marked NP positions than on more marked ones.

A comparison of Liceras's markedness hypothesis with Hyltenstam's opens some interesting points for discussion. Liceras (1983:130) hypothesizes that "marked parameters in L1 will seldom cause permeability while marked parameters in L2 will favour permeability in the nonnative grammar". In other words, it is hypothesized that marked structures in the NL will not be transferred to IL, whereas transfer from the NL will occur if the TL structure is marked. Let us plot Liceras' predictions on a series of constellation on the model of Hyltenstam's framework (Figure 2.2).

Figure 2.2 : Hypothesized model for Liceras's predictions pertaining to markedness conditions in initial stages of IL under different L1/L2 conditions

Row	Native Language	Target Language	Initial stages of interlanguage
1	Unmarked	Unmarked	Unmarked
2	Unmarked	Marked	Unmarked
3	Marked	Unmarked	Unmarked
4	Marked	Marked	?

For the first three rows Hyltenstam's and Liceras's predictions agree. IL is hypothesized to exhibit unmarked features if both TL and NL are unmarked, or if either of them is. However, Liceras's framework fails to make definite predictions concerning the last configuration. Marked L1 features are not expected to transfer, but, at the same time, L2 marked features are expected to favour transfer. In this case the two predictions are in conflict. In other words, as marked features in the NL should not transfer to IL, then we would expect TL features to occur. Yet, Liceras also hypothesizes that whenever the TL is marked, NL transfer will occur. But NL transfer was blocked by the first prediction. The only way out of this conundrum is to resort to Hyltenstam's model which predicts the unmarked pattern to occur irrespective of TL or NL considerations. In fact, Liceras's findings on pronoun retention in relative clause formation offer evidence in favour of Hyltenstam's hypothesis. Both English and Spanish present

a marked pattern in relativization -- i.e., deletion of the pronoun copy --. Yet, these English speaking learners produced and accepted resumptive pronouns in their Spanish IL.

Mazurkewich's (1984) findings on the acquisition of dative constructions support the hypothesis that predicts an initial unmarked stage in IL development irrespective of the MT. In the pair of sentences:

a. John gave a gift to Lucy

b. John gave Lucy a gift

a. is unmarked and b. marked. In English only a group of dative verbs can take double accusative constructions -- like b. If a verb can take a double accusative construction, e.g. The king sent the princess a messenger, it will also take a dative construction formed with a prepositional phrase (e.g., The king sent a messenger to the princess), but not vice versa -- I explained your reasons to Tom is grammatical but I explained Tom your reasons is not. Thus the former group of verbs is a subset of the latter group (Mazurkewich, 1984:18).

Mazurkewich found that NP PP constructions were acquired before NP NP ones by both French and Inuit speakers despite the structural differences between the two NLs. French allows only the first construction, Inuit is a polysynthetic language; it is thus very different from both French and English. The fact that French speakers preferred the unmarked construction could be accounted for by transfer, but as Inuit speakers exhibit the same tendency, transfer from the MT cannot be adduced anymore as the explanation for IL development.

White (1985 a and b) within the framework of UG has recently advanced a proposal which, differently from the markedness hypotheses reviewed in this section, predicts that once a parameter is set in learners' MT, it will be transferred to the TL irrespective of its degree of markedness. It is consistent with this model that marked structures can be transferred from NL to TL in the early stages of IL. In fact, White (1985a) hypothesizes that:

a situation where some L1 parameter is not active in L2 will require the learner effectively to 'lose' the L1 parameter, leading, at least initially, to the carrying over of L1 structures into L2.

(p.49)

Such a hypothesis is in direct contrast to Hylltenstam's which, by predicting the same starting point (i.e., unmarked point) for all learners, blocks the possibility of initial transfer of MT marked structures.

In support of her hypothesis White (1985a) reports the results of an investigation on the acquisition of subjacency in English by French and Spanish speakers. Some of her subjects were found to transfer the L1 rule for subjacency into English and accept sentences such as: How many did you buy of the books? According to White the L1 (i.e., French and Spanish) pattern is marked whereas the L2 (i.e., English) is unmarked. However, no independent linguistic evidence is supplied in support of this assumption. The English type rule is considered marked as it represents the learner's initial hypothesis. The learner - in White's discussion, the child - would require explicit evidence to move from this initial hypothesis to the rule of French or Spanish grammar. There is no reason why the opposite should not be true: the French and Spanish rules represent the unmarked case: further evidence is needed to acquire the English rule.

Even if White's account of subjacency were accurate and French and Spanish represented the marked case, her results would still be inconclusive as less than half of the learners transferred the L1 pattern. Furthermore there is no statistical indication that the occurrence of this IL feature is restricted to the early stages of linguistic development.

In another study White (1985b) investigated the acquisition of Pro-drop structures by ESL Spanish and French learners. For the purposes of this study we will consider subject pronoun deletion only: White found that Spanish speakers accepted missing subjects in utterances

such as John is greedy. Eats like a pig (p.51) significantly more often than French speakers. This tendency was more noticeable at lower levels of proficiency for both groups.

As Spanish allows for subject pronoun deletion but French does not, White argues that these results are due to the initial transfer of a L1 parameter. However, the differences between the two groups is purely quantitative. Although to a lesser extent, French speakers accepted incorrect pronoun deletion. This tendency has in fact been noticed in speakers of different MTs. Zobl (1984b) reports missing pronouns in the English IL of Francophones as well as in that of speakers of other NLs. Liceras (1983) also found non-target-like subject pronoun deletion to be common among her English learners of Spanish. Most of the MTs included in Zobl's study and English as in Liceras's investigation do not allow missing subjects.

Subject pronoun deletion has been described as an unmarked feature (e.g. Hyams, 1983, reported in White, 1985). Thus as the tendency to drop the subject pronoun is more evident at the beginning stages for both groups, we may hypothesize that all learners, irrespective of their MT go through this unmarked stage. They may go through it at a different speed -- some learners may exhibit the pattern more than others -- but if the same type of IL feature appears at a comparable point in time, then similarity of IL development must be hypothesized. To support White's strong claim - i.e., learners transfer L1 parameters irrespective of markedness values - evidence that learners from certain NL groups totally miss some IL stages is necessary.

2.2.4 Markedness and Input

Whereas the issue of markedness and transfer can be empirically easily tackled, that of markedness and input presents significantly greater difficulty. As unmarked phenomena tend to be more frequent than marked ones, it may be argued that an order of acquisition which goes from unmarked to marked is the result of input frequency rather than markedness. Looking only at sequences of TL features would

not solve the ambiguity unless empirical evidence was supplied derived from some kind of input control situation or from the acquisition of structures for which markedness and frequency do not correlate. However, if learners' whole production is taken into account, input frequency provides an inadequate explanation, or even prediction of IL development. The existence of transitional structures and generally of non-target-like performance shows that a fundamental part of learners' language cannot be accounted for by features of the input. Those structures and non-target-like productions are simply not part of the language the learner is exposed to.

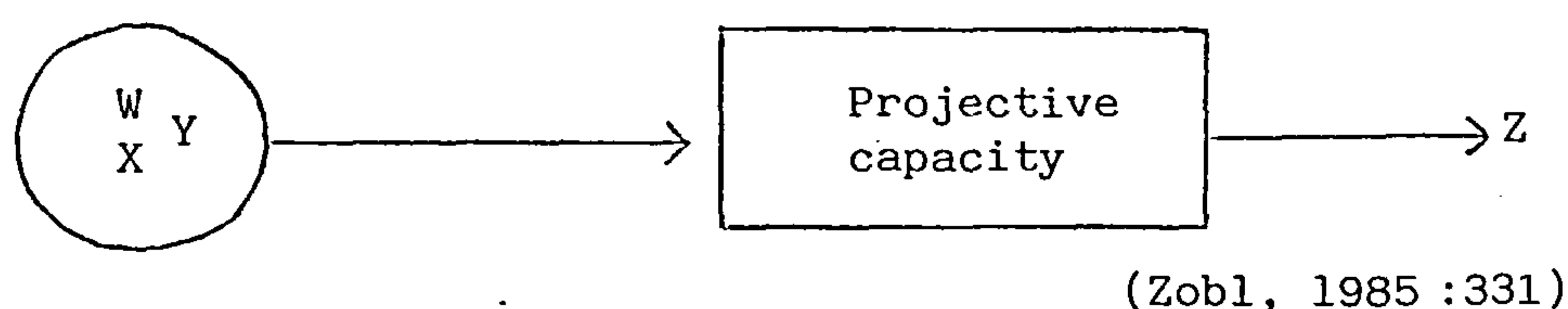
A theory of markedness is on the contrary capable of dealing with errors and transitional structures. As will be discussed in section 2.1.2, pronoun retention, a transitional structure in the acquisition of English relative clauses, can be seen as an unmarked pattern. Similarly, Appendix A1 reports on the development of negation and interrogation in English L2 from the point of view of markedness.

It has been further suggested that IL would be the result of interaction between learner and competent speaker (e.g. Hatch, 1978; and more cautiously Ellis, 1984b). Transitional structures would derive from the building of discourse between these two speakers. However, it is not clear how such an interactionist approach can account for the similarity of route of IL development recorded for different learners. Is one to hypothesize that all learners take part in the same sort of interaction? Such a claim seems hard to maintain and it suffers from the general drawback of implying the arguable standpoint which assumes interaction as the necessary and sufficient component for language acquisition (see Krashen, 1985 for a discussion of this issue). Yet, as soon as we leave some initiative to the learner in the management of interaction, and/or we recognize the importance of other components for language acquisition, then we have to postulate some internal mechanisms which organize or perceive input in a structured and self-motivated way.

Going back to the issue of input frequency and target-like features, it should be stressed that as for markedness and acquisition (see section 2.1.1 above) the correlation between markedness and frequency should not be assumed but demonstrated. Frequency could in fact be influenced by phenomena other than markedness. There could be unmarked structures which also tend to be infrequent or, vice versa, marked structures which tend to be frequent. In order to empirically verify whether it is markedness or frequency which accounts for the acquisition of target-language structures two methodologies are available: 1. input manipulation, i.e., the amount of marked and unmarked structures in the input is controlled for and the effects on learners' output are then measured; 2. individuation of areas or phenomena for which the relationship 'unmarked/marked' is opposite to that 'frequent/infrequent'.

Zobl (1985) within his general Projection Model (Zobl, 1983) investigates the role of input in relation to markedness. As discussed above, whereas the systematic emergence of transitional structures strongly supports the hypothesis that input does not determine SL development, the difficulty of splitting markedness from frequency remains when dealing with target-like structures. Zobl offers a theoretical solution. Despite input to the learner being extremely reduced if compared to the vastness of possible input, his final knowledge will potentially generate that "universe of data" to which he was not exposed. Thus Zobl postulates an abstract structure behind the input. This structure is represented by markedness conditions. The input allows the learner to arrive at this abstract structure. In other words, the learner learns via the input, not because of it.

Two procedures for overcoming input limitations are identified: 1. markedness implications of the kind "dual implies singular but not vice versa", and 2. markedness correlations between related parameters, e.g. VSO word order in human languages correlates with prepositions. Both procedures belong to a model of SLA which predicts that a learner will gain indirect knowledge (i.e. not through direct access) of a structure as a consequence of having direct knowledge (i.e. through direct exposure) of other structures.



Zobl (1985) studied the acquisition of two related phenomena which he had previously investigated (Zobl, 1984a). As reported above he found two implicational scales for acquisition which mirrored markedness relations. Namely, HUMAN > NON-HUMAN for the suppliance in the correct environment of the target-like possessive determiner and HER > HIS for the choice of the determiner. An experiment was then devised to test the validity of the Projection Model predictions. Two hypotheses were set at the beginning of the investigation. The first predicted that the performance of learners exposed to marked environments will improve for both marked and unmarked forms. The second predicted that the performance of learners exposed to unmarked environments will improve only for those environments. The first hypothesis was fully supported, the second partially. All learners who received a treatment of intensive exposure to marked environments -- that is, possessives with human referents, e.g. his/her mother, always improved their performance on both marked and unmarked environments. However, some of the learners who had received a treatment of intensive exposure to unmarked environments -- that is, possessive with inanimate referents, e.g. his/her house -- benefited also in their performance on marked environments. Despite the inconclusive results concerning the second hypothesis, a seemingly paradoxical finding should be emphasized. Learners who received the marked treatment did better on unmarked constructions than learners who received treatment on those unmarked constructions. This in itself indicates that the effect of input is subordinated to that of markedness. Exposure to marked input "weighs" more than exposure to unmarked input. If acquisition depended on input no such differences should be noticed.

Evidence was found for the second projection measure. Learners who received the marked treatment overgeneralized the marked possessive determiner her. Conversely, learners who received the unmarked

treatment overgeneralized the unmarked determiner his. No input treatment had been provided for the structure. Exposure to one parameter resulted in benefit for another, related parameter. Again input, if not considered the outcome of an underlying abstract markedness structure, cannot account for these findings.

Gass (1982) also deals with the issue of input and markedness in an experiment where input frequency for one structure is expected to affect another structure. Learners who received intensive exposure to marked NP positions of the AH of relativization (Keenan and Comrie, 1979, see chapter 3) benefited in their performance on relatively unmarked NP positions. Yet, exposure to unmarked positions did not result in better performance in marked positions.

Similar results were obtained by Eckman (1985) in an experiment that closely resembles Gass's (1982). Three groups of learners were given instruction on relative clauses: the first group on subject relative clauses, the second group on direct object relative clauses, the third group on object of preposition relative clauses. All groups improved in their performance on the particular type of relative clauses they were exposed to. However, the third group, who had been instructed on the most marked type, did better than the other two in generalizing the learning to the other relative clause types. Similarly, the second group, who had been exposed to the medially marked type, generalized more than the first group, who had been exposed to the least marked type.

It has been noted (Ellis, 1985) that the contrived nature of these experiments may undermine their validity. Results of the kind obtained by Zobl (1985), Gass (1982) and Eckman (1985) should thus be corroborated by findings derived from more "natural" learning situations. Mazurkewich's (1984, 1985) results offer such a corroboration. Her 1984 study on the acquisition of dative complements which aimed at separating markedness from transfer, has also some relevance to the issue of markedness and input. Mazurkewich (1984) found prepositional dative constructions to be acquired earlier than double accusative constructions. She remarked that "input does not appear to be an

influencing factor since both forms of the alternation NP PP and NP NP constructions are available in the linguistic environment to which both first and second language learners are exposed" (Mazurkewich, 1985:19).

In her following study on the acquisition of dative questions (1985) more supporting evidence is presented for a distinction between markedness and input, with markedness accounting for IL development. Mazurkewich reports that of two possible forms which dative questions can take in English:

a. To whom did Bob give a gift?

b. Whom did Bob give a gift to?

a. is marked, b. unmarked. As mentioned above, preposition stranding is a marked phenomenon in language (van Riemsdijk, 1978), b. exhibits it whereas a. exhibits pied-piping, a more transparent structure (Mazurkewich, 1985:24). Yet the former structure is much more common in Modern English than the latter one. Mazurkewich claims that the same developmental path (i.e., from unmarked to marked) is followed by both French and Inuit speakers. However her results are not totally conclusive since the Inuit speakers produced more marked questions (that is, with preposition stranding) than unmarked ones (that is, with pied-piping). On the basis of a type of response with a double preposition -- e.g. To whom did Cathy a book to? -- given more frequently by the Inuit speakers, Mazurkewich hypothesizes an intermediate stage between the production of pied-piping structures and the production of structures where the preposition is fronted. Such an intermediate stage would imply an earlier stage characterized by the use of the unmarked, and infrequent form.

Mazurkewich's hypothesis concerning an intermediate stage between unmarked and marked structures is supported by her next investigation on dative questions in a passive context (Mazurkewich, 1985). She found further evidence of the intermediate stage in both groups and, more importantly, for this structure, both French and Inuit speakers produced a greater number of unmarked structures -- which are also less frequent -- than of marked ones -- which are also more frequent.

Further evidence in support of the primacy of markedness over input can be found in the work of Berretta (1986) on the acquisition of Italian atonic pronouns. After having found an order of frequency for clitics in Italian (Berretta, 1985), the author compared it with an order of acquisition exhibited by informal SL learners. Except for some cases, there was no correspondence between the two orders. On the contrary Berretta (1986) suggests that the sequence of acquisition mirrors an independent markedness scale derived from considerations of naturalness and universal discourse organization.

Although not conclusive -- mainly because still quantitatively scarce --, the results of the investigations reviewed here suggest that, when split from input, markedness can account for the acquisition order of TL features.

2.2.5 Averages versus implicational orders

Two positions on acquisition and markedness can be identified for most of the studies reviewed in this chapter. The first position, exemplified by Eckman (1977), describes learners' performance in terms of static difficulty. Learners exhibit more or less difficulty in a TL structure depending on the frequency with which they make errors on that structure. The picture derived is predominantly static: some learners make more errors than others. Later approaches have employed the preferable notion of order of acquisition.

Hyltenstam (1978a, 1984), for example, hypothesizes that SL development proceeds from unmarked to marked:

"H:1) The initial stages of interlanguage are characterized by unmarked categories.

H:1) Development towards a given target is achieved from unmarked to marked categories"

(Hyltenstam, 1978:75)

This view has the advantage of focusing on SLA as a dynamic process rather than a static event. IL development is seen as a series of

stages with an emphasis on qualitative rather than quantitative differences.

A similar position is also held by Rutherford (1982) and Comrie (1984): change overtime is predicted to be informed by markedness relationships. Comrie's (1984) hypothesis, although resorting to degrees of easiness, stress the interaction between markedness and acquisition (a dynamic interaction) rather than between markedness and difficulty (a static interaction). "The overall hypothesis is ... that less marked properties will be acquired more easily ... and more marked properties will be acquired less easily" (Comrie, 1984:14), which stated in slightly different terms, reads: less marked properties will be acquired earlier and more marked properties will be acquired later.

There are then intermediate positions (e.g., White, 1985a, b) which make use of the notion of difficulty but try to include a dynamic element by looking at different levels of proficiency.

However, the major drawback of the studies presented here is to report group averages rather than individual performances. If it is an improvement to move from a static vision of learners' language to a dynamic one (e.g., Rutherford, 1982; White, 1985a and b), the picture so derived is still incomplete. Averages are only simplifications of the learning process and as such they can be inaccurate and even misleading.

The tools typical of analysis of language variation (notably implicational scaling) have been used in some of the studies reviewed in this chapter. Hyltenstam (1984) uses implicational scaling in his investigation on the acquisition of relative clauses. Zobl (1984 a) uses the same statistical technique when analysing the results on possessive determiners and their favourable environments. Implicational orders are derived from these studies. That is, we obtain precise information about the sequence of acquisition for each individual learner.

A scale of the type $A > B > C > D$ summarizes individual learners' behaviour. It does not simply report that on average learners performed better on A than they did on B, than they did on C and so on down the scale. It more precisely states that if a learner possesses C, he will also have A and B, but not necessarily D. If he reaches B on the scale, he will exhibit A but not necessarily C or D. In studies of markedness and SLA, as in most studies of SLA, information on the individual learner's behaviour is needed if any claims of real order of acquisition are to be made.

CHAPTER 3 : DESCRIPTION OF RELATIVE CLAUSES AND SPATIAL PREPOSITIONS AND RELEVANT ACQUISITIONAL LITERATURE

3.0 In the first part of this chapter the two linguistic areas investigated -- relative clauses and spatial prepositions -- will be described from the perspective of markedness and semantic complexity. Such a linguistic description will be followed in each case by a review of SLA studies on the two areas, with particular reference to markedness.

 Secondly, the general aims of the study will be presented in relation to what SLA research has achieved and, more importantly, in relation to the aspects which have not been so far investigated.

 Finally, the specific hypotheses of the study will be stated.

3.1.0 Relative clauses

 The theoretical framework adopted in this study for the description of relative clauses in English and Italian is that included in Keenan and Comrie (1977, 1979). In that investigation the two authors suggest an Accessibility Hierarchy (AH) for relative clause (RC) formation derived from the analysis of how relativization is achieved in about 50 natural languages. On that basis an implicational order together with a series of constraints operating on RC formation is suggested. Here we will deal only with the aspects of direct concern to our study.

 Six basic NP grammatical functions are individuated in RC formation. They are: subject (S), direct object (DO), indirect object (IO), oblique object -- or object of preposition -- (OO), genitive (G), and object of comparison (OC -- or comparative -- (OC)). The AH states that there is a fixed, universal and implicational order in which these NP categories can be relativized in any natural language; the order is as follows:

S > DO > IO > OO > G > OC

The following clauses are examples of relative clauses on all the different NP positions:

S The woman who came
 DO The woman who I phoned
 IO The woman who I was talking to
 OO The friend who I went to the cinema with
 G The woman whose children you met
 OC The woman who I am older than

The order is implicational because if a language can relativize an NP position on the AH, it will also relativize all NP positions to the left of the NP position -- i.e., positions of higher accessibility --, but not necessarily those to the right -- i.e., positions of lower accessibility. Thus if a language can relativize the IO, it will also relativize the S and the DO, but not necessarily the OO, the G, or the OC. Similarly, if another language can relativize the G, it will also relativize the S, the DO, the IO, and the OO, but not necessarily the OC.

The AH can be interrupted at any point: i.e., there are languages where relativization tout court or the use of a given RC forming strategy apply only to the S, or to the S and the DO, or to the S, the DO and the IO, etc. English can relativize all NP positions (see examples given above). Italian stops at the G position:

S L'uomo che è venuto
 (the man that came)
 DO L'uomo che hai incontrato
 (the man that you met)
 IO L'uomo al quale leggevo
 (the man to whom I was reading)
 OO La ragazza con la quale lavoro
 (the girl with whom I work)
 G La ragazza la cui madre ha un negozio di scarpe in centro
 (the girl whose mother has a shoe shop down town)

No relativization on the OC is allowed in Italian: *E' l'unica ragazza della quale sono più alta (she is the only girl than whom I am taller).

3.1.1 Relativization strategies

Relativization is achieved by means of two main types of RC forming strategies. The first one we will deal with is the one pertaining to the presence or the absence of case marking in the relative clause. We can thus have [+ case] strategies where the case of the NP in the relative clause is formally signalled either by the relative pronoun itself or by other explicit means such as prepositions (e.g. the man to whom I am talking). Accordingly, [- case] strategies will be those which leave the case formally unspecified. In the latter instance the case of the NP must be retrieved either from the syntactic organization of the clause -- e.g. the man who came versus the man who I saw, where word order signals the grammatical function of the NP -- or from the pragmatic context -- e.g. dammi gli occhiali che vedo tutto ('give me the glasses that I see everything'), in colloquial nonaccurate Italian (Cinque, 1981).

Case strategies, like all other RC formation strategies, must be applied to a continuous stretch of the AH, that is, if they apply to the IO and the G, they must also apply to the OO. Moreover, strategies may cease to apply at any point of the AH. Both English and Italian use a [- case] strategy on the first two positions of the AH, i.e., S and DO:

S The dog which/that bit you
 Il cane che ti ha morso
 DO The dog which/that I bought
 Il cane che ho comperato

Both English and Italian employ a [+ case] strategy for the remaining positions: IO, OO, G, and OC for English only:

- IO The person (who/that) I was writing to
 La persona alla quale scrivevo
- OO The puppy (which/that) John is playing with
 Il cucciolo con il quale John sta giocando
- G The girl whose father died yesterday
 La ragazza il cui padre è morto ieri
- OC The girl I am richer than

3.1.2 Retention strategies

The type of RC formation strategy which will be central in our investigation is the strategy of pronoun retention. It consists in the occurrence of personal pronouns which make the function of the related NP explicit. There are languages which make use of this RC forming device. Hebrew is one example:

ha-isha she-David natan la et ha-sefer
 the woman that David gave to-her DO the book
 'the woman that David gave a book to'

(Keenan and Comrie, 1977:92)

According to Keenan and Comrie neither standard English nor standard Italian use pronoun copies. The strategy, however, occurs in non-standard varieties of both languages and it is occasionally present in colloquial Italian:

- * This is the road which I don't know where it leads (Comrie, 1981:133)
- * E' l'uomo che gli ho parlato l'altro giorno
 (he is the man that to him I spoke the other day)
 'He is the man I spoke to the other day'

Keenan and Comrie report how the distribution of pronoun copies in natural languages represent a mirror image of the AH. Retention strategies follow the same implicational order as the hierarchy

and tend to be used on lower NP positions. Thus if the chance of finding relative clauses in languages decreases when the AH is descended -- i.e., it is much easier for a language to relativize the S or the DO rather than the G or the OC --, the chance of finding retention strategies increases when the AH is descended. The retention of the pronoun lets the more explicit deep structure representation emerge to the surface. As the movement from NP positions which are high on the AH to NP positions which are low corresponds to a gradual increase in syntactic complexity, the use of a pronoun copy facilitates the processing of otherwise cognitively demanding structures.

3.2.1 Literature review on the acquisition of relative clauses

Drawing on implicational universals of the type if A, then B, but not vice versa, the AH has frequently been treated as a markedness implicational scale (Eckman, 1977), with the S and the OC being respectively the least and the most marked NP positions on the scale. The acquisition of relative clauses in their various aspects has received considerable attention (e.g. Ioup and Kruse, 1977; Cook, 1973; Gass, 1979). We will focus our attention on those investigations which have dealt with the testing of the predictions made on the basis of the AH in a second language.

Schachter (1974) was the first who used the AH -- in an earlier version -- in SLA research. She did not however test the order of acquisition but studied avoidance in second language learners' production. Her data, collected from written compositions, aimed at comparing language groups on total relative clause production. Results were grouped according to error types: i.e., position of the relative clause in relation to the head, use of the relative marker, use of pronoun copies. No subdivision in terms of the NP positions on the AH was made: in terms of the AH her findings are purely quantitative as they report only an order of error frequency.

A similar criticism can be made of Eckman's (1977) interpretation of Schachter's results (see 2.2.1 above). No distinction between the different NP positions is drawn and the AH is used as a general predictor of learners' difficulty depending on the MT. Moreover, Eckman's analysis of Schachter's data revolves only around the pattern of pronoun retention, which, in his opinion, is the only one directly involved in any markedness relationship. Target-like RC formation as such is not taken into consideration.

Ioup and Kruse (1977) used grammatical judgement tasks to obtain data on some aspects of English relativization. The results of the first task they administered agreed with the AH. Learners, irrespective of their MTs, accepted relative clauses with pronoun retention much more often in the OO and G than in the S and DO. However the results of this investigation are not conclusively in support of the AH as the findings of the second task did not confirm the markedness hypothesis based on the AH. Learners did not make fewer errors when judging S relatives as opposed to DO ones.

Gass (1979) also tested the validity of the AH as a predictor of SL development in relativization. Similarly to Ioup and Kruse she included both centre-embedded and sentence final relatives in her sentence combining task. However, whereas in Ioup and Kruse's study only S and DO relative clauses were investigated (at least in the second task), in Gass's study relatives on all NP positions were elicited. A grammaticality judgement task was administered in addition to the sentence combining one -- in this task IO and OO relatives were treated as a single category.

As one of Gass's purposes in her investigation was to study the effect of transfer, data were collected from speakers of MTs which differed in terms of the features investigated. In particular, Gass studied the pattern of pronoun retention and pronoun deletion. She found that on the whole the predictions made on the basis of the AH were confirmed. The effect of transfer was evident in the greater reliance on the retention strategy exhibited by learners

whose MTs made use of pronoun copies in relative clauses. This tendency was particularly noticeable for the first two positions (i.e., S and DO) in the judgement task.

G relatives in the combining task, however, represented a significant deviation from the expected pattern: learners' performance on this position was second only to that on S relatives. Gass suggests two explanation for this discrepancy: 1. whose is the only relative which carries the case in English (whom can be used for all objects), learners would thus find it very salient; 2. whose + NP is interpreted as either the direct object or the subject of the following verb.

"In (...) 'the man whose son just came home' (...) it is possible that whose son was treated as a unit, the subject of the verb came"

(Gass, 1979:341)

Kumpf (1984) further suggested that Gass's learners' high level of performance on whose could be due to the drilling of the relative in the classroom. Gass's learners were in fact all ESL students at an American University. Kumpf interestingly suggested that a study on the acquisition of relative clauses by informal learners would probably yield results which more closely conformed to the predictions made on the basis of the AH.

3.2.2 The AH in other target languages

Hyltenstam (1984) was the first to investigate the validity of the AH in a TL other than English. He studied the acquisition of Swedish relative clauses by speakers of different MTs. Once again the pattern of pronoun retention versus pronoun deletion in the relative clause was investigated, rather than the acquisition sequence per se. On the basis of data elicited with an oral picture description task Hyltenstam showed that pronoun deletion in his learners' IL occurred in an order corresponding in the main to that predicted by the AH. Besides the occurrence of pronoun retention Hyltenstam reports another type of error in his learners' performance:

namely, noun retention. Learners, in other words, produced utterances such as No.5 is the man who the cat is looking at the man. No further comments are provided concerning this error type as it is assimilated to the other retention strategies. Although the AH was generally supported, the inversion of the IO with the OO on the one hand, and the inversion of the G with the OC, on the other, did not affect the statistics obtained. Hyltenstam, moreover, found that pronoun retention was used by subjects belonging to all different language groups. This was despite the fact that the learners' mother tongues included languages which do not allow this RC formation strategy and in Swedish itself pronoun retention is never used. These results, which suggest that the influence of the MT does not disrupt the universal pattern, agree with those of the investigation previously cited. The structure of Swedish was considered responsible for the pattern pertaining to the two pairs IO-OO and G-OC.

MT features may be found to intensify the pattern exhibited by the universal hierarchy if learners whose NL exhibits pronoun retention produce more copies than learners whose NL do not exhibit the feature. From our standpoint the presence of transfer does not disprove the markedness hypothesis as long as only unmarked structures and not marked ones are transferred. Transfer, in other words, can coexist with markedness and intensify it. However, as suggested by Hyltenstam (1978a), and as already reported in the previous chapter, the real testing ground for markedness are situations when mother tongue and target language are equally marked. Only in that case can transfer as an explanation be ruled out and can the effect of markedness on its own be established.

Tarallo and Myhill (1983) investigated RC formation in the IL of the English speaking learners of five different TLs - German, Portuguese, Persian, Japanese and Chinese. Grammaticality judgements were employed to collect data. Among other features the pattern of pronoun retention was analyzed and it was found that the feature was frequently accepted despite its absence in the informants' MT. However, the frequency distribution of copies did not always

coincide with the predictions made on the basis of the AH but was influenced by other factors such as the position of the relative clause in relation to the head noun. Despite the unexpected pattern of pronoun retention, the AH as such proved a good predictor of difficulty as learners found higher positions easier to accept than lower positions. Interestingly IOs proved more difficult than OOs. The two authors attributed this finding to the ambiguous status of IOs in natural languages, where IOs are borderline functions between DOs and OOs (see Keenan and Comrie, 1977). As we have just remarked, evidence pointing in the same direction could be found in Hyltenstam (1984) where IO could be inverted with OO without any change in the level of significance of the scale.

Tarallo and Myhill's study like those before Hyltenstam's suffered from reporting only group averages: no implicational order which would give evidence of individual performance is provided.

As reported in the previous chapter, Liceras (1983) also investigated relativization in a second language. English speaking learners of Spanish, particularly at the beginning stages, retained pronoun copies in all the three tasks employed to elicit data. As far as the AH is concerned Liceras looked at well-formedness in relation to the NP grammatical function. Thus errors such as choice of the relative pronoun in Spanish -- e.g. el qual --, instead of the relative particle -- i.e. que -- were included in the analysis (cf. Hyltenstam's analysis of RC formation only in terms of copies). Such a choice can in fact explain (as Liceras herself points out) some of the inconsistencies found with the AH. Learners often performed better on DOs than they did on Ss mostly because of the more frequent employment of a relative pronoun instead of the expected relative particle in S position. It may be questioned why performance on such a feature should be included in the testing of the predictive power of the AH for IL development.

IOs also behaved differently from expectations: learners often performed better on OOs than they did on IOs. Liceras attributes this pattern to the structural properties of Spanish. As DOs

in Spanish can require to be introduced by the preposition a -- when they are animate --, learners assume a parallelism between them and IOs and do not mark the latter for case when the object is inanimate.

Finally, whereas beginners' performance on the G was the lowest among all the NP positions, intermediate and advanced learners often did better on the G than they did on the OO. This pattern has been explained by hypothesizing that once learners have acquired the lexical item cuyo (i.e., whose) they use it correctly in obligatory contexts.

3.3.0 Spatial prepositions

In this study nine English spatial prepositions will be analysed: at, on, in, to, from, into, out of, across, and through. Traditionally, (e.g. Quirk et al., 1972) these prepositions can be described resorting to the following criteria: 1) location versus movement; 2) number of dimensions involved in the reference object; 3) negative versus positive direction; 4) passage or path -- i.e., the reference object is made up of more than one point.

3.3.1 Location versus movement

We can therefore group and oppose spatial prepositions on the basis of the criteria outlined above. In terms of the opposition location and movement we distinguish between typically static prepositions: at, on, in and typically dynamic prepositions: to, into, and onto. On and in, especially in colloquial English, may substitute onto and into, thus carrying both meanings of location and movement:

I am in the kitchen. / I am going in the kitchen.

Path prepositions like across and through do not distinguish between location and movement:

The rabbit ran across the path. / The tree is lying across the path.
even though the meaning of movement is prior to that of location for these prepositions (Bennett, 1975).

3.3.2 Number of dimensions

Spatial prepositions are also distinguished on the basis of the number of dimensions of the reference object. At refers to a zero-dimensional reference location, The man is at the bus stop, at the door, at the post office, where reference is represented as a geometrical point. To is the corresponding dynamic preposition, the man is going to the bus stop, to the door, to the post office. On refers to a one or two-dimensional space: i.e., either a line or a surface, the boat is on the river, the cup is on the table. As already mentioned above, on is also almost always used as a directional, the cup fell on the floor. In is used with two- and mainly three-dimensional reference locations. It is thus mostly employed to convey meaning of inclusion in a three-dimensional space -- i.e., a volume: the book is in the drawer, the guests are in the living room. The meaning of inclusion in a two-dimensional space -- i.e., in an area -- is however also possible, the circle is in the square. Into is the locative which is formally marked for movement to a two- or three-dimensional space, the woman was going into that house, I put the milk into the fridge. The same locative meaning can also be expressed by in, especially in American English.

3.3.3 Negative prepositions

There is no preposition which explicitly distinguishes between negative location and negative movement. For negative location not + preposition is used, the book is not on the desk, Dad is not at home. Negative locatives are typically used for negative

direction, the baby was falling off the table, but they have a secondary locational meaning Marchmont Crescent is off Marchmont Road (Bennett, 1975). Whereas the opposition between location and movement does not apply to negative prepositions, the distinction between dimension-types is preserved. Thus from is used for zero-dimensional negative directionals, I brought it from the shop, off for one-, two-dimensional negatives, the car went off the door, out of for two, three-dimensional negative directionals, it's just come out of the oven, it will soon jump out of the box.

3.3.4 Path prepositions

Across and through are usually defined 'path' or 'passage' prepositions (Clark, 1973; Quirk et al., 1972). Like in the case of negative prepositions they have both a locational and a locomotional meaning, with the latter being primary (Bennett, 1975). Quirk et al. (1972) describe across as a one- or two-dimensional preposition, thus corresponding to the static on, the ball rolled across the table. Through, on the other hand, is a two-, three-dimensional preposition which corresponds to in, e.g. we walked through the woods.

The two prepositions are further distinguished on the basis of their 'reference to an axis' (Quirk et al., 1972). Across expresses movement or location from one side to the other following a straight line more or less perpendicular to the longer side of the two-dimensional space. Through, on the other hand, does not carry this additional meaning but the characteristics of the directional path are left unspecified:

'I walked across the park' versus 'I walked through the park'.

The opposition of interest to us in this study is that which is based on the number of features.

3.3.5 Structural markedness of spatial prepositions

In the following section the degree of markedness of the nine English spatial prepositions investigated will be discussed. No semantic considerations will enter the presentation, we will resort only to the structural criteria traditionally used in markedness theory. The description is based on Clark (1973) and Traugott (1974).

Between the positive prepositions at, on, in, to, into, and the negative prepositions, from, out of, the latter appear more marked than the former because the distinction between location and movement, which is formally marked in positive prepositions, is syncretized in negative ones.

Similarly, path prepositions are more marked than both positive prepositions and negative prepositions: they do not distinguish between location and movement, or between positive and negative direction.

In English, within the group of positive prepositions, movement is marked as opposed to location. Dynamic prepositions, i.e., (to), onto, into, present an extra feature to, which is added to the corresponding locative prepositions. Thus into is formally marked for movement. The unmarked status of in and on as opposed to into and onto is further indicated by the fact that the former prepositions can neutralize the opposition location and movement and be used in both static and dynamic contexts: e.g. the old lady swam in the swimming pool versus the old lady fell in the swimming pool.

Among movement prepositions two-/three-dimensional ones are definitely more marked than zero-dimensional prepositions. Into and onto include the morpheme to and carry an extra one, in and on respectively. The relationship between zero-dimensional and two- three-dimensional prepositions is not equally clear among static prepositions: no formal marking is evident as in the case

of dynamic prepositions. We could however generalize the markedness relationship established for the latter prepositions to the static ones. This generalization is supported by the fact that whereas the distinction between location and locomotion is obligatory in zero-dimensional prepositions (at versus to), the same does not apply to two- and three-dimensional prepositions -- especially in spoken English --, where in and on can be used for both location and movement. The same markedness relationship applies to negative prepositions where out of (is more marked than from if we consider of an allomorph of from (Clark, 1973), e.g. there are five from our group = there are five of our group).

Table 3.1 below, adapted from Clark (1973:41), presents prepositions in terms of increasing markedness. According to Clark "at appears to be the least complex preposition, and the farther the word is from at in this table, generally, the more complex (or marked) it is" (1973:41).

Table 3.1
English Prepositions of Location and Location + Direction
(Adapted from Clark, 1973:41).

Number of dimensions	Location	Positive direction	Negative direction	Path
0	at	to	from	via
1/2	on	onto	off	across
2/3	in	into	out of	through

3.3.6 Clark's Complexity Hypothesis

In his paper on spatial and temporal terms "Space, time, semantics and the child" Clark (1973) draws attention to the correlation between space as it is usually perceived by man (i.e. perceptual space) and space as it is represented in language (linguistic space). "Since perceptual space is a human universal, it should condition

linguistic space in every language" (Clark, 1973:54). The starting point, then, is to determine how perceptual space is organized. In his study Clark resorts to criteria derived from physics, biology and psychology. Correlations are then found between the perceptual organization of space and the system of English spatial terms analyzed by using both the markedness criteria reported in the preceding section and a componential analysis. Spatial concepts which are more complex perceptually are found to be more complex linguistically.

Clark's componential analysis makes use of semantic features -- rules of application, to use his terminology -- such as number of dimensions, movement, negative direction. Thus an increase in the number of dimensions of the reference object represents an increase in the number of semantic features. Movement, as opposed to location, is an additional feature, and so is negative direction if compared to positive direction. Notice that according to this analysis location is definitely more basic than movement. To, for example, is more complex than at because its correct use presupposes that (i) the space of the reference point is zero-dimensional. (ii) the subject of the preposition is moving in that direction; at, on the other hand presupposes only (i). In is more complex than at as its correct use presupposes location in a three-dimensional space whereas at presupposes location in a zero-dimensional space. From is more complex than to and at because it presupposes both location in a zero-dimensional space and movement but it also specifies that the direction is not positive.

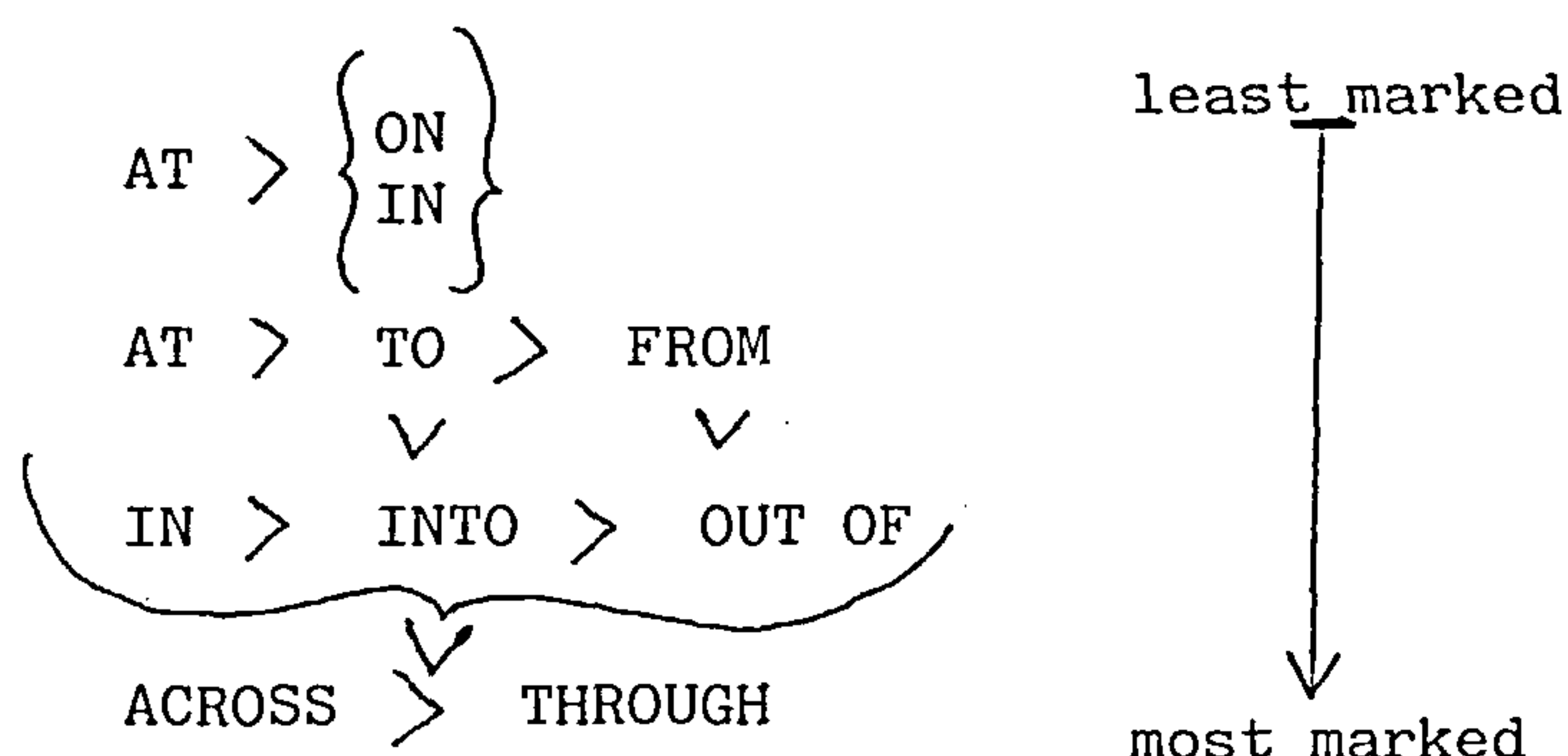
Drawing on linguistic complexity derived from both a structural and a semantic component, Clark formulates his Complexity Hypothesis (CH) which predicts that the order of acquisition (in first language) of spatial terms will be constrained by their linguistic complexity. The CH

"posits that the order of acquisition of English spatial terms is constrained by their rules of application. (...) More specifically, the complexity hypothesis claims that given two terms A and B, where B requires all rules of application of A plus one or more in addition, A will normally be acquired before B."

(Clark, 1973:29)

3.3.7 Summary: a hierarchy for spatial prepositions

In summary, drawing on both structural markedness and semantic complexity we propose a hierarchy for the English prepositions investigated. The hierarchy is as follows:



In this hierarchy, which should be read from the top to the bottom, at is the least marked preposition, through the most marked one. Locational prepositions (i.e. at, on, in) are less marked than the corresponding movement prepositions (i.e. to, onto, into). The latter are less marked than their negative counterpart (i.e. from, off, out of). Zero-dimensional prepositions are less marked than two-three-dimensional ones. Path prepositions are the most marked prepositions in the set.

3.3.8 Italian spatial prepositions

For the purpose of this study and in reference to the English prepositions dealt with here we can identify a number of characteristics of the Italian system of spatial prepositions. Our description is based on Parisi and Castelfranchi's (1969) paper "Analisi semantica dei locativi spaziali".

First of all in Italian the distinction between location and movement is never carried by the preposition:

L'uomo è all' ospedale

(The man is at the hospital)

L'uomo andò all' ospedale

(The man went to the hospital)

The information is on the contrary carried by the verb alone. Thus whereas in English to, into, specifically code the meaning of movement -- as opposed to at, in which specifically code the meaning of location --, in Italian a and in or dentro a are used in collocation with both static and dynamic verbs.

Of the three simple prepositions a, su, and in, Parisi and Castelfranchi consider a the simplest one (cf. Clark's similar treatment of the English at). The reference object is dimensionless -- i.e., a zero-dimensional point. At expresses coincidence. Its locative meaning is thus very general and unspecific.

Su and in have on the contrary a more specific meaning. In refers to location in a reference object which includes the object of the preposition. The reference objects used with in usually have three dimensions. They may have two dimensions as long as the object of the preposition is internal to the reference object.

Whereas for in the object of the preposition is internal to the reference object, for su the object of the preposition must be external to the reference object.

Le chiavi sono nella mia borsa
(The keys are in my bag)
Le chiavi sono sul tavolo
(The keys are on the table)

Thus su can only be used with one- or two-dimensional objects and corresponds to on with the exception that it does not imply contact:

Abbiamo volato su Roma
(We flew over Rome)

In Italian the verb does not only convey the information pertaining to movement versus location, but it may also lexicalize the information pertaining to the number of dimensions of the reference object, cf.:

Andò in camera versus Entrò in camera
 (He went to his room) (He went into his room)

where the verb entrare contains the features [movement] and [three-dimensional reference space]. The same can be said about negative movement, cf.:

Vengo dalla banca versus Sta uscendo dalla banca
 (I'm coming from the bank) (He's going out of the bank)

where uscire already contains the feature [three-dimensional reference space].

When negative movement is expressed in collocation with other verbs such as saltare (jump) or tirare (pull) da is used with zero-dimensional reference points and fuori da with two- and three-dimensional reference objects:

La rana è saltata dal tavolo sul letto
 (The frog has jumped from the table to the bed)
 La rana è saltata fuori dalla scatola
 (The frog has jumped out of the box).

Among path prepositions attraverso is used with one- two- three-dimensional reference objects, when movement can be represented as a straight line going from one side of the reference object to the other:

La pallottola gli è passata attraverso il braccio
 (The bullet went through his arm).

Per is used when the movement involves at least three points within the reference object, which must be three-dimensional.

Table 3.2 summaries the distribution of Italian prepositions whose meaning at least partially overlaps with that of the English prepositions investigated in this study.



Table 3.2
Italian locative prepositions

Number of dimensions	Location	Positive direction	Negative direction	Path
0	a	a/in	da	
1/2	su	su	da	attraverso
2/3	in/dentro a	in/dentro a	fuori da	attraverso/ per

3.4.1 Literature review on the acquisition of English spatial prepositions

Research on the development of spatial terms in English as a second language is very limited. The acquisition of some spatial prepositions has been studied in the framework of morpheme studies (e.g. Hakuta, 1978). The information we derive from these investigations mainly concern the acquisition of spatial terms in relation to other morphemes or unrelated structures, with the number of locatives being too small to allow any meaningful comparison.

Hakuta (1978) reports in, to, and on, in this order, to appear early in the spontaneous English IL of his Japanese speaking child. Hakuta further noticed that in also occurred very often in non-obligatory contexts and substituted for other prepositions such as at, out, off, and around:

She's waiting in your door (at)
Is she in a floor? (on)
I saw in a window (from)

(Hakuta, 1978:143)

Similarly Cancino (1976, reported in Andersen, 1983) observes that in and on are acquired early by her Spanish speaking subject, with in being frequently generalized to on-obligatory contexts.

Chamot (1978) also reports an overgeneralized use of in by her bilingual (French-Spanish) child learning English. "The most frequent preposition error involved the indiscriminate use of in: in bed (for to bed), (...) in the school for at school" (p.180). To is also reported as substituting other target-like prepositions such as on and at, e.g. gave to TV (for on), stay to school (for at). From these scanty data it may be inferred that in and to are among the first prepositions to appear in this child's IL; yet no acquisition order is given.

For has also been reported as occurring in the speech of ESL Francophone learners to express movement (Zobl, 1984b:205):

She want to go for the disco

Similarly Wode (personal communication) found for to be among the first locatives to be produced by his four German speaking children when acquiring English naturally. Interestingly the same feature occurs in Pidgins and Creoles at the beginning stages of their development (Traugott, 1974).

Mougeon et al. (1977) provide a wider study of the acquisition of English prepositions by both English monolingual and French speaking children learning English. The prepositions investigated include the following locatives: at, in, on, to, from, into, and through. To our knowledge, this is the only study of the acquisition of spatial prepositions by SL learners which tested Clark's CH.

The monolingual children included in this investigation appear to have acquired all spatial prepositions by grade 2 (age 7-8) except for into, which was not supplied correctly 33% of the time (all prepositions reached the 90% criterion level in the speech of grade 5 monolinguals). Bilingual children, on the other hand, show a higher percentage of errors. The acquisition pattern which emerges from this accuracy study agrees in the main with the predictions made on the basis of Clark's CH. At, in and on are mastered before to, into, and through. However, among the more complex prepositions

from is unexpectedly acquired before to (7% of the errors for the former, 48% of errors for the latter). The CH predicts prepositions expressing negative direction to be learnt after the corresponding ones expressing positive direction. The authors explained the unexpected result as a consequence of transfer: there is no specific French preposition which expresses positive movement to a zero-dimensional place. Moreover, errors in to- and into-obligatory contexts were more frequent than those in through-obligatory contexts. As monolingual children also had serious difficulty with into, MT influence cannot be the only explanation for the late acquisition of the preposition. According to the authors the more likely explanation of this result is to be found in the restricted use of into, a preposition which is typical only of formal English.

Mougeon et al.'s study presents the great advantage of reporting data about a group of related spatial prepositions. It however suffers from having a small number of obligatory contexts for each preposition and from the lack of statistics which provide information about individual performance.

3.4.2 Some findings from other target languages

One of the focuses of the European Science Foundation Project on the acquisition of a SL by adult immigrants has been on spatial reference. Studies in Second Language Acquisition by Adult Immigrants edited by Extra and Mittner (1984) reports the preliminary results of three longitudinal investigations on the acquisition of spatial terms including spatial prepositions. Two studies address the acquisition of spatial reference in French L2: the first uses Spanish speaking informants (i.e., Cammarota and Porquier, 1984), the second Arabic speaking informants (i.e., Houdaïfa and Véronique, 1984). The other one deals with the acquisition of Dutch spatial terms by Arabic and Turkish speakers (Broeder et al., 1984).

As the markedness of spatial prepositions depends – much more than in the case of relative clauses – on the structure of each

language system, our predictions for the acquisition of English spatial terms cannot be extended to other target languages. However, it is interesting to look at the acquisition of spatial prepositions in TLs other than English to observe the development of spatial reference from a semantic point of view.

First of all it must be pointed out that all three studies report an initial stage in which no spatial prepositions are supplied. This is thus irrespective of MT and TL.

For French, Houdaïfa and Véronique found dans to be the most frequent preposition in the IL speech of the four Arabic speakers:

Le livre dans le sac
(the book in the bag)

(p.223)

Pour is also occasionally used as a goal preposition. The same tendency has been noticed for English IL (see 3.4.1 above).

[ʃariv] pour M. Karim (= J'arrive chez M. Karim)
(I arrive for M. Karim) (= I arrive at M. Karim)
(p.250)

A is another early preposition, which often substitutes for its negative counterpart (i.e., de):

Je [parti] à Vieux-Port et [ʃariv] à le bar Cabotage
'I leave to Vieux-Port and I arrive to the bar Cabotage'
(I leave from Vieux-Port and I arrive at the bar Cabotage)

No negative or path prepositions are reported.

Cammarota and Porquier's study specifically investigated the emergence of dans, sur, en, à from a perspective of transfer. Two of the Spanish speakers investigated started by using the Spanish system for spatial reference while the third one was clearly operating within the French system and used à and dans for both location

and movement (but there is only one instance of dynamic dans). Little can be said about the other subject's opposition between a dynamic à and a static en. These subjects, in fact, appear to insert occasional French words into their Spanish speech.

As for Dutch in ('in') is the most frequently used static preposition for three of the four informants (although the fourth one never uses it). In is also often overgeneralized and used, for example, instead of op (on). Naar ('to') is the most frequent directional locative; it is often used instead of the dynamic in, while the reverse does not seem to happen. No negative or path prepositions are reported to occur.

From these studies it appears that zero- and two- three-dimensional positive locatives are the first to appear in these learners' French and Dutch IL. The distinction, or lack of distinction, between location and movement does not seem to create any particular problem to learners.. No negative or path prepositions are reported in any of the studies.

3.5.1 Summary of the acquisition of relative clauses and spatial prepositions

The findings of the investigations on the acquisition of relative clauses reported in this chapter show that the predictions made on the basis of the AH are generally supported. However, some inconsistencies with the AH were found which need to be explained by resorting to

1. the characteristics of the given TL system (i.e., IO-00 and G-00 in Hyltenstam, 1984; IO in Liceras, 1983);
2. universal tendencies (e.g. the ambiguous status of the IO in Tarallo and Myhill, 1983);
3. type of learning (see Gass's 1979 results on the G as explained by Kumpf, 1984).

These factors need further investigation.

As far as spatial prepositions are concerned systematic data are much scarcer, especially for English as a second language. The only study which specifically tested Clark's CH is Mougeon et al.'s (1977). However, the result of the study are probably only indicative as the orders provided are based just on group frequencies. Clark's CH is supported at a very general level by the findings of the Canadian study.

Little else is known about spatial prepositions in English as a second language: in, on, to appear to be the first prepositions to occur in English IL. They are frequently generalized to inappropriate contexts. In, in particular, appears to be the earliest and most wide-spread spatial preposition.

Comparable results can be found in studies on other target languages. The first prepositions to appear are used to refer to location, movement, and both location and movement in a zero- and in a two- three-dimensional space. What is known about the acquisition of both English and other TLs is mostly restricted to the simplest prepositions. Very little is known about more complex spatial terms.

3.6.0 General aims

In this study we intend to further investigate the markedness hypothesis as applied to relative clauses and spatial prepositions, by testing the predictions made on the basis of the AH for relative clauses and of the hierarchy suggested above (3.3.7) for spatial prepositions.

3.6.1.0 Further factors

Some factors have been investigated in studies on the acquisition of relative clauses and spatial prepositions, notably the two variables mother tongue and target language. There are other variables,

however, with which no study has dealt. Two factors were selected for further research connected to markedness and the two areas investigated: intertask variability, and language learning setting.

3.6.1.1 Intertask variability and markedness

Intertask variability could in theory affect the accuracy orders of the two groups of features as it has been found to generally affect accuracy orders for other structures (Krashen, 1982; Tarone, 1983; Ellis, 1984b.). We could thus find different orders in response to variation in the degree of formality of the task (e.g. written versus oral), as well as in the amount of time available for completion. Focus on form has been found an important factor in intertask variability, although, as Tarone (1985) points out, it may simply be an intermediary, not an explanatory, variable.

However, as both relative clauses and spatial prepositions are bound in a markedness relationship, it might happen that markedness constraints operate irrespective of task formality or time available. In that case we would expect accuracy orders to be the same across tasks but the more formal task would probably elicit a more marked performance. That is, we should find an increase of marked structures in the more formal task.

Formal registers -- and typically the written language -- are characterized by more complex syntax and morphology (Ochs, 1979; Givón, 1979), and it may be expected, by a more complex lexis. IL speakers' behaviour, like native speakers', should reflect such a shift in complexity occurring when more attention is paid to form.

3.6.1.2 Language learning setting and markedness

Kumpf (1984) already pointed out that formal instruction, characterized by the overlearning of the G may 'distort' the acquisition

order for relative clauses. It was hypothesized that learners who acquire English naturally would not exhibit an IL production with such a noticeable inconsistency with the expected universal order.

Despite the discrepancy found by Gass (1979), no study has investigated the acquisition of a group of features bound in a markedness relationship by learners who are either formal or informal. Most of the studies reported so far, in fact, used informants who were both exposed to the language naturally in a SL environment and, simultaneously received language instruction.

Throughout this thesis we will use formal registers and planned discourse as synonyms as opposed to both informal registers and unplanned discourse. Ochs (1979) defines planned discourse as "discourse that has been thought and organized (designed) prior to its expression" and unplanned discourse as "discourse that lacks forethought and organizational preparation" (p.55). Planned discourse is typical of written language and formal situations, unplanned discourse of speech and informal situations. Planned discourse is characterized by a greater number of complex features (Givón, 1979). A feature as marked as relativization, for example, is much more frequent in planned discourse. In informal registers other linguistic means are preferred -- e.g. determiner + noun constructions such as this man, instead of the man who..., or noun + preposition constructions such as the woman with a red hat, instead of the woman who is wearing a red hat (Ochs, 1979). G relatives, in particular, are very rare in spoken speech (cf. Brown, 1985) and are often substituted by S relatives:

- a. the woman whose husband is in hospital
- b. the woman who has her husband in hospital

(adapted from Keenan and Comrie, 1977:91)

It may be hypothesized that the IL of untutored learners, who are mainly exposed to informal registers of the language, will exhibit fewer marked features than that of tutored learners, who are exposed to more formal registers which are characterized by a greater number of marked structures (Givón, 1979).

It must be emphasized that within a markedness hypothesis language learning setting - with its correlate of possibly different inputs - is to be considered a quantitative rather than a qualitative variable. In other words, learning contexts are not hypothesized to 'disrupt' the expected order but simply to possibly determine an increase or a decrease in the level of performance. More specifically, given the organization of discourse, variation is hypothesized to affect the most marked features.

In this study we introduce a somewhat contentious interpretation of the formal/informal distinction, defining a formal context of language learning as a setting characterized by the use of planned discourse, either as written language or formal speech. According to the definition of planned above, any kind of educational institution is likely to be a formal context, though we know of no empirical research to support this supposition. This will be so whether the language is taught explicitly, or learnt implicitly - e.g. through being a means of instruction. Informal contexts, on the other hand, are settings which are characterized by the use of unplanned discourse, most commonly in the form of informal speech. No 'pure' formal or informal contexts of language learning exist in real life. There is always some degree of combination of the two types of discourse in any social setting. There are, however, contexts which gravitate toward one extreme or the other. Students learning a foreign language in school have a substantial input of formal language and can thus be said to learn in a formal context. Migrants working in a host country are almost exclusively exposed to unmonitored speech, so they can be said to learn in an informal context.

3.6.2 Hypotheses of the study

3.6.2.1 Group 1 : general hypotheses¹

These hypotheses concern all learners with no distinction between the task on which they perform, or the learning setting they are exposed to.

- 1.1.H₀ There is no statistically significant accuracy/acquisition sequence within the two sets of features investigated. Learners acquire features randomly.
- 1.1.H₁ There is a significant implicational order in the acquisition of both sets of features.
- 2.1.H₀ The acquisition of English relative clauses does not proceed from unmarked to marked as defined by the order of the AH for relativization.
- 2.2.H₁ The acquisition of English relative clauses proceeds from unmarked to marked as defined by the order of the AH for relativization.
- 2.2.H₀ The acquisition of English spatial prepositions does not proceed from unmarked to marked as defined by their structural markedness and Clark's CH (i.e. the hierarchy at 3.3.7).
- 2.2.H₁ The acquisition of English spatial prepositions proceeds from unmarked to marked as defined by their structural markedness and Clark's CH (i.e. the hierarchy at 3.3.7).
- 3.1.H₀ Learners' lexical substitutes for expected spatial prepositions do not include a statistically significantly greater number of less marked items than of more marked ones.
- 3.1.H₁ Learners' lexical substitutes for expected spatial prepositions include a significantly greater number of less marked items than of more marked ones.

3.6.2.2 Group 2 : more formal and less formal tasks

These hypotheses concern the comparison between the performance on the more formal task, i.e. the written task, see 4.1.2 and on the less formal task, i.e. the oral task.

- 1.1.H₀ There is no statistically significant difference between learners' performance in the written and in the oral task on relative clauses.

- 1.1.H₁ There is a statistically significant difference between learners' performance in the written and the oral task on relative clauses. Learners perform on more marked positions significantly better in the written task.
- 1.2.H₀ There is no statistically significant difference between learners' performance in the written and oral task on spatial prepositions.
- 1.2.H₁ There is a statistically significant difference between learners' performance in the written and in the oral task on spatial prepositions. Learners perform on more marked prepositions better in the written than in the oral task.
- 2.1.H₀ There is no statistically significant difference in the markedness value of lexical substitutes in the written and the oral task on spatial prepositions.
- 2.1.H₁ There is a statistically significant difference in the markedness values of lexical substitutes in the written and the oral task. In the oral task learners produce a significantly greater number of less marked substitutes than they do in the written task.

3.6.2.3 Group 3: formal and informal learners

This group of hypotheses pertains to the comparison between formal and informal contexts of language learning.

- 1.1.H₀ There is no statistically significant difference between formal and informal learners' performance on relative clauses.
- 1.1.H₁ There is a statistically significant difference between formal and informal learners' performance in the oral task on relative clauses. Formal learners perform significantly better than informal learners on more marked NP positions on the AH.
- 1.2.H₀ There is no statistically significant difference between formal and informal learners' performance on spatial prepositions.

- 1.2.H₁ There is a significant difference between formal and informal learners' performance on spatial prepositions. Formal learners perform on marked prepositions significantly better than informal learners.
- 2.3.H₀ Formal learners' pattern of lexical substitution when expected prepositions are not supplied is not statistically significantly different from that of informal learners.
- 2.3.H₁ Formal learners' pattern of lexical substitutions when expected prepositions are not supplied is statistically significantly different from that of informal learners. The latter supply a greater number of less marked substitutions.

Notes

1. No hierarchy of markedness can be established for non-target-like production on relative clauses. It cannot be claimed, for instance, that pronoun retention strategies are less marked than case strategies. Therefore no specific hypotheses will be formulated pertaining to non-target-like performance on this structure.

Substitutions of expected spatial prepositions with other inappropriate spatial prepositions can, on the contrary, be classified in terms of markedness. In the utterance 'the cat is at the box', a less marked preposition has been used instead of the expected more marked in. In 'the cat is into the box', on the other hand, a more marked preposition has been employed instead of a less marked one.

CHAPTER 4 : METHODOLOGY

4.0 In this chapter the methodology of the pilot, main, and additional studies will be presented and discussed. The tasks used in the core investigation will be described in detail in the section dedicated to the preliminary study. In the section on the main study only the modifications to the tasks will be presented. The elicitation techniques used in the additional study will be discussed in the corresponding section. Scoring procedure will be presented last.

4.1.1 Cross-sectional versus longitudinal research design

The design chosen for our investigation is a cross-sectional one. The tasks were administered to groups of learners in one session or over a limited period of time. Data were collected from each learner only once. The assumption underlying this methodology is that the accuracy or difficulty rankings derived from the data collected from learners at one session mirror the acquisitional orders derived from the data of a few learners observed in their linguistic development over time.

The assumption that accuracy can be equated with acquisitional orders has been criticised (e.g. Rosansky, 1976). But those criticisms were addressed to morpheme order studies, that is, to investigations of the acquisition/accuracy sequences for a group of unrelated grammatical features. Hyltenstam (1978b) and, in particular Borland (1983) have shown, however, that cross-sectional studies yield orders which definitely mirror those obtained from longitudinal studies, provided the sequence of developmental stages relative to individual structures is investigated. More precisely, Borland (1983) and Hyltenstam (1978b) researched the order of linguistic environments according to which a single grammatical feature, such as copula or negation, is correctly supplied.

Furthermore, in an attempt to determine how different the morpheme orders obtained from cross-sectional investigations are compared to those obtained from longitudinal investigations, Krashen (1981) reviewed a large number of relevant studies. He found that, provided the number of obligatory contexts was at least 10 for each morpheme, cross-sectionally obtained accuracy orders generally did not differ significantly from longitudinally obtained acquisitional orders (cf. also Andersen 1978; Long and Sato, 1984).

On the basis of this evidence we assume in the present study that accuracy orders reflect acquisition orders, and thus we feel justified in using the two terms interchangeably. More specifically, we assume that we will be able to regard our results as pertinent to the acquisition of the structures investigated.

We are aware, on the other hand, of the limitations of any study which uses group means with respect to the acquisition of several different structures (Wode, Bahns, Bedey, and Frank, 1978). This statistical technique may actually obscure the acquisitional pattern of some structures. We refer to those features whose acquisition follows a U-shaped development (see, for instance, Bowerman, 1982). In these cases, the use of statistics which employ group means entails levelling out the various acquisitional phases of the structure, thus presenting an untrue picture both of the development of the feature itself, and of the interaction of this development with that of other related features. When analysing the data, care must therefore be taken to identify possible cases of structures which seem to follow a U-shaped acquisitional growth.

4.1.2 Spontaneous data versus elicitation data

Data in SLA has traditionally been gathered in two ways:
 (i) by analyzing samples of spontaneous speech in order to isolate all the obligatory contexts for the suppliance of the features investigated,
 (ii) by eliciting those features through structured tasks. (For the first approach, see for example many of the empirical studies

reported in Hatch 1978; for the second one see for example Gass, 1979; Hyltenstam, 1977; Zobl, 1984a). Some researchers have used both approaches, one in combination with the other (e.g. Cancino, Rosansky and Schumann, 1978). Some others have claimed to have collected spontaneous speech but the tasks they used guided the learners towards the production of the structures investigated by the researchers (e.g. Dulay and Burt, 1973, 1974.).

The advantages of collecting data from spontaneously occurring language are obvious. The major one is that, when involved in real communication, the learner is more likely to produce language which he would produce in any other naturally occurring situation. We thus have a truer picture of his IL grammatical system.

There are, however, practical and theoretical limitations to this approach. First of all, from a statistical point of view, it may be very difficult at times to have a sufficient number of obligatory contexts for the analysis of one or more structures (see for example Platt, 1979). Second, as first described by Schachter (1974), learners tend to avoid structures which they find difficult. Consequently, lack of errors in certain grammatical areas may be due to actual acquisition, but also to general avoidance of the feature coupled with its correct suppliance only when the learner is certain to perform according to the TL rules.

Another problem arising from the spontaneous collection of data is related to that of avoidance, and specifically concerns our investigation. Marked structures are very infrequent in language. Even native speakers produce marked structures more rarely than they do unmarked structures. It would therefore be unlikely for us to be able to collect from spontaneous speech balanced samples of both marked and unmarked features. For instance, in the case of relativization, which is itself a marked feature of language, positions low on the AH are very rare in oral and informal registers, where virtually the only types of relative clauses produced are subject and direct object ones. Consequently, collection of data

from spontaneous speech would hardly provide a representative picture of the learner's competence on the general phenomenon of RC formation.

For the practical and theoretical reasons outlined above we decided to make use of elicitation techniques rather than spontaneous speech in order to collect data on the acquisition of the features investigated.

4.1.3 Different degrees of formality in the elicitation techniques

It has been pointed out on several occasions (cf. chapter 3) that different kinds of elicitation techniques are likely to give different pictures of the learner's language. "The task used for elicitation of data from learners may have a variable effect on the learner's production of related phonological and syntactic structures" (Tarone, 1983:142).

In order to test the hypothesis that discrepancy exists between the results given by different elicitation techniques, subjects were required to perform two different tasks, one written and one oral, for each structure tested. On the one hand, the written tasks where the attention on the linguistic form is greater, are expected to elicit a language which is closer to both the TL and NL grammars, and, therefore, more marked. On the other hand, the oral tasks, where the learner is pressed for time and therefore focuses on meaning, are expected to elicit a more unmonitored and simpler language, that is, a language which is closer to the unmarked end of the developmental continuum.

4.2.0 Pilot study

Previous to the main investigation a pilot study was carried out in Italy during September-October 1983. The aims of the study were threefold. Firstly, the structures chosen for the investigation had been selected mostly on theoretical grounds -- that is, on the

basis of how describable they were in terms of markedness. It was therefore necessary to determine if they were all suitable for further investigation, given our population of Italian speaking learners. Secondly, the elicitation tasks designed for the study needed to be piloted in order to reveal faults or inadequacies both in the tasks globally or in individual items. Thirdly, we wanted to define what level of linguistic competence learners should have attained for us to obtain representative data on the development of the features researched.

The structure investigated during the preliminary study were relative clauses, spatial prepositions and the definite article. The choice of the definite article was also made on theoretical grounds. Since most languages of the world do not have a definite article, the absence of the article -- seen as a case of zero sign -- is considered the unmarked member of the opposite "presence versus absence of the article". It was hypothesized that SL learners will go through a stage of no or little use of the article before acquiring the structure. Furthermore, on the basis of Givón's definition of markedness as presuppositional complexity, it was hypothesized that learners would begin by inserting the definite article in front of direct objects and only later would they supply it in front of prepositional phrases and subjects (cf. Huebner, 1979).

4.2.1 Subjects

Two different linguistic levels were believed to be necessary for the investigation of the development for the three structures. The acquisition of the definite article was supposed to be completed very early, soon after the Italian speaking learner had been exposed to English as a foreign language. Italian has an article system -- as opposed to languages which do not -- and it operates very similarly to the English article system. Italian speakers, moreover, are not known for having great difficulty with the English definite article, except for its absence in generic references. It was

thus hypothesized that Italian learners would go through a series of developmental stages for the acquisition of this structure but they would do so quickly. Learners at an elementary stage were chosen for the elicitation of the article. The group included 12 learners of 13, who had had English for two years, 12 learners of 14, who had had English for three years and six learners of 15, who had had English for four years.

On the other hand, relative clauses and spatial prepositions, which may be considered more complex grammatical areas, are known for causing numerous and long lasting problems to Italian speakers, as well as to speakers of other languages. A more advanced level of linguistic development was therefore believed to be necessary for the study of these structures. Six students of 15 and six students of 16 were chosen for the elicitation of both structures. They had been studying English for four and five years respectively. Their school was an academically-oriented High School. All learners belonging to both groups -- elementary and more advanced -- came from the same geographical area (i.e. around Mantova and Modena), which was also the area where part of the main investigation was to be carried out.

4.2.2 Elicitation techniques

4.2.2.1 Written task: relative clauses

The technique devised to elicit relative clauses in the written mode was a sentence combination task. This technique, which is also often administered as a test of relative clause production, has been already used for the elicitation of this structure from learners of English as a second language by Gass (1979).

A sentence-combination task was hypothesized to tap a very elaborated span of the learner's developmental continuum. The written mode in itself plus a task that strongly resembles the form-oriented tests to which learners are exposed would presumably promote the learner's reliance on the most target-like, i.e. marked, level of his IL.

The task comprised 36 pairs of nuclear sentences, six pairs for each of the six NP positions on the AH. Learners were asked to combine each pair of nuclear sentences into one sentence by means of a relative pronoun. They were allowed to delete and rearrange elements in the sentences as long as they did not change the grammatical functions of those elements. Examples were given to clarify this point (see Appendix B1 for the complete task and the instructions which accompanied it). Learners were not allowed to change the grammatical relationships of the elements within the sentences in order for us to prevent them from relativizing NP positions which were less marked than those they were asked to relativize.

Only relatives whose head noun has the function of direct object in the matrix sentence were included in the task e.g. Mum lost the address which was on the living room table.

4.2.2.2 Written task: spatial prepositions

The nine spatial prepositions whose acquisition is investigated were elicited in the written mode by means of a modified discourse-completion task (for a description of the technique of discourse-completion as such see Levenston and Blum, 1978). "The term 'discourse' is used here to refer to a coherent stretch of speech or writing which contains enough information to enable the reader to supply the situational context in which it took place" (Levenston and Blum, 1978:5). At the beginning of the task, learners were provided with the list of the nine prepositions from which they were to choose. A short text, made up of one or more sentences, was provided for each preposition. A blank was left for the insertion of the item

by the learner. The discourse was constructed in such a way as to ensure that only one preposition among the nine supplied was acceptable in that particular context. Each preposition was elicited six times.

Whereas Levenston and Blum maintain that a well-constructed discourse must be unambiguous, it immediately became clear during the preparation of this task that this ideal level could not be reached when eliciting spatial prepositions. On in the lamp is on the table can easily be replaced by above, under, opposite and many other prepositions. A totally unambiguous context would necessarily be a very long, wordy and uneconomical one. Thus, since we were interested only in nine prepositions, we decided to restrict the choice available to the learner to the prepositions investigated. Even then, the construction of unambiguous contexts proved difficult. In many cases we had to rely on the learner's knowledge of the world, e.g. David sat the piano and began to play can only be completed with at provided it is known that in order to play the piano one sits on a chair in front of it. Some of the learners were to supply on in this item. The whole and final version of this task is to be found in Appendix B2.

4.2.2.3 Written task: definite article

Several different written tasks were used to elicit the definite article. This was because serious problems arose in determining the appropriate level in the learners' IL. The same text was used for two slightly different tasks. In both tasks the learners were asked to insert missing words; some of the definite articles and some other items had been deleted from the text, a short passage about the story of a pet. In the first task, no blanks had been provided in the text, in order to avoid directing the learner's attention to the lack of the particular structure investigated. In the second task -- a modified cloze test -- blanks were provided in order to help learners at a lower linguistic developmental stage. Finally, another group of learners was asked to write a short composition.

In the case of this structure, even a spontaneous task was believed to provide enough obligatory contexts for an adequate statistical analysis.

4.2.2.4 Oral task: relative clauses

Relative clauses were elicited orally by means of the pictorial material that Hyltenstam (1984) devised and employed in his study of the acquisition of Swedish relative clauses by second language learners. The material consists of six sets of pictures, one set for each NP position on the AH. The relative structure is elicited by asking the learner about the identity of a given numbered character. All eight characters appearing on each set of pictures are uniquely defined. For example, on the page pertaining to the S position, N.7 is the girl who is running, N.6 is the man who is running, N.3 is the girl who is singing, and so on for each of the remaining characters in this set. The experimenter, then, simply asks questions such as who is N.6?, the expected answer being N.6 is the man who is running. (For the whole task see Appendix B3.)

4.2.2.5 Oral task: spatial prepositions

Visual stimuli were also used in the oral elicitation of spatial prepositions. This time, however, responses were not induced by means of pictorial cues but by real objects. This was in line with the usual experimental procedure used in first language acquisition studies and, in particular, with the technique used to elicit spatial prepositions from children acquiring their mother tongue (Johnston and Slobin, 1979). The use of objects (i.e. puppets, boxes, miniatures of houses, animals, etc) has the advantage of making an immediate impact on the learner. Another important advantage is that, if well set up, the stimulus situation is unambiguous. For example, if one of the objects, a miniature cat, is placed on another object, a miniature table, and the experimenter points at the cat closely, a question such as where is the cat? can only be answered with

on the table.' In a written task, on the other hand, the same ambiguity would have required a very large and probably complex context. Notice that the frame the cat is ... table could be completed by any static preposition.

In this task, reference objects and movable objects were used. The learner was asked questions involving the location or the direction of one of the movable objects (e.g. cat, horse, Mary) in relation to one of the reference objects (e.g. box, bank, house). For example, in the case of movement out of a three-dimensional space the experimenter would ask what is John doing? while showing the miniature in the act of going out of the post office. An example of a question relative to movement to a zero-dimensional space would be where is the horse going?, the expected reply being to the fountain. Notice that with negative direction no verbs indicating movement can be used in the question without supplying the appropriate preposition as well. (See Appendix B4 for the complete protocol of this task in its final version.)

4.2.2.6 Oral task: definite article

The article was elicited orally by means of visual stimuli. A series of very simple pictures was presented to the learner and he was asked to describe them. All the characters and objects (e.g. a man, a woman, a vase, etc) which were to appear in the pictures were introduced to the learner before the actual interview started. In this way contexts for second mention references were created, which required the use of a definite determiner.

4.2.3 Administration

4.2.3.1 Written tasks

No time limit was set for any of the written tasks. All tasks were performed at school in the presence of the experimenter alone

for relative clauses and prepositions, but in the presence of both the experimenter and the class teacher for the article. Pupils were given one task at a time. The youngest learners, who performed on the article, were given only the text insertion task. Their poor performance suggested the administration of the other three tasks on the article mentioned earlier to a slightly more advanced group. Each of the members of this new group performed on only one of the three tasks.

4.2.3.2 Oral tasks

All oral tasks were administered by the experimenter herself. Students were interviewed one at a time. The experimenter set up a time limit by proceeding to the next questions if a reply was not elicited. More time was allowed to the youngest pupils when eliciting the article.

Two slightly different procedures were used in the elicitation of relative clauses. Half the students (= six) were asked to relativize on the different NP positions in a cyclical manner: that is, one question for the S, one question for the DO and so on to the last position on the AH; at the end of each time the cycle was started again until five responses for each NP position had been elicited. The other half of the students were asked the different NP positions in sets: that is, five questions in a row, relative to the same page, for the S, five for the DO, and so on to the last page which was the one relative to the OC. No difference between the two approaches was noticed, either in frequency or type of errors made.

4.2.4.0 Trends of the pilot study

In this section we will present the trends pertaining only to relative clauses and spatial prepositions. On the basis of the learners' responses it was decided not to investigate the

acquisition of the article in the main study. It became clear from the beginning of the pilot study, in fact, that the transitional stage in the mastering of the English definite article by Italian speakers was extremely short. It appeared that either the learner provided the structure in all NP environments, i.e. in front of the subject, direct object, and prepositional phrase, or he did not provide it at all. This dichotomy tended to coincide with the number of years of instruction. One year of instruction, going from third year to fourth year of English, was usually sufficient for the learner to realize that the English article system is very similar to the Italian one. From that moment on articles are supplied in the great majority of obligatory contexts. The four tasks appeared to elicit the same pattern: learners' linguistic behaviour oscillated from no suppliance of the article to punctual suppliance of the structure when needed. No systematic intermediate stages were noticed.

4.2.4.1 Relative clauses

Table 3.1 presents the individual and total mean scores expressed in percentages pertaining to both tasks for each NP position in RC formation. These numerical values indicate that, as expected

Table 3.1
Mean scores, expressed in percentages, for relative clauses.
Written and oral tasks. Pilot study

	S	DO	IO	OO	G	OC	All NP positions
Written task	98	100	65	69	67	39	73
Oral task	96	67	42	42	16	4	45
Both tasks	97	84	54	56	42	22	

and in agreement with the AH order, there is a general decrease in the level of performance, going from the highest position on the

AH, i.e. the S, to the lowest one, i.e. the OC. The decrease is more evident in the oral task, which, as predicted, exhibits fewer marked structures than the written task. That is to say, learners, when performing on the oral task, produced a greater number of ungrammatical relatives than they did in the written task. Moreover, the pattern exhibited by the oral task appears more regular. This must be attributed to the intrinsically more immediate stimuli provided by the visual input and to the fact that when time constraints are imposed the subjects cannot easily appeal to conscious rules.

The strategy of pronoun retention (and occasionally that of noun retention) constituted the most frequent source of error for this structure. However, it was also noticed that learners tended to delete or drop the preposition of the IO, the OO, and the OC when producing relatives on those NP positions.

On the basis of the information supplied by the pilot study, both tasks appeared likely to elicit the structure in the main investigation. Both tasks showed the existence of different stages of development, they were straightforward to administer and were performed by the learners with ease.

4.2.4.2 Spatial prepositions

Table 3.2 presents the individual and total mean scores expressed in percentages relative to both tasks for all nine prepositions.

Table 3.2

Mean scores, expressed in percentages, for spatial prepositions.

Written and oral tasks. Pilot study

	AT	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH	ALL
Written task	78	79	92	72	62	49	58	57	36	65
Oral task	94	95	95	74	64	34	58	32	30	64
Both tasks	86	87	94	73	63	42	58	45	33	

As a general trend we notice that, as expected, in most cases, increase in markedness (see 3.3.5) corresponds to a lowering in the level of performance. Thus, the means relative to static prepositions are much higher than those pertaining to prepositions indicating path. However, there are discrepancies with the predicted pattern, i.e. a low mean score for into and a relatively low one for at. The discrepancies suggested that a much greater body of data was necessary for a clearer picture of the acquisition sequence. As a consequence, it was decided to expand the tasks by increasing the number of items for each preposition in both tasks. Such an expansion would allow us to test the initial hypothesis with more confidence.

Whereas the overall difference between written and oral tasks seems quite large for relative clauses, it does not appear so for spatial prepositions. However, it is evident that in the written task learners perform on more marked prepositions (i.e. into, out of, across, through) better than they do in the oral task. Unexpectedly, learners seem to perform on less marked prepositions better in the oral task than in the written one. This may once again be attributed to the greater inherent ambiguity of the written task as opposed to the directness of the oral task composed uniquely of visual stimuli.

Items in the written task which had proved to be a frequent source of confusion to the subjects were deleted. During the interview it was noticed that from was a very difficult preposition to elicit. If, for instance, the expected response to a stimulus situation was the horse is jumping from the chair to the floor, the most likely reply would be the horse is jumping to the floor. Consequently, new and more explicit items had to be devised for the elicitation of from.

An analysis of the errors made when incorrect prepositions were provided revealed that 86% of the errors in the written task and 97% in the oral task were due to the choice of a less marked preposition in terms of the markedness hierarchy presented in 3.3.7. This was in line with what was predicted.

The pilot study showed that these tasks were easy to administer, were well accepted by the learners, and individualized different stages of linguistic development. With appropriate modifications, both tasks appeared suitable for the main study of spatial prepositions.

The level of linguistic competence of the learners seemed to be adequate for us to obtain representative data on the development of both relative clauses and spatial prepositions. Learners at a similar level were thus chosen for the main investigation.

4.3.0 Main study

Data collection for the main investigation started in December 1983 and ended in May 1984. It was divided into two parts. During the first part -- December-January -- data was collected in Italy from a group of tutored learners. During the second part -- March-May -- data was collected in Edinburgh from a group of untutored learners.

As explained in the previous sections only two of the three original structures were included in the main study: relative clauses and spatial prepositions. The definite article (see above) was found unsuitable for further investigation.

4.3.1 Subjects

Two groups of learners were chosen for the main study. The first group was composed of 49 Italian High School students, all coming from the same school 'Liceo Scientifico M. Fanti' in Carpi (MO). Their age ranged from 14 to 18. The number of years they had been studying English ranged from two to seven, with an average of four years. They belonged to six different classes, which supposedly corresponded to five different levels. They all had had an average of three hours a week instruction in English since beginning to study English. All the subjects belonging to this

group, except for three who had spent up to two months in Britain, had had only formal exposure to English. The method used by the teachers was a grammar-based one. All the subjects in this group spoke standard Italian. They came for the most part from middle class families and therefore their exposure to a local dialect was presumably quite limited. Their school is a very academic type of High School. Consequently they had great familiarity with the formal registers of their mother tongue and were heavily exposed to formal English through the study of British literature and, more generally, through a substantial input of written language.

The second group was composed of 38 Italian workers -- waiters for the most part. The subjects belonging to this second group had had only minimal instruction or none in English. They had been exposed to the language naturally, while at work, at home or during recreation. They had had very little contact with speakers of other foreign languages in Britain. Their social and working environment was thus mainly a combination of Italian and English, with a great predominance of Italian. Their age ranged from 19 to 50. They had been in Britain from a minimum of three months to a maximum of 25 years, for an average of six years. I tried to gather informants who spoke standard Italian, or a regional variety as similar as possible to the standard. About half of the subjects reported that they used both standard Italian and the dialect spoken in their native area, but none of them claimed that they had learned the dialect as their mother tongue. Uncertainty remains on the degree to which the dialect was a potential influence in each learner's developing IL. Given that their level of education was generally quite low -- only 13 of them had gone to secondary school and, of these 13, 12 attended a training college -- it was assumed that these untutored learners' exposure to the formal registers of standard Italian was not as extensive as that of the tutored learners. For similar reasons, and also on account of their semi-skilled occupation, it was assumed that their exposure to the formal registers of English was quite limited.

From a practical point of view the collection of data from this group proved to be very hard. First of all, it was very difficult to locate the subjects and to persuade them to take part in the experiment. I encountered a great deal of suspicion, machismo, and fear to perform in what they felt was a testing situation. Second, once they had been persuaded to participate, it was very troublesome to arrange a day and a time when they would be free. On many occasions the arrangements were not kept. With some of the learners this happened several times. Finally, if and when the interview took place, it was sometimes carried out in very unsuitable locations -- such as restaurant kitchens. Some of the subjects would make nasty or inappropriate comments while being interviewed.

4.3.2.0 Tasks

The two areas chosen for the main investigation were elicited by means of the same tasks as for the pilot study. However, modifications -- in the form of deletion of some items and expansion of the two tasks on prepositions -- were made on the basis of the inadequacies indicated by the results of the pilot study and in order to gain a clearer picture of the developmental sequence in the acquisition of spatial prepositions. The final versions of both tasks -- written and oral -- for each instruction are sketched below. For the full presentation of the four tasks see Appendix B .

4.3.2.1 Relative clauses: written and oral tasks

Relative clauses are an area in which very few modifications were necessary either in the written or in the oral task. One item for each of the six NP positions was deleted in the written task. This resulted in a decrease of the number of items in this task from 36 to 30, which is also the number of items included in the oral task. It was noticed that in the pilot study the pattern exhibited by this structure was very stable. A slight decrease in the number of items was therefore not believed to obscure the

overall pattern of acquisition. Moreover, a reduction to five items instead of six for each NP position would ease the statistical analysis and would demand less effort from the subjects, who would have to perform on an enlarged version of the preposition task.

4.3.2.2 Spatial prepositions: written and oral tasks

Both tasks on prepositions were substantially expanded. The results of the preliminary study showed a much hazier acquisitional pattern for this structure than for relative clauses. It was hoped that an increase in the number of items would bring out a more stable and consistent developmental sequence. Thus, in the written task the number of contexts for each preposition was increased by four, from six to 10, in the oral task it was increased by three, from five to eight. This resulted in a total of 90 prepositions elicited in the written task and 72 in the oral one. As pointed out earlier, the oral task, composed of visual rather than verbal stimuli, was in itself more reliable, because it was more immediate and unambiguous. Therefore, the smaller number of items in that task was not believed to yield less stable results than those obtained from the larger written task.

Items which had proved ambiguous in the pilot study were replaced by other items, which had been carefully piloted on native speakers. All new items, especially those of the written tasks, were also tested on native speakers. As from had proved to be a very difficult preposition to elicit orally (i.e. learners tended not to express negative direction) special care was taken to devise items which would induce the preposition. The text of the written task on preposition and the protocol of the oral one can be found in Appendix B2, B4.

4.3.3.0 Administration

The procedure for the administration of the tasks relative to the two structural areas investigated followed closely the one

used for the preliminary study, although with the untutored learners the tasks were rarely administered in an educational institution. Some of these learners agreed to be interviewed in one of the rooms of Edinburgh University. Most of them, however, had to be visited at their homes or, much more often, at their working places. These included restaurant dining halls, restaurant kitchens, shops, pubs, and garages. Data collection with this group thus took much longer than with the group of tutored learners.

The written tasks were administered only to the formal group. The informal learners, in fact, were unwilling to perform on a task which required them to read and write in the second language, and which reminded them of testing situations in school.

4.3.3.1 Written tasks

The two written tasks were administered in the afternoon and in one of the school classrooms. Students were seated apart from each other in order to prevent cheating. They were often reminded that they were not taking a test but were providing data for an investigation on how people learn foreign languages.

The two written tasks were administered one after the other. Learners were required to complete the first task -- i.e. prepositions -- before being given the second one -- relative clauses. No time limit was set up for any task. Instructions, which were typewritten in English on the first task sheet, were repeated orally in Italian. One or two examples were provided for each task. Learners were often reminded not to drop prepositions at the end of a relative clause, since it had been noticed in the pilot investigation that they frequently did so, thus producing ungrammatical sentences, - e.g. This is the tree Chris used to play, instead of This is the tree Chris used to play behind. Learners were free to ask the meaning of any obscure lexical item, and I went through some of the vocabulary in the task on prepositions before learners actually started it. We wanted to eliminate all possible sources of ambiguity or confusion in this task whose completion depended greatly on lexical comprehension.

4.3.3.2 Oral tasks

Both oral tasks were administered to 48 formal learners and to the informal learners. Nine informal informants performed only on the task on relative clauses. The tasks were administered one after the other, with the task on prepositions usually preceding the one on relative clauses. The subjects were given one or two examples before each task. Both before and during the interview it was ascertained that the learner understood what he was required to do. The interviews, which were tape-recorded lasted about 30-40 minutes: 20-25 minutes for the preposition task, 10-15 minutes for the relative clause task. The subject was invited to supply the first reply which came to his mind. The experimenter encouraged the learner to move through both tasks rapidly and without too many hesitations.

During the administration of the task on spatial prepositions stimulus situations would be repeated if it was clear that the stimulus had not been adequately provided, that is, if the learner did not seem to 'perceive' the intended stimulus - probably because of the experimenter's action being either too fast or confused.

Once again, from proved to be quite difficult to elicit. The experimenter had frequently to insist on the source of the movement before the subject would supply the preposition. Across and through also proved difficult to elicit. Learners preferred to use less marked prepositions such as in, to, or out, and very often failed to provide prepositions indicating path even after the insistent repetition of the stimulus situation.

As for relative clauses, the subject was asked to look at the pictures before any question was asked. Prompts were frequently supplied by the experimenter in the course of the interview, especially when trying to elicit the lowest positions on the AH. A general tendency to relativize on the S, the least marked position, even when the learner was asked to relativize on other positions was noticed. In particular, most of the learners avoided retaining

the preposition in RC formation of IO and sometimes, in OO and OC position. The most common reply to a question requiring IO was, for example, N.5 is the man the dog is giving the ball. Only after several attempts on the part of the interviewer to have the learner use the preposition (i.e. N.5 is the man the dog is giving the ball to) was the preposition retained, but, in most cases, together with a copy pronoun or even with a full NP.

Six native English speakers as well were interviewed using Hyltenstam's elicitation material. They all produced the expected structures even though some prompting was necessary at times. No pronoun retention or noun retention was ever used.

4.4.0 Additional study

After the data collection, during the transcription of the oral data, it was noticed that many of the learners produced indefinite relatives, e.g. N.5 is a woman the dog is looking at, instead of the expected definite relatives, e.g. N.5 is the woman the dog is looking at. It is still doubtful if those indefinite relative clauses are to be considered restrictive or non-restrictive. It is clear, though, whenever he utters an indefinite relative, the learner is approaching the task in a different way from when he produces a definite relative. In the latter case, he is defining each character in contrast to the others on the same page, e.g. N.2 is the girl who is running, not the girl who is singing. In the case of the production of an indefinite relative, on the contrary, the learner's attention seems to be focused on each picture at a time. He describes what he sees in the given picture in isolation from the immediate pictorial context. The response N.2 is a girl who is singing implies that if any contrast is made, this does not involve the other characters on the page, but a much larger set of girls, a possibly infinite set.

The main independent variable in our investigation is the increasing syntactic complexity of the subordinate clause in RC formation (compare,

for instance, the syntactic complexity of the S relative to that of the G relative). Consequently, the definiteness versus the indefiniteness of the head noun, e.g. the woman in the woman who came, or the defining versus non-defining function of the relative clause are not a concern in our study. Moreover, the distribution of relativization in natural languages indicates that the semantic distinction between restrictive and non-restrictive, definite and indefinite relative clauses seems almost irrelevant typologically (Comrie, 1981; personal communication). However, despite this linguistic evidence, it was feared that the above mentioned factors could have an influence on the acquisition of the structure investigated. Thus, to ensure the validity of our findings, which were going to be based on the co-occurrence of the two types of relatives, we formulated the following null hypothesis:

H_0 = there is no difference in the acquisition index of definite restrictive relative clauses and indefinite (non-) restrictive relative clauses.

To test this additional null hypothesis a new elicitation technique -- articulated in two parts -- was devised in order to elicit both restrictive definite relatives and (non-) restrictive ones.

4.4.1 Subjects

A new group of learners took part in this new set of tasks. The new group was composed of 37 Italian High School students attending a three-week English language course in Edinburgh during July 1984. During the course, classes were taught by Italian teachers of English. These learners, moreover, socialized only with the other Italian students on the course and had only minimal contacts with English speaking people when outside school. The subjects belonging to this new group should thus be considered formal learners of English. They came from different High schools, which nonetheless were, for the most part, academically oriented. They had been studying English for a minimum of two years to a maximum of 11 years, for an average of six years. Their age ranged from 14 to 18. Their socio-economical

background was quite high; this entailed that they would not speak the dialect but only standard Italian. All the remaining considerations made about the formal group from Carpi apply also here.

4.4.2 Tasks

4.4.2.1 Task 1 : definite restrictive relative clauses

This type of relatives was elicited orally by using the same basic material as for the previous task on oral relative clause production in order to control the kind of visual input the subjects received and thus make the results of this new task comparable to those of the first task. For this task, cards with pairs of pictures were prepared in which the contrast of characters was clear. Each card had only two characters: the two characters were of the same sex and age (e.g. two girls, two men). This was done in order to prevent subjects from producing possible restrictive indefinite relatives such as N.5 is a boy who the dog is biting as opposed to N.7 is a girl who the dog is biting. The question frame used to prompt the learner was which one of these two ... is N.X? e.g. which one of these two women is N.2?, the expected reply being the woman/the one who the dog is giving the ball to. At the beginning and during this task it was often stressed to the learner that he had to focus his attention on the contrast between the two characters on each card.

4.4.2.2 Task 2 : indefinite (non-)restrictive relative clauses

For the elicitation of this type of relatives pictures were presented individually, each card had only one, unnumbered character: e.g. a man who was running, a boy who a dog was looking at. The cards were shown in isolation, one after the other. In this way the learner was not encouraged to see the character in relation to one another. The question asked every time was 'what is this?', the expected reply being 'this is a ...'.

4.4.3 Administration

Each NP position was elicited five times in both tasks, for a total of 30 questions for each. Each subject performed on both tasks. The two tasks were presented in alternation. The first learner would perform on task 1 first and on task 2 second, whereas the following learner would perform on task 2 first and on task 1 second. Examples were given at the beginning of both tasks.

4.4.4 Results of the comparison between the two types of relative clauses

A t-test for correlated samples was conducted to compare the new group learners' overall performance on the two types of relative clauses. No significant difference was detected between the two samples ($t_{\text{obs}} = .173$, $p < .05$). This result allowed us to consider the two types of relative clauses as equivalent in learners' IL. Consequently the results presented in the next chapter will be based on the two kinds of data, collected from the formal and the informal group, collapsed together.

4.5 Scoring method

4.5.1 Relative clauses: written task

In the written part pertaining to relative clauses, responses were scored incorrect if, first of all, the learner did not delete the noun or the pronoun copy when joining the two nuclear sentences by means of a relative pronoun. Second, we did not accept any combination where the preposition belonging to the resulting subordinate clause was deleted together with the noun or pronoun copy. The following resulting sentences for example, were scored incorrect:

* Tom likes the place which I am thinking.

* I phoned the minister I had already written a letter.

Third, if in a G relative clause, a relative pronoun other than whose was used, the response was considered ungrammatical. This was the only instance when the choice of the right relative pronoun was believed important for the aims of the study. In the case of other NP positions, in fact, which, whom, who, that were treated as allomorphs. In our investigation we are not interested in the distinction between human reference versus non-human reference or between restrictive relatives versus non-restrictive relatives, but with the strategies of [-case] and [+case] in RC formation (see chapter 3). In English the strategy of [+case] applies to a continuous span of the AH from the IO to the OC. Whose is the element which carries the case marking in G relatives as to carries it in IO relatives. Thus, since we did not accept IO relatives in which to had been deleted, we did not accept G relatives in which the case was not explicitly marked in the pronoun.

Fourth, responses were scored incorrect if (i) the nuclear sentences were not joined together or (ii) were joined, but not by means of a relative pronoun -- if, for example two coordinates or one main clause and one temporal subordinate were used. Last, we did not accept transformations where the grammatical functions within the sentences had been altered in order to allow relativization on a less marked NP position. For instance, the accepted combination of the two nuclear sentences John loves the girl and Andy goes out with her is John loves the girl who Andy goes out with and not Andy goes out with the girl who John loves.

4.5.2 Relative clauses: oral task

All interviews were transcribed. The same scoring criteria as in the written task apply to the oral task, the only difference being that the experimenter had the opportunity to prompt the learner during the interview. This happened (i) if the learner dropped the preposition with the IO, OO, and OC relatives, (ii) if he supplied a coordinate clause or another type of subordinate clause instead of a relative, or (iii) if he relativized on a NP position of higher

accessibility. The response, however, was scored as incorrect if the subject failed to modify it after being prompted several times.

4.5.3 Spatial prepositions: written task

Choices were scored incorrect in the written task on prepositions whenever they were not either the exact preposition or a plausible one for the given context. This flexibility was necessary because some of the items proved ambiguous despite the care we put in devising and testing them. Thus, if the learner provided a possible alternative to the expected choice, his response was not included in the total score for that particular preposition and the percentage for that preposition was calculated on the basis of the other responses.

4.5.4 Spatial prepositions: oral task

All interviews were transcribed. The first response provided by the informant was the one included in the total scoring except in the case of at, across, through and when it was evident that the stimulus situation had not been clear. It happened for instance, that the learner supplied John is going out of the post office when John was simply placed inside the post office. The learner's response indicated that the stimulus had been somewhat ambiguous. During the interview, I tried to clarify all cases of ambiguity whenever I was aware of it.

As for the three prepositions mentioned above, it sometimes happened that the learner, after supplying in front of in the case of at or in and out in the case of through, would provide the expected preposition. In this case the second answer was considered a refinement of or an addition to the first one and not a simple self-correction.

At proved difficult to elicit. Most learners would supply synonyms or more precise prepositions instead of at, such as by, in front of, outside, etc. We adopted a strict and a flexible

scoring system. In the first case only at as such was accepted, in the second case all its synonyms were. It must be noticed that with at the learner was asked to provide alternatives several times before his first response was accepted as the only one.

CHAPTER 5 : RESULTS OF LEARNERS' PERFORMANCE ON RELATIVE CLAUSES

5.0 In this chapter the results pertaining to learners' performance on relative clauses are reported. A performance analysis will be presented first. It will include (i) orders of acquisition for the two tasks and the two groups, as well as (ii) comparisons between the two groups and the two tasks. The performance analysis will be followed by an error analysis. The three main statistical tests employed in the investigation: implicational scaling, ANOVA and X^2 , will be briefly described.

5.1.0 Performance analysis

In the following section we present the results of the main study pertaining to the acquisition of relative clauses. At first the data was analyzed by means of implicational scaling. This statistical technique is utilized to highlight the general developmental pattern of the structures investigated. Subsequently, analysis of variance (ANOVA) was employed in order to perform comparisons between the different groups and between the two tasks as well as between the structures composing the grammatical area investigated.

5.1.1.1 Implicational scaling

The statistical technique generally called 'implicational scaling', but also known as 'Guttman Scalogram' (Guttman, 1944), is a procedure used to show the implicational ordering within a group of linguistic features. Employed firstly in sociolinguistic studies of variation (e.g. De Camp, 1971), it has been successfully introduced into SLA research (Andersen, 1978; Hyltenstam, 1977; Borland, 1983). Such a technique enables us to test the hypothesis that the acquisitional order of certain structures is not random, but systematic, and what is more, implicational. This technique can also be used when predictions about the order of acquisition of a set of linguistic features have already been made on the basis of a given theory.

If we take a group of features A, B, C, D implicational scaling will allow us to test the hypothesis that the order of those structures is governed by a series of implications which follow each other in a fixed order. In this case we could find, for instance, the order A>B>C>D, according to which B is acquired only after A has been acquired, C is acquired only after A and B have been acquired and finally D is acquired after all the preceding features have entered the learner's IL. It should be noticed that this order is cumulative and directional, that is, for each learner acquisition of a structure on the scale implies acquisition of all the other structures on the left of that point on the scale, but not necessarily of any on its right. Table 5.1 displays an ideal implicational scale.

Table 5.1
Ideal implicational scale

	A	B	C	D
1	-	-	-	-
2	+	-	-	-
3	+	+	-	-
4	+	+	+	-
5	+	+	+	+

A, B, C, and D on the horizontal plane represent the structures investigated in the order from earliest acquired to last acquired. (Note that, strictly speaking, when talking of a cross-sectional study we should use the terms 'most favoured' or 'easiest' and 'least favoured' or 'most difficult', but for a discussion of longitudinal versus cross-sectional studies see 4.1.1.) 1, 2, 3, 4, and 5 on the vertical plane represent the individual learners whose scores are being analyzed. Thus for each individual, performance in each structure is reported. This performance is expressed in the form of either - or + (the notation 0, 1 is often used instead, and is, in fact, the one in which results are presented in the computer printout). If the value of the individual score falls below the cutting point established for acquisition, the learner's performance on the structure will be coded as - (= not acquired); if the value falls above, or

is equal to, the cutting point, then the learner's performance will be coded as + (= acquired).

It appears clear that the choice of the cutting point for a bimodal scale such as the Guttman Scalogram is crucial and should be well motivated. It nonetheless remains a somewhat arbitrary decision. For the analysis of relative clauses we chose an 80% cutting point. This choice was made on the basis of the following reasons. First of all it appears that the acquisition rate slows down significantly after the 80% accuracy point (see, for instance, Borland, 1983). Secondly, a fluctuation of performance between 80% and 100% should be regarded as mastery of the structure if factors such as memory limitations, momentary loss of attention, unfamiliarity with the task or items of vocabulary, are to be taken into consideration. Finally, from the point of view of comparability of our study to others, the choice of the 80% criterion allows our results to fall in line with those of many other investigations on acquisitional accuracy orders (e.g. Cancino, Rosansky, and Schumann, 1978).

So far we have talked of ideal scales. However, individual learners' linguistic behaviour does not always conform to the order predicted on the basis of the scale. The inconsistencies within the scale are called 'errors' or 'deviations'. In order to establish whether the scale is a valid predictor of individual performances despite all the deviations from the expected pattern, the coefficient of reproducibility is calculated. This coefficient, which is the main statistic for implicational scaling, must be $\geq .90$ to be statistically meaningful and the formula to obtain it is as follows:

$$\text{Coef. of rep} = 1 - \frac{\text{total numbers of deviations}}{(\text{number of Ss}) (\text{number of items})}$$

(Hatch and Farhady, 1982)

A coefficient of reproducibility $\geq .90$ is not sufficient to have a valid scale. We need to know whether in fact the "given set of variables are truly scalable and unidimensional" (Hatch and Faradi, 1982: 181). To this end the value of the coefficient of scalability

is required. This value must be $\geq .60$ for the scores to be scalable, and it is obtained from the following formula:

$$\text{Coef. of scal.} = \frac{\% \text{ of improvement of rep.}}{1 - \text{MM rep.}}$$

where

$$\text{MM rep.} = \frac{\text{number of correct responses}}{(\text{number of Ss}) (\text{number of features})}$$

$$\% \text{ improvement of rep.} = \text{Coef. of rep.} - \text{MM rep.}$$

(Hatch and Farhady, 1982)

All the implicational scales pertaining to the data on relative clauses were obtained using the Guttman Scale Program in SPSS (1970).

5.1.1.2 Formal group: written task

Implicational scaling was used to analyze the scores of the formal group on the written task. The order of environments -- from most favoured to least favoured -- was predetermined on the basis of our theoretic framework, and, more precisely, on the basis of the AH. Thus the order initially set to the scale was $S > DO > IO > OO > G > OC$. The results obtained for this group and for this task showed that the scale as ordered is statistically valid (coef. of rep. = .92; coef. of scal. = .72). Table 5.2 presents the scale with each individual performance.

However, the inversion on the scale of IO and OO on the one hand, G and OC on the other yielded reproducibility coefficients which, if considered at the first decimal point, are as significant as those obtained with the order predicted by the AH ($OO > IO$: coef. of rep. = .89; $OC > G$: coef. of rep. = .88). Similarly, both scalability coefficients obtained for scales with those permutations reach the significant p-level ($OO > IO$: coef. of scal. = .64; $OC > G$: coef. of scal. = .62). When looking more carefully at the individual performance we notice that only three students master one member

Table 5.2

Implicational scale showing the order of acquisition for relative clauses; Formal group, written task

	S	DO	IO	OO	G	OC
2	-	-	-	-	-	-
3	+	-	-	-	-	-
11	+	-	-	-	-	-
23	+	-	-	-	-	-
33	+	-	-	-	-	-
28	+	-	-	-	-	-
30	+	-	-	-	-	-
37	+	+	-	-	-	-
1	+	+	-	-	-	-
45	+	+	-	-	-	-
4	+	+	-	-	-	-
18	+	+	-	-	-	-
19	+	+	-	-	-	-
21	+	+	-	-	-	-
22	+	+	-	-	-	-
32	+	+	-	-	-	-
27	+	-	+	-	-	-
25	+	+	+	-	-	-
7	+	+	-	+	-	-
8	+	+	+	+	-	-
6	-	-	+	+	-	-
10	+	+	+	+	-	-
16	+	+	+	+	-	-
20	+	+	+	+	-	-
24	+	+	+	+	-	-
40	+	+	+	+	-	-
9	+	+	+	+	+	-
14	+	+	+	+	+	-
17	+	+	+	+	+	-
29	+	+	+	+	+	-
39	+	-	+	+	+	-
41	+	+	+	+	+	+
42	+	+	+	+	+	+
38	+	+	+	+	+	+
5	+	+	+	+	-	+
13	-	+	+	+	-	+
43	+	+	+	+	+	+
44	+	+	+	+	+	+
46	+	+	+	+	+	+
47	+	+	+	+	+	+
48	+	+	+	+	+	+
49	+	+	+	+	+	+
31	+	+	+	+	+	+
34	+	+	+	+	+	+
36	+	+	+	+	+	+
12	+	+	+	+	-	+
15	+	+	+	+	-	+
26	+	+	+	+	-	+
35	+	+	+	+	-	+

of the pair IO-00 before the other, and no clear favouring of the G over the OC is evident -- five learners favour the G whereas six favour the OC. (The set of the computer printouts pertaining to this task and this group can be found in Appendix C1.1.)

Figure 5.1 displays the percentage of the formal learners who performed on the written task at a level equal ^{to} or greater than 80% in each of the six NP positions.

5.1.1.3 Formal group: oral task

The analysis of the scores obtained from the second task of the formal group followed the same procedure as for the written task. The environments for relativization were set sequentially on the basis of what was theoretically considered less or more marked. The values obtained for the scale which mirrored the AH were significant (coef. of rep. = .96, coef. of scal. = .82). Table 5.3 presents the scale which includes all individual performances.

As in the written task both pairs IO-00 and G-OC were inverted and the statistical values of the new scales calculated. Both permutations yielded highly significant results (00 > IO: coef. of rep. = .98, coef. of scal. = .91; OC > G: coef. of rep. = .97, coef. of scal = .88). In both cases the coefficients are higher than those obtained with the theoretically-based order. At a closer look we notice that only one subject (i.e. n.2) favours the IO over the 00 whereas three subjects favour the 00 over the IO. Similarly in the case of the pair G-OC the only two subjects who distinguish between the two categories favour the OC over the G. (The set of Guttman scaling printouts for this group's oral task on relative clauses can be found in Appendix C1.2.)

Figure 5.2 graphically displays the percentage of formal learners who reached the 80% level set for the acquisition of each of the six NP positions in the oral task.

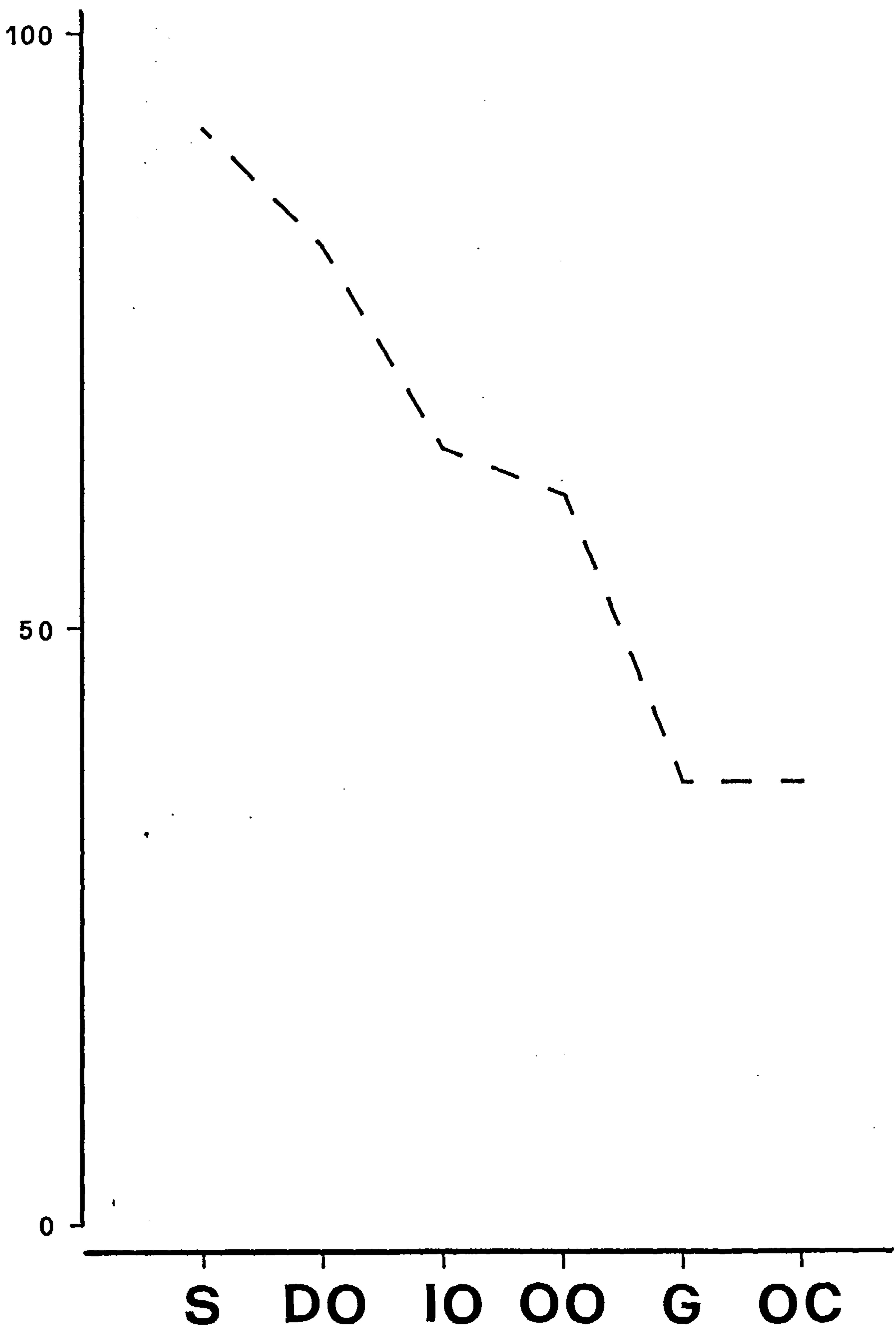


Figure 5.1

Percentage of formal learners who reached the 80% level for relative clause, written task.

Table 5.3

Implicational scale showing the order of acquisition for relative clauses. Formal group, oral task*

	S	D0	I0	00	G	OC
12	-	-	-	-	-	-
28	-	-	-	-	-	-
1	+	-	-	-	-	()
6	+	-	-	-	-	-
7	+	-	-	-	-	-
11	+	-	-	-	-	-
14	+	-	-	-	-	-
18	+	-	-	-	-	-
19	+	-	-	-	-	-
23	+	-	-	-	-	-
24	+	-	-	-	-	-
29	+	-	-	-	-	-
40	+	-	-	-	-	-
44	+	-	-	-	-	-
8	+	+	-	-	-	-
9	+	+	-	-	-	-
16	+	+	-	-	-	-
17	+	+	-	-	-	-
20	+	+	-	-	-	-
22	+	+	-	-	-	-
25	+	+	-	-	-	-
26	+	+	-	-	-	-
27	+	+	-	-	-	-
31	+	+	-	-	-	-
32	+	+	-	-	-	-
37	+	+	-	-	-	-
45	+	+	-	-	-	-
49	+	+	-	-	-	-
2	+	-	+	-	-	()
4	+	+	-	+	-	-
10	+	+	+	+	-	-
15	+	+	-	+	-	-
21	+	+	-	+	-	-
3	+	+	+	+	-	-
5	+	+	+	+	-	-
13	+	+	+	+	-	-
30	+	+	+	+	-	-
33	+	+	+	+	-	-
34	+	+	+	+	-	-
47	+	+	+	+	-	-
39	+	+	+	+	-	-
42	+	+	+	+	-	+
48	+	+	+	+	-	+
36	+	+	+	+	+	+
38	+	+	+	+	+	+
41	+	+	+	+	+	+
43	+	+	+	+	+	+
46	+	+	+	+	+	+

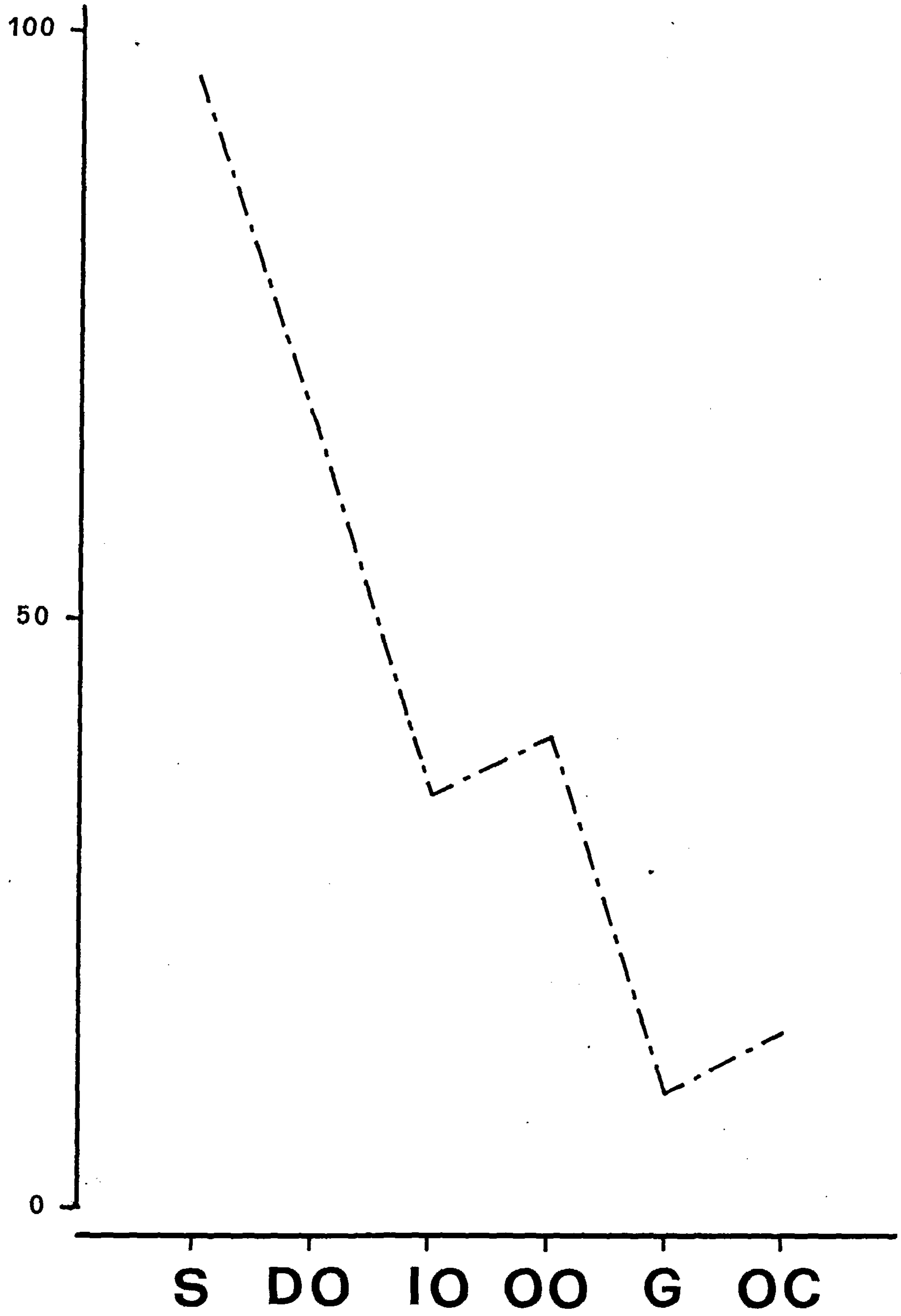


Figure 5.2
Percentage of formal learners who reached the 80% level for relative clauses, oral task.

5.1.1.4 Informal group: oral task

For the informal group only the data of the oral task were available for analysis. As mentioned in the previous chapter, in fact, the informal learners were unwilling to perform on the written task.

The results of this group pertaining to the hypothesized implicational sequence (AH) were significant (coef. of rep. = .96, coef. of scal. = .71). In Table 5.4 the individual performances arranged in the scale based on the AH are presented.

From Table 5.4 it appears clear that here as in the previous AH-based scales there is absolutely no clear favouring of the IO over the OO: four subjects' performance agrees with the predicted pattern (AH), but three subjects' performance disagrees with it. Similarly in the case of the G versus the OC, only one subject distinguishes between the two categories and she happens to favour the G over the OC. Once again, on the basis of these facts the coefficients pertaining to the two scales obtained by the inversion of the above mentioned categories were calculated. They were statistically significant ($OO > IO$: coef. of rep. = .96, coef. of scal. = .71; $OC > G$: coef. of rep. = .96, coef. of scal. = .77). (See Appendix C1.3 for the computer printouts pertaining to this group's performance on relative clauses.)

Figure 5.3 displays the percentage of informal learners who successfully performed at the 80% criterion set for the acquisition of each of the six NP positions.

5.1.1.5 Summary of the results of implicational scaling

In summary, the results of the implicational analyses showed that the AH order of NP positions ($S > DO > IO > OO > G > OC$) yields valid scales when used with our data, that is, the scores for the formal group -- written and oral task -- and for the informal group -- oral task.. However, alternative orders give equally significant coefficients

Table 5.4

Implicational scale showing the predicted order of acquisition for relative clauses. Informal group, oral task

	S	D0	IO	OO	G	OC
50	+	-	-	-	-	-
52	+	-	-	-	-	-
54	+	-	-	-	-	-
55	+	-	-	-	-	-
58	+	-	-	-	-	-
59	+	-	-	-	-	-
73	+	-	-	-	-	-
76	+	-	-	-	-	-
77	+	-	-	-	-	-
81	+	-	-	-	-	-
83	+	-	-	-	-	-
85	+	-	-	-	-	-
86	+	-	-	-	-	-
53	+	+	-	-	-	-
56	+	+	-	-	-	-
57	+	+	-	-	-	-
61	+	+	-	-	-	-
63	+	+	-	-	-	-
64	+	+	-	-	-	-
66	+	+	-	-	-	-
68	+	+	-	-	-	-
71	+	+	-	-	-	-
72	+	+	-	-	-	-
79	+	+	-	-	-	-
84	+	+	-	-	-	-
69	+	+	+	-	-	-
67	+	-	+	-	-	-
74	+	+	+	-	-	-
88	+	+	+	-	-	-
60	+	+	+	+	-	-
70	+	+	+	+	-	-
51	+	+	-	+	-	-
62	+	+	-	+	-	-
65	+	+	-	+	-	-
75	+	+	+	+	-	-
80	+	+	+	+	-	-
87	+	+	+	+	-	-
82	+	+	+	+	-	+

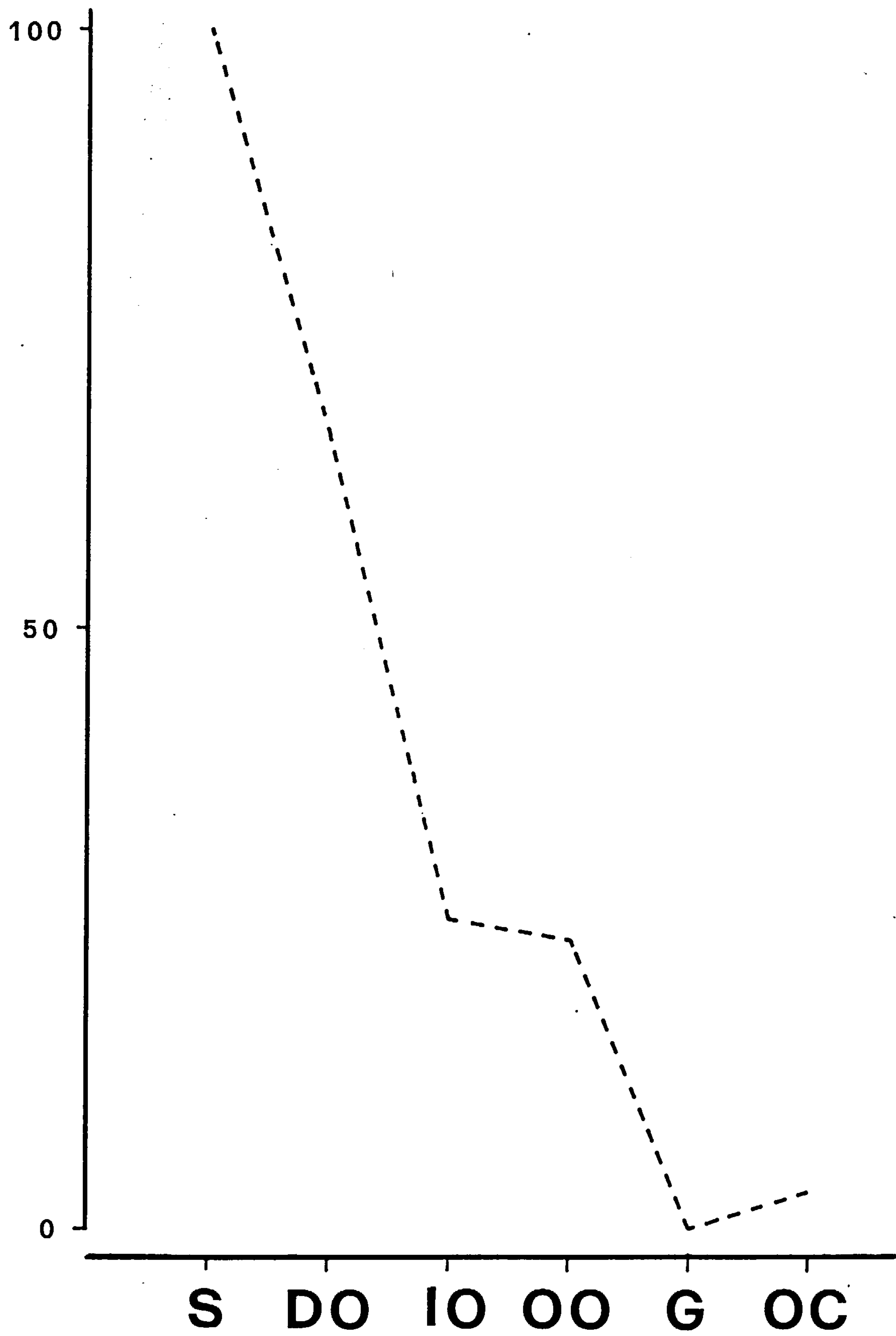


Figure 5.3

Percentage of informal learners who reached the 80% level for relative clauses.

(with the exception of two coefficients of reproducibility in the written task). Table 5.5 displays the results of the implicational analyses for the two groups, the two tasks and the different orderings.

Table 5.6 presents the sequence of environments, from more favoured to least favoured, for the two groups and the two tasks.

5.1.2.0 Analysis of variances

Having highlighted the implicational pattern for the structure in both tasks and in both groups, we further analyzed the data by means of analysis of variance (ANOVA). This statistical technique was employed to compare (i) the performance of our two groups (i.e. formal and informal), as well as (ii) the formal learners' performance on the written and the oral task. ANOVA, moreover, allowed us to test the significance of the differences among the six NP positions elicited in both tasks. This had the advantage of at least clarifying the overlaps noticed in the various implicational scales.

ANOVA is a statistical technique devised to perform multiple comparisons simultaneously. T-tests cannot be used when more than two means are being compared: such a procedure would artificially increase the likelihood of rejecting the null hypothesis when the null hypothesis is in fact true.

There are mainly two types of ANOVA, one-way ANOVA and n-way ANOVA. The former is used when "there is one dependent variable and one independent variable with two or more levels" (Hatch and Faradi, 1982). When there is more than one independent variable -- each of these independent variables may have several levels --, then an n way ANOVA is used, with n being the number of independent variables entering the comparison. In both types of ANOVA there is always only one dependent variable, which in our case is level of performance in relative clause production. In our study only two-way ANOVAs were used. This technique enabled us to individuate the levels of significance of the following effects on the total variance:

Table 5.5
Relative clause implicational scaling coefficients for the two groups,
the two tasks and the different orderings.

	Formal coef. rep.	Written coef. scal.	Formal coef. rep.	Oral coef. scal.	Informal coef. rep.	Oral coef. scal.
S>DO>IO>OO>G>OC	.92	.72	.96	.82	.96	.71
S>DO> <u>OO</u> >IO>G>OC	.89	.64	.98	.91	.96	.71
S>DO>IO>OO> <u>OC</u> >G	.88	.62	.97	.88	.96	.77

For a significant scale coef. of rep. $\geq .90$, coef. of scal. $\geq .60$

Table 5.6
Sequences of environments for correct relative clause production.
The two groups and the two tasks.

Formal group Written task	$S > DO > \begin{Bmatrix} IO \\ (OO) \end{Bmatrix} > \begin{Bmatrix} G \\ (OC) \end{Bmatrix}$
Formal group Oral task	$S > DO > \begin{Bmatrix} IO \\ OO \end{Bmatrix} > \begin{Bmatrix} G \\ OC \end{Bmatrix}$
Informal group Oral task	$S > DO > \begin{Bmatrix} IO \\ OO \end{Bmatrix} > \begin{Bmatrix} G \\ OC \end{Bmatrix}$

1. Independent variable (or factor) 1 = main effect 1
2. Independent variable (or factor) 2 = main effect 2
3. Combination of variable 1 by variable 2 (or factor 1 x 2) = interaction effect.

The statistic used in ANOVA is F. The observed F is obtained "by calculating the ratio of the two sources of variability -- between-group variance over within-group variance:

$$F_{\text{obs}} = \frac{S^2_{\text{between}}}{S^2_{\text{within}}}$$

where

(Hatch and Farhady, 1982:130)

S^2 = variance

Within-group variance is the variation due to individual differences in each of the groups which enter the comparison. Between-group variance is the difference between the groups, which may be due to chance variation or to treatment effect.

N-way ANOVAs will have several F-ratios, one for each independent variable plus one for each interaction.

All ANOVAs were performed using the computer program 'BMDP2V - Analysis of variance and covariance with repeated measures' (1983).

5.1.2.1 Scheffé test

ANOVA enables us to establish whether the differences among our group means are statistically significant. A two-way ANOVA, for example, tells us if there is a significant effect of one independent variable, of both independent variables, or of the interaction of those two factors. ANOVA, however, fails to tell us where exactly the differences among the groups lie. The Scheffé test is specifically designed for individuating all the significant differences in the group means. In the Scheffé test a critical value is calculated whose formula is as follows:

Scheffé critical value = $2F_s N MS_e$

where

$F_s = F_{crit}$ number of means being compared

N = number of measurements in each cell

MS_e = the MS (mean square) over which the interaction MS was placed to get its F .

All means are then multiplied by N . The values thus obtained are subtracted from one another so as to have a remainder for each pair of means being compared. For two means to be significantly different this remainder must be greater than the critical value.

5.1.2.2 Analysis of variance versus χ^2 tests

An alternative or, maybe more appropriately, an integrative method of statistical analysis was ANOVA when comparing performances on relative clauses according to groups and tasks.

ANOVA, as mentioned earlier, can be used to compare a series of means without artificially raising the p -level and thus making it easier to reject the null hypothesis. ANOVA, however, like the t -test, has certain assumptions. One of these assumptions, which can be easily violated without almost any consequences, is normality of distribution. A second assumption underlying ANOVA concerns the nature of data. These should be continuous. Yet the scores we obtained on relative clauses were not continuous, the only possible values being 0, 20, 40, 60, 80, 100. The scores on the oral task, moreover, tend to be either 0 or 100.

Although the second assumption presented here is often violated and ANOVA is applied to non-continuous data, we wondered how non-continuous the data can be before ANOVA becomes truly unsuitable and inadequate. As a result of this question χ^2 tests were performed on the scores which had previously been changed into nominal data. Using the 80% criterion as for the implicational scaling it was calculated how many learners exhibited target-like relativization on each of

of the six NP positions, and how many did not. It must be emphasized that in this way learners received a score of either 1 or 0 for each NP position in each task, the problem of the 'inflated N' (Siegel, 1956) is thus avoided. A X^2 test was applied on each NP position when comparing the performance of the formal group and the new group on the written and the oral task, and when comparing the performance of the formal group and the new group with the informal group on the oral task.

Uncertainty still remains on the appropriateness of both ANOVA and X^2 for our analysis. ANOVA solves the problem of multiple comparisons but 'adds' information by presupposing continuity in the data. X^2 on the other hand, satisfactorily provides a solution to the problem of data type but can only be used in a series of comparisons. A further disadvantage of ANOVA -- which still remains the more powerful technique -- consists in levelling out 'ceiling' and 'cellar' effects (Hopkins and Glass, 1978:116), in our case learners' performance respectively on the least and the most marked NP positions.

5.1.2.3 Comparison between written and oral task

A two-way ANOVA was performed on the formal group's scores for the written and the oral tasks. The ANOVA had two independent variables: (i) 'category', a repeated measure within subjects, with six levels, one for each of the NP positions on the AH; (ii) 'Mode', a between subjects factor with two levels, written and oral.

The results of the ANOVA showed:

1. There is a significant main effect of category ($F = 78.8$, $p = 0.00$).
2. There is a significant main effect of mode ($F = 23.8$, $p = 0.00$).
3. There is a significant interaction between 'category' and 'mode' ($F = 9.4$, $p = 0.00$).

(See Appendix C1.4 for further details.)

Therefore the results showed that there is a significant difference between the NP positions in both tasks. There is also a significant

difference between the written and the oral task. Finally the six different NP positions interact significantly with the oral and the written tasks in determining the learners' level of performance.

Having established that there were two main effects of category and mode plus an interaction between the two factors, a Scheffé test was performed with the aim of determining which of the six NP positions differ significantly within and between the written and the oral tasks. Table 5.7 presents the significant differences found. Only the comparisons of interest to us are reported here.

Figure 5.4 presents a visual display of the main effects of 'category' and 'mode' for the formal group.

Figure 5.5 displays graphically the interaction of the independent variables for the same group.

Table 5.7 shows that as expected from the results of the implicational scaling, in both the oral and the written tasks, the pairs IO-OO and G-OC do not differ significantly. Whereas in the oral task all the other means differ from each other meaningfully, in the written task there are fewer significant differences. More precisely, the S does not differ meaningfully from the DO and nor does the OO from the G. In order to find significant differences we have to move one position, that is, we must compare the S with the IO, and the OO with the OC.

It further appears from table 5.7 that the first category on the AH, namely the S, does not differ significantly between the written and the oral task. On the other hand, the other five categories, i.e. DO, IO, OO, G, OC differ significantly between the two tasks. The means of the written task for these categories are greater than those of the oral task. This allows us to say that the performance on the written task is significantly higher than the one on the oral task for the five NP positions DO, IO, OO, G, and OC (see Figure 5.5).

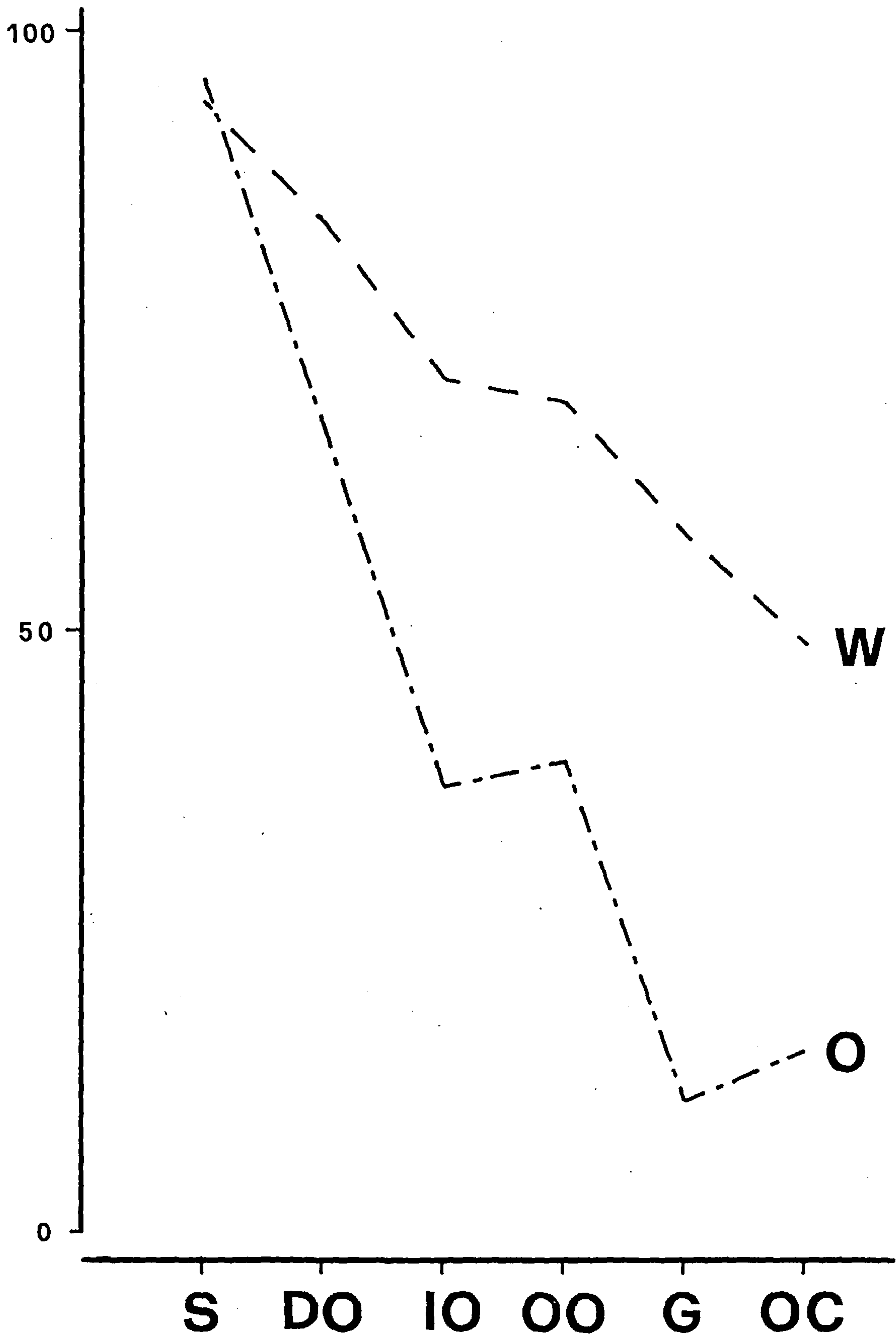


Figure 5.4

Mean scores for relative clauses, written and oral task.

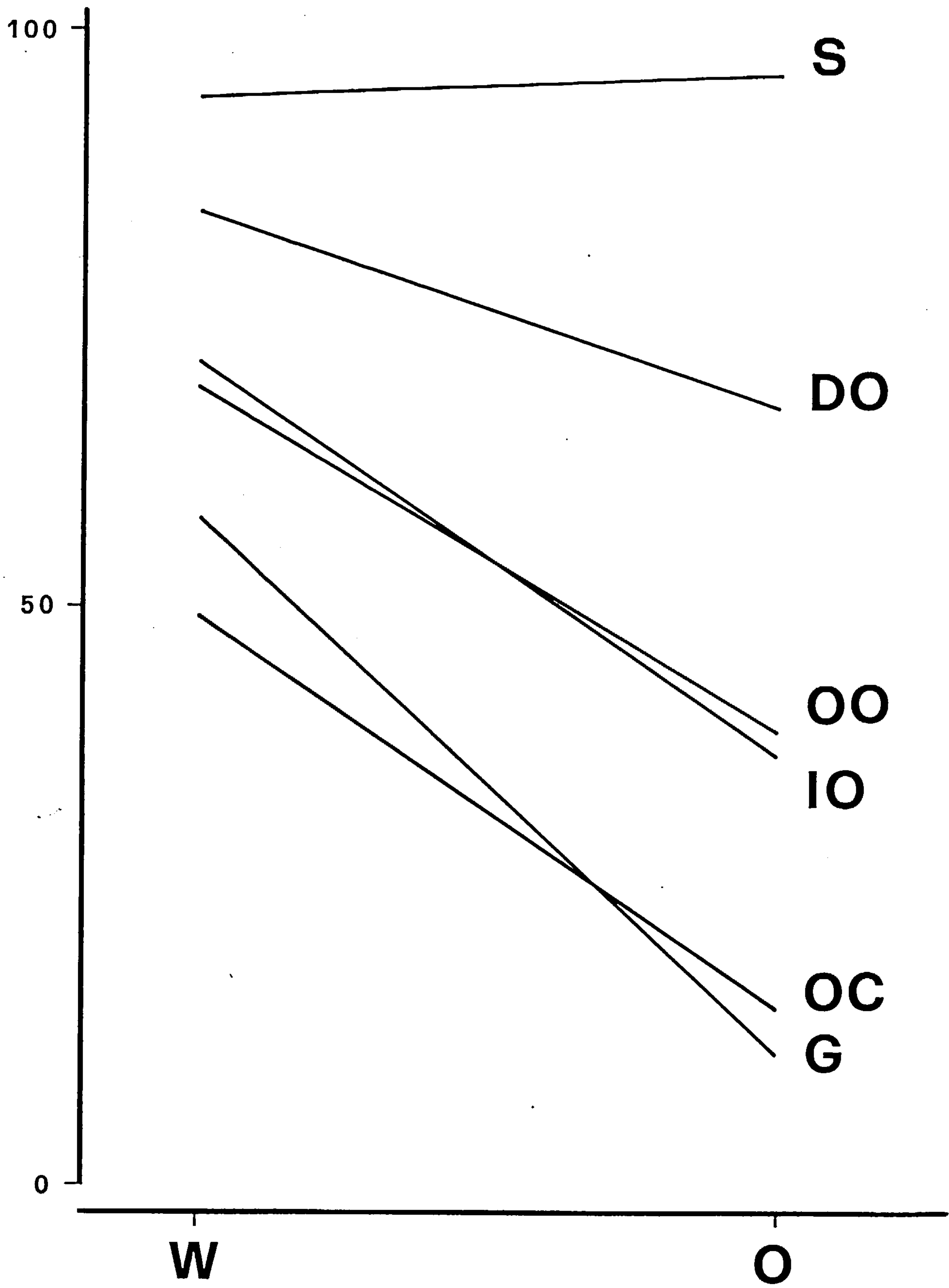


Figure 5.5

Interaction between NP position and task, mean scores.

Table 5.7

Scheffé test on relative clauses. Comparison of group means for formal group : Written and oral tasks.

S	D0	IO	OO	G	OC		S	D0	IO	OO	G	OC
$\bar{x}=94.2$	$\bar{x}=83.8$	$\bar{x}=70.8$	$\bar{x}=69.2$	$\bar{x}=58.3$	$\bar{x}=48.8$		$\bar{x}=96.3$	$\bar{x}=66.7$	$\bar{x}=36.7$	$\bar{x}=39.2$	$\bar{x}=10.8$	$\bar{x}=14.6$
	2496	5616**	6000**			S 504		6504**	14304**	13704**		
		3120**	3504**			D0 4104**	D0		11304**	10704**		
		384		5280**	3000**IO	8184**	IO				6216**	5304**
				2616	4896**OO	7200**	OO			600	6816**	5904**
					2280 G	11400**	G					462
					OC	8208**	OC					

** p < .01

The results obtained with χ^2 tests applied to the six NP positions on the two tasks agree in the main with those obtained with ANOVA (see Table 5.8). The only difference concerns the D0. The χ^2 test shows a difference between the two tasks only at the $P < .10$ level (cf. table 5.7).

Table 5.8
 χ^2 tests on relative clauses. Frequencies of learners who scored $\geq 80\%$. Written and oral task, formal group.

	Written task (n = 49)		Oral task (n = 48)		χ^2
	Raw Scores		Raw Scores		
S	45	92%	46	96%	.70
D0	40	82%	32	67%	2.96+
I0	32	65%	17	35%	8.5 **
00	30	61%	19	40%	4.4 *
G	18	37%	5	10%	9.3 *
0C	18	37%	7	15%	6.3 *

+ $p < .10$

* $p < .05$

** $p < .01$

5.1.2.4 Comparison between the formal and informal group: oral task

A two-way ANOVA was performed on the scores for the oral task for both the formal and the informal group. The ANOVA had two independent variables: (i) 'category', a repeated measure within subjects, with six levels -- one for each NP position; (ii) 'learning', a between-subjects factor, with two levels -- formal and informal.

The results of the ANOVA showed:

- 1. There is a significant main effect of category ($F = 129.1, p = 0.00$).
- 2. There is no significant effect of learning ($F = 1.96, p = 0.17$).
- 3. There is no interaction between 'category' and 'learning' ($F = 1.15, p = 0.34$).

(See Appendix C1.4 for further details.)

A Scheffé test was performed to determine which NP positions significantly differ within both groups. (Since there was no learning or interaction effect, no between groups comparisons were carried out.) Table 5.9 displays the significant difference found.

Table 5.9
Scheffé test on relative clauses. Comparison of group means for the oral task: formal and informal groups.

	1 G $\bar{x}=6.5$	2 OC $\bar{x}=9.3$	3 IO $\bar{x}=32.5$	4 OO $\bar{x}=32.8$	5 DO $\bar{x}=65.3$	6 S $\bar{x}=97.9$
1		1269	11245**	11374**		
2			9976**	10105**		
3				129	14104**	
4					13975**	
5						14018**
6						

** $p < .01$

Figure 5.6 visually displays the significant main effect of category for the two groups.

Figure 5.7 presents the level of performance for each NP position in both groups (no significant interaction).

The results thus showed that there is no significant difference between the performance of the formal and the informal group. NP category on the contrary has a significant effect on both groups'

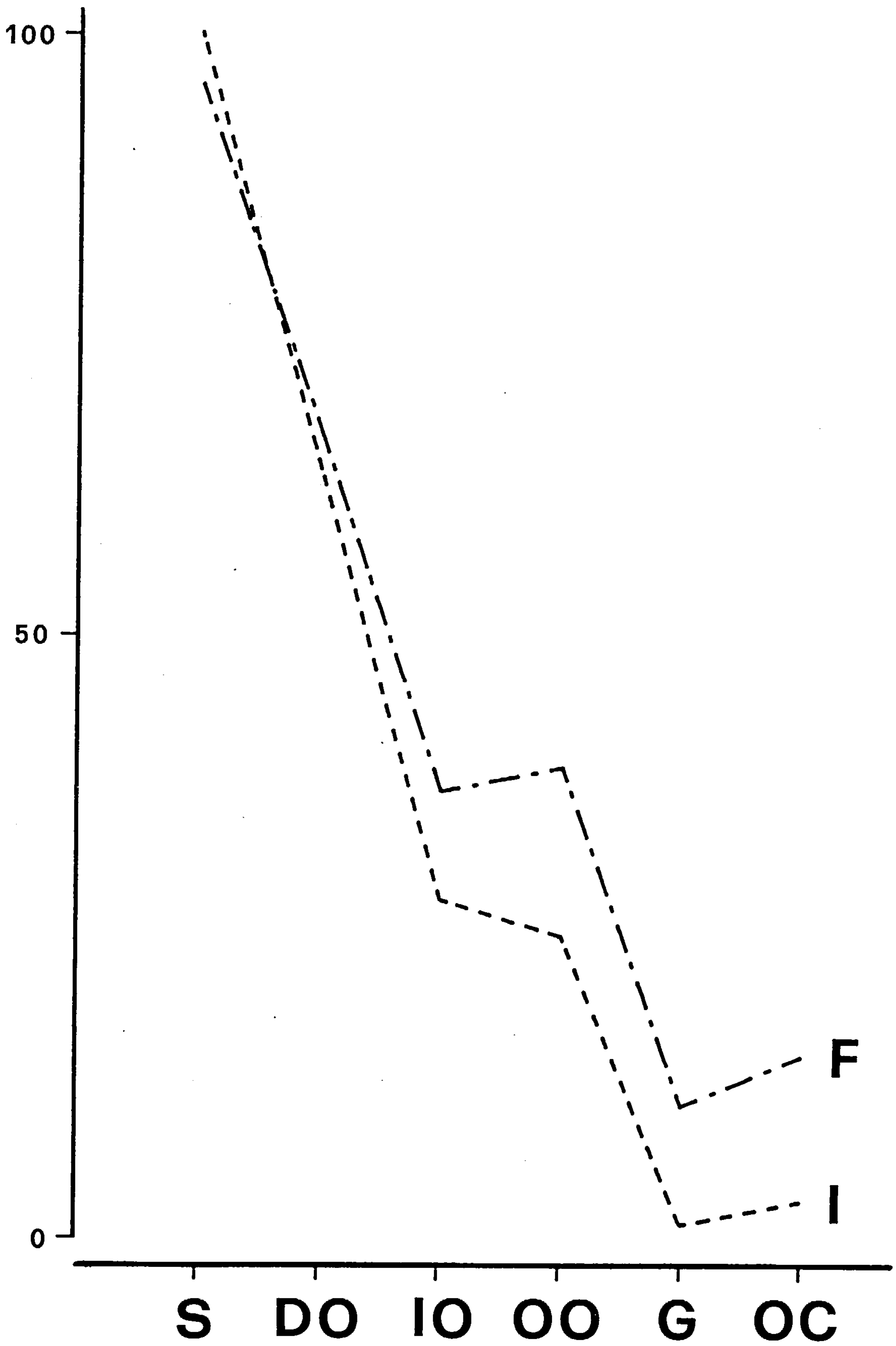


Figure 5.6

Mean scores for relative clauses, formal and informal group.

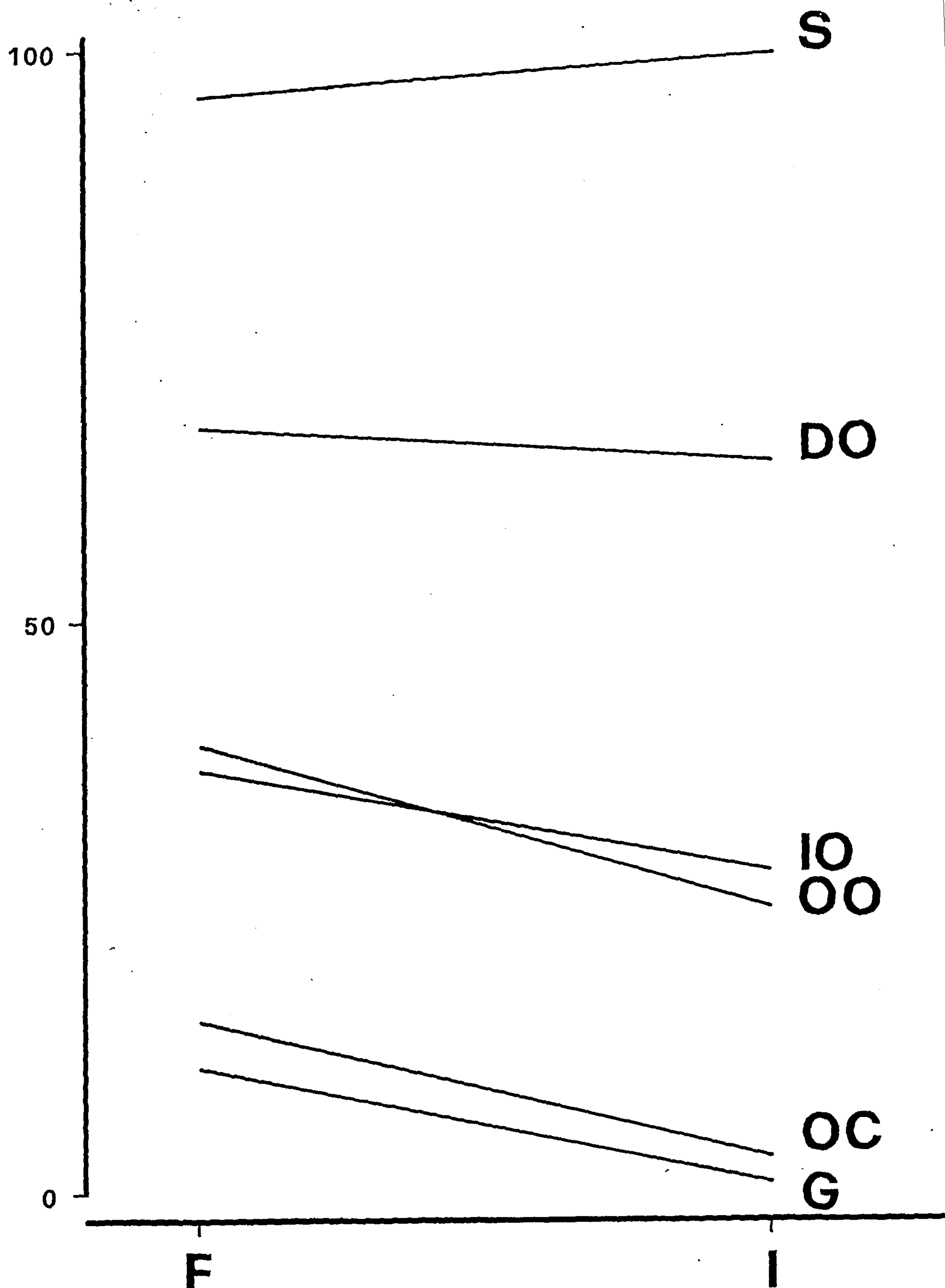


Figure 5.7

Interaction between NP position and group, mean scores.

performance. More specifically, for both groups there is a significant difference between S and D0, D0 and I0, 00 and G (there are other differences but those are not particularly relevant to our study), whereas there is no difference between I0 and 00, G and OC.

A X^2 test performed on the G shows a significant difference ($p < .05$) between the two groups. Using the same statistical technique as $p < .10$ is also found for the OC. For all the other categories no significant difference is found between the two groups (see table 5.10).

Table 5.10
 X^2 tests on relative clauses. Frequencies of learners who scores 80%. Oral task, formal and informal group.

	Formal group (n = 48)	Informal group (n = 38)	X^2
S	46 (96%)	38 (100%)	.94
D0	32 (67%)	25 (66%)	2.16
I0	17 (35%)	10 (26%)	.79
00	19 (40%)	9 (24%)	2.48
G	5 (10%)	0 (0%)	4.18*
OC	7 (15%)	1 (3%)	3.31+

+ $p < .10$

* $p < .05$

The results of the X^2 partially disagree with those obtained with ANOVA, namely with the former test the G is found significantly different and the OC just fails to be so, with ANOVA no significant difference is detected. These discrepancies in results could be attributed to the fact, as mentioned earlier, that 'cellar' effects are levelled out with ANOVA. When comparing the two groups on each NP position, the categories with the lowest means are treated

like the categories with the highest means. No adjustment is made to relative frequencies. All subgroups are given equal weight. Since scores are extremely low on the most marked positions (as opposed to the very high scores on the least marked one), it is much more difficult to establish significant differences between the two groups.

5.2.0 Error Analysis

Having reported the results on the acquisition of TL forms, in this section we will present the results pertaining to the forms produced when the correct, or the expected, response was not provided. The types of errors and avoidance structures whose statistics we report here are those which we listed in chapter 4. We will briefly mention them again:

1. Retention. Either the pronoun, the noun copy, or the definite article for the genitive is retained in the relative clause. Examples: the man who the dog is giving the ball to him, the woman who the cat is looking at the woman, the boy who the dog is biting the jacket.
2. - Case. The preposition signalling the case of the NP is dropped in the combination of the two initial sentences. Example: My brother teaches the handicapped children you were talking. Relative pronouns and particles other than 'whose' are used in the G relative clause formation. Example: I hate the man which dog wakes me up every morning at five o'clock.
3. Partial avoidance. A coordinate or a subordinate other than the expected relative clause is supplied. Examples: my mother is an expert in the topic and your brother is writing his thesis about it, Jack does not like the women because he is less intelligent than the women. A higher position on the AH is relativized instead of a required lower position. Example: Andy goes out with the girl John loves vs. John loves the girl Andy goes out with.

4. Total avoidance. No response is supplied.

5.2.1 Written task: formal group

In table 5.11, the frequencies -- expressed in percentages and raw scores -- of correct responses, incorrect responses and types of incorrect responses for the written task of the formal group are displayed. In this table the frequencies are relative to the total of learners' responses.

Table 5.11
Relative clauses. Frequencies of all types of responses. Formal group, written task.

	S	DO	IO	OO	G	C	All
Total							
Responses %	100	100	100	100	100	100	100
(raw scores)	(245)	(245)	(245)	(245)	(245)	(245)	(1470)
Correct							
Responses %	94.3	84.1	71.4	69.8	58.0	49.4	71.2
(raw scores)	(231)	(206)	(175)	(171)	(142)	(121)	(1046)
Incorrect							
Responses %	5.7	15.0	28.6	30.2	42.0	50.6	28.8
(raw scores)	(14)	(39)	(70)	(74)	(103)	(124)	(424)
Retention							
Strategy %	5.7	13.9	14.7	14.7	18.8	34.7	17.1
(raw scores)	(14)	(34)	(36)	(36)	(46)	(85)	(251)
[-Case]							
Strategy %	-	-	7.8	7.8	16.7	7.3	6.6
(raw scores)			(19)	(19)	(41)	(18)	(97)
Partial							
Avoidance %	-	1.2	1.6	4.5	3.3	4.5	2.5
(raw scores)	-	(3)	(4)	(11)	(8)	(11)	(37)
Total							
Avoidance %	-	0.8	4.5	3.3	3.3	4.1	2.7
(raw scores)	-	(2)	(11)	(8)	(8)	(10)	(39)

As it is shown in table 5.11, errors constitute 28.8% of all responses. The retention strategy accounts for 17.1% of the learners' responses¹, whereas the [- case] strategy is employed 6.6% of the time a response is elicited. The two other types of errors are less frequent: partial avoidance occurs 2.5% of the time in the whole body of responses, whereas learners completely failed to provide a response to the 2.7% of the transformations required.

In Table 5.12 the frequency of types of errors relative to the total number of incorrect responses is presented.

Table 5.12
Relative clauses. Frequencies (expressed in percentages) of types of unacceptable responses relative to total number of errors.
Formal group, written task.

	S	D0	I0	00	G	C	All
Retention Strategy	100	87.2	51.4	48.6	44.7	68.5	59.2
[-Case] Strategy	-	-	27.1	25.7	39.8	14.5	22.9
Partial Avoidance	-	7.6	5.7	14.9	7.8	8.7	8.7
Total Avoidance	-	5.1	15.7	10.8	7.8	8.1	9.2

The retention strategy accounts for the majority of errors (59.2%) but it is more frequently employed when a non-targetlike response is provided in S relatives (100%) and D0 relatives (87.2%), rather than with lower NP positions. In the case of I0, 00, G, and OC, other types of incorrect responses also occur quite frequently. The [- case] strategy accounts for a great number of errors in the NPs which require marking for case in relativization. The OC is not marked for case 14.5% of the time an incorrect response occurs in that environment, the 00 and the I0 respectively 25.7% and 27.1%, and finally the G is relativized with no case marking 39.8% of the time

learners failed to provide a targetlike response. The two other types of incorrect responses appear to be equally distributed among D0, IO, OO, G, and OC (all below 10% of non-targetlike responses), with the exception of partial avoidance for the OO (14.9%), and total avoidance for the IO and the OO, respectively 15.7% and 10.8%.

5.2.2 Oral task: formal and informal groups

In table 5.13 the frequencies -- expressed in percentages and raw scores -- of correct responses, incorrect responses and types of incorrect responses in the oral task for both groups are reported. In this table the frequencies are relative to the total of learners' responses.

Table 5.13
Relative clauses. Frequencies of all types of responses. Oral task, formal and informal group.

	Formal Group	Informal Group
Total responses % (raw scores)	100 (1440)	100 (1440)
Correct responses % (raw scores)	43.9 (632)	36.7 (418)
Incorrect responses % (raw scores)	56.1 (808)	63.3 (722)
Pronoun Ret. Strategy % (raw scores)	48.6 (700)	32.6 (371)
Noun Ret. Strategy % (raw scores)	5.7 (82)	28.0 (319)
Missing & Partial Avoidance % (raw scores)	1.8 (26)	2.7 (31)

In this task learners' responses were constrained by the experimenter's intervention (e.g. if the learner provided a relative clause without case marking, the experimenter would encourage him to modify his answer so as to supply it). Thus the types of incorrect responses are in the oral task not as diversified as in the written one. However, when using a retention strategy, learners were not influenced by the task text (cf. written task) as to which strategy to use. The error analysis for this task was, therefore, mainly concerned with the type of retention used: noun or pronoun. We notice, in fact, that in the total of both groups' responses PR accounts for the 40.6%, NP for the 16.8%, while other types of errors account only for the 2.3%.

In Table 5.14 the percentages of the two types of retention strategy relative to the total number of incorrect responses is presented.

Table 5.14
Relative clauses. Percentages of retention strategies relative to total number of errors. Oral task. Formal and Informal groups.

	Formal Group	Informal Group
Pronoun Ret. Strategy	86.5	51.4
Noun Ret. Strategy	10.2	44.2

Table 5.14 clearly shows that the type of retention strategy in RC formation varies in the two groups. While the formal group makes use of the strategy of PR 86.5% of the time an unacceptable relative clause is produced, the informal group uses it to a considerably less extent, that is 44.5% Conversely, the informal group makes quite a frequent use of the strategy of NR (44.2% of incorrect responses), whereas the formal group limits the use of this strategy to a mere 10.2%

Having noticed this apparent difference between formal and informal groups in the use of retention strategies, we tested its

significance by means of a two-way analysis of variance. The ANOVA had two independent variables: (i) 'retention', a repeated measure within subjects, with two levels -- PR and NR --; (ii) 'learning', a between-subjects factor, with two levels -- formal and informal --.

The results of the ANOVA showed:

- 1. There is a significant main effect of 'retention' ($F = 30.47$, $P = 0.00$).
- 2. There is no significant effect of 'learning' ($F = 1.39$, $p = 0.24$).
- 3. There is a significant interaction between the two independent variables 'retention' and 'learning' ($F = 19.89$, $p = 0.00$).

(See Appendix C1.4 for further details.)

Since ANOVA showed that the interplay of learning group and retention type has a significant effect on learners' errors, a Scheffé test was performed to establish which subgroups significantly differ from the others. Table 5.15 displays the results of the Scheffé test.

Table 5.15
Scheffé test for differences in retention strategies between formal and informal group. Oral task.

	1	2	3	4
	FOR NR	INFOR NR	INFOR PR	FOR PR
	$\bar{x}=1.7$	$\bar{x}=9.1$	$\bar{x}=9.8$	$\bar{x}=14.6$
1		4321**	5236**	8320**
2			93	3999**
3				3096**
4				

** $p < .01$

In agreement with the trend suggested by the frequency displayed in Table 5.4 informal learners use the strategy of NR to a significantly greater extent than formal learners. Formal learners, on the other hand, use PR strategies significantly more often than informal learners. Finally, there is no significant difference in the frequency of use of the two strategies for the informal group, but formal learners' use of retention strategies significantly favours pronoun copies.

Notes

1. No distinction between PR and NR was made for the scoring of this task. For each transformation in the second nuclear sentence either a pronoun or a noun was supplied. The learners' choice of retention strategy was thus influenced by the type of NP which was already provided in the original sentence.

CHAPTER 6 : RESULTS OF LEARNERS' PERFORMANCE ON SPATIAL PREPOSITIONS

6.0 In this chapter the results pertaining to learners' performance on spatial prepositions are reported. As in the preceding chapter the performance analysis will be presented first. It will include (i) orders of acquisition for the two tasks and the two groups, as well as (ii) comparisons between the groups and the two tasks. The performance analysis will be followed by an error analysis (also called substitution analysis) for the two tasks and the two groups. Finally, we will suggest a general sequence in which semantic notions are mapped onto English spatial prepositions in these learners' IL.

As for relative clauses implicational scaling and ANOVA were the two main statistical techniques used for the analysis of these features. The statistical values associated with implicational scaling were calculated by means of the SPSS package. The coefficient of reproducibility (the most important statistic in Guttman scaling), was calculated manually as well. It has been noticed (cf. Borland, 1983) that differences often occur between the coefficients obtained by computer and those obtained by hand. These differences are due to the way deviations are calculated with the computer calculation being much stricter than the manual one. The computer program counts deviations both on the left and on the right of the unexpected response. Hand calculations count deviations only in one direction. The hand calculation is particularly valuable when the coefficients obtained by computer just fail to reach the significant level (i.e. $p \geq .90$).

ANOVA alone was employed for the comparisons between the two tasks and between the two groups. The number of times each preposition was elicited was significantly higher than in the case of relative clauses (7-10 times for each preposition versus 5 times for each relative clause position). We thus had a distribution of scores which was closer to continuity than the distribution of scores pertaining to relative clauses. Furthermore, and more importantly, the scores for prepositions did not obviously gravitate towards one extreme or the other as for relative clauses (cf. chapter 5). They were more homogenously distributed.

6.1 Performance analysis

6.1.1.1 Three scoring methods

For the performance analysis results were first of all analyzed in terms of suppliance of the prepositions in obligatory contexts (O-C). O-C performance analysis had also been used with the data pertaining to relative clauses and is the traditional scoring method used in morpheme studies (e.g. Brown 1973; Dulay and Burt, 1974). However, a few limitations to this approach have been repeatedly pointed out (e.g. Long and Sato, 1984). A learner who is at an early stage of acquisition possesses very few T-L features in his IL and is likely to generalise those to inappropriate contexts. This is the well-known case of Homer (Wagner-Gough, 1978), the child who used the -ing ending correctly as a gerund but who also used it incorrectly as a general ending for various verb forms -- e.g. for the imperative.

A new scoring technique has been suggested which takes suppliance in non-obligatory contexts into consideration. This is called target-like (T-L) performance analysis. The two formulas for these two scoring procedures (in the forms in which they are employed in this study) are given below:

O-C performance analysis	$\frac{n \text{ correct suppliance in obligatory contexts}}{n \text{ obligatory contexts}} \times 100$
--------------------------	--

T-L performance analysis	$\frac{n \text{ correct suppliance in obligatory contexts}}{(n \text{ obligatory contexts}) + (n \text{ non-obligatory contexts with inappropriate suppliance})} \times 100$
--------------------------	--

(adapted from
Long and Sato, 1984)

The second scoring method is thought to help in presenting a more authentic image of IL development. First of all 'premature structures', those structures which occur very early and which would be scored as acquired with a traditional O-C method, are treated more realistically. They are scored as non-acquired until they are employed, at least for the most part, in obligatory contexts.

This procedure would thus take care of the initial stages of some features such as the English irregular past whose acquisition follows a U-shaped growth. Secondly, the resulting score and pattern of acquisition would be more comprehensive as they represent the totality of the learner's performance and not just his performance on the restricted subpart represented by the obligatory contexts.

These are the theoretical premises, however a full understanding of the actual differences occurring in the acquisitional picture when using the two scoring methods is still needed. In particular, attention should be paid to the nature and characteristics of the structures being investigated and, consequently, the choice of the most appropriate method should be evaluated in each case independently. An O-C performance analysis, for instance, is certainly the best approach to the scoring of relative clauses. In this case either the structure is well-formed on a given NP position or it is not. It is not possible for an IO relative clause, for example, to be supplied inappropriately. In the case of morpheme orders, on the other hand, the problem of overgeneralizations is a major one and information on suppliance in non-obligatory contexts is essential for the accuracy of the acquisitional picture. Supplying the ending -s in third person singular only is not equivalent to supplying it in all persons.

With spatial prepositions the situation appears more complicated. If a learner uses in instead of through (e.g. the horse is jumping in the ring) or to instead of across (e.g. Mary is running to George Square), can one say that the learner is totally misapplying in and to? Obviously the meanings of in and to are included in those of through and across respectively. Moreover, how are we to know whether the learner did not know the TL meaning of the two prepositions or he resorted to their use simply because in his IL he lacked the two more complex (more specific) prepositions? For these reasons both analyses were employed. The traditional performance analysis was employed first and was integrated later (in the oral task only) with the more target-like analyses.

Two types of target-like performance analyses were used for spatial prepositions elicited orally. Firstly a new set of scores was calculated by using the second formula on page 125. The scores thus obtained were determined to a substantial extent by the number of times prepositions were inappropriately supplied. Let us give a few examples to show how with this method (i) suppliance on non-obligatory contexts affect the total score, and (ii) how different performances can result in the same score:

on supplied correctly seven times in the eight obligatory contexts plus six times in non-obligatory contexts (with an O-C performance analysis the score for this performance would equal 88)

$$\frac{7}{8+6} \times 100 = 50$$

in supplied correctly eight times out of the eight obligatory contexts but inappropriately 24 times (the score would be 100 with an O-C performance analysis)

$$\frac{8}{8+24} \times 100 = 25$$

out of supplied correctly two times out of the eight obligatory contexts and never in non-obligatory ones (the score would be 25 with an O-C performance analysis)

$$\frac{2}{8+0} \times 100 = 25$$

As can be seen from the examples T-L performance analysis lowers the scores of 'early' prepositions such as in or on, which are easily overgeneralized and leaves intact (or almost intact) scores of 'late' prepositions, which are hardly ever overgeneralized. This scoring method was used, together with O-C performance analysis, when comparing the two groups -- formal and informal -- with ANOVA.

Whereas ANOVA makes use of numerical scores, Guttman scaling employs only scores which have been reduced to binary values, 0 vs 1 or - vs +. To obtain these scores a cutting point must

be set according to which numerical scores will be divided into the two categories. A cutting point at the 80% or 90% accuracy level has been usually set for acquisition when using a traditional (O-C) performance analysis. However such a cutting point would be too high for scores calculated with a T-L analysis. With an 80% criterion only 39 prepositions would be scored as acquired out of the 432 elicited in the oral task administered to the formal group (i.e. 48 learners x 9 prepositions = 432; total percentage of prepositions acquired: 9.0). We can lower the cutting point, but such a lowering allows the inclusion of lower performances in obligatory contexts. Let us make an example. If we set a 60% cutting point we allow up to five inaccurate suppliances of a preposition which is always supplied in the eight obligatory contexts: i.e.

$$X = \frac{8}{8+5} \times 100 = 62.$$

However, using the same cutting point a preposition which is never supplied in non-obligatory contexts but which is supplied only five times out of the eight obligatory contexts is scored acquired: i.e.

$$X = \frac{5}{8+0} \times 100 = 63.$$

If we are using a binary scale, where the two terms are 'acquired' vs 'non-acquired' we certainly want to differentiate between partial and categorical (or, almost categorical) suppliance in obligatory contexts. Is a preposition supplied only 5/8 times it is required as 'acquired' as a preposition which is supplied 8/8 times in obligatory contexts and 5/63 times in non-obligatory contexts. Such a difficulty with T-L performance analysis is particularly relevant in the case of spatial prepositions. As pointed out earlier using in instead of at or instead of through is not like using -ing with the function of an imperative. The error analyses which follow will show how in fact many of the misuses of prepositions are motivated e.g., the most common preposition used instead of from is to, the ones used instead of through are in/into and across. However, for clarity of argument implicational scales using a T-L performance analysis and 60% criterion will be presented.

To avoid these difficulties inherent to T-L performance analyses a third scoring method was considered. Johnston and Slobin (1979) in their study on the acquisition of some spatial prepositions by native speaking children of four different languages used a scoring technique which, while taking suppliance in non-obligatory contexts into consideration, gave prime emphasis to suppliance in obligatory contexts. More specifically, the two researchers first isolated the prepositions which had been supplied in all obligatory contexts and then checked if these prepositions had been also supplied in non-obligatory contexts. The child was credited with the acquisition of a preposition if he had produced it more often in the obligatory contexts than in non-obligatory ones (Johnston and Slobin, 1979:535). This method, slightly modified, was applied to our analysis and called J-S performance analysis. Learners received credit for each item 1. they supplied at least 80% of the time it was required and 2. they did not supply more often in inappropriate contexts than they had in appropriate ones. In the case of the oral task where each preposition was elicited eight times, the learner scored 'plus' for prepositions which he produced correctly either seven or eight times and did not use incorrectly more than seven or eight times respectively. Such a scoring method seemed to strike a good balance between O-C and T-L performance analyses when dealing with binary-valued implicational scaling. It offers the advantage of detecting early overgeneralizations (in may be initially supplied inappropriately up to 29 times) but credits the learner with partial knowledge when the preposition is supplied in non-obligatory contexts. It ensures that production in appropriate contexts is used as the main criterion whereas suppliance in inappropriate contexts is used as a mitigating criterion when deciding on acquisition vs non-acquisition of spatial prepositions.

6.1.1.2 Reasons for limiting the analysis of the written task to O-C performance

The more differentiated analysis of learners' performance was restricted to the oral task. It was felt, in fact, that a more detailed analysis of the data pertaining to the written task would not contribute any further to our understanding of the learners'

linguistic behaviour. The decision was motivated by three main considerations:

1. As already pointed out the written task proved to be inherently more ambiguous than the oral task. The choice of the right items was often based on other than linguistic knowledge: e.g. pragmatic knowledge. Shall we count as inappropriate suppliance of on its use in David sat on the piano and started to play?
2. Part of the difficulty of the task was due to very detailed linguistic contexts. This further complication was unavoidable as it was essential to make the context as unambiguous as possible. It however constituted an increase in task complexity. A misuse of an item could thus be due to either ignorance or context misunderstanding.
3. As the choices were given and he was asked to fill in the blanks, the learner was encouraged to provide an answer for any blanks. The likelihood thus increased for the learner to choose randomly out of the list provided when he did not have a ready answer.

Despite the limitations of the task both O-C performance analysis (i.e. implicational scaling and ANOVA) and error analysis were performed. It was felt, however, that stricter scoring methods would not clarify the developmental picture but would on the contrary obscure it.

6.1.2.1 Formal group: written task

The data pertaining to the written task performed by the formal group were analyzed by means of implicational scaling. For the analysis of the results of this task two cutting points were set: an 80% criterion, in conformity to the rest of the analyses and a 70% criterion. The choice of an additional lower cutting point was made on the basis of the already mentioned further difficulties

posed by the written task (cf. previous section).

Using the 80% criterion for distinction between '+acquired' and '-acquired' the following developmental ordering was obtained:

TO > ON > AT > FROM > IN > INTO > OUT OF > THROUGH > ACROSS

The computer analysis yielded statistics which are below the significant level (coef. of rep. = 0.8277, coef. of scal. = 0.5000). However the coef. of rep. calculated manually was significant: = 0.91. Table 6.1 displays the scale with all individual performances included. (Figure 6.1 displays the percentage of formal learners who performed on the written task at a level equal or greater than 80% on each of the nine prepositions.) (See Appendix C2.1 for computer analysis.)

Using the 70% criterion the order of acquisition found is very similar to the one obtained with the 80% criterion and reads as follows:

TO > ON > FROM > IN > AT > INTO > OUT OF > THROUGH > ACROSS

As can be noticed the only difference between the two orderings lies in the position of at. Whereas at is in third position in the first ordering, it is in fifth position in the second one. Similarly to the previous scale the statistical coefficients obtained by means of the computer program just fail to be significant (coef. of rep. = 0.8458, coef. of scal. = 0.5342). The coef. of rep. obtained manually, however, reaches the level for statistical significance: = 0.92. The discrepancies between the two calculations must be explained with different methods of identifying deviations.

6.1.2.2.0 Formal group: oral task

The data pertaining to the oral task performed by the formal group were firstly also analyzed using implicational scaling techniques. For the reasons outlined in section 6.1.1.1 different scoring methods

Table 6.1

Implicational scale showing the order of acquisition of spatial prepositions. Written task

	TO	ON	AT	FROM	IN	INTO	OUT	DURING	ACROSS
3	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-
37	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-
1	-	+	-	-	-	-	-	-	-
2	-	+	-	-	-	-	-	-	-
32	-	+	-	-	-	-	-	-	-
22	-	-	-	-	-	+	-	-	-
28	-	-	-	-	+	-	-	-	-
6	+	-	-	-	-	-	-	-	-
18	+	-	-	-	-	-	-	-	-
7	+	-	-	+	-	-	-	-	-
23	+	-	-	-	-	-	-	-	-
39	+	-	-	+	-	-	-	-	-
13	+	-	-	-	-	-	-	-	-
30	+	-	-	-	-	-	-	-	-
19	+	-	-	-	-	-	-	-	-
16	-	+	-	-	-	-	-	-	-
25	-	+	-	-	-	-	-	-	-
26	+	+	-	-	-	-	-	-	-
14	-	+	+	-	-	-	-	+	-
9	+	+	-	+	-	-	-	-	-
21	+	+	-	+	-	-	-	-	-
31	+	+	+	+	-	-	-	-	-
33	-	-	+	+	-	-	-	-	-
40	+	+	+	+	-	-	-	-	-
11	+	+	+	-	+	-	-	-	-
42	+	-	+	-	+	-	-	+	-
10	+	-	+	+	+	-	-	-	-
5	+	+	+	+	+	-	-	-	-
29	+	+	-	-	+	+	-	-	-
34	+	+	+	+	+	+	-	-	-
36	+	+	+	+	+	+	-	-	+
49	+	+	+	+	-	+	-	-	-
15	+	+	+	+	+	-	+	-	-
35	+	+	+	+	+	-	+	-	-
8	+	+	+	-	+	+	+	-	-
24	+	+	+	+	+	+	+	+	-
17	+	+	+	-	+	+	+	+	-
20	+	+	+	-	+	-	+	+	-
27	+	+	+	+	+	-	+	+	-
38	+	+	+	+	-	-	+	+	-
41	+	+	+	+	-	+	-	+	+
43	+	+	+	+	-	+	+	+	+
44	+	+	-	+	+	+	+	-	+
43	+	+	+	+	-	+	-	+	+
46	+	+	+	+	+	+	+	+	+
47	+	+	+	+	+	+	+	-	+
48	+	-	+	+	+	-	+	-	+

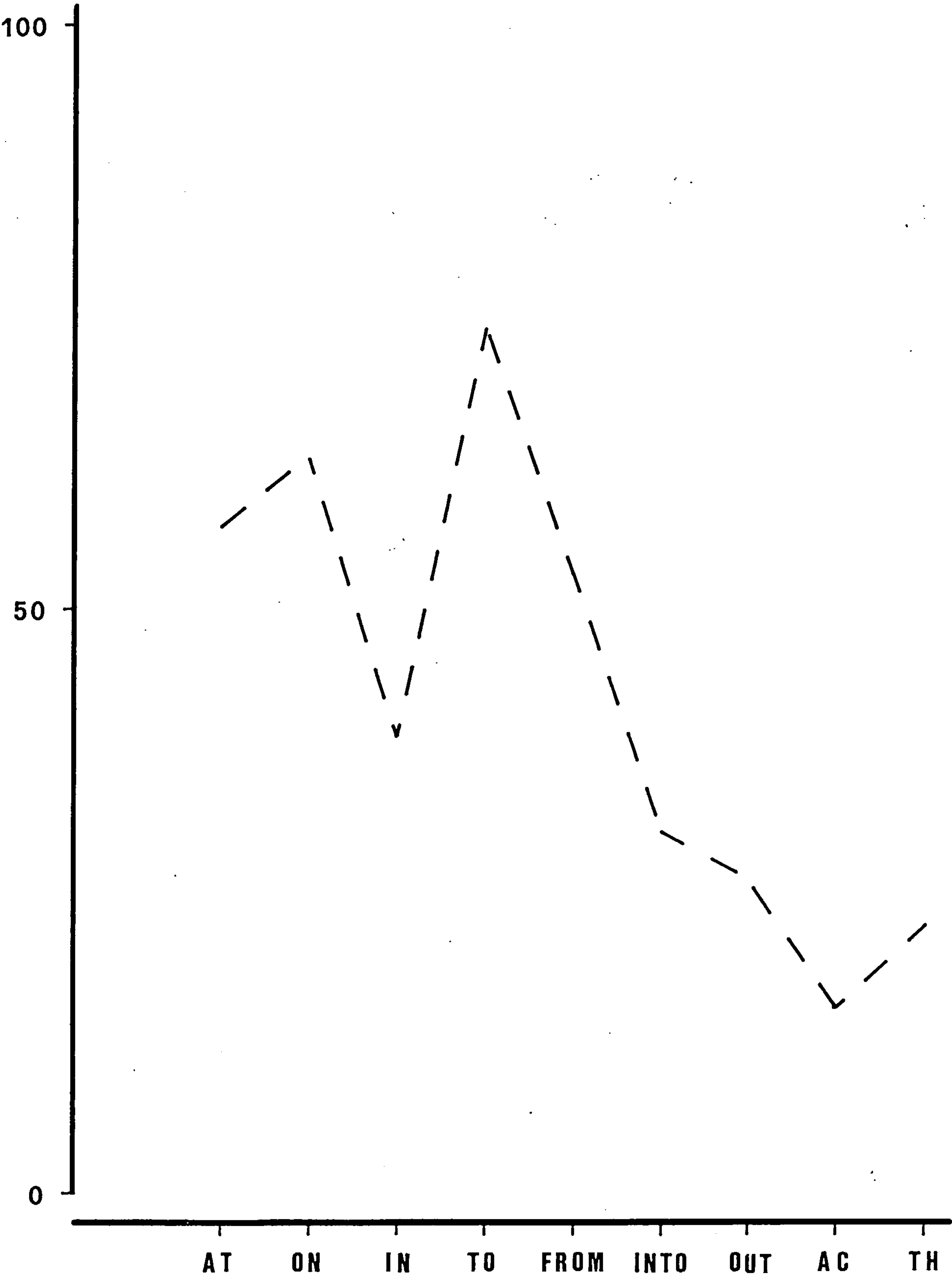


Figure 6.1

Percentage of formal learners who reached the 80% level for spatial prepositions, written task.

were used and, consequently, different Guttman scalograms were obtained. Moreover, since in the oral task there was no guided choice, implicational scales which included acceptable synonyms or partially well formed prepositions were also performed (cf. 4.5.4). These supplementary scales were however limited to the O-C performance analysis and, for at+, to the J-S performance analysis. As a result when using O-C performance analysis two different scales were obtained (two with the latter scoring method). The first scale results from very strict scoring: only at was accepted together with the other seven prepositions; this scale thus uses what we have called 'core prepositions'. For the second scale all acceptable lexical alternatives to at were included. This scale is called at+.

6.1.2.2.1 O-C performance analysis

Core prepositions

The scores including only suppliance of the core prepositions in obligatory contexts were analyzed first. The implicational scaling analysis showed the following accuracy or acquisitional order (see Table 6.2 for a presentation of individual performance and Figure 6.2 displays the percentages of formal learners who reached the 80% level set for the acquisition in the oral task on core and at+ prepositions.)

ON > TO > FROM > IN > INTO > AT > OUT OF > ACROSS > THROUGH

The values obtained with the computer program just fail to reach the respective significant levels (i.e. coef. of rep. = .8611, coef. of scal. = .3093). However the coef. of rep. is very close to significance. With the manual calculation the same coefficient is found significant: = .93.

It should be pointed out that the weakest point is the sequence in > into. Only two learners (4.2%) possess both prepositions.

Table 6.2

Implicational scale showing the order of acquisition of core prepositions.
Formal group, oral task. O-C scoring method

	ON	TO	FROM	IN	INTO	AT	OUT OF	ACROSS	THROUGH
1	-	+	-	-	-	-	-	-	-
23	-	+	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-
29	-	-	-	+	-	-	-	-	-
2	+	-	-	-	-	-	-	-	-
3	+	-	-	-	-	+	-	-	-
28	+	-	-	+	-	-	-	-	-
4	+	-	-	-	-	-	-	-	-
6	+	-	-	-	-	-	-	-	-
9	+	-	-	-	-	-	-	-	-
22	+	-	-	-	+	-	-	-	-
16	+	-	-	-	-	-	-	-	-
19	+	-	-	-	+	-	-	-	-
18	+	+	-	-	-	-	-	-	-
20	+	+	-	-	-	-	-	-	-
44	+	+	-	-	-	-	-	-	-
21	+	+	-	+	-	-	-	-	-
32	+	+	-	-	-	-	-	-	-
48	+	+	-	-	-	-	-	-	-
7	+	+	+	-	-	-	-	-	-
8	+	+	+	-	-	-	-	-	-
12	+	-	+	-	-	-	-	-	-
13	+	+	+	-	-	-	-	-	-
26	+	+	+	-	-	-	-	-	-
31	-	+	+	-	-	-	-	-	-
33	+	+	+	-	-	-	-	-	-
34	+	+	+	-	-	-	-	-	-
5	+	+	+	-	-	+	-	-	-
14	+	+	+	+	-	-	-	-	-
15	+	+	+	+	-	-	-	-	-
17	+	-	+	+	-	-	-	-	-
25	+	+	+	+	-	-	-	-	-
36	+	+	+	+	-	+	-	-	-
37	+	+	-	+	-	-	-	+	-
39	+	-	+	+	-	-	-	-	-
40	+	+	+	+	-	-	-	-	-
11	+	-	+	-	+	-	-	-	-
41	+	-	+	-	+	-	-	-	-
47	+	+	+	+	+	-	-	-	-
38	+	+	+	-	+	-	-	-	-
10	+	+	+	+	-	+	-	-	-
24	+	+	+	+	-	+	-	-	-
42	+	+	+	-	+	+	-	-	-
30	+	+	+	-	+	+	+	-	-
43	+	+	+	-	+	-	+	+	-
45	+	-	+	-	+	+	-	+	-
49	+	+	+	+	+	+	-	+	-
46	+	+	+	-	+	-	+	-	+

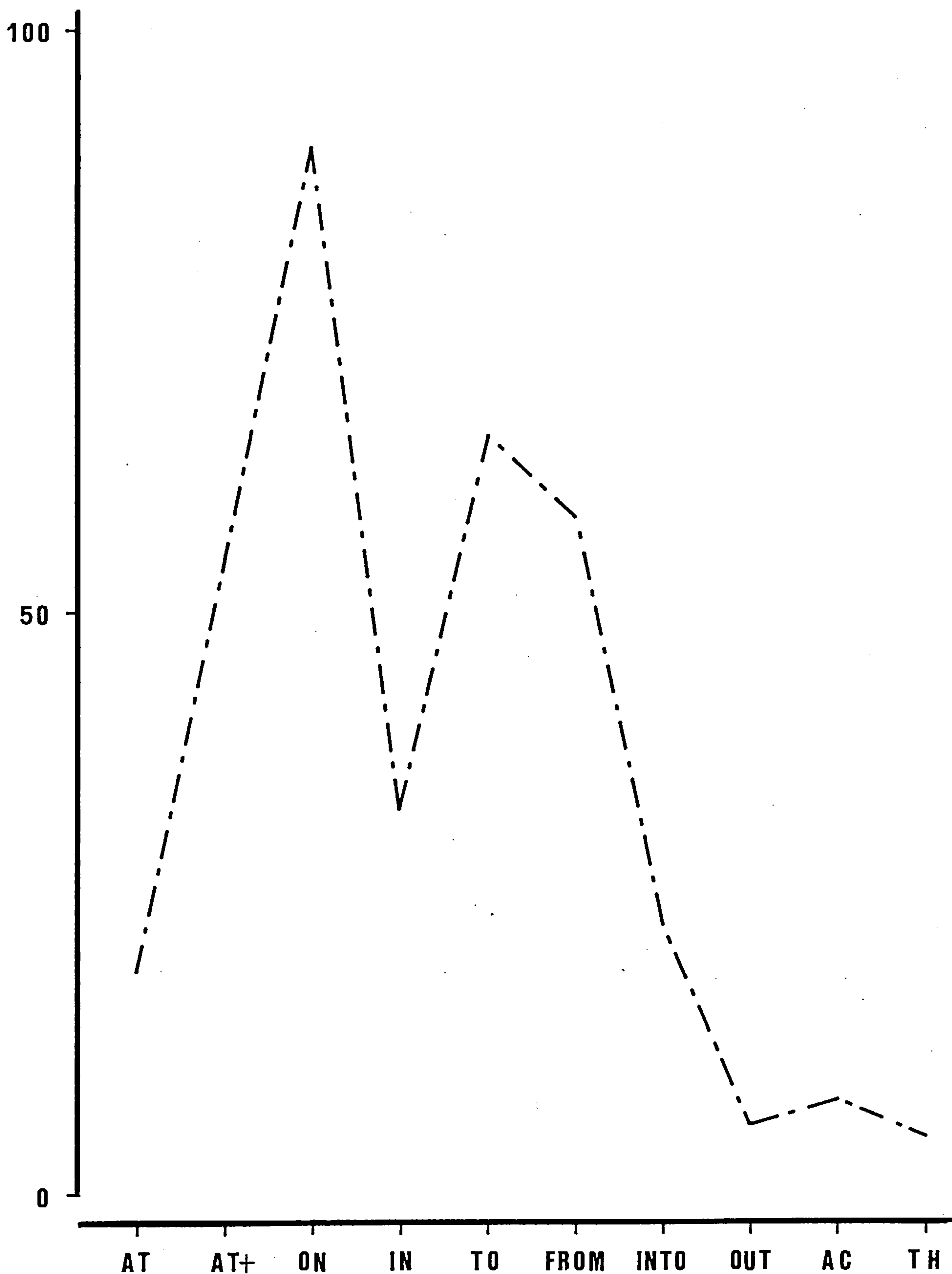


Figure 6.2

Percentage of formal learners who reached the 80% level for spatial prepositions, oral task.

Seven deviations (22.6% of all deviations) are due to the unpredicted lack of in when into appears acquired. Finally, it should be noticed that, for this group and in this task, in always immediately precedes into. The same was true for the written task when the criterion was set at the 80% level.

At+ prepositions

The second implicational scale was calculated by including as acceptable all the possible alternatives to the preposition at. The developmental order thus obtained is as follows:

ON > TO > FROM > AT+ > IN > INTO > OUT OF > ACROSS > THROUGH

Table 5.3 displays the implicational scale with all individual performances. The pertaining statistics obtained by using the SPSS package just fail to be significant (coef. of rep. = .8472; coef. of scal. = .3333). When calculated manually, however, the coef. of rep. reaches the significant level (i.e. coef. of rep. = .92).

At+ gains two positions on the implicational sequence if compared to at. Whereas only nine learners (18.8%) produced the latter preposition enough times to reach the 80% criterion level, 26 (54.2%) can supply adequate substitutes.

6.1.2.2.2 J-S scoring method

The Guttman scaling procedure was also applied to the scores obtained by crediting the learner with prepositions he supplied correctly at least 80% of the time and did not misuse more often than he supplied appropriately. Two scales were calculated using this method: one scale with at and one with at+. The scales were calculated only manually and the two respective coefficients of reproducibility are both significant (for the at scale, coef. of

Table 6.3

Implicational scale for the order of acquisition of at+ prepositions.
 Formal group, oral task. 0-C scoring method

	ON	TO	FROM	AT+	IN	INTO	OUT OF	ACROSS	THROUGH
23	-	+	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-
4	+	-	-	-	-	-	-	-	-
3	+	-	-	+	-	-	-	-	-
6	+	-	-	-	-	-	-	-	-
9	+	-	-	+	-	-	-	-	-
2	+	-	-	-	-	-	-	-	-
10	+	-	-	+	-	+	-	-	-
19	+	-	-	+	-	+	-	-	-
22	+	-	-	-	-	+	-	-	-
28	+	-	-	-	+	-	-	-	-
32	+	+	-	-	+	-	-	-	-
1	-	+	-	-	-	-	-	-	-
18	+	+	-	-	-	-	-	-	-
21	+	+	-	-	+	-	-	-	-
44	+	+	-	+	-	-	-	-	-
18	+	+	-	-	-	-	-	-	-
7	+	+	+	-	-	-	-	-	-
12	+	-	+	-	-	-	-	-	-
26	+	+	+	-	-	-	-	-	-
5	+	+	+	+	-	-	-	-	-
8	+	+	+	+	-	-	-	-	-
13	+	+	+	+	-	-	-	-	-
20	+	+	-	+	-	-	-	-	-
31	-	+	+	+	-	-	-	-	-
33	+	+	+	+	-	-	-	-	-
34	+	+	+	+	-	-	-	-	-
48	+	+	-	+	-	-	-	-	-
10	+	+	+	+	+	-	-	-	-
14	+	+	+	+	+	-	-	-	-
15	+	+	+	-	+	-	-	-	-
17	+	-	+	-	+	-	-	-	-
24	+	+	+	+	+	-	-	-	-
25	+	+	+	-	+	-	-	-	-
36	+	+	+	+	+	-	-	-	-
39	+	-	+	+	+	-	-	-	-
40	+	+	+	-	+	-	-	-	-
41	+	-	+	+	+	-	-	-	-
11	+	-	+	+	-	+	-	-	-
38	+	+	+	+	-	+	-	-	-
42	+	+	+	+	-	+	-	-	-
30	+	+	+	+	-	+	+	-	-
46	+	+	+	+	-	+	+	-	-
43	+	+	+	+	-	+	+	+	-
47	+	+	+	-	+	+	-	+	-
49	+	+	+	+	+	+	-	+	-
45	+	-	+	+	-	+	-	+	+

rep. = .94, for the at+ scale, coef. of rep. = .94). Tables 6.4 and 6.5 show the two scales. It should be noticed that both orderings exactly mirror the ordering obtained with the O-C performance analysis. The number of deviations is however smaller with the J-S scoring method: 33 deviations in the O-C performance analysis with core prepositions versus 28 in the corresponding J-S analysis (18% more in the former); 35 deviations in the O-C performance analysis with at+ versus 27 in the corresponding J-S analysis (26% more in the former)(see Tables 6.4 and 6.5).

It should also be noted that when using the J-S scoring method there is a decrease in the number of features scored as acquired. 11% of both the core prepositions and the at+ prepositions scored plus in the O-C analysis fail to satisfy the criteria set with the J-S scoring method.

6.1.2.2.3 T-L performance analysis

We finally report the results of the implicational scaling performed on the scores of core prepositions obtained with the T-L scoring method. A cutting point of 60% was set for this analysis. As explained earlier a higher cutting point would be too strict when suppliance in non-obligatory contexts was included in the calculation of the individual scores. The limitations of T-L performance analyses used with binary implicational scaling have already been pointed out. These were the reasons why the technique was used only to check the consistency of the orderings obtained with different scoring techniques. Only the computer analysis was carried out and no scale with individual performances was derived from the data. The developmental order found was as follows:

ON > TO > FROM > IN > AT > INTO > OUT OF > ACROSS > THROUGH

The coefficients obtained are quite high but just fail to be significant (coef. of rep. = .9706, coef. of scal. = .5000). What must be noticed is the very noticeable similarity of the ordering obtained with this

Table 6.4

Implicational scale for the order of acquisition of core prepositions.
Formal group, oral task. J-S scoring method

	ON	TO	FROM	IN	INTO	AT	OUT OF	ACROSS	THROUGH
27	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-
19	+	-	-	-	-	-	-	-	-
2	+	-	-	-	-	-	-	-	-
3	+	-	-	-	-	+	-	-	-
6	+	-	-	-	-	-	-	-	-
9	+	-	-	-	-	-	-	-	-
22	+	-	-	-	-	-	-	-	-
32	+	-	-	-	-	-	-	-	-
28	+	-	-	-	-	-	-	-	-
1	-	+	-	-	-	-	-	-	-
13	+	+	-	-	-	-	-	-	-
18	+	+	-	-	-	-	-	-	-
21	-	+	-	+	-	-	-	-	-
37	+	+	-	-	-	-	-	-	-
44	+	+	-	-	-	-	-	-	-
1	+	+	-	-	-	-	-	-	-
20	+	+	-	-	-	-	-	-	-
48	+	+	-	-	-	+	-	-	-
12	+	-	+	-	-	-	-	-	-
15	+	+	+	-	-	-	-	-	-
25	+	+	+	-	-	-	-	-	-
45	+	-	+	-	-	+	-	+	-
26	+	+	+	-	-	-	-	-	-
31	-	+	+	-	-	-	-	-	-
5	+	+	+	-	-	+	-	-	-
8	+	+	+	-	-	-	-	-	-
7	+	+	+	-	-	-	-	-	-
17	+	-	+	-	-	-	-	-	-
34	+	+	+	-	-	-	-	-	-
38	+	+	+	-	-	-	-	-	-
14	+	+	+	+	-	-	-	-	-
39	+	-	+	+	-	-	-	-	-
11	+	-	+	-	+	-	-	-	-
40	+	+	+	+	+	-	-	-	-
41	+	+	+	+	+	-	-	-	-
47	+	+	+	+	+	-	-	-	-
24	+	+	-	+	-	+	-	-	-
10	+	+	+	+	-	+	-	-	-
36	+	+	+	+	-	+	-	-	-
42	+	+	+	-	+	+	-	-	-
30	+	+	+	-	+	-	+	-	-
43	+	+	+	-	+	-	+	+	-
49	+	+	+	+	+	+	-	+	-
46	+	+	+	-	+	-	+	-	+

Table 6.5

Implicational scale showing the order of acquisition of at+ prepositions.
Formal group, oral task. J-S scoring method

	ON	TO	FROM	AT+	IN	INTO	OUT OF	ACROSS	THROUGH
29	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-
19	+	-	-	-	-	-	-	-	-
2	+	-	-	-	-	-	-	-	-
3	+	-	-	+	-	-	-	-	-
6	+	-	-	-	-	-	-	-	-
9	+	-	-	+	-	-	-	-	-
22	+	-	-	-	-	-	-	-	-
32	+	-	-	-	-	-	-	-	-
1	-	+	-	-	-	-	-	-	-
18	+	+	-	-	-	-	-	-	-
21	-	+	-	-	+	-	-	-	-
7	+	+	+	-	-	-	-	-	-
12	+	-	+	-	-	-	-	-	-
15	+	+	+	-	-	-	-	-	-
25	+	+	+	-	-	-	-	-	-
26	+	+	+	-	-	-	-	-	-
17	+	-	+	-	-	-	-	-	-
48	+	+	-	+	-	-	-	-	-
8	+	+	+	+	-	-	-	-	-
13	+	+	+	+	-	-	-	-	-
5	+	-	+	+	-	-	-	-	-
20	+	+	-	+	-	-	-	-	-
30	+	+	+	+	-	-	+	-	-
31	-	+	+	+	-	-	-	-	-
33	+	+	+	+	-	-	-	-	-
34	+	+	+	+	-	-	-	-	-
38	+	+	+	+	-	-	-	-	-
44	+	+	-	+	-	-	-	-	-
45	+	-	+	+	-	-	-	+	-
41	+	+	+	+	-	-	-	-	-
10	+	+	+	+	+	-	-	-	-
14	+	+	+	+	+	-	-	-	-
4	+	+	-	+	+	-	-	-	-
36	+	+	+	+	+	-	-	-	-
39	+	-	+	+	+	-	-	-	-
11	+	-	+	+	-	+	-	-	-
40	+	+	+	-	+	+	-	-	-
41	+	-	+	+	+	+	-	-	-
42	+	+	+	+	+	+	-	-	-
47	+	+	+	-	+	+	-	-	-
49	+	+	+	+	+	+	-	+	-
43	+	+	+	+	-	+	+	+	-
30	+	+	+	+	-	+	+	-	-
46	+	+	+	+	-	+	+	-	+

analysis and those obtained with both previous analyses. The only point of divergence between the first two scales and the last one is the position of at: after in and into in the first case; between the two prepositions in the second one. (See Appendix C2.2 for the set of computer printouts pertaining to the formal group, oral task.)

6.1.2.3 Informal group: oral task

6.1.2.3.1 O-C performance analysis

Core prepositions

As for the formal group the scores derived from suppliance of the core prepositions in obligatory contexts were analyzed first. The implicational scale revealed the following accuracy/acquisitional order (Table 6.6 displays the implicational scale with individual performances and Figure 6.3 displays the percentage of informal learners who performed successfully at the 80% criterion in the oral task on prepositions.

ON > FROM > IN > TO > OUT OF > ACROSS > THROUGH > AT > INTO

When using the SPSS package the coefficient of reproducibility ($= .8697$) and of scalability ($= .3462$) just fail to reach the significant level. When calculated manually, however, the coefficient of reproducibility is found to be significant ($= .94$).

At+ prepositions

The second implicational scale was calculated by including as acceptable all the possible alternatives to the preposition at. The acquisitional order thus obtained is as follows:

ON > FROM > IN > TO > AT+ > OUT OF > ACROSS > THROUGH > INTO

Table 6.6

Implicational scale showing the order of acquisition of core prepositions.
Informal group, oral task. O-C scaling method

	ON	FROM	IN	TO	OUT OF	ACROSS	THROUGH	AT+	INTO
52	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-
51	-	-	+	-	-	-	-	-	-
58	-	-	-	+	-	-	-	-	-
71	+	-	-	-	-	-	-	-	-
85	+	-	-	-	-	-	-	-	-
66	+	+	-	-	+	-	-	-	-
67	+	+	-	+	-	-	-	-	-
70	+	+	-	+	-	-	-	-	-
69	+	+	-	-	-	-	-	-	-
61	+	+	-	-	-	-	-	-	-
57	+	+	+	-	-	-	-	-	-
65	-	+	+	-	-	-	+	-	-
69	+	+	+	-	-	-	-	-	-
63	+	+	+	-	-	-	-	-	-
72	+	+	+	-	-	-	-	-	-
73	-	+	+	-	-	+	-	-	-
74	+	-	+	-	-	-	-	-	-
50	+	-	+	+	-	-	-	-	-
53	+	+	-	+	-	-	-	-	-
54	+	+	+	+	-	-	-	-	-
55	+	+	+	+	-	-	-	-	-
64	+	+	+	+	-	-	-	-	-
68	-	+	+	+	-	-	-	-	-
76	+	+	+	+	-	-	-	-	-
59	+	+	+	+	-	-	-	-	-
56	+	+	+	+	-	+	-	-	-
60	+	+	+	+	-	-	+	+	-

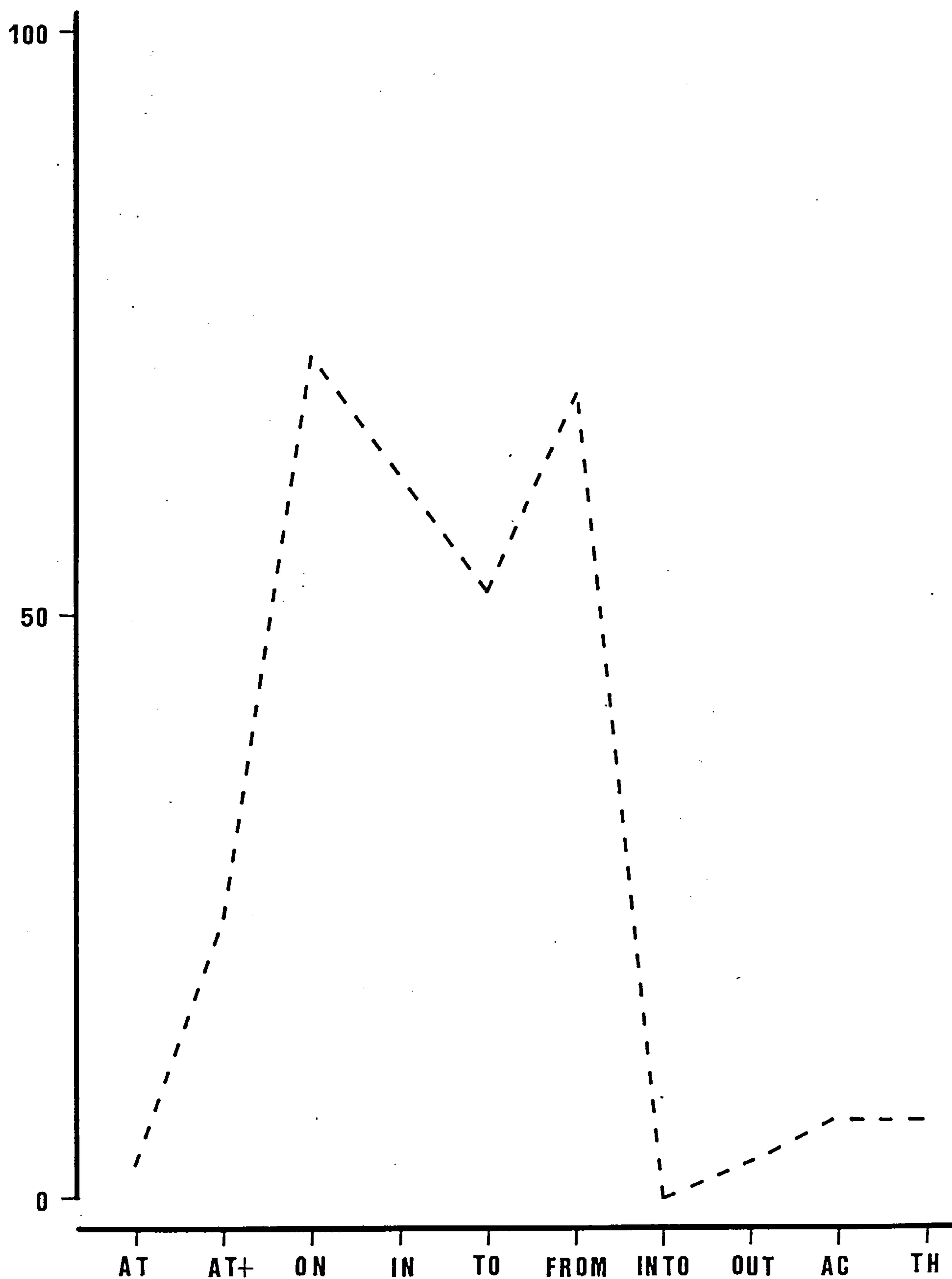


Figure 6.3

Percentage of informal learners who reached the 80% level for spatial prepositions.

Table 6.7 displays the implicational scale with all individual performances. The pertaining statistics obtained using the computer package just fail to be significant (coef. of rep. = .8621, coef. of scal. = .3751). When calculated manually, however, the coefficient of reproducibility reaches the significant level (i.e. = .92).

At+ gains three positions on the implicational sequence if compared to at. Whereas only one learner (3.5%) produced the latter preposition enough times to reach the 80% criterion, seven learners (24.1%) can supply acceptable substitutes.

6.1.2.3.2 J-S scoring method

The Guttman scaling procedure was also applied to the scores obtained by crediting the learner with prepositions he supplied appropriately at least 80% of the time and did not misapply more than seven or eight times (depending on whether he had supplied the preposition correctly respectively seven or eight times). The scales were calculated manually using this scoring method: one scale with at and one with at+. The coefficient of reproducibility is significant in both cases (for the scale with at, coef. of rep. = .95, for the one with at+ coef. of rep. = .94). Table 6.8 and 6.9 show the two scales: it should be noticed that in both scales the orders obtained are identical to those obtained with the O-C performance analysis (see tables 6.8 and 6.9). The number of deviations is however smaller with the J-S scoring method: 16 deviations in the O-C performance analysis with core prepositions versus 13 in the corresponding J-S analysis (19% more in the former); 20 deviations in the O-C performance analysis with at+ versus 16 in the corresponding J-S analysis (25% more in the former).

One noticeable difference between the two analyses is that there is a sensible decrease in number of features scored as acquired when the J-S scoring method is used instead of the O-C one.

Table 6.7

Implicational scale showing the order of acquisition of at+ prepositions.
Informal group, oral task. O-C scoring method

	ON	FROM	IN	TO	AT+	OUT OF	ACROSS	THROUGH	INTO
57	-	-	+	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-
58	-	-	-	+	-	-	-	-	-
85	+	-	-	-	-	-	-	-	-
74	+	-	+	-	-	-	-	-	-
63	+	+	+	-	-	-	-	-	-
69	+	+	+	-	-	-	-	-	-
73	+	+	+	-	-	-	+	-	-
57	+	+	+	-	-	-	-	-	-
72	+	+	+	-	+	-	-	-	-
50	+	-	+	+	-	-	-	-	-
55	+	+	+	+	-	-	-	-	-
53	+	+	-	+	-	-	-	-	-
56	+	+	+	+	-	-	+	-	-
76	+	+	+	+	-	-	-	-	-
61	+	+	-	+	-	-	-	-	-
62	+	+	-	+	-	-	-	-	-
67	-	+	-	+	-	-	-	-	-
70	+	+	-	+	-	-	-	-	-
54	+	+	+	+	-	-	-	-	-
60	+	+	+	+	+	-	-	+	-
64	+	+	+	+	+	-	-	-	-
65	-	+	+	-	+	-	-	+	-
68	-	+	+	+	+	-	-	-	-
59	+	+	+	+	+	-	-	-	-
66	+	+	-	-	+	+	-	-	-

Table 6.8

Implicational scale showing the order of acquisition of core prepositions.
 Informal group, oral task. J-S scoring method

	ON	FROM	IN	TO	OUT OF	ACROSS	THROUGH	AT	INTO
51	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-
67	-	-	-	+	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-
50	+	-	-	-	-	-	-	-	-
54	+	-	-	+	-	-	-	-	-
70	+	-	-	+	-	-	-	-	-
57	+	+	-	-	-	-	-	-	-
66	+	+	-	-	+	-	-	-	-
63	+	+	-	-	-	-	-	-	-
69	+	+	-	-	-	-	-	-	-
65	-	+	+	-	-	-	-	-	-
72	+	+	+	-	-	-	-	-	-
73	-	+	+	-	-	-	-	-	-
74	+	-	+	-	-	-	-	-	-
55	+	+	+	+	-	-	-	-	-
59	+	+	+	+	-	-	-	-	-
60	+	+	+	+	-	-	+	-	-
61	+	+	-	+	-	-	-	-	-
62	+	+	-	+	-	-	-	-	-
64	+	+	+	+	-	-	-	-	-
68	-	-	+	+	-	-	-	-	-
76	+	+	+	+	-	-	-	-	-
56	+	+	+	+	-	+	-	-	-

Table 6.9

Implicational scale showing the order of acquisition of at+ prepositions.
Informal group, oral task. J-S scoring method

	ON	FROM	IN	TO	AT+	OUT OF	ACROSS	THROUGH	INTO
51	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-
67	-	-	-	+	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-
50	+	-	-	-	-	-	-	-	-
70	+	-	-	+	-	-	-	-	-
57	+	+	-	-	-	-	-	-	-
63	+	+	-	-	-	-	-	-	-
69	+	+	-	-	-	-	-	-	-
73	-	+	+	-	-	-	-	-	-
72	+	+	+	-	-	-	-	-	-
74	+	-	+	-	-	-	-	-	-
55	+	+	+	+	-	-	-	-	-
61	+	+	-	+	-	-	-	-	-
62	+	+	-	+	-	-	-	-	-
76	+	+	+	+	-	-	-	-	-
56	+	+	+	+	-	-	+	-	-
54	+	-	-	+	+	-	-	-	-
65	-	+	+	-	+	-	-	-	-
59	+	+	+	+	+	-	-	-	-
60	+	+	+	+	+	-	-	+	-
64	+	+	+	+	+	-	-	-	-
68	-	-	+	+	+	-	-	-	-
66	+	+	-	-	+	+	-	-	-

6.1.2.3.3 T-L performance analysis

As with the formal group, an implicational scaling was performed on the core preposition scores obtained with the T-L scoring method. The cutting point was set at the 60% criterion level (cf. section 6.1.1.1 for a justification for this and other choices pertaining to this task).

Only the computer analysis was carried out and no scale with individual performances was derived from the data. The acquisitional order was as follows:

ON > FROM > IN > TO > OUT OF > ACROSS > THROUGH > AT > INTO

The coefficients obtained are quite high but just fail to be significant (coef. of rep. = .8774, coef. of scal. = .3962). The order obtained with this scoring method and a 60% criterion exactly corresponds to that obtained with both O-C and J-S scoring methods and an 80% criterion. (See Appendix C2.3 for the set of computer printouts pertaining to the informal group.)

6.1.3.1 Comparison between the written and the oral task. O-C performance analysis

Two two-way ANOVAs were performed on the O-C scores of the formal group for the written and the oral task. (No comparisons between the two tasks was carried out on T-L scores as these were not calculated for the written task.) The first ANOVA used only the core prepositions, the second ANOVA used at+ prepositions (for the oral task only). Both ANOVAs had two independent variables: (i) 'preposition', a repeated measure within subjects with nine levels -- one for each preposition, (ii) 'mode', a repeated measure within subjects with two levels -- written and oral.

The results of both ANOVAs showed:

- 1. There is a significant main effect of 'preposition' ($F = 49.47$, $p = 0.0001$ for core prepositions; $F = 52.75$, $p = 0.0001$ for at+ prepositions).
- 2. There is a significant main effect of 'mode' ($F = 11.43$, $p = 0.0015$ for core prepositions, $F = 4.80$, $p = 0.0335$ for at+ prepositions).
- 3. There is a significant interaction between 'preposition' and 'mode' ($F = 13.96$, $p = 0.0001$ for core prepositions; $F = 13.92$, $p = 0.0001$ for at+ prepositions). (See Appendix C2.4 for further details.)

A Scheffé test was performed to determine which prepositions significantly differ within and between the two modes. Table 6.10 displays the significant differences found between the two modes. Figure 6.4 shows the interaction between the two factors 'preposition' and 'mode' and figure 6.5 shows the main effect of 'mode'.

Table 6.10
Scheffé test on spatial prepositions. Comparison of group means for the formal group: written and oral task.

Prepositions	Written task	Oral task	
	\bar{x}	\bar{x}	
AT	66.3	36.8	**
AT+	66.3	72.0	
ON	72.7	86.9	**
IN	69.2	65.5	
TO	78.3	78.5	
FROM	69.8	69.5	
INTO	55.9	54.9	
OUT OF	50.7	22.5	**
ACROSS	45.2	25.4	**
THROUGH	47.4	25.4	**

** $p < 0.01$

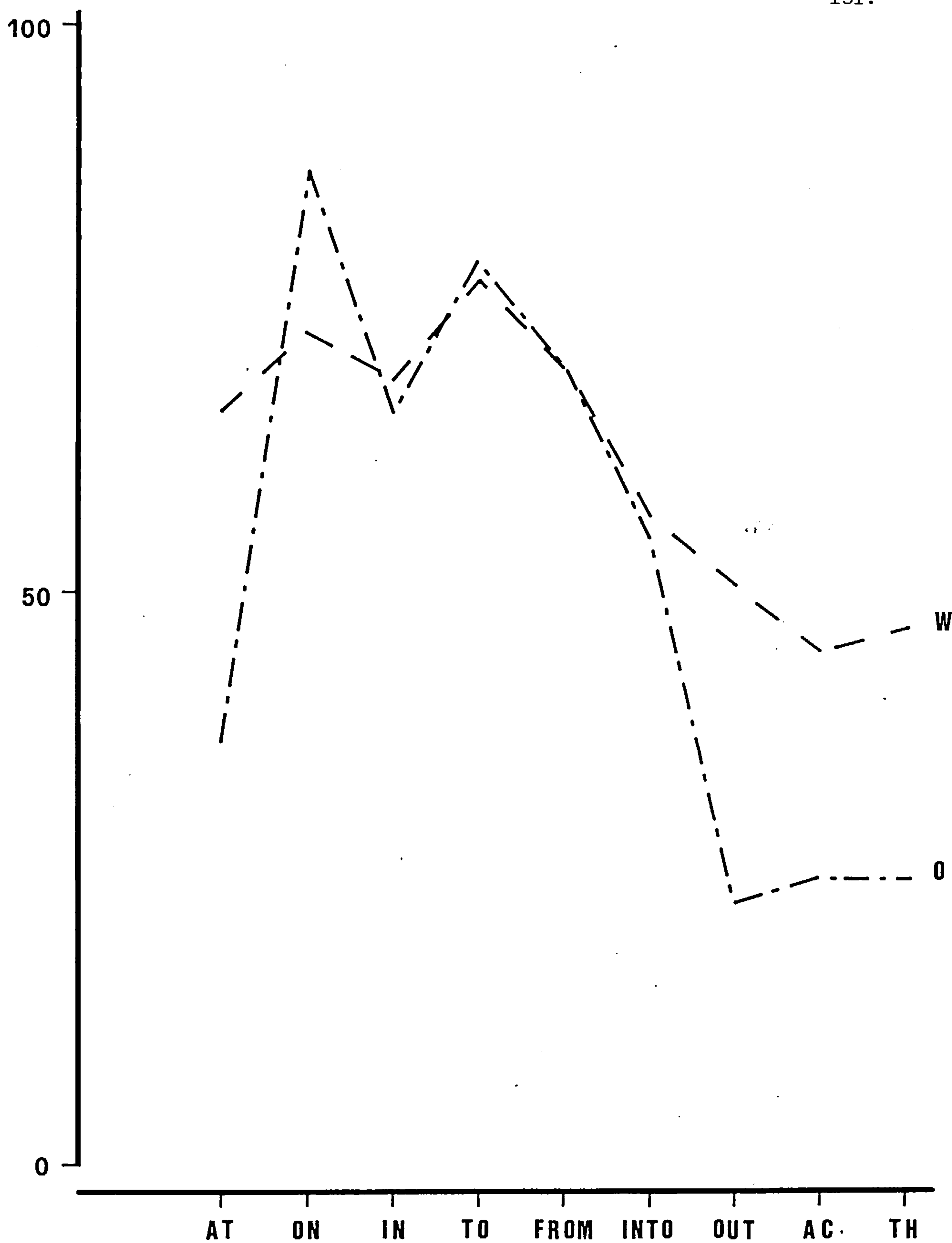


Figure 6.4

Mean scores for spatial prepositions, written and oral task.

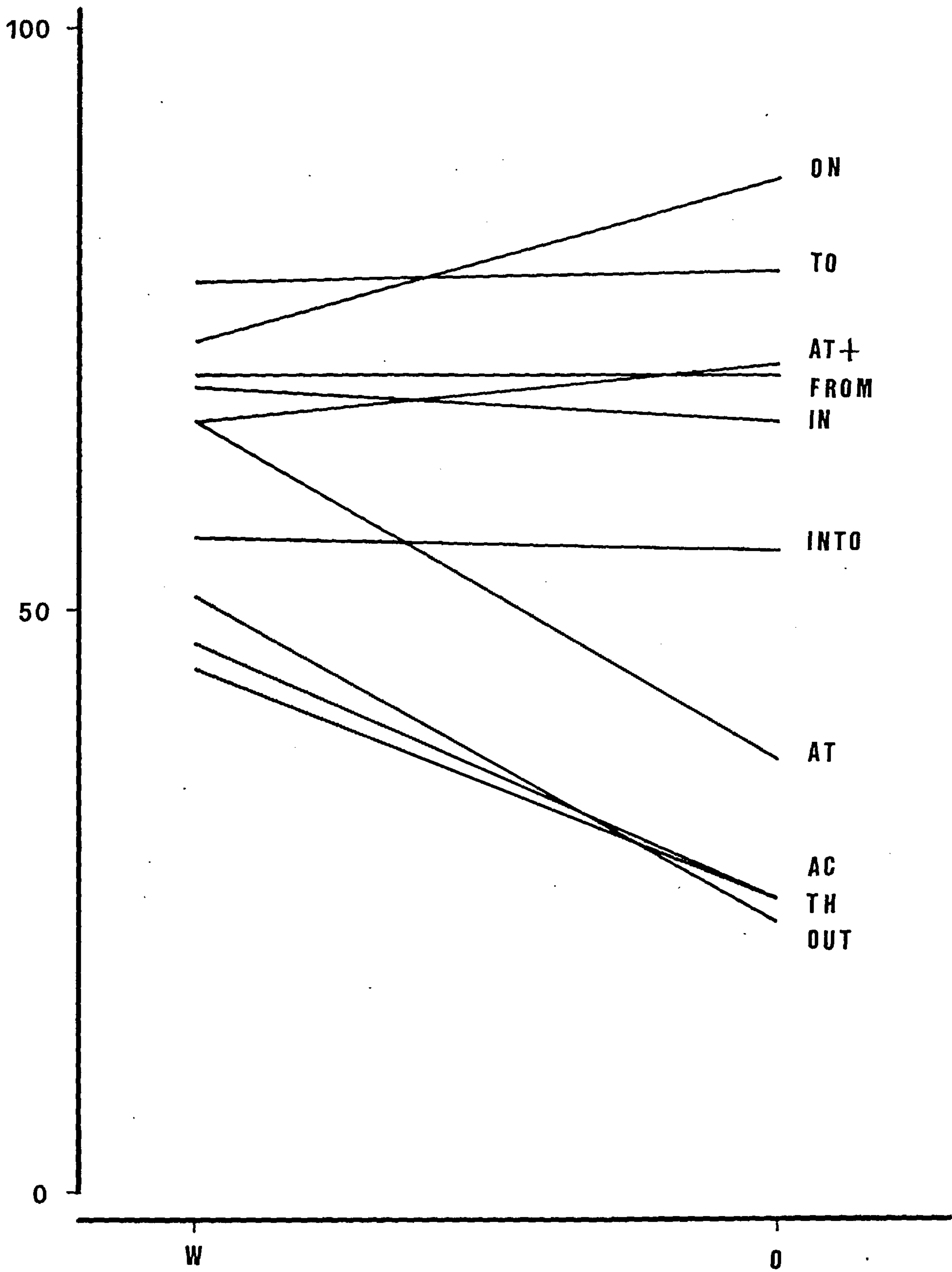


Figure 6.5

Interaction between spatial prepositions and task, mean scores.

As shown by table 6.10 at, on, out of, across and through significantly differ between the written and the oral task with performance on the more formal task being better than that on the less formal one. Performance on the remaining prepositions does not differ significantly between the two tasks. Interestingly, performance on at in the written task is significantly superior to that on at in the oral task, but not to that on at+ in the same task.

Table 6.11 and table 6.12 display the comparisons of interest between the prepositions investigated respectively in the written and the oral task. The pattern within the two tasks differ in some respects: we will highlight the most important ones. First of all there are no significant differences between locationals (i.e. at, on, in) in the written task, whereas in the oral task at is significantly different from both on and in, at+ is significantly different from on, and on from in. Secondly, in differs significantly from both to and into in the written task, but only from to in the oral one. Lastly, into significantly differs from out of in the oral task but not so in the written one.

Table 6.11
Scheffé test. Comparison of group means between individual prepositions.
Written task.

	AT	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH
\bar{x}	66.3	72.7	69.2	78.3	69.8	55.9	50.7	45.2	47.4
AT		0	0	*					
ON			0		0			*	
IN				*		*			*
TO					*	*			
FROM							*		
INTO							0		*
OUT OF								0	0
ACROSS									0
THROUGH									

0 $p > .05$
* $p < 0.01$

Table 6.12
Scheffé test. Comparison of group means between individual prepositions.
Oral task, formal group. O-C performance analysis.

	AT	AT+	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH
\bar{x}	36.8	72.0	86.9	65.5	78.5	69.5	54.9	22.5	25.4	25.4
AT			*	*	*					
AT+			*	0	0					
ON				*		*			*	
IN					*		0			*
TO						0	*			
FROM								*		
INTO									*	*
OUT OF									0	0
ACROSS										0
THROUGH										
<hr/>										
0 p > .05										
** p < 0.01										
<hr/>										

6.1.3.2 Comparison between the formal and the informal group

6.1.3.2.1 Comparison between the formal and the informal group; oral task:
O-C performance analysis

Two two-way ANOVAs were performed on the O-C scores of the oral task for both the formal and the informal group. The first ANOVA used only the core prepositions (i.e. at and out of), the second ANOVA used at+ prepositions. Both ANOVAs had two independent variables: (i) 'preposition', a repeated measure within subjects with nine levels -- one for each preposition -- (ii) 'learning', a between subjects factor, with two levels -- formal and informal.

The results of both ANOVAs showed:

- 1. There is a significant main effect of 'preposition' ($F = 71.49$, $p = 0.0001$ for core prepositions; $F = 71.29$, $p = 0.0001$ for at+ prepositions).
- 2. There is no significant main effect of 'learning' ($F = 2.14$, $p = 0.1478$ for core prepositions; $F = 1.92$, $p = 0.1478$ for core prepositions; $F = 1.92$, $p = 0.1704$ for at+ prepositions).
- 3. There is a significant interaction between 'preposition' and 'learning' ($F = 7.43$, $p = 0.0001$ for core prepositions, $F = 8.85$, $p = 0.0001$ for at+ prepositions. (See Appendix C2.4 for further details.)

A Scheffé test was performed to determine which prepositions significantly differ within and between the two groups. (Table 6.13 displays the significant differences found between the two groups. Figure 6.6 shows the interaction between the two factors 'preposition' and 'learning' and figure 6.7 shows the main effect of 'learning'.

Table 6.13
Scheffé test on spatial prepositions. Comparison of group means for the oral task: formal and informal group. O-C performance analysis.

	Formal group	Informal group	
	\bar{x}	\bar{x}	
Prepositions			
AT	36.8	21.4	**
AT+	72.0	50.1	**
ON	86.9	79.6	
IN	65.5	79.1	
TO	78.5	71.6	
FROM	69.5	81.4	
INTO	54.9	11.4	**
OUT OF	22.5	21.2	
ACROSS	25.4	26.5	
THROUGH	25.4	29.1	

** $p < 0.01$

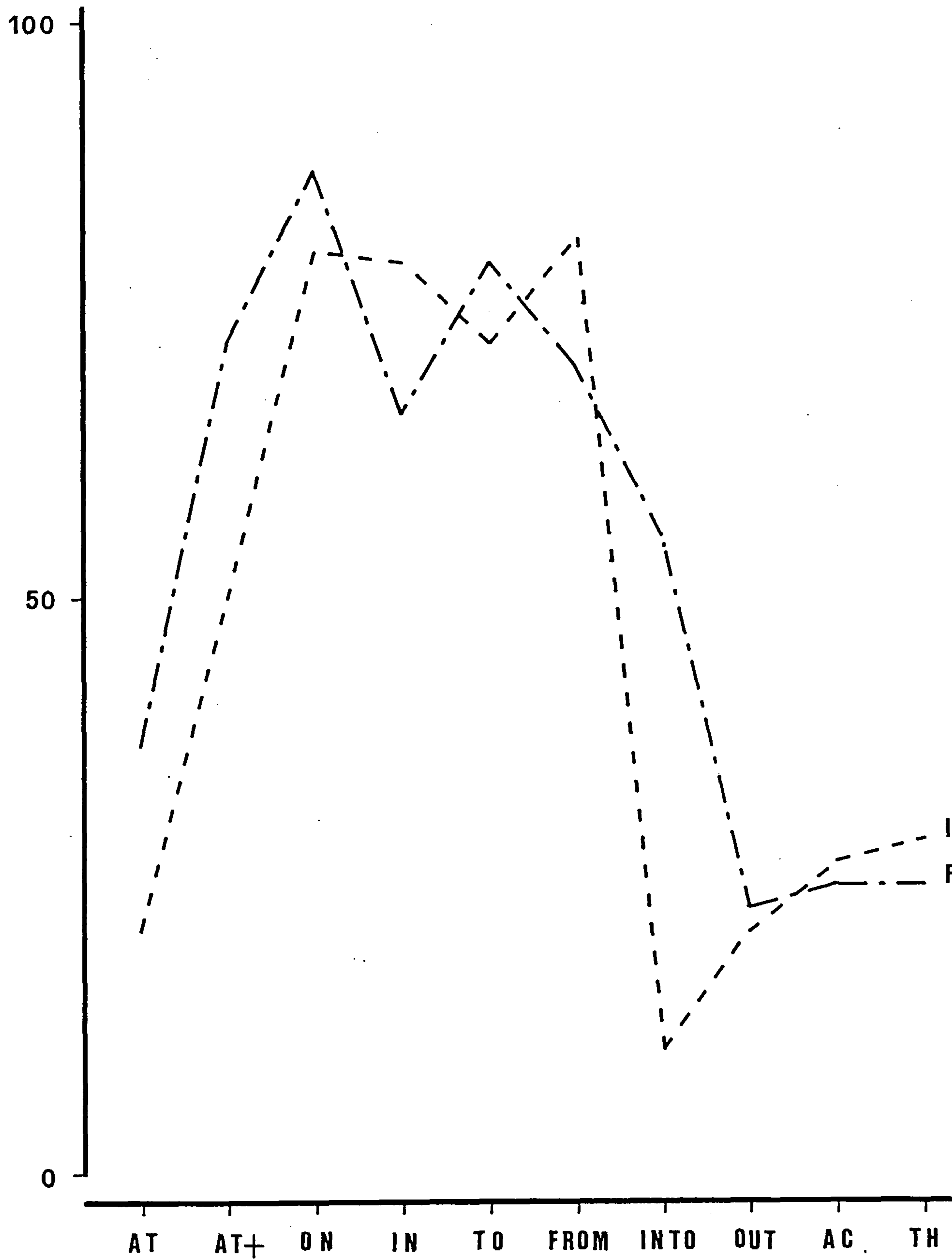


Figure 6.6

Mean scores for spatial prepositions, formal and informal group.

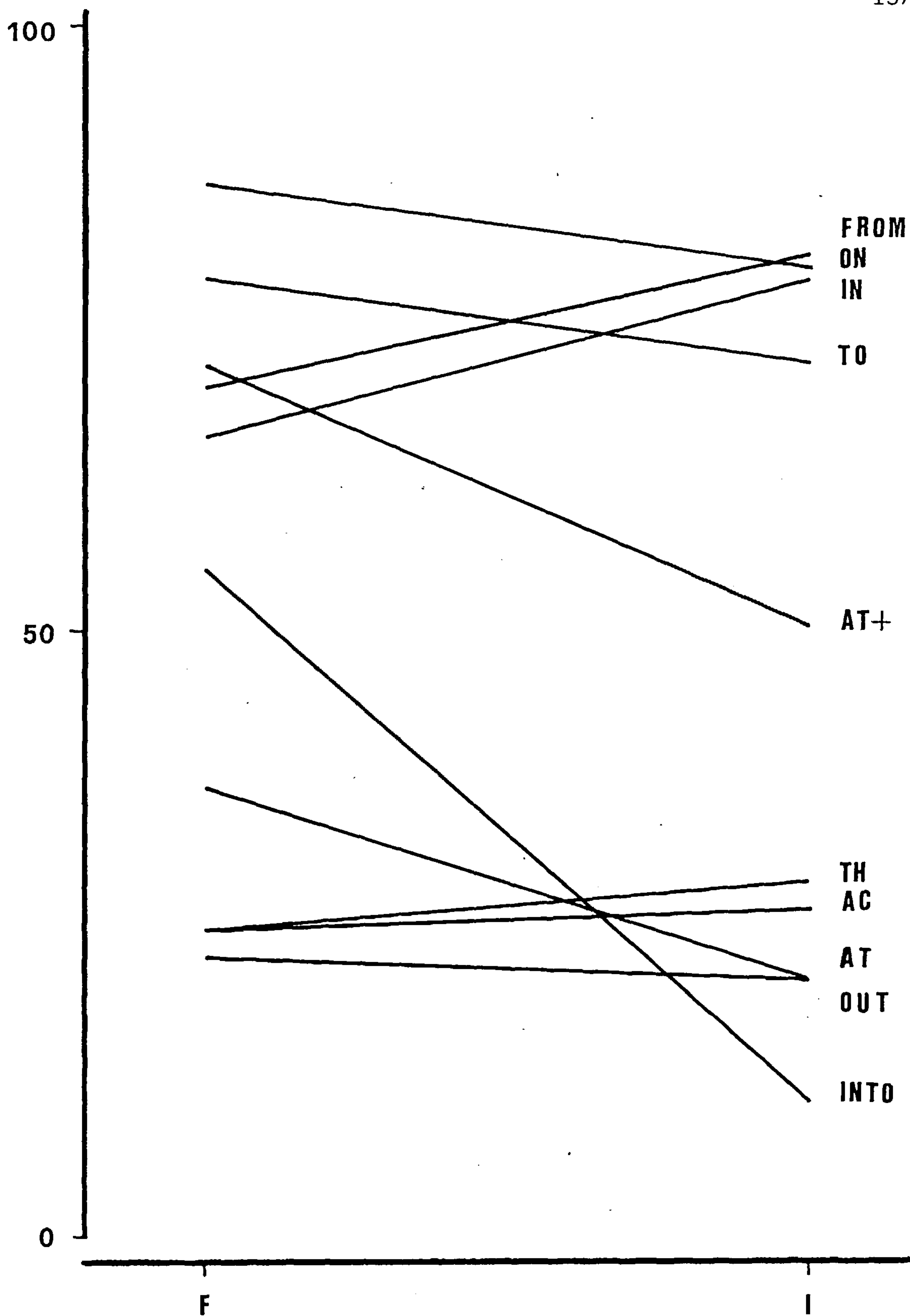


Figure 6.7

Interaction between spatial prepositions and group, mean scores.

6.1.3.2.2 Comparison between the formal and the informal group; oral task: T-L performance analysis

A two-way ANOVA was performed on the T-L scores of the core prepositions (i.e. at) pertaining to the oral task of the formal and informal group. The ANOVA had two independent variables:

(i) preposition, a repeated measure within subjects with nine levels -- one for each preposition investigated, and (ii) learning, a between subjects factor, with two levels -- formal and informal.

The results of ANOVA showed:

1. There is a significant main effect of 'preposition' ($F = 58.59$, $p = 0.0001$).
2. There is no significant main effect of 'learning' ($F = 2.11$, $p = 0.1504$).
3. There is a significant interaction between 'preposition' and 'learning' ($F = 6.37$, $p = 0.0001$) (see Appendix C2.4 for further details).

A Scheffé test was performed to determine which prepositions significantly differ within and between the two groups. Table 6.15 displays the significant differences found between the two groups. As it appears from table 6.15 with a T-L performance analysis the two groups' scores differ significantly for at, to and into with the formal group performing better on these three prepositions. The two groups do not perform significantly differently on the remaining prepositions.

Table 6.16 and table 6.17 display the comparisons between prepositions of interest to us respectively for the formal and the informal group. The pattern of the two groups differs in some respects: we will highlight the most important ones. For the informal group at is significantly different from in, but there is no significant difference between the two prepositions in the formal group. From and on differ

Table 6 .17
Scheffé test on spatial prepositions. Comparison of group means for the oral task: formal and informal group. T-L performance analysis.

Prepositions	Formal group \bar{x}	Informal group \bar{x}	
AT	36.8	18.3	**
ON	68.9	63.5	
IN	41.7	43.0	
TO	62.0	47.9	**
FROM	52.1	60.3	
INTO	38.2	10.6	**
OUT OF	20.8	20.3	
ACROSS	21.2	24.3	
THROUGH	22.8	22.2	

** p < 0.01

significantly in the formal group but they do not in the informal one. In the formal group the mean of in is significantly smaller than that of to but the same does not apply to the informal group where the two means do not differ. The means of in and into do however significantly differ in the formal group (the value for in being greater) but they do not in the formal group.

6.2.1 Error analysis

In this section we will present in tabular form three error analyses: one for each task and each group. For each of the nine prepositions the frequencies are given of the unexpected responses. These unexpected responses are all incorrect substitutions with the exception of synonyms of at and paraphrases of across and through. (e.g. in(to) and out(of) the room;, instead of through the room). For the oral task 16 substitute categories are given. These include

(i) the nine prepositions investigated, (ii) the already mentioned acceptable substitutions, (iii) common error types: i.e. out from, out to and out, expressions of path such as around and along, (iv) uncommon error types: i.e. the category "others" and finally (v) suppliance of no relation item. For the written task a smaller number of substitute categories is included since the learner's scope of possible responses was restricted by the list of the nine prepositions from which he was asked to choose.

The error analysis pertaining to the written task is reported in tables 6.18 and 6.19, that pertaining to the oral task in tables 6.20 and 6.21 for the formal group, and in tables 6.22 and 6.23 for the informal one. Table 6.18, 6.20, 6.22 present the frequencies in raw scores of the types of unexpected responses supplied instead of each of the nine prepositions investigated. Tables 6.19, 6.21, 6.23 present the percentages of errors and acceptable substitutions relative to the total number of unexpected responses.

Table 6.24 shows the frequencies -- both in raw scores and percentages -- of less marked, more marked and equally marked prepositions being used instead of the expected ones in both tasks for the formal group and in the oral task for the informal one. From table 6.24 it appears that the use of less marked prepositions is at the origin of the majority of errors made in both tasks and by both groups, whereas the use of more marked prepositions represent the least conspicuous cause of error in all three cases.

A X^2 test was performed for each task and both groups on the raw scores divided into the three categories mentioned above. The X^2 proved significant in all three cases with $p = 0.0001$ -- formal written, d.f. = 3, $X^2 = 833$; formal oral, d.f. = 3, $X^2 = 585$, informal oral, d.f. = 3, $X^2 = 365$). These results show that in all three cases the number of errors made by using a less marked preposition is significantly higher than the number of errors made by employing a more marked preposition instead of a less marked one.

Table 6.18

Spatial prepositions. Frequencies in raw scores of unexpected responses. Written task, formal group.

SUBSTITUTES												
	AT	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH	OTHERS	Ø	TOTAL
AT	-	37	53	30	0	11	10	3	0	0	10	154
ON	32	-	68	19	11	5	0	0	0	0	3	138
IN	31	32	-	19	9	42	0	1	0	0	6	140
TO	30	3	43	-	11	5	1	0	0	0	6	99
FROM	20	25	20	54	-	3	3	5	2	4	4	140
INTO	11	6	100	69	4	-	5	1	1	0	3	200
OUT OF	26	10	18	50	48	17	-	10	8	10	6	204
ACROSS	12	53	40	44	15	3	10	-	39	5	4	223
THROUGH	22	39	35	32	34	9	31	39	-	3	15	259
TOTAL	184	205	377	317	132	95	60	59	50	22	57	1558

OBLIGATORY CONTEXTS

Table 6.19

Spatial prepositions. Frequencies in percentages of unexpected responses. Written task, formal group.

	SUBSTITUTES											
	%	AT	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH	OTHERS	Ø
OBLIGATORY CONTEXTS	AT	-	24.0	34.4	19.5	0.0	7.1	6.5	2.0	0.0	0.0	6.5
	ON	23.2	-	49.3	13.8	8.0	3.6	0.0	0.0	0.0	0.0	2.2
	IN	22.1	22.9	-	13.6	6.4	30.0	0.0	0.7	0.0	0.0	4.3
	TO	30.3	13.3	43.4	-	11.1	5.1	1.0	0.0	0.0	0.0	6.1
	FROM	14.3	17.9	14.3	38.6	-	2.1	2.1	3.6	1.4	2.9	2.9
	INTO	5.5	3.0	50.0	34.5	2.0	-	2.5	0.5	0.5	0.0	1.5
	OUT OF	12.8	4.9	8.8	24.5	23.5	8.3	-	4.9	3.9	4.9	2.9
	ACROSS	5.4	23.8	17.9	19.7	6.7	1.4	4.5	-	17.5	1.8	2.2
	THROUGH	8.5	15.1	13.5	12.4	13.1	3.5	12.0	15.1	-	1.2	5.8
	TOTAL	11.8	13.2	24.2	20.4	8.5	6.1	3.9	3.8	3.2	1.4	3.7

Table 6.20

Spatial prepositions. Frequencies in raw scores of unexpected responses. Oral task, formal group.

SUBSTITUTES															
OUT				NEAR/ IN FRONT OF/ETC				OUT TO/ OUT FROM OUT				OTHER PATHS AND SIMILAR			
AT	ON	IN	TO	FROM	INTO	OF	ACROSS	THROUGH	IN FRONT OF/ETC	OUT FROM	OUT OUT	OTHER PATHS AND SIMILAR	PARA- PHRASES	OTHERS	TOTAL
AT	-	5	84	4	0	3	5	0	0	111	0	0	0	0	4 216
ON	2	-	42	0	0	5	0	0	0	0	0	0	0	0	2 51
IN	17	15	-	1	0	96	0	0	1	0	0	0	0	0	2 132
TO	17	2	38	-	0	7	0	0	10	0	0	0	0	3	1 78
FROM	1	5	6	14	-	0	0	0	0	0	0	0	0	11	64 101
INTO	7	9	85	60	0	-	0	0	0	0	0	0	0	2	4 168
OUT OF	3	4	12	9	60	5	-	0	1	75	80	0	0	9	24 283
ACROSS	4	76	77	18	0	16	5	-	2	0	0	17	8	1	23 283
THROUGH	0	8	44	14	0	53	24	44	1	0	0	4	27	25	37 281
51	124	388	120	60	185	34	44	38	126	75	80	21	35	51	161 1593

Table 6.21

Spatial prepositions. Frequencies in percentages of unexpected responses. Oral task, formal group.

SUBSTITUTES													
OBLIGATORY CONTEXTS													
	AT	ON	IN	TO	FROM	INTO	OUT OF	ACROSS	THROUGH	NEAR/ IN FRONT OF/ ETC	OUT FROM	OUT TO/ OUT	OTHER PATHS OR SIMILAR PHRASES OTHERS Ø
AT	-	2.3	38.9	1.9	0.6	1.4	2.3	0.0	0.0	51.4	0.0	0.0	0.0
ON	3.9	-	82.4	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IN	12.9	11.4	-	0.8	0.0	72.7	0.0	0.0	0.0	0.8	0.0	0.0	0.0
TO	21.8	2.6	48.7	-	0.0	9.0	0.0	0.0	0.0	12.8	0.0	0.0	0.0
FROM	1.0	5.0	5.9	13.9	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTO	4.2	5.4	50.6	35.7	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUT OF	1.1	1.4	4.2	3.2	21.2	1.8	-	0.0	0.4	0.4	26.5	28.3	0.0
ACROSS	1.4	26.9	27.2	6.4	0.0	5.7	1.8	-	12.7	0.7	0.0	0.0	2.8
THROUGH	0.0	2.9	15.7	5.0	0.0	18.9	8.5	15.7	-	0.4	0.0	0.0	9.6
TOTAL	3.2	7.8	24.4	7.3	3.8	11.6	2.1	2.8	2.4	7.9	4.7	5.0	10.1

Table 6.22

Spatial prepositions. Frequencies in raw scores of unexpected responses. Oral task, informal group.

SUBSTITUTES															

Table 6.23

Spatial prepositions. Frequencies in percentages of unexpected responses. Oral task, informal group.

OBLIGATORY CONTEXTS															
	NEAR										OTHER				
	AT	ON	IN	TO	FROM	INTO/ INSIDE TO	OUT OF	ACROSS	THROUGH	IN FRONT OF/ ETC.	OUT FROM	OUT TO/ OUT	PARA- OR SIMILAR PHRASES	OTHERS	Ø
AT	-	6.3	39.4	6.3	0.0	0.0	1.7	1.7	0.0	38.9	0.0	0.0	0.0	0.6	5.1
ON	0.0	-	81.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	4.1
IN	13.0	44.4	-	0.0	0.0	25.9	0.0	0.0	1.9	1.9	0.0	0.0	0.0	5.6	7.4
TO	13.4	4.5	58.2	-	0.0	6.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	16.4
FROM	0.0	2.3	2.3	40.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	41.9
INTO	0.1	4.0	58.2	26.7	0.0	8.0 (inside to)	0.0	0.0	2.0	0.0	0.0	0.0	0.0	6.0	4.0
OUT OF	0.0	0.6	2.8	1.1	12.5		0.0	-	0.0	0.6	0.0	43.8	53.4	0.0	4.0
ACROSS	0.6	15.9	25.6	14.0	3.1	3.1	0.0	-	17.1	1.2	0.0	0.6	0.0	10.4	7.9
THROUGH	0.0	6.2	24.2	3.7	1.2	7.5	0.0	9.9	-	0.0	0.0	13.7	5.0	8.7	13.7
TOTAL	1.7	7.7	32.3	9.7	2.7	4.5	0.3	1.7	3.1	6.6	7.1	7.3	0.7	1.0	8.4

Table 6.24
Frequencies in the use of less marked, more marked and equally marked
substitutes for expected spatial prepositions.

	- Marked		+ Marked		= Marked	
Formal Written	1053	67.6%	305	19.6%	200	12.8% ***
Formal Oral	971	61.0%	212	13.3%	410	25.7% ***
Informal Oral	634	58.2%	121	11.1%	335	30.7% ***

*** = X^2 significant at p-level = 0.001

χ^2 tests were also performed to test if there was a significant difference between the written and the oral task on the one hand and the formal and the informal group on the other in terms of use of more and less marked prepositions instead of the required ones. In both cases the χ^2 was statistically insignificant (written vs oral, d.f. = 2, χ^2 = 0.00049; formal vs written, d.f. = 2, χ^2 = 0.00038).

6.3.1 The development of spatial prepositions: the IL point of view

In conclusion to this chapter we attempt a qualitative IL oriented description of the development of the spatial prepositions investigated. On the basis of our cross-sectional data we tried to trace the sequence in the evolution from prepositions having very wide meanings: i.e., 'megaprepositions', to a more articulated and differentiated system for the expression of spatial relations. The moments in development we have identified are outlined below. They are simplified descriptions of the complex and variable phenomenon under investigation. The various moments often at least partially overlap in learners' speech. However, the sequence presented here seems to us a representative overall picture of spatial prepositions use and development in our learners' IL.

Only the data derived from the oral task have been drawn upon for this qualitative description. No systematic distinction has been made between the formal and the informal group. The data from the two groups had been analyzed separately at first but commonalities of development seemed to override the differences greatly. Where appropriate, group peculiarities have been emphasized.

At the beginning no prepositions are used. Among our informants no one can be said to be truly and totally at this stage. Yet, there are learners whose performance strongly gravitates towards the \emptyset suppliance stage. The case of Vincenzo (No.77), an Italian immigrant who had been in Britain for 11 years, is very illustrative in this respect. His utterances included:

Interviewer (I): Where is John?

Vincenzo (V): Bank

I : What is the horse doing?

V : The horse jump the chair the table (TL 'the horse is jumping from the chair to the table')

I : What is the man doing?

V : The man the push the car the station the garage
'TL the man is pushing the car (towards the station) out of the garage'.

When prepositions are introduced, one or occasionally two prepositions are used to express all spatial relations. This is the stage of 'megaprepositions'. Usually the first to appear and the most wide-spread preposition is in:

Mary is <u>in</u> the bus stop	(TL 'at')
He is <u>in</u> the table	(TL 'on')
Mary running <u>in</u> the George Square	(TL 'across')
John is going <u>in</u> the fountain in the lake	(TL 'from ... to')

Some formal learners may alternate in with into, e.g. Peter is into the house (TL 'in'), the horse is jumping into the table (TL 'on'); informal learners may alternate the same preposition with inside e.g. the car is going inside the castle (TL 'to'). In is at times accompanied by on (formal learners) and on(top) (informal learners), e.g. Mary walking on the sink (TL 'to').

Explicit expressions of negative movement are introduced almost immediately. Out (from /of/to) and from are used for exit from a three-dimensional space, from is used for departure from a zero-dimensional space:

Peter is going from the house in the bank.

The horse is jumping out the box in the floor. (TL 'out of')

The horse is jumping from the box. (TL 'out of')

Avoidance of expression of negative movement when dealing in the zero-dimensional source is however very common: e.g. The horse jump on a table, instead of the horse is jumping from the chair to the table, when the experiment had made the source very salient.

After negative prepositions have been introduced, positive movement to zero-dimensional spaces starts being formally differentiated from other notions which are still expressed by in(to) or, sometimes, by on. To is introduced, e.g. John is walking to the bank. The occasional use of in in its place tends however to be a long-lasting and recursive feature of these learners' IL.

Zero-dimensional location is still expressed by in, e.g. Mary is in the bus stop where for two-dimensional locatives a preposition other than in is typically used. Formal learners employ on, e.g. the cat is on the washing machine. Informal learners use on, on/in top of: e.g. the match is on top of the box, and, limitedly to the beginning stages up(to): e.g. the box is up(to) the table.

At quite an advanced stage lexical formations such as inside to for both three-dimensional location and movement appear in the speech of some informal learners:

Peter is inside to the house. (TL 'in')

The train is going inside to the station. (TL 'into')

Formal learners continue to use both in and into as three-dimensional locationals and directionals:

The cat is going into the kitchen.

The horse is jumping in the box. (TL 'into')

The cat is into the kitchen. (TL 'in')

The horse is in the box.

Especially for informal learners to becomes a particle to be attached to any preposition:

- The horse is jumping through to the ring (TL 'through')
- Mary from to the sink going to cooker. (TL 'from')
- The car driving outside to the tunnel (TL 'out of')

Both formal and informal learners sometimes use to for movement into a three-dimensional space: e.g. John is going to the kitchen. (TL 'into').

From is in most cases employed for zero-dimensional negative movement but to occasionally alternates with it: e.g. the airplane is flying to Milan to Rome (TL 'from'). Negative movement out of a three-dimensional space is expressed mostly by lexical formations which include out as their basic component -- i.e. out, out from/to/of -- e.g. She is going out/out from the house. Sometimes from is used instead.

Zero-dimensional location starts being expressed by in front of, near, at, outside. Between this and the following stage the introduction of specific markers for zero-dimensional locations induces in some cases their use as dynamic prepositions as well:

- The car is driving in front of the castle. (TL 'to')
- Peter going near the lake at the icecream kiosk. (TL 'to').

Up to this stage the notion of path had rarely been conveyed by specific prepositions: in, on and to were the most common prepositions used instead. In, into and out tended to occur with three-dimensional path, on, to and from with two-dimensional path:

- The horse jumps in(to) the ring. (TL 'through')
- You're pushing the car on Queen Street. (TL 'across')

At this point, however, through and across are introduced as path expressions. No systematic distinction between two- and three-dimensional path is made, and initially only one of the two prepositions is used for both dimensional types:

The swan is going through the lake. (SE 'across')

The car is going across the tunnel. (SE 'through')

Through is occasionally employed for non-path expressions: e.g. John is going through the room. (TL 'into') However generalization of path expressions to other contexts is extremely rare (cf. previous tables on E.A.).

At this point, in is no longer used as a zero-dimensional locational: in front of, near, etc. are now the only prepositions with that function, e.g. Mary is at the bus stop. To is no longer employed for movement into a three-dimensional space. Formal learners use both in and into to convey this meaning whereas informal learners tend to employ in and inside: e.g. The cat is going in/into/inside the kitchen. Thus among positive locatives there appears to be a clear distinction between dimension-types. The meanings of punctual location, surface and inclusion are formally distinguished one from the other when referring to both location and movement:

Mr Smith is near the door.

The match is on the box/in the box.

Mr Smith is going to the house/in(to) the house.

The distinction between dimension-types tends also to be established for negative locatives: John is going out (from/of) the house vs John is going from his flat to the bank.

Although learners' use of spatial prepositions is becoming more and more English-like, the following features tend to characterize the learners' system of spatial expressions as different from that of English:

1. Across and through are not always differentiated according to the number of dimensions possessed by the reference object.
2. Out from is frequently used instead of the TL out of.

3. The distinction between location and movement is sometimes unobserved with three-dimensional locatives: formal learners occasionally still employ into for the expression of both location and movement, informal learners use in and inside for both notions.

Finally among some learners the usage of the nine prepositions investigated mirrors target-language usage.

CHAPTER 7 : DISCUSSION OF LEARNERS' PERFORMANCE ON RELATIVE CLAUSES

7.0 In this chapter the results pertaining to learners' performance on relative clauses will be discussed. After an introduction about the general hypotheses of the study, each specific hypothesis will be discussed. First, learners' performance on the written and the oral task will be compared. Second, formal learners' performance will be compared to informal learners' performance, both on the oral task. Finally, the discrepancies with the expected pattern will be isolated. To explain such discrepancies emphasis will be given to considerations of typological tendencies, and of 'local' factors. Discourse considerations will be used to account for most of the differences found between the two tasks and the two groups.

7.1.1 Markedness and the orders of acquisition

The results obtained for relative clauses support the general hypothesis that SLA progresses from unmarked to marked. The AH suggested by Keenan and Comrie (1977, 1979) is a statistically valid predictor of the acquisitional sequence for RC formation in English found for both the written and the oral tasks and for the formal and informal groups. Relativization on more marked NP positions is mastered only after relativization on less marked NP positions. The order is implicational and it predicts individual learners' performance.

Thus the nature of the task -- written versus oral, more formal versus less formal -- or learning setting -- classroom versus naturalistic -- does not seem to influence the order in which this syntactic structure is exhibited in learners' IL. The same learners when performing at different levels of formality show consistency in their IL relativization. Also, subjects learning English as a foreign language thus being exposed mostly to planned speech (Ochs, 1979), and subjects learning the second language naturally, thus being exposed mostly to unplanned

speech, both conformed in their IL to the constraints on relativization described by the AH.

However, the results of the oral task for the formal group and the informal group, and, to a certain extent, those of the written task show that equally valid implicational scales can be obtained by inverting the IO with the OO, and the G with the OC. These discrepancies will be accounted for on the basis of structural properties of English and will be discussed in section 7.4.1 below.

Despite the possibly ambiguous status of the two pairs IO-OO and G-OC, our findings on the order of acquisition for relative clauses in English by Italian learners are strongly supportive of the markedness hypothesis. Moreover, non-target-like production also indicates that learners move from unmarked to marked in the acquisition of this structure. Retention strategies are, in fact, the most common strategies for RC formation employed when target-like production is not achieved. Pronoun (or noun) copies make the underlying logical form of the relative clause explicit. Their distribution in the world's languages mirrors the order of the AH and gravitates towards the lowest, more marked NP positions (see 3.1.2). The noticeable frequency of this structure in these learners' language must thus be considered an unmarked feature of their IL.

7.2.1 Written and oral tasks

At the beginning of this study we proposed to investigate the relationship between markedness and intertask variability. More specifically, we hypothesized that a more formal task would exhibit a more marked IL. Formality of the task, however, was predicted to have no bearing on the order in which target-like relative clauses were realized in the different environments.

These two hypotheses were fully supported by our results. Our tutored learners performed significantly better on the more formal task -- i.e. the written task -- than on the less formal

one -- i.e. the oral task -- in all positions except for the S. Importantly, therefore, the only NP position which did not differ in the two tasks was the least marked one of the AH.

As the orders of acquisitions do not change with the task, our results suggest that, at least as far as syntactic environments are concerned, the formality of the task does not affect the resulting picture of IL development. A model of IL variability must make explicit the nature of the linguistic phenomena investigated. Within-areas intertask variability should be distinguished from between-areas intertask variability. For example, the constraints operating on the realization of the copula in different environments are surely dissimilar from those operating on the production of unrelated structures. We thus expect different effects from the two types of constraints on intertask variability. Our results suggest that markedness relations strongly constrain within-areas variability. The order in which syntactic environments are favoured for target-like relativization is not influenced by the task. The only effect of the varying formality of the task is quantitative.

7.2.2 Non-target-like production in the written task

Relative clauses with pronoun copies are the most frequent non-target-like production in both tasks.¹ However, together with the retention strategy, there was a high incidence of -case strategies in inappropriate contexts in the written task. When combining the two basic sentences, learners often produced relative clauses with no prepositions, or supplied different relative pronouns or particles instead of the expected whose:

The blackbird's nest is in the tree Chris used to play.

(...tree behind which...)

I hate the man which dog wakes me up every morning at 5 o'clock.

(... man whose dog ...)

The latter tendency is particularly noticeable as it constitutes 40% of the errors made in the G position. Learners here appear

to have partially mastered the rules of G relativization as they delete the possessive and conform to target word order. If utterances such as I hate the man which dog wakes me up every morning at 5 o'clock had been scored 'correct', the G would have seemed a much easier NP position to relativize and our results would have been similar to Gass's (1979), who, with the same type of task, found the G to be unexpectedly in second position in the acquisitional order for RC formation. This pattern suggests that case marking on the relative pronoun in the only position which requires it in English remains the last difference between learners' IL and TL grammar.

As for the other NP positions which require case marking in English -- especially the IO and OO -- it was noticed that learners often tended either to retain the preposition but retained the pronoun (or noun) copy as well, or deleted both:

John loves the girl who Andrew goes out with her.

John loves the girl who Andrew goes out.

It thus appears that the two features, i.e. [-case] strategies and retention strategies, may be related in IL grammar. We may hypothesize a stage in which both features occur interchangeably before target-like relativization is achieved or we may even hypothesize a stage where only [-case] strategies are used.

In support of these hypotheses, it should be remembered that during the oral interview learners tended to drop the preposition to, and the copy with it, when producing IO relatives:

No.5 is the man the dog is giving a ball.

When prompted to supply the preposition, they would often retain the pronoun as well. In this case, however, the evidence is ambiguous since it also points at the indefinite status of indirect objects in English. Yet, if the preposition may be more easily dropped with the IO than with other non-direct objects, it is still true

that the retention of the preposition often entails the retention of the copy pronoun.

This pattern could be explained as caused by the application of a TL rule to contexts where such a rule does not apply. [-case] strategies are used for S and DO relatives: the learner extends them to other NP positions.

Also, in the specific case of Italian learners, the occurrence of [-case] relative clauses might be traceable to features of colloquial non-standard Italian where the strategy is used:

La proposta che parleró è già nota.

(The proposal that I will talk is already known.)

instead of the standard:

La proposta della quale parleró è già nota.

(The proposal about which I will talk is already known.)

(Cinque, 1981:295)

More research is needed to establish 1. whether [-case] strategies are used by learners from other MT backgrounds when learning English; 2. if such strategies are used when neither MT or TL ever allow them; 3. if, when the strategy is used, it is employed on a continuous stretch of the AH. 1. would test the effect of transfer, 2. that of TL generalization, 3. would establish whether universal constraints apply to IL as well -- RC forming strategies must apply to a continuous segment of the AH. We would expect, then, that if a learner uses a [-case] strategy with IO and G, he will apply it also to OO, but not necessarily to S, DO, or OC.

Finally, from a theoretical point of view, it would be interesting to determine whether different markedness values can be attributed to different RC forming strategies: an IL study could be set up to test the related predictions.

7.3.0 Formal and informal groups

So far we have considered the results of the written and the oral task for the formal group. As for the comparison between the formal and the informal group, both groups exhibit the same implicational order of acquisition which generally agrees with the AH. Both groups show the same inconsistencies with the hierarchy and tend either not to differentiate or to alternate the positions of the two pairs IO-OO and G-OC. Also, both groups provided copies when formation of the target-like relative clause was not achieved. This resulted in the production of utterances not directly found either in the mother tongue or in the target language. In the case of High School students, their frequent use of pronoun copies cannot be explained simply as a feature of their mother tongue since they were all speakers of standard Italian; similarly it cannot be attributed to the input they received, which was, for the most part, written language and formal speech. As for the informal learners with their frequent use of noun copies, no type of input includes utterances such as No. 5 is the boy who the dog is biting the boy and no native language - i.e. standard Italian or dialect - provides a model for such utterances either.

However, our results show that, as expected, the formal group's IL exhibits a greater number of marked features than the informal group's. Tutored learners produced target-like instances of the more marked NP positions on the AH more frequently than untutored learners, and in the case of the G there is a statistically significant difference between the two groups. Also, informal learners use noun copies to a significantly greater extent than formal learners, and conversely the formal group uses pronoun copies much more frequently than the informal one.

7.3.1 Noun copies

We shall consider two suggestions regarding possible sources for the use of structures containing noun copies. The first possibility

is that no transformation at all has taken place, not even conversion of the full NP into a pronoun. The two clauses that correspond to the main and the embedded clause in a properly formed relative construction are simply juxtaposed to one another, with who or that functioning as coordinate conjunctions. If this suggestion is correct, these utterances are not relative clauses and may be better classified as avoidance phenomena.

An utterance which includes two full NPs could also be interpreted as a slight development away from simple juxtaposition towards target-like relativization. Relative constructions in which NPs in both the main clause and the embedded clause are retained, with the embedded clause being placed at the left of the head noun, are attested in natural languages. We provide an example from Hindi:

Ādmī ne jis - cākū se murgī ko
 man ERGATIVE which knife with chicken ACCUSATIVE
 mārā thā, us cākū ko Rām ne dekha
 killed that knife ACCUSATIVE Ram ERGATIVE saw
 'Ram saw the knife which the man killed the chicken.'
 (Comrie, 1981:139)

This kind of non-reduction RC type is not found in Italian or English, which have right-branching relatives without retention. It may well be that learners are producing relative clauses of this basic type although retaining the word order of the mother tongue and the target language. In these types of non-reduction relative clauses the grammatical function performed by the head noun in the embedded clause is made extremely clear by the repetition of the full NP. As Comrie (1981), discussing the level of explicitness of the most common types of relative clauses in natural languages, remarks:

"the non-reduction type is as explicit as it is possible to be; the pronoun-retention type is less explicit, since it is necessary to establish the appropriate anaphoric relation for the pronoun before the relative clause construction as a whole can be interpreted."

(p. 141-142)

7.3.2 Markedness and discoursal modes

The use of more marked features on the part of the formal learners should not be simply interpreted as evidence that explicit teaching of rules promotes the acquisition of a fully-fledged language, whereas lack of it does not. It has been suggested (e.g. Ellis, 1984a.) that if the teaching of the language per se influenced acquisition, learners taught with different syllabuses should exhibit different acquisition sequences, and in our case, tutored learners should learn grammatical structures in a drastically different order from the one followed by untutored learners. The effect of explicit teaching is in fact most noticeable in the disruptions of acquisition orders which occur when formal learners perform on tasks where the application of formal rules is possible (cf. Gass, 1979). In our study, however, both formal and informal learners, performing on a task which did not allow monitoring, followed the same universal implicational hierarchy.

The slightly different level of achievement and the two different approaches to relativization found for the two groups may be explained with more general features of instructional settings. This entails a wider definition of instruction than is commonly accepted, a definition which takes different discoursal modes into account. Ellis (1984a) first suggested that tutored learners' faster rate of acquisition may be due to instruction providing them with access to both planned and unplanned discourse in the second language.

Our results indicate that it may be the different degree of complexity in the two styles which determines the better performance of the formal group in RC formation. It is suggestive to notice

that the formal register presents features which are more marked than the corresponding ones in the informal register - e.g. more passive constructions, more complex morphology, a more differentiated tense-aspect system and as already mentioned more frequent relative constructions (cf. Givón, 1979; Ochs, 1979).

A discourse mode with varying indexes of markedness may thus create the basis for the level of elaboration reached. In the case of RC production the following reasons seem very plausible. First of all, formal learners may perform better than informal learners because they receive sufficient input of marked structures. This is what Corder (personal communication) has called threshold for acquisition: input must present the feature with a minimum frequency before acquisition can take place. It is specifically the case for the G in the informal learners' speech. Whose-relatives are hardly ever used in spoken English² and none of the migrants, even after several years of residence, possesses the structure in his IL. Secondly, some general features of the discoursal organization of a given register may indirectly affect the development of some particular features in learners' language. Unplanned discourse tends to use fewer anaphoric pronouns and more zero-anaphora than planned discourse (Givón, 1979). In informal registers second references are often not coded and speakers rely "on nonverbal means to supply the missing information" (Ochs, 1979:67). It is quite conceivable then that learners who are exposed to unplanned speech would start (or prefer) to express coreference in the simplest way, that is by repeating the full argument (i.e. NP). The frequent use of noun copies in the linguistic production of informal learners could therefore be at least partially influenced by more general features of informal discourse.

7.4 .1 Discrepancies with the AH

If the results of this investigation generally confirm the predictions made on the basis of the AH, in both tasks and for both groups the inversion of IO and OO on the one hand, and that of

G and OC on the other, give equally valid implicational scales. Let us consider some linguistic factors which may be at the origin of the merging of the two categories IO and OO in the learners' English IL. As noticed by Keenan and Comrie (1977), indirect objects do not have a clear typological status in terms of RC formation: i.e. they tend to behave like either direct objects or objects of prepositions. From a more general point of view, indirect objects are widely realized as adverbs of movement (see Brown and Miller (1982) for a brief discussion). English, in fact, is a typical example of a language where indirect objects, by sharing semantic and syntactic features with directional locatives, are not distinguishable from other oblique objects. This may be why indirect objects are treated as simple objects of preposition even by SL learners of English.

Preposition stranding in both IO and OO English relatives could also be at the origin of the merging of the two NP positions in the learners' IL. During the elicitation of both grammatical functions the subjects were asked to produce a relative with preposition stranding, as for example No.6 is the man the dog is giving the ball to. Preposition stranding is, from the point of view of TM, an extremely rare phenomenon whose diffusion seems to be limited to the Indo-European family (van Riemsdijk 1978). It could thus be a main factor in determining the degree of complexity of the two structures, and consequently their assimilation in learners' speech.

Similarly, either the lack of differentiation between the G and the OC or the alternation of the two positions in the sequence of acquisition can be explained by attributing their origin to features of English syntax. The comparative conjunction than behaves very similarly to a preposition. Moreover, the elicitation of the OC during the interview mirrored the elicitation of the IO and the OO: the experimenter prompted the subject so as to have him place than at the end of the relative. It does not seem unreasonable then to postulate that in the learners' IL the three functions are represented as having a common denominator: stranding.

Consequently, the G relative construction -- in which the role of the head noun in the relative clause is case marked by the relative pronoun rather than by a preposition -- will be put aside and will assume, at times at least, the lowest position on the acquisitional hierarchy. This tendency to acquire G relatives last has already been noticed by Hawkins and Keenan (1974, reported in Keenan and Comrie, 1977) in a study based on the results of a repetition task administered to English-speaking children. Genitives were found to be the most difficult position to recall, whereas comparatives were assimilated to OO relatives. Preposition stranding was given as the explanation of these findings.

As reported in the section on results, Hyltenstam's (1984) findings on the status of the two pairs IO-OO and G-OC are similar to ours. Such a parallelism can be accounted for by the structural similarities of Swedish and English. Swedish, like English, allows preposition stranding and, exactly as in English, requires it if the relative particle som "that" is used rather than the relative pronoun vilken-t/a "which". Moreover, relativization on the G is possible only by using a relative pronoun equivalent to whose. As in standard English where that lacks a genitive form, Swedish does not have G relatives introduced by som. Thus local factors -- properties inherent to the target language -- appear to account for the patterns of language behaviour which do not conform to the predictions based on the AH. These factors become evident in Hyltenstam's study and ours because all different positions were elicited. Gass (1979) collapses IO and OO, other studies (e.g. Ioup and Kruse, 1977; Tarallo and Myhill, 1983) do not elicit OC as such but have a general category 'object of preposition' which may or may not subsume OC. Notice however that Liceras (1983) and Tarallo and Myhill (1983) had already pointed out some specific problems with indirect objects.

Thus the results of our and other researchers' investigations pertaining to the 'discrepancies' with the AH draw attention to the reciprocity of IL and language typology studies. We may start with hypotheses about IL development based on considerations of language structure and language universals only to discover that our findings concerning SLA provide insight into areas of much wider scope for linguistic investigation.

Notes

1. Contrary to what will be done for spatial prepositions no markedness considerations will be applied when comparing different types of non-target-like performance.
2. Cf. the 17 examples of whose (including interrogatives) in the 192,000 words of the London-Lund corpus of spoken educated English (Brown, 1985). Romaine (1982, 1984) too notes the infrequency of possessive relatives in modern Scots English and the use of the form that's or of pronoun retention rather than the standard English whose. A survey of the speech of 6-10 year old Edinburgh children yielded 201 relative clauses, only one of which was possessive, an example of that's. The informal subjects in this study would have been exposed mainly to Scots English.

CHAPTER 8 : DISCUSSION OF LEARNERS' PERFORMANCE ON SPATIAL PREPOSITIONS

8.0 In this chapter the results pertaining to learners' performance on spatial prepositions will be discussed. The chapter is divided into three main sections. In the first section the hypotheses concerning the acquisition orders for both tasks and both groups will be discussed in the light of the results obtained. Other factors beyond markedness will be used to account for the discrepancies found with the expected pattern. In the second section the substitution patterns for the two tasks and the two groups will be discussed. Finally, the IL perspective on the development of spatial prepositions presented at the end of chapter 6 will be further explored and related to the findings previously discussed.

8.1.1 Markedness and the predictions for the orders of acquisition

At a general level the results of the various implicational scales for both tasks and both groups confirm the predictions made on the basis of structural markedness. If we subdivide the three orderings into two parts the prepositions found in the first part -- early acquired -- are less marked than those found in the second part -- late acquired. (This statement holds only if we compare at of the written task with at+ of the oral one: at constitutes a noticeable incongruence with the expected pattern, cf. 8.2.3 and Appendix A2.) The items found in each of the two subparts correspond across tasks and groups but the order in which individual prepositions are acquired does not always coincide (see table 8.1).

At a finer level of analysis our predictions are not confirmed. When the relative order of acquisition of each preposition is examined it is not always the case that less marked prepositions are acquired before more marked ones. In all three orderings zero-dimensional dynamic prepositions, both positive and negative, precede some of the locationals, contrary to prediction. In the written task to

Table 8.1
Implicational orders for spatial prepositions according to tasks and groups.

Formal written		Formal oral		Informal oral	
80%		AT	AT+	AT	AT+
TO		ON	ON	ON	ON
ON		TO	TO	FROM	FROM
AT		FROM	FROM	IN	IN
FROM		IN	AT+	TO	TO
IN		INTO	IN	OUT OF	AT+
INTO		AT	INTO	ACROSS	OUT OF
OUT OF		OUT OF	OUT OF	THROUGH	ACROSS
THROUGH		ACROSS	ACROSS	AT	THROUGH
ACROSS		THROUGH	THROUGH	INTO	INTO

appears to be mastered before any other preposition, thus completely disconfirming our hypothesis predicting the primacy of locationals over directionals. In the informal group from is mastered before to and out of before into. At and at+, however, constitute the most striking discrepancy between our predictions in terms of structural markedness and the acquisition order found. It was expected that at would be the first spatial preposition acquired. Even with the inclusion of possible lexical alternatives to at+, zero-dimensional locationals appear in third position in the written task, in fourth and fifth position in the oral task (formal and informal group respectively). At on its own figures among the last positions on the acquisitional scale for both formal and informal group performing on the oral task.

8.1.2 Markedness and error types

Whereas the order of acquisition of prepositions only partially substantiates the markedness hypothesis, the types of errors made when the correct or expected preposition is not supplied give more support to it. In the pattern of errors the frequency of less marked substitutions is significantly greater than that of more marked ones for both tasks and both groups. Some of the errors could be equally attributed to transfer rather than choice of a less marked term. Those include some instances of at and in used instead of to, in substituting for into and some instances of from being used instead of out of. It is likely, however, that low degree of complexity and transfer reinforce each other's effect on the developmental pattern. If transfer were the only or the major determining factor in the development of spatial prepositions, the inappropriate suppliance of on instead of across or of to instead of from could not be accounted for. Moreover only one third of the errors could be attributed to the influence of the mother tongue against the two thirds which involve the suppliance of a less marked term.

8.1.3 Written and oral tasks

Two further groups of hypotheses had been set at the beginning of the study. The first one which concerned the formal group's performance on the written and the oral task was generally substantiated. Marked features are supplied more frequently in the more formal task. Formal learners performed better in the written task on three relatively more marked prepositions: out of, across and through. In the same task they also perform better on at, but the difference disappears when the comparison is drawn between at in the written task and at in the oral one.

Formal learners' significantly higher performance on on in the oral task does not disconfirm our hypothesis, as we did not make any predictions about performance on relatively unmarked prepositions. We can in fact interpret this result as indirectly supporting the hypothesis of learners' better performance on marked features when involved in a more formal task. It could have easily been the case that better performance on the written task affected all prepositions, not only the most marked ones. Such a pattern of results, however, would not have specifically supported our hypothesis, which focuses on performance on marked items, but would have provided evidence for the better overall performance on the more formal task. Better performance on marked features in the written task accompanied by better performance on unmarked features in the oral one, on the other hand, makes the polarization between the written (formal) and the oral (informal) task stronger.

It must be noticed, however, that whereas learners performed on marked prepositions better in the written task than in the oral one, they did not use more marked substitutes more frequently in the former than in the latter. This contradicts the second prediction we made concerning intertask variability. Whenever the appropriate item is not available, learners are thus shown to resort to the same general strategy (i.e., the tendency to employ a relatively unmarked term) irrespectively of the degree of formality of the task they are approaching.

8.1.4 Formal and informal groups

As already made evident by the implicational orders, the acquisitional pattern exhibited by the two groups presents some differences. However, the specific hypothesis predicting that formal learners would employ more marked structures than informal learners is only partially substantiated. First of all, there is no significant difference between the two groups in the substitution pattern. When the expected relational term is not supplied formal and informal learners to the same extent tend to employ less marked prepositions rather than more marked ones. Secondly, context of learning affects subjects' performance only on at, at+, to and into. At and at+ are unmarked prepositions. Formal learners' better performance on those would indicate that they use unmarked features more often than informal learners. To and into, however, are marked as opposed to other prepositions and, in particular, if compared to in which is their most frequent substitute. Formal learners' better performance on these prepositions shows that at least to some extent they proceed to some among the most marked structures more often than informal learners.

Although the amount of exposure to the language could not be controlled for as it was impossible to determine how much contact with English informal learners had had, we suspect that in view of the number of years they had lived in Britain their exposure was greater than that of formal learners. If this was actually the case, formal learners' slight advantage over informal learners is an indication that the former would perform significantly better than the latter if given the same extent of exposure to the second language.

8.2.0 Other factors involved in the acquisition of spatial prepositions

If the hypotheses set at the beginning of this study are only partially substantiated, other factors must have influenced the acquisition pattern as well as determined the differences in the implicational sequences between written and oral task and, in particular, between formal and informal groups. On the basis of structural markedness

we had predicted that the sequence of acquisition would be the same in all three instances (i.e., written task for the formal group, oral task for both formal and informal groups). This was found to be the case only at a macro-level but not when individual prepositions were analyzed in relation to one another. In the following sections we will discuss in detail the major points of dissimilarity between our predictions and the actual acquisition pattern.

8.2.1 Transfer and input: in-into

We noticed earlier how the opposition marked-unmarked appears to determine the general error pattern. Whenever the expected prepositions are not supplied, learners tend to employ less marked items. Transfer often intensifies this tendency: a few prepositions which are relatively unmarked in English correspond to the prepositions the learner would employ in the mother tongue. These prepositions are very frequent substitutions for the TL spatial terms. We suggested moreover that transfer alone could not account for all the errors made by our Italian learners, and, more importantly, could not operate on its own, independently from the degree of markedness exhibited by the lexical items which were transferred. However, on one occasion transfer seems to occur in a marked context. Into, which is marked if contrasted to in, is very often used with a meaning of location which is not found in English. Into is the most frequent substitute for in among formal learners and is, together with inside to fairly frequent among informal learners as well. Italian does not distinguish in the preposition between location and movement: in and dentro (a) can be used with both static and dynamic verbs -- Mario e' in camera ('Mario is in his room'), Mario corse in camera ('Mario ran into his room'). If learners say the cat is into the room they do not mark in the preposition the distinction between dynamicity and stativity which they similarly fail to mark when they utter the horse jumped in the box (i.e., into). Some formal learners appeared to draw different distinctions by mapping the meaning of the Italian preposition in and dentro (a) onto the two English prepositions in and into respectively.

Thus there are features in the learner's MT which may effect his IL development. However, it has been suggested (e.g. Andersen, 1983) that for transfer to occur there must be some 'triggering' or 'allowing' factors in the input: i.e., some similarities between MT and TL which justify any assumption of further similarity. If on the one hand Italian does not distinguish in the preposition between location and movement, in English on the other in is often used as a directional: e.g. come in, I put the milk in the fridge, Mary jumped in the swimming pool. This partial similarity is likely to trigger the two-way equivalence: if in can be used for movement then into can be used for location.

As already pointed out in the chapter on results, many deviations in the implicational scalings for the oral task of the formal group lie in the in column. Learners who would be expected to have in in their IL given their general position on the scale do not have it. Those are the cases of learners who use into in obligatory contexts but also generalize it to contexts where in is required. The same tendency does not seem to characterize informal learners' production. For them the most common substitute for in is on instead of into as for the formal group. Into, in fact, appears in last position in the informal group's acquisitional sequence since no learner produced it often enough to reach the 80% criterion level. The analysis of variance performed on the two groups' scores showed a significant difference between formal and informal learners on this preposition. Context of learning appears here to have a direct influence both on the sequence of acquisition and on the type of errors made by the learners investigated. Into is characteristic of formal registers and does not always occur in informal speech. Formal learners, moreover, are introduced to into quite early together with other spatial prepositions. It is interesting to note that at the beginning of the acquisition sequence formal learners correctly supply in in obligatory context, but as soon as into occurs their performance on in drastically decreases. Only at the very end of the developmental sequence for the prepositions investigated does formal learners' production of in reach the criterion level again. When it does, the learner usually performs accurately on into as well. With formal learners, who are exposed to in and

into simultaneously, we thus have a case of U-shaped developmental growth. On the other hand, informal learners' acquisition of in does not appear to follow a U-shaped curve. Learners who are exposed supposedly mainly to in with both meanings and who are not explicitly taught the opposition in - into do not frequently overgeneralize the more marked member to static contexts.

It is possible moreover that teacher's correction may influence the overuse of into. It is difficult in fact to believe that our informal learners, some of whom had been in Britain for several years, hardly ever heard into being used. It seems unlikely that the only difference between the two groups of learners is simply amount of exposure to the preposition. Other factors are likely to play a part in the overgeneralization of into. An utterance like she came in the restaurant would be accepted or at least understood by native speakers and therefore not corrected but the same utterance may provoke an immediate reaction in an Italian teacher of English. Non-native speaking foreign language teachers have been often reported to be stricter than their native speaking colleagues. Ferguson, (1983) reports non-native speaking English teachers marking as serious errors register-bound choices: that is, forms which typically occur in spoken, informal language. Correction of in being used with a dynamic meaning may have contributed to the overproduction of into. Informal reports of such a negative influence of correction are frequent.

Our findings on the acquisition of into by informal learners agree with those of Mougeon et al. (1977) who also found the preposition to be very late in the speech of French-English bilingual children. The delay was attributed by the authors to the lack of distinction in the mother tongue between in and into as well as the frequency of the marked preposition in casual speech (notice that in the same study into was also late acquired by English monolingual children). Although these authors do not deal in detail with the error pattern and no explicit information is available on the possible overgeneralization of into, there is some indication that this does not occur at least to any noticeable extent. As learners hardly ever employ the preposition in obligatory contexts, it seems very unlikely that they would over-

generalize it to non-obligatory ones. Moreover, the very small percentage of errors in in obligatory contexts equally suggests that the overgeneralization of into does not occur. These results thus support our suggestion that the massive amount of overgeneralization of into coupled with an apparent relative early acquisition of the preposition among formal learners is a consequence of some feature of formal language instruction.

In summary, several factors appear to have played a part in 1. the substantial difference in the acquisition sequence between the two groups as far as in and into are concerned, and 2. the widespread overgeneralization of into to in obligatory contexts found in formal learners but not nearly to the same extent among informal ones. The frequency of into changes according to the register: more frequent in formal registers, less frequent in informal ones. Tutored learners are exposed mainly to the former, untutored learners mainly to the latter.

The lack of distinction in Italian between static and dynamic prepositions may be at the origin of Italian learners' tendency to use only one preposition for both meanings: informal learners in, formal ones in or into (but see later sections). The learner's equivalence of the English prepositions in and into to the Italian in and dentro (a) could only be drawn on the basis of English allowing in in collocation with dynamic verbs.

8.2.2 Staticity and dynamicity: to and from

At the beginning of the discussion we noticed how the informal learners appear to acquire negative prepositions before positive ones whereas the formal learners' developmental pattern agrees with our predictions and shows the primacy of positive relational terms over negative ones. The fact that out of precedes into in the acquisitional sequence may be explained by the very late acquisition of the positive preposition. No such immediate explanation, however, is available for the same learners' better performance on from rather than on to.

We can hypothesize that formal learners rely more on routine learning derived from classroom drilling. Formal learners may initially learn verbs of movement holophrastically in combination with the preposition to. This hypothesis is supported by the fact that in the written task to is the preposition which they supply more often in obligatory contexts and which is also second only to in as a substitute for other prepositions. Informal learners who are ^{not} subjected to drilling exercises, on the other hand, would rely more on the use of less marked prepositions in and at which also correspond to the prepositions used for expressions of movement to zero-dimensional space in the mother tongue. The influence of the Italian system of spatial relational terms may also account for the relatively early mastery of from by informal learners. The Italian da is a spatial preposition which with inanimate objects expresses movement away from a zero-dimensional point. Moreover, in English the distinction between movement and location is always coded in zero-dimensional positive locatives (e.g. I went to the cinema, she was at the cinema), but is not coded in zero-dimensional negative locatives (e.g. We came straight from the department, she is from Milan). In Italian the distinction is never coded. Italian learners may thus be facilitated in performing on a preposition which has both directional and locational meanings. If this is true, formal learners' better performance on to may be really the outcome of explicit teaching and learning in which the collocation of the preposition with verbs of movement is emphasized. Mougeon et al. (1977) also found that from preceded to in the speech of their French-English bilingual children. French, like Italian, does not distinguish in the preposition between location and movement. The absence of this distinction is in fact common to other languages (cf. Anderson, 1971). English itself very often overlooks the distinction. The unmarked prepositions in and on can express both location and movement even though they are specifically marked for location (as opposed to into and onto respectively). Negative prepositions (e.g. out of) and path ones (e.g. through), while being primarily dynamic, can also have a static meaning (Bennett, 1975). Although we want to avoid the difficult issue of determining whether location is perceptually prior to movement or vice versa, we do not believe that priority of the former is as well established as Clark (1973) claims; rather, the problem seems a chicken-and-

egg one. From a developmental point of view, it may be that learners prefer prepositions which code direction primarily or which can express both staticity and dynamicity (cf. Traugott, 1974 and section 8.4.3).

8.2.3 The problem with at

In this final section of the first part of the chapter we will address the problem of at in learners' production. As noticed earlier, in contrast with the markedness hypothesis and even despite the presence of a similar feature in the MT, at, particularly in the oral task, is rarely supplied in appropriate contexts. Our results do not only contradict our predictions but also disagree with Mougeon et al.'s findings. In the Canadian study French-English bilinguals showed a very high accuracy on at. However, there are important differences between the two investigations in the way the data were collected. In Mougeon et al.'s study prepositions were not explicitly elicited but occurred spontaneously during an oral interview. In our study, on the contrary, both tasks focussed specifically and openly on the elicitation of spatial terms. In the case of at in the oral task, the learner was asked to describe configurations of proximity rather than coincidence. If we were trying to elicit Mary is at the station we would not place the toy inside the building area, but just outside it. This type of configuration may have represented additional complexity for the learners whose first interpretation of at is that of inclusion or coincidence. For a detailed and additional presentation on this issue see Appendix A2. When learners produce the preposition spontaneously they may restrict themselves to the uses they feel sure about. Our learners were asked to perform on a meaning of at which they might have avoided otherwise. We suspect that in spontaneous production they would have restricted themselves to the use of at with the meaning of inclusion and coincidence.

The question why zero-dimensional locationals in general are not acquired earlier still remains unanswered and may be unanswerable, at least at the present moment. No markedness relationship with the other prepositions investigated is obvious. Semantically, according

to Clark's complexity hypothesis zero-dimensional locationals are very simple. Clark's analysis is based on the assumption that, cognitively, locationals are simpler than directionals. We have already remarked, however, that such an assumption may be inaccurate.

8.3.0 Substitution pattern in spatial prepositions: a clue to lexical simplification?

So far we have analyzed learners' production in terms of structural markedness. We can however look at the same phenomenon from a different but related point of view, namely that of semantic complexity. In other words we can look at the substitution pattern in the two tasks and the two groups from the perspective of lexical simplification. With this expression we assume that the learner simplifies on the basis of the knowledge of lexical organization which he derives from his MT (Levenston and Bloom, 1983). We thus agree with Corder (1977) and Traugott (1977) in believing that simplification can occur only on a body of knowledge possessed. Spatial prepositions are a tightly organized set in which the various items stand in clear opposition relationships (cf. the localist theory which sees the whole language system deriving from the basic organization of spatial relations, e.g. Lyons, 1977). Simplification takes place when the relationships within this lexical organization are exploited to reduce the complexity of the task in which the speaker is involved (d.g. translation, production in a second language). The claim that the learner simplifies his MT to make the task of learning the TL lexicon easier is based on the assumption that the principles underlying lexical organization are universal.

It is expected that learners will use simpler prepositions instead of more complex ones with respect to number of semantic features involved. Reduction of number of features will tend to occur within relationships of opposition. However we will treat as lexical simplification also phenomena which do not involve a reduction in the number of semantic features but which draw on any relationship involved in lexical organization. For the purpose of this analysis we will not include all possible

relationships between lexical items but we will limit ourselves to those relevant to the terms investigated (the following taxonomy is based on Lyons, 1977):

Hyponymy Relationship between two terms, one of which includes all the semantic features of the other plus some additional one(s), e.g. 'train', 'vehicle'.

Synonymy Relationship between two lexical items of similar meaning, e.g. 'buy', 'purchase'.

Paraphrase The rendering of a term or an expression by the use of different words e.g. 'brief case', 'a case for carrying papers and documents'.

Orthogonal opposition Relationship between two terms which share all semantic features except for one, e.g. 'man', 'boy'.

Directional opposition Relationship between two lexical items, one expressing movement in the opposite direction from the other.

In the following sections we will discuss the substitutions provided by our learners in terms of this taxonomy. For the semantic analysis of prepositions we will draw mainly on Clark (1973). However, we do not assign primacy to stativity over dynamicity. According to Clark dynamic prepositions have all the corresponding static features plus the additional feature 'movement'. In his framework, then, at and to are in a relationship of hyponymy where at is the superordinate term. As presently it is not at all known whether location is perceptually more basic than movement or vice versa, we will consider static and dynamic prepositions to be in orthogonal opposition: that is, differing only on the feature location versus movement. Similarly, prepositions differing one from the other on the basis of the number of dimensions involved in the reference object will be attributed equal number of features. At, for example, will not be considered the superordinate of on and in.

8.3.1 Hyponymy

Among the prepositions investigated through and across are the ones which clearly stand in a relationship of hyponymy with several of the others included in the study: in, into and out of are all superordinate of through, on of across. Both formal (oral and written task) and informal learners make use of this relationship to a considerable extent. It jumped in the ring instead of it jumped through the ring and the horse ran on the table instead of the horse ran across the table are examples of the employment of a term whose semantic features are included among those constituting the meaning of the required and more specific one (see 3.3.6). The prepositions provided in other words have fewer semantic features than the prepositions required by the context.

8.3.2 Synonymy and paraphrase

The scope of synonymy was limited if we consider both the linguistic semantic area investigated and the tasks chosen for elicitation. Spatial prepositions are a well-structured system of oppositions. They express precise relational meanings. The meaning of it is on the door describes a location which is totally distinct from the one described by it is in the door or it is outside the door. While in the oral task there could be some opportunity for substitution with items of similar meaning to the one expected, in the written task the learner was constrained by the list of choices provided. Among the prepositions investigated, however at has several synonyms or near-synonyms which could, and in fact were, supplied in the oral task: by, near, etc. On more than half of the occasions when the formal learners failed to supply at, they employed these semantically more precise relational terms. Informal learners follow the same substitution pattern slightly less frequently but still to a remarkable extent.

The resort to paraphrase is even rarer than the use of synonyms. Its only possibility for occurrence was at the place of path

prepositions. On the whole the frequency of this strategy is quite low if compared to the use of superordinates or of orthogonal opposites.

8.3.3 Orthogonal and directional oppositions

Orthogonal oppositions appear to govern most of the substitutions within locationals. In is the most common preposition used instead of on in the two tasks and the two groups and it is also a very frequent substitute for at. On is the most common substitute for in among informal learners performing on the oral task and among formal learners performing on the written one. At is in both cases the second most frequent substitute. At, on and in differ only in one aspect, namely the number of features characterizing the reference point: they are all locational and all positive. The substitutions between in and into, and between at and to are also governed by an orthogonal relationship: they share the same number of features but they are opposed in terms of staticity and dynamicity. The combination of orthogonal opposition and synonymy is probably at the origin of the substitution of to by near and other zero-dimensional locationals sometimes found among formal learners performing on the oral task. The relationship between to and into is parallel to that between at and to. The two prepositions are both positive directionals but they differ in the number of dimensions composing the reference object: zero for to, three for into.

To was in fact a very frequent substitute for into. Orthogonal oppositions based on number of dimensions hold also between from and out of on the one hand and across and through on the other. Many errors made on these prepositions originate from these oppositions. From is often substituted for out of and the two path expressions are frequently used one instead of the other.

The investigation included two pairs of directional oppositions: to and from, into and out of. Among the possible substitutions the only one to occur to a noticeable extent is to instead of from. Notice also the rather common lexical expression out to where to substitutes of, an allomorph of from. Into and in rarely occur instead of out of

in the oral task but they occur to a certain extent in the written task.

8.3.4 In

From our substitution analysis in emerges as the most frequent substitute for expected spatial prepositions in both written and oral tasks and for both formal and informal groups. Learners' reliance on in could be attributed to the frequency with which the preposition occurs in the input. Frequency may certainly play a considerable part in determining which prepositions are going to become what we have called 'megaprepositions'. On, for example, may be considered of similar complexity -- in terms of semantic features -- to that of in but is much less frequent in the input (cf. Andersen, 1983). We found in fact that it does not constitute a considerable source of substitution. A limitation of input as the unique explanation for the primacy of in in learners' error patterns is the difference in the frequencies of the preposition according to the various functions which it is made to perform. The frequency of in is not homogeneous but varies considerably from being very high when used instead of TL prepositions such as to and on to being very low in obligatory contexts for from and out of. Here, as in the preceding cases, the use of a substitute appears to follow some principled pattern which is independent from frequency even though it may be reflected in it. In in English, as in Italian, is a central preposition in the lexical network for the expression of spatial relations. In English in is used for both three-dimensional location and movement (e.g. I am in the room, put the milk in the fridge) and stands in relationship of hyponymy and opposition with many of the other spatial prepositions.

The same is true of Italian, but in also expresses movement to a zero-dimensional place (vado in bagno: 'I'm going to the bathroom'). In both languages in can often be successfully used instead of the locational at or a without a significant change in meaning (I'll be in the office vs. I'll be at the office, see Appendix A2). The 'versatility' of in may in fact account for its frequent use instead of prepositions which are not directly semantically related to it.

There is no other preposition which is so widely applicable in both English and Italian. In may function as a general superordinate for all positive relational terms.

It is interesting to observe how our findings on the primacy of in among the prepositions investigated agree with the findings of other studies on the acquisition of spatial reference in a second language. In chapter 3 we reported that in and its equivalents in other languages are early to appear and are very frequently over-generalized in the speech of L2 learners of both English and other target languages (e.g. Hakuta, 1978; Houdaïfa and Véronique; Broeder et al., 1984).

8.4.0 The IL perspective on the development of spatial prepositions

So far we have discussed the development of spatial prepositions from the point of view of English, the TL, with some reference to Italian, the MT. We have found that markedness may be used as a predictor of the very general order of acquisition of spatial prepositions, as well as a predictor of the substitution pattern when non-target-like or unexpected responses are provided. At a particular level, however, markedness considerations fail to predict the exact developmental ordering of the prepositions investigated. In particular, we have observed that there are a few major discrepancies with the expected sequence. Zero-dimensional directional prepositions (both positive and negative) are acquired before some or all of the static prepositions. In the case of informal learners negative directional appear before positive ones. At and other zero-dimensional locationals are not the first prepositions to be acquired. Finally, the error analysis showed that a more marked preposition into was very often used by formal learners instead of the less marked one, in. We explained these last inconsistencies on the basis of both MT and input characteristics, but these phenomena may reflect tendencies of a much wider scope.

The purpose of these sections is to discuss the development of spatial prepositions in learners' speech from within the IL system and on the basis of the description presented in 6.3.1. This analysis will help put the observed phenomena into a wider perspective which may absorb the inconsistencies into the expected pattern noticed earlier. One perspective from which we can look at the development of the lexicon is the building of oppositions.

8.4.1 Positive and negative prepositions

The first opposition which appears in learners' speech is between positive prepositions and negative ones. In the initial stages of learners' language the distinction of location and movement fails to be made in the preposition, but negative movement is formally distinguished from positive movement. If simplification occurs, the features which are not recoverable from the remaining verbal context are retained. Staticity and dynamicity are indicated by the verb but the same does not apply to positive and negative direction. It has been often reported in the literature on FLA that prepositions expressing negative movement appear late in children's speech (e.g. Clark and Clark, 1977). Children insist on expressing goals rather than sources. It may seem that this is in contradiction with our observation. It was mentioned earlier, however, (see 4.2.4.2), that during the pilot study from proved a very hard preposition to elicit. Learners would focus on the positive direction of the movement rather than on the negative one. Even during the main investigation it was noticed that subjects would spontaneously avoid the expression of negative movement. However, if the interviewer insisted enough, they would often provide a preposition which was uniquely employed with such a function. The reluctance to express source relations in a second language may reflect a general tendency to conceptualize movement as primarily positive rather than the actual absence of the linguistic category in learners' language. If we had gathered spontaneous data, we might have reached the different conclusion that negative movement is a late notion to be expressed linguistically in IL development. Such a conclusion would have agreed with the findings reported in

other developmental studies.

8.4.2 The expression of positive movement and oppositions between locationals

As negative movement is formally differentiated from other spatial relational meanings, the expression of its counterpart starts being formally differentiated: i.e. to starts to appear. At the same time another essential, because uninterpretable opposition, emerges: surface versus inclusion, location and movement, (in(to) and inside are used in opposition to on(top) and, occasionally up(to)). In child language the distinction between in and on is a fairly early one. Brown (1973) reported these two spatial prepositions as the first ones to appear in the speech of the three children he investigated. Johnston and Slobin (1979) also reported in and on to be the prepositions among the ones they investigated on which children performed better. Their study comprised children from four different language backgrounds, including English and Italian. Interestingly, although Johnston and Slobin did not investigate the acquisition of the other locational, it has been observed elsewhere (e.g. Clark, 1973) that, in contrast to the predictions made by the markedness hypothesis, the preposition is not one of the first to occur in English speaking children. Clark (1973) explained this inconsistency by suggesting that at does not need to be explicitly marked. According to the same author at is the simplest and thus the most easily recoverable relational term. On and in, on the contrary, would need to be explicitly marked since they are more complex and not so easily recoverable from the verbal and non-verbal context. However, a in Italian and in other Romance languages such as French and Spanish is the first or among the very first prepositions to occur in children's speech. It expresses location in a zero-dimensional space like the English at, but it has an additional meaning if compared to the English preposition: movement. (We are aware that at has sometimes a dynamic meaning: e.g. Pete threw the ball at John, but in those cases at is used for the adversative connotation it generally assumes when in collocation with dynamic verbs.) Children thus choose ambiguous prepositions: i.e. prepositions which are not uniquely marked for either location or movement.

This initial acquisitional stage has been attested for other native languages (cf. Traugott, 1974). Pidgins and creoles often do not signal in the preposition the distinction between location and movement and introduce this distinction only after negative prepositions have been formally differentiated from positive ones and after prepositions have been introduced which distinguish between the number of dimensions pertaining to the reference object (Traugott, 1974). Traugott has even suggested that in Pidgins, creoles and language acquisition the expression of movement emerges before that of location.

If on the basis of our data we cannot claim that the expression of movement is prior to that of location, the opposite is certainly not true. The first prepositions to be used occur in both static and dynamic contexts. Interestingly, zero-dimensional locationals are expressed by in for a long time: in expresses in the MT, the TL and the IL + or - staticity. The problems with at have already been presented in section 8.2.3 and in Appendix A2.

8.4.3 In - into: differences in the product, similarities in the process

From the previous analysis it appeared that formal learners acquire into earlier than informal learners but also generalize it to locational contexts much more frequently than informal learners. If, however, we look at the IL development from an internal (IL oriented) rather than external (TL oriented) point of view, we find that the same process is evident for both groups of learners (but formal learners exhibit it to a much greater extent). Lexical formations such as inside to quite common at least at one stage among informal learners can have two explanations. These are either mutually exclusive or may interact one with the other. Inside to could be the word by word translation of the Italian dentro (a) where the preposition is used to stress that the object is not simply located in a three-dimensional space but is actually enclosed by it. Into as used by formal learners would serve the same purpose. In both cases, then, the opposition would not be between movement and staticity but between emphasis on the boundaries of the three-dimensional space versus absence of such

an emphasis. The second explanation for such a lexical formation makes appeal to the process of disjunction of the meaning expressed in English by into. The two components of location in a three-dimensional space and movement are expressed individually. (The use of inside instead of in makes the formation unacceptable in standard English.) Such an interpretation is supported by the occasional occurrence of another lexical formation: to inside where the two prepositions are juxtaposed in an order which is not found in either mother or second language. When these formations appear in collocation with dynamic verbs, they also occur with static ones. Thus both formal and informal learners do not apply the distinction between staticity and dynamicity. Since this lack of discrimination is reported for pidgins and creoles as well (Traugott, 1974) one suspects that the reason may be more general than simple first language influence. The distinction in the preposition between location and movement is redundant as the verb itself carries the information. Moreover the two notions may be conceptually continuous or even overlapping. Location is the result of movement she is in the room implies that she went into it (Lyons, 1977). It would be interesting to investigate whether speakers of languages which distinguish in the preposition (or in the case, for example) between the two notions exhibit the same distinction early in their English IL.

8.4.4 The expression of path

The expression of path by means of a unique preposition is a rather later development in these learners' IL. During the interviews it was noticed however, that from the beginning some learners tried to supply verbs which included the notion of path. This was realized by the use of an anglicized Italian verb 'travers' (cf. the Italian attraversare) for the formal learners and 'pass' for the informal ones. In Italian the verb passare in collocation with the preposition per is used to express motion through path. We thus infer that at least in some cases IL speakers try to differentiate path from other locative notions from a very early stage. Their resort to the mother tongue, however, appears more a case of 'borrowing' (Corder, 1983)

than actual transfer of rules as it is never categorical even for those who exhibit this IL feature. Systematic differentiation between two and three-dimensional path expressions occurs very late and is often never achieved. As for locationals and directionals, dimension oppositions start being expressed only after the general locative relation between the object and the reference point have received formal coding.

CHAPTER 9 : CONCLUSIONS

9.1.1 Summary of findings

In the present study we set out to investigate the role of markedness in second language acquisition. With the first group of hypotheses we predicted that the acquisition of the two areas investigated would proceed from unmarked to marked. Our results show that whereas for the syntactic structures under scrutiny -- relative clauses -- our hypotheses are supported, the same is true only at a general level for the lexical set, i.e. spatial prepositions. In the latter area other factors appear to be involved, such as mother tongue influence and context of learning. In this respect the study suggests that markedness may be a much stronger predictor of the acquisition order of syntax than of lexis.

A second group of hypotheses predicted that performance on tasks differing in degrees of formality would result in a different production of marked structures. Learners were hypothesized to perform better on marked structures in the more formal task than in the less formal one. These hypotheses were in fact substantiated as learners produced a greater number of more marked items -- both relative clauses and spatial prepositions -- in the written than in the oral task. Once again relative clauses appear a much more predictable area since the orders remained the same when learners were moving across tasks. The orders for spatial prepositions, although generally similar to one another, changed from the written to the oral task.

The last finding could originate from the dissimilar organization of the two areas investigated. Spatial prepositions are in fact different items even though interrelated whereas relative clauses are the same structure realized in different syntactic environments. This draws attention to the necessity of separating within-structure and between-structures variability in any study of IL variation. The discrepancy noticed in the behaviour of the two areas in learners' IL may also embody a further difference between syntactic and lexical

phenomenon, where the former are much more liable to markedness constraints.

The third group of hypotheses predicted that formal learners would perform better on the more marked structures investigated. This prediction received more support from the results on relative clauses than from those on spatial prepositions. These findings, together with the results mentioned above, suggest that context of learning may have some effect on the rate rather than the route of SLA for syntax, while it affects mostly route for lexis (see also Corder 1986). For rate, our results indicate that faster development may mean either acquiring more marked structures or not acquiring them, or acquiring more marked structures more quickly.

9.2.1 The notion of markedness

On the one hand, this study gives support to the hypothesis that markedness can be used as a valid predictor of syntactic development in SLA. On the other hand, the results of learners' performance on spatial prepositions, while showing that the acquisition of these terms is influenced by other factors besides markedness emphasize the need for a satisfactory definition of the latter. In the case of at, for example, it became clear in the course of the investigation that the preposition presented features of complexity which had not been anticipated and which contrasted with a description in terms of markedness and componential analysis (cf. Appendix A2). If for some phenomena the degree of markedness is clear-cut, for others it is much less readily and firmly assigned. This seems to be the case for lexical fields in particular, where formal oppositions are accompanied by semantic ones.

More research is needed which will provide further information on the nature of markedness in lexis, and, more specifically, on the relationship between a theory of markedness and the acquisition of the lexicon.

9.2.2 Markedness and transfer

Our study generally gives support to Hyltenstam's model for IL development by showing that learners acquiring marked TL features go through an acquisition order characterized by a shift from unmarked to marked structures. Unmarked features occur in early IL irrespective of the marked status of the NL. If transfer had a significant effect on the route, we would expect learners to proceed directly to the most marked features of the TL, which correspond to the marked features of the MT. This is obviously not the case in the acquisition of relative clauses.

As for spatial prepositions the situation appears more complicated. On the one hand, learners do not transfer the MT set into the TL as they generally proceed from unmarked prepositions to marked ones. Moreover, the kind of errors which are made mostly draw on lexical simplification and consist, for the most part, of unmarked substitutions. On the other hand, the late acquisition of some features -- e.g. the distinction between location and movement in three-dimensional locatives -- and certain errors -- into used instead of in -- suggest that transfer may in fact play a more significant role in the acquisition of lexical sets. It is still to be ascertained, however, whether transfer works in accord with, or in opposition to, markedness and semantic complexity. To give an answer to this question further theoretical investigation on the markedness of spatial terms is needed.

9.2.3 Markedness and input

Whereas the relationship between markedness and transfer appears quite straightforward, that between markedness and input is less clearcut. From a theoretical point of view, markedness is obviously the superordinate of both acquisition and frequency. However, from an empirical point of view whenever features are acquired early which are both unmarked and frequent, the hypothesis that input is the determining factor cannot be rejected (Ellis, personal communication).

Our study may thus be said to suffer from a frequent drawback of SLA studies which have set out to test the markedness hypothesis. While the orders of acquisition found support the markedness hypothesis, they could also support an input frequency hypothesis were a correlation established between acquisition and frequency.

This is a general methodological problem associated with research into the role of markedness in SLA. Two possible ways of disentangling markedness from input were suggested in section 2.2.4. It is obvious, however, that for most structures frequency will agree with markedness and it will not always be possible to devise experiments where one is isolated from the other. This should draw attention to the mirror image of this problem: research into the role of input in SLA should make sure that frequency is disentangled from markedness.

If, however, a number of studies show that, when disentangled, markedness predominates over input we may interpret with more confidence those studies which show the early occurrence of unmarked, and frequent, structures as evidence in support of the markedness hypothesis.

9.3.1 Pedagogical implications of the study

The findings of this investigation agree with the results of the studies on the acquisition of syntax reported in chapter 2. The body of research on markedness in SLA (cf. also that on language universals, e.g. Gass, 1984) suggest that route of development cannot be substantially influenced by explicit instruction as universal strategies appear to be the fundamental factor in shaping the development of IL syntax.

What has emerged from the acquisition of spatial prepositions by our learners suggests, however, that a formal context of learning characterized by explicit language instruction may in fact have some qualitative effects on the learning of lexis although these effects are not necessarily always positive. Learners who are 'pushed' beyond their competence are likely to make errors of overgeneralization:

e.g. the cat is into the kitchen (cf. War, 1984 for a similar observation).

Overgeneralization is a common strategy of language learning but in a formal setting its direction may be 'forced' to go from marked to unmarked whereas in a naturalistic setting we find the opposite trend. In that situation learners may mostly tend to overgeneralize the unmarked member as, for instance, in the case of in used with a dynamic meaning: e.g. the cat is going in the kitchen. (cf. Pica, 1983 for comparable findings).

Going back to syntax, if instruction does not affect route of development (Ellis, 1984a), it may affect its rate (Long, 1983). Such a finding in itself fully justifies the function of formal contexts of language learning. The results of our investigation into the acquisition of relative clauses (and, in this respect, also of spatial prepositions) provide evidence for the accelerating effect of classroom instruction. The components of formal exposure which foster acquisition thus need to be isolated. We must exclude the explicit teaching of language items as such, since if that had an effect we would expect it to disrupt the course of acquisition. The results on relative clauses show that this is not the case.

We agree with Ellis (1984a) in believing that the availability of different discourse types, and of planned discourse in particular, is a major factor towards faster development.

One of the most salient features of planned discourse is the greater incidence of complex or marked structures (Ochs, 1979; Givón, 1979). If a learner is exposed to marked features we may expect that 1. his IL will include a greater number of them; 2. his performance will improve on unmarked features as well (cf. Zobl, 1985; Eckman, 1985). Our study gives direct support to the first prediction only.

However, although the amount of input was not strictly controlled for, we may assume that formal learners received less of it. Thus, if there is no difference between the two groups in terms of unmarked features, this does not exclude the possibility that, if they had

received the same amount of input, formal learners may have done better than informal learners on unmarked structures as well.

9.4.1 Final remarks

In recent years much discussion has revolved around the role of input in SLA (cf. Gass and Madden, 1985). Hatch (1983), for example, believes in the important function of simplified input in the acquisition process although she maintains that there is no evidence to support it. Long (1985b), on the contrary, believes there is, and claims that comprehensible input is a causative variable in SLA.

Even from this perspective the distinction must be drawn between rate and route (Ellis, 1984a). We may believe that input determines both or that it affects only one. Any markedness or universalistic hypothesis is compatible only with the latter solution (at least as far as grammar is concerned). Input, in the form of frequency, interaction, or comprehensible input can be hypothesized to affect only rate, the route being determined by other factors such as innate cognitive (or linguistic) structures.

The relationship between markedness and input may thus involve a relationship between rate and route. The concentration of marked features in certain types of discourse may favour the development of marked structures in learners' IL. Our results do in fact point in this direction.

We must, however, distinguish between syntax and morphology on one side and lexis and semantics on the other. Input in the case of the latter may affect the route and not simply the rate, thus cooccurring with other variables (e.g. markedness and transfer) in shaping the course of IL development.

This influence could however be only at the surface level. Our analysis of spatial prepositions from the IL point of view has revealed that, despite overt differences in the two groups' orders,

the processes appear very similar. Different elements of the different inputs are chosen to map similar semantic distinctions. In the case of in - into (the most noticeable discrepancy between the two groups) it is obvious that both formal and informal learners fail to make a distinction between location and movement in a three-dimensional space. Informal learners tend to use in (or inside) for both notions, formal learners generalize into to static contexts. Lightbown (1985) has already drawn attention to this phenomenon. If inputs are dissimilar we should expect outputs to be equally so, but such a diversity does not impinge on the nature of the process.

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APPENDIX A1

NEGATION AND INTERROGATION IN ENGLISH: THE ACQUISITION OF TWO
STRUCTURES IN TERMS OF MARKEDNESS *

A1.0 The notion of markedness has been occasionally employed by researchers in second language acquisition (SLA) (Eckman, 1977; Hyltenstam, 1978, 1981; Kellerman, 1979; Rutherford, 1982; Zobl, 1984) as a possible explanation for certain phenomena occurring in interlanguage (IL). However, the full potential of such a notion is still to be fully appreciated and exploited.

Several different criteria have been used to determine markedness (see, in particular, Jakobson, 1941; Greenberg, 1966a, 1966b; Givón, 1979). In all these criteria the notion of basic (unmarked) element, as opposed to deviant from the norm or additional (marked) element, is implicit. Most of the criteria used to detect markedness (e.g. neutralization, text frequency, feature addition) apply within each given language system. As for English, in the pair work, worked, for example, worked is marked because it possesses an additional feature -ed which does not appear in the unmarked work. Similarly, the sentence never was he sad is considered marked if compared with the sentence he was never sad because the usual affirmative declarative word order is disrupted. In the cases just presented the markedness oppositions are established for English; they depend on the unique structural organization of the language in question and could be different or even totally absent in other linguistic systems.

Whereas the above mentioned markedness criteria apply only intra-linguistically, there are other criteria, namely universal implications and typological frequency (i.e. frequency distributions among natural languages) which make use of crosslinguistic considerations. The cross-linguistic approach is chosen instead of, or together with, the intra-linguistic one whenever the phenomenon under investigation cannot be analyzed within the boundaries of a single language system or when the interest lies on the universal traits of natural languages. In the case of negation, for instance, it would be impossible to determine whether post-verbal negation is more marked than pre-verbal

negation on the basis of a single language system. Italian, for example, has only pre-verbal negation: there is no systematic opposition which would help us detect which negation type is unmarked, which marked. The frequency of occurrence of a given phenomenon in the languages of the world will determine its degree of markedness (here, typological markedness). The unmarked structure is the one which is more frequent, and the marked one the more rare.

A third type of markedness, discourse markedness, has also been employed to integrate what we have identified so far as intra- and cross-linguistic criteria (Givón, 1979). The level of presupposed background upon which a structure is used determines the degree of markedness of that structure (Givón, 1979:49). A negative utterance is more marked than the corresponding affirmative one because the former presupposes the latter. Along a similar pragmatic line, a pattern will be considered unmarked when it reflects the norm of human discourse - e.g. when it places the topic at the beginning of the utterance.

The purpose of this study is to explore the role of markedness in relation to the acquisitional pattern of two structures - i.e. negation and interrogation - as they develop in the speech of learners of English as a second language.

As a result, we will define SLA as a process of progressive linguistic differentiation where the starting point is a minimum set of basic, all-encompassing rules and the final point is a more articulated system of language-specific rules. The learner is hypothesized to reach the final level through a number of stages characterized by a progression from the unmarked to the marked (cf. Hyltenstam, 1978).

For the purpose of this study a structure will be considered marked when it has a more restricted typological diffusion or is of more specific application. For each phenomenon investigated the most appropriate linguistic criterion will be employed. This will lead to the prevalence of typological considerations being used

in determining markedness relationships. We are aware of the potential confusion which such a diversity of criteria may arise. Linguistic markedness, an intuitively very appealing notion, reflects however the modular organization of human language whose analysis may need different and differentiated approaches depending on which of its subpart is being investigated.

A1.1. Negation

A1.1.1 The acquisitional data

The acquisition of negation in English by speakers of other languages follows a quite regular pattern in spite of the different languages spoken natively by the learners. Table 1 presents data derived from a few L2 studies of the acquisition of negation in English. (Only those studies which report more than one developmental stage are included in the table.)

Ravem (1968), the first to study this widely investigated structure in the speech of a second language learner, notices that Rune, his Norwegian speaking child does not transfer to English the V Neg strategy which is used in his mother tongue. On the contrary he makes use, at least in the first stages, of a Neg V strategy thus producing utterances of the type I not like this (p.180).

Similarly, the SLA studies reviewed by Hatch (1974) in an article which summarizes the results of 15 investigations conducted on a total of 40 learners both children and adults, coming from different linguistic backgrounds, reveal an acquisition pattern in which preverbal negation represents one of the earliest stages of development. More precisely, Hatch observes that the general order consists of external negation - e.g. not is tall -, followed by internal negation preposed to AUX and V - e.g. We no can go on bus, I no feel better -, followed by Neg attachment to modals - e.g. I can't see -, and finally by analyzed don't - e.g. I don't sit on the chair (p.6).

TABLE 1

The acquisition of negation

External negation	Pre AUX/V internal negation no(t) } don't } = particles	be } can } not	Analyzed don't	
	I not like that I not looking for edge	One is not crying		Ravem (1968) L1 Norwegian
no this no come	He was not here I no like cookie Me no understand We no can go on bus	Bus come and no can't can't got it	I don't get off I don't see noth... anything	Hatch (1974) L1 several
no my turn not Dennis	You no can go I no like small I don't know how	(...) so he can not	Dennis, you do that, you don't play with the kind	Milon (1974) L1 Japanese
	I no can see They no have water He don't like it I don't can explain	No, he's not skinny He can't see Somebody is not coming in	It doesn't spin We didn't have a study period He doesn't laugh like us	Cancino, Rosansky and Schumann (1978) Schumann (1978) L1 Spanish
no cold no bread no catch it	You no shut up ¹	He cannot hit the ball	You did not see	Wode (1981) L1 German

¹ Note that Wode reports also the occurrence of V Neg utterances, e.g. "I catch that not".

Milon (1974), in his study of a seven-year-old Japanese child learning English, also finds that the initial strategy which characterizes the child's language is preverbal negation. In line with Hatch's findings, a first stage where negation is sentence external preceeds a second stage where negation is internal but pre-AUX and pre-V - e.g. I not cheat, I don't know what kind (note that at this stage don't is a lexical alternative to no or not). It must be stressed that Japanese has postverbal negation. Consequently transfer cannot be adduced as an explanation for sentential initial and preverbal negation in the first stages of the boy's acquisition of English.

Transfer, on the contrary, is usually invoked as a justification for the acquisitional route followed by Spanish speakers. Yet, the results of a major longitudinal study comprising six Spanish speakers, two children, two adolescents and two adults, learning English show a developmental pattern very similar to those presented above (see Cancino, Rosansky, and Schumann, 1978; Schumann, 1978). The subjects begin by using NO V constructions such as I no see. Don't is then introduced as a simple momomorphemic particle with no grammatical function - e.g. He don't like it. In the next stage AUX Neg constructions start being used with be and can: You can't tell her, Somebody is not coming. Finally, the subjects apply the post auxiliar negation rule to all instances: analyzed don't is acquired - e.g. It doesn't spin (all examples are taken from Schumann, 1978, p.13).

It is interesting at this point to compare the acquisitional order of English negation observed for Spanish speakers with that of German speakers. German, in fact, is a language which uses postverbal negation (at least in main clauses, those of interest to us). From a contrastive analysis point of view, once again, we would expect a completely opposite tendency from the one reported in the case of Spanish speakers. The results obtained by Wode (1981) in his study of the naturalistic acquisition of English by four German speaking children, however, reveal that the acquisitional pattern resembles those found for other language groups. Despite the presence of transfer-type utterances such as John go not to the school, plenty of evidence of presentential and preverbal negation is found:

No catch it
 Me no close the window
 You no shut up (p.98)

As Wode rightly observes, the fact in itself that those non-transfer-like productions appear quite frequently and regularly in the learners' language give strong support to the hypothesis that SLA proceeds according to strategies available to all learners despite their different mother tongues.

Similarly, Felix (1981) in a study meant to compare second language learning, as it progresses in a formal situation, with second language acquisition in a naturalistic environment, finds instances of preverbal negation in the productions of German learners during English classes: e.g. Britta no this ... no have ... this (p.96). These incorrect utterances are particularly interesting because they arise in an environment where the emphasis on the grammatical correctness and controlled drilling is extreme, and where the teacher takes particular care in preventing any occurrence of non-target-like forms.

In the case of French, another language which uses postverbal negation, Ervin-Tripp (1974, p.117) reports French children placing the negator before the verb when learning English.

Similarly, Chamot (1978) found that her 10 year-old child, bilingual in French and Spanish, consistently used a NO AUX/V strategy when speaking English during a stay in the United States:

She no look at it
 This no is chicken (p.182)

Chamot explains these negative sentences as transfers from Spanish. We wonder, however, why the learner never transfers from French, his other native language. If transfer were the basic, underlying principle in L2 production, then we would expect at least some instances of French-type utterances in this learner's language.

A1.1.2 Linguistic evidence for the unmarked status of pre-V negation

Clearly from the results of the studies presented here, it emerges that the tendency to place the negator initially is very powerful, at least in the first stages of the acquisition of English as a second language. Either we can claim that such a uniformity of results strongly suggests that preverbal negation might be a linguistic universal - this is the conclusion drawn by Wode, 1981 -, or we can tackle the problem from the opposite point of view and look for an explanation of the acquisitional facts in related linguistic phenomena. The latter approach will be followed here.

Dahl (1979), in an article entitled "Typology of sentence negation" analyzes the placement of the negator in 240 languages. Almost two thirds of the languages comprised in the study present preverbal negation. Thus, the placement of the negator before the verb must be considered an unmarked pattern. Moreover, among those languages which make use of syntactic negation-- i.e. a free morpheme added to the affirmative sentence--, the tendency to place the negator preverbally is even stronger: the great majority of these languages exhibits a Neg V pattern.

Syntactic negation is assumed here to be the unmarked strategy for introducing negation into the sentence. Firstly, there is some typological evidence in support of this assumption - there are more languages which have syntactic negation than language which have morphological negation (cf. again Dahl, 1979). Secondly, a free morpheme, which constitutes a simple addition and does not modify other elements in the sentence, appears to be the more neutral, less disruptive way of including the negator in the utterance. It is not by chance, therefore, that pidgins too, characterized by a definite predilection for paratactic constructions, exhibit syntactic (and preverbal) negation (cf. Hyltenstam, 1978; Valdam and Phillips, 1975).

From the typological evidence available, preverbal syntactic negation can already be considered an unmarked category. Jespersen

(1917) also gives support to this position. On the basis of historical evidence he suggests that "there is a natural tendency, also for the sake of clearness, to place the negative first, or at any rate as soon as possible, very often immediately before the particular word to be negatived (generally the verb)" (p.5). English, therefore, appears to be a marked language as far as the negation strategy is concerned. Negation, in fact, is postverbal in English as the negative particle not always follows the finite element of the verb, that is the auxiliary which carries tense and person¹.

The pattern proposed by Hyltenstam (1978) for treating markedness in SLA finds full realization in the finding presented here. If we keep English constant (TL), as exhibiting a marked category, we can vary the markedness index of the corresponding category in the learner's mother tongue. The outcome of both categories in the early stages of IL will be an unmarked category. Spanish is characterized by preverbal negation, and Spanish speakers use preverbal negation at the beginning stages of their linguistic development in English. More interestingly, Japanese, German, Norwegian, and French speakers use postverbal negation in their mother tongues. Yet, they have a tendency to drop the marked category when learning English despite the fact that English, itself, behaves in a similarly marked fashion.

A1.1.3 External negation as the first, most unmarked negation pattern

A few words should be said at this point about the sometimes reported occurrence of external negation in the language of learners of English (see Klima and Bellugi, 1966; Hatch, 1974; and Milon, 1974 for an account of this structure in first and second language acquisition). It is, in fact, at this very early stage of negation development (if such a stage does occur) that instances of apparent "postverbal" negation may be found. Despite the higher frequency of utterances such as No candy, other utterances of the type Ball no are also reported (both examples are taken from Huang and Hatch, 1978, p.122). The main characteristic of Neg Nucleus or Nucleus Neg structures, it seems to us, is that the whole utterance, often

realized as a single word, is negated. The learner has regressed to a purely pragmatic mode (see Givón, 1979, ch. 5) where any sign of syntacticization, that is, tight integration and interaction of linguistic elements in self-contained utterances, is lacking. The basic pattern is expressed in a polarity: the entity to be negated on one side and the negator on the other. Such a basic mode of communication - the pragmatic one - seems to be the most universal, and, consequently, the most unmarked one (for a discussion of the universality of the pragmatic register see Givón, 1979).

A1. 2. Interrogation

A1. 2.1 The acquisitional data

Interrogation is another widely studied structure in SLA research. What will be reviewed here is only the syntactic development of interrogation in English as a second language. Consequently, the semantics of wh- words will not be considered here. (See Table 2 for a presentation of data; only studies which report more than one acquisitional stage are included.)

Strangely enough, most studies tackle the acquisition of interrogatives in English by separating completely Y-N questions from Wh- questions. The development of the two interrogation types is not usually compared at the outset. Studies are not explicitly directed toward determining which structure emerges first, but mainly concern themselves with the development of each type independently of the other. Some evidence can be found, nonetheless, in support of an earlier occurrence of Y-N questions. Hatch (1974), in her already mentioned review, places Y-N questions with rising intonation at the first stage of the acquisitional sequence of interrogation:

You studying?

You will finish? (p.6)

Hatch, moreover, notices that the subjects often avoid inversion by using a Y-N question marked simply by rising intonation.

TABLE 2

The acquisition of interrogation

Y-N questions with rising intonation	Wh- questions with Wh fronting and no inversion		<u>do</u> as an interrogative particle		Inversion with <u>be</u> and <u>can</u>		Inversion with <u>do</u> auxiliary	
This is Canada? You will finish?	Where you was?				Is it Misty?		Hatch (1974)	
	What you said?				Are you play?		L1 several	
	Where dem drink? ¹				What are they?		Ravem (1974)	
eh? ah? right? You can see that?	What that is?		What do you doing to yesterday?		Why can't you touch with your...		L1 Norwegian	
	Why her don't stand there?		What do you going to do tomorrow?		with your hand?			
	(Henning, what ₂ is it fishing pole?)		Do it is good?		What else can I take out?		Wode (1978)	
You will come back? You like one cognac?	What you doing?		What do you was doing?		Please, can I have another piece of drink?		L1 German	
	What you want it?							
	What you did for Christmas?		Do you go to school?		How can you say it?		Cancino, Rosansky and Schumann (1978)	
This slipper? Fish see?	Where do you live the your mother?		Do you have children?				Schumann (1978)	
							L1 Spanish	
	Where's Kenny? Where's pen?				Can I write my name? What am I doing?		Huang and Hatch (1978)	
							L1 Chinese	

¹ Note that Ravem's study deals only with the acquisition of Wh- questions.

² See section 2.1 for a discussion of the early occurrence of this pattern in Wode's data.

³ Where's is to be interpreted here as a question marker.

Similarly, the study of the linguistic development of Paul, a Chinese speaking child (see Huang and Hatch, 1978), reveals that his first rule-governed interrogative utterances consist of an equative sentence characterized by rising intonation - e.g. This slipper? (p.27).

Ricardo, a Spanish speaking adolescent (see Butterworth and Hatch, 1978), is said simply to add rising intonation to his utterances when producing a question. The examples given for the first stage are all Y-N questions, e.g. You come by Friday? (p.240).

Y-N questions are also reported to open the development sequence for interrogation in Felix's (1978) study of the formal learning of English by German speakers.

Wode (1978) in his paper "The L1 vs L2 acquisition of English interrogation" dismisses the issue of which interrogation type occurs first by saying that at the beginning stage, data are not clear enough for analysis. Yet, we suspect that there could be some evidence of an initial predilection for Y-N questions in the primitive forms of "items like eh?, ah?" and of longer chunks spoken with a rising intonation and intended as a query (p.50).

If most studies do not compare the acquisitional development of Y-N and Wh- questions, all of them report an initial stage when learners of English as a second language use intonation as the only means of forming interrogation, at least in Y-N questions. We have already mentioned that Hatch (1974) reports intonation as the first stage in the development of interrogation. Cancino, Rosansky, and Schumann (1978) similarly relate that initially their six Spanish speaking learners of English simply use intonation as an interrogation marker in Y-N questions. Wode's (1978) four German children go through a first period when they form Y-N questions by adding rising intonation to declarative sentences:

You can see that?

You see my little ball? (p.48)

Shapira (1978), defining the lack of development in the interrogative system of her 25-year-old Spanish speaking subject, states "both Yes/No and Wh- questions are basically statement with rising intonation" (p.252). Adams' 10 Spanish speaking children are also reported to use declarative word order plus rising intonation as their first interrogation pattern in Y-N questions. Paul, the Chinese speaking child (Huang and Hatch, 1978), also forms his first Y-N question with the simple aid of rising intonation.

Looking now at Wh- questions, characterized in English by obligatory AUX inversion, we note that the data obtained by various researchers give indication of a lack of inversion in the first stages of IL. Ravem (1974) observing the development of Wh- question in his two Norwegian children learning English, notices that AUX inversion is very late acquired. Utterances of the type What she is doing?, What Jane give him? (p.141) occur for a long time in the children's speech. Moreover, very few examples of main verb subject inversion resembling the Norwegian pattern are found (e.g. Why drink we tea and coffee?, p.141).

Similarly, Hatch (1974) found a stage in the development of Wh- questions characterized by Wh- fronting alone, with the word order kept as in the declarative sentence:

What you doing me?

When you go your house? (p.6)

Cancino, Rosansky, and Schumann (1978) report that their subjects do not invert at first when producing Wh- questions. Inversion at the initial stage seems to occur mainly because of the almost categorical copula inversion which, in fact, can be explained either as direct transfer from Spanish, or as learned routine, i.e. wh-word is...

A similar explanation may be adduced for the placing of be-inversion as the first stage of Wh- question production in Wode's (1978) study. The only example of the pattern given, in fact, is Hening, what is it fishing pole? where it is very tempting to consider what is it

a routine. This interpretation is supported by the fact that non-inverted copula appears as a later stage after non inversion with main verbs has established itself as the basic, initial interrogation strategy: e.g. What you want it? (p.49).

Other studies of the acquisition of English by Spanish speakers (Adams, 1978; Butterworth and Hatch, 1978; Chamot, 1978; Shapira, 1978) provide further evidence for the early occurrence of non-inverted questions in the learners' language.

It must be emphasized at this point that the native language of most subjects in the investigations presented here have obligatory inversion in Wh- questions. Spanish and Norwegian, for instance, like most European languages, require subject-verb inversion in Wh- questions. Yet, the pattern occurs very rarely in the learners' initial IL stages. On the other hand, Wh- fronting, which is common both to English and to all the native languages spoken by the learners, appears from the beginning in the formation of the interrogatives.

A1. 2.2 Linguistic evidence for the unmarked status of early occurring interrogative structures

Turning now to the degree of markedness of the different interrogation structures we observe that the occurrence of Y-N questions before Wh- questions suggested by the studies reported earlier is predicted by the different presuppositional load of the two interrogative types (Givón, 1979, ch. 2). Wh- questions are more marked than Y-N questions because they presuppose the truth of an implied proposition. When did your son arrive? presupposes the truth of your son arrived. On the other hand Did your son arrive? does not have any such presuppositional weight. Moreover, the marked status of Wh- questions as compared to Y-N questions is confirmed by the more evident deviation of the former from the basic pattern of the declarative sentence. While in most cases Y-N questions differ from the corresponding declarative sentence by means of simple intonation or particle addition, Wh- questions often require a complete disruption of the basic word order so as to allow the fronting of the wh- word.

As for intonation, the prevalence of this interrogation device in the first stages of IL development is consistent with pre-existing typological facts. If we take the most widely spread interrogation strategy as the unmarked pattern, then intonation is such an unmarked pattern. Ultan (1978) in his study of the typology of interrogative systems based on some 80 languages suggests that most languages, perhaps all, have intonation at least as some means of distinguishing an interrogative utterance from the corresponding declarative utterance (p.219). Ultan further suggests that rising or high pitched contours are the most prevalent supersegmental feature in the typology of Y-N questions.

All the learners in the studies quoted here seem, therefore, to start with the most unmarked pattern. Even native speakers of languages, like Spanish or German, which allow the alternative of inversion in Y-N questions adopt simple rising intonation for the formation of these interrogation types.

Finally, in the case of Wh- questions learners' initial IL stages appear once again to mirror more general linguistic phenomena. Wh- fronting is a well-attested interrogation device, whose wide diffusion originates from the universal tendency among natural languages to place the topic - and the Wh- word is the topic - at the beginning of the utterance. It is not surprising, therefore, to see that this unmarked pattern appears without exception in the learners' language since the earlier stages.

What is more interesting from the point of view of markedness is the lack of inversion in the IL of learners whose mother tongue and target language (i.e. English) both require the transformation. Interestingly enough, the frequency of subject verb inversion as an interrogation device in the languages of the world (see again Ultan, 1978) indicates that the pattern must be viewed as marked. Inversion in Y-N questions is an uncommon device, whose frequency is misleadingly concentrated among European languages. Similarly, inversion in Wh- questions does not usually participate in determining the interrogative mode of the utterance. Furthermore, the disruption

of the basic word order obviously represents, in itself, an increase in complexity provided that such a change is not justified, as in the case of Wh- fronting, by any strong pragmatic tendency.

In brief, for most of the languages included in this study, both the mother tongue and the target language are characterized by a marked feature - inversion - which, on the contrary, is realized as unmarked in the initial stages of the learner's language. On the other hand, intonation and Wh- fronting, which are unmarked interrogative devices, are found in all three languages: mother tongue, target language, and learner's language. An agreement is found between the marked status of a structure as indicated by linguistic facts (here we have resorted mostly to typological and pragmatic considerations) and its acquisitional development in the learner's language.

A1.3. Commonalities in the development of the negative and interrogative system

As shown in the previous sections the starting point in the acquisition of negation and interrogation by second language learners of English is the most unmarked category for each of the two structures. In summary: (i) negation is preverbal, and (ii) interrogation is characterized by simple intonation in Y-N questions and by Wh- fronting plus declarative word order in Wh- questions, with Y-N questions tending to appear before Wh- questions.

A1.3.1 Do as a particle

When do appears in the following stage of development of the two structures, it is simply a negative or interrogative particle (cf. what has been defined unanalyzed don't, lexical alternative to no/not, or monomorphemic unit for negation, and interrogative marker for interrogation). Cancino, Rosansky, and Schumann (1978), for instance, report the occurrence of this "pseudo auxiliary" in the development of both negation and interrogation in the speech

of their subjects. In an utterance such as he don't like it (p.210), don't is simply used as a particle substituting for the earlier particle no. In a similar fashion, do in questions of the type Do you go to school? (p.228) is interpreted by the authors to be a simple interrogative particle since it occurs in inversion when no other auxiliary does.

It is interesting to note also that this development stage corresponds to observed typological trends. Particles, in fact, are an extremely common device among the languages of the world for the formation of both negative and interrogative sentences. As for interrogation, particles are second only to intonation in their diffusion as an interrogative device (Ultan, 1978, p.226). As for negation, particles are the most common syntactic treatment, as reported by Dahl (1979, p.84). Hence it seems that a first interpretation of do as a particle is consistent with the unmarked nature of the structure.

It is worth noting, in passing, that many of the so called hypercorrections where do is used with another auxiliary in sentences such as Do the crickets can fly? (Wode, 1978, p.43) and Why do he is going? (War, 1984) can easily be interpreted as utterances in which the interrogation is signalled by a particle and the word order is kept as for the declarative sentence.

A1. 3.2 Development of the auxiliaries: be and can

As far as the first occurrence of the auxiliaries in the two structures is concerned, the findings of the investigations quoted here suggest that learners generally start using postverbal negation in negative sentences and inversion in questions with be first. Can occurs simultaneously with be or follows very closely. Other modals like could or will occur next, and finally do as a true auxiliary becomes part of the learner's grammar.

Many explanations have been offered for such a pattern of development. Frequency in the input is notably one of those (see

for example Hatch, 1974; Huang and Hatch, 1978). Yet, while such an explanation could account for the earlier appearance of can in respect to other modals, it is difficult to see how it could be claimed that be and can are more frequent than do in the input to the learner.

The semantic value of the auxiliary has also been used as an explanation for early occurrence (Hatch, 1974; Cancino, Rosansky, and Schumann, 1978). However, if can bears a distinct semantic value, be does not. Still, the two forms appear simultaneously, earlier than the do auxiliary. On the other hand, if we compare the two auxiliaries do and be we note that they perform the same function: they are carriers of tense and person, but are devoid of any meaning. Yet, do is only used in negative and interrogative sentences, while be, similarly to can, is present in declarative sentences as well. Do, consequently, has a more restricted, specific use.

The marked status of the auxiliary do is confirmed by typological evidence. The employment of a dummy auxiliary in expressions of negation is a very infrequent phenomenon among the languages of the world. English, moreover, is unique in so much as it uses the dummy auxiliary for question-formation as well (cf. Dahl, 1979, p.85). In this case also the acquisitional sequence in the learner's language appears to conform to the degree of markedness of the specific structure.

A1.4. Conclusions

In this study negation and interrogation have been discussed in terms of their acquisitional pattern as they develop in the speech of second language learners of English, and in terms of their degree of markedness. A relationship has been found between the order of occurrence of the various patterns and the universal tendencies pertaining to those patterns. This finding supports a general theory of SLA which explains the process as one of progressive

linguistic differentiation which goes from the unmarked to the marked (cf. Hyltenstam 1978). The learner starts by producing a structure which is, in fact, an unmarked one. The occurrence of the most marked patterns is delayed until much later, after the learner has gone through stages which, by increasing in markedness, lead to language specificity.

We are aware, however, that further research is needed both from the theoretical and from the acquisitional point of view. The notion of markedness needs to be better defined in order to be applied to all different areas of linguistic investigation. At the same time, more data on the acquisitional development of these and different structures in English and other languages are required before we can make any definite theoretical claims on the nature of the processes involved in the acquisition of a second language. In particular, it would be interesting to study the development of these two English structures in the speech of Italian speakers. Since most Italian learners are tutored learners, this investigation would offer the opportunity to observe IL development in the classroom and thus expand the scanty body of data presently available on acquisitional sequences in formal settings.

Extensive research, moreover, is needed to establish the exact relationship between markedness and the influence of the mother tongue. Recent studies have precisely begun to address this issue (in particular, Eckman, 1977; Gass, 1983; Zobl, 1984). It may well be that, as suggested by Corder (1983) and as indicated by this review, the sequences of stages through which learners' IL develops, at least at the beginning, will prove very similar to one another irrespective of the learners' different mother tongues. However, learners whose native language is close to the target language in a particular area will go through the developmental sequence pertaining to that area in a shorter time than learners whose mother tongue does not exhibit the same similarity with the second language. We suggest, furthermore, that fossilization and backsliding-- which have been identified as typical and probably unique features of IL (Selinker, 1972)--will be likely to affect

those structures which are dissimilar in the two languages and which are also less marked in the native tongue. You no go up was an utterance produced by an Italian museum porter in London when spontaneously addressing a group of visitors. He had lived in Britain for 35 years. An unmarked pattern which is also the negation strategy employed in his mother tongue has become a permanent or a recurrent feature of his IL

* Studi Italiani di Linguistica Teorica e Applicata, 14, in press.

1. We are aware that negation in English may be viewed as preverbal since the negator is placed before the lexical part of the verb. Yet, if we agree with Dahl (1979) and regard the position of the negator in respect to the finite element of the sentence as the determining factor, then we are bound to consider English negation as post-verbal as it always follows the grammatical part of the verb. A possible solution to this dilemma would be to define English negation as premain verbal but then such a category could not be easily included in the classes already used for the classification of the different kinds of negation.

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APPENDIX A2

How simple is at *

A2.0. The spatial preposition at has often been described as the simplest among spatial relational terms (e.g. Clark, 1973, Bennett, 1975). The reference object is punctual or zero-dimensional and there is no movement involved (Quirk et al. 1972). From a componential analysis point of view at has the fewest number of semantic features if compared with other spatial prepositions. In, for example, refers to a three-dimensional space, a more complex concept than zero-dimensional space. To shares with at a zero-dimensional reference point, thus being of equal simplicity in this respect. It however has an additional feature : movement.

On the basis of such a semantic feature analysis we hypothesized that second language learners' performance on at-locatives would be very high, especially if compared with performance on other spatial prepositions. This tendency was hypothesized to be even more marked in speakers of a Romance language such as Italian which has a spatial preposition a. This strongly resembles phonologically the English preposition at and shares with it its static meaning.

A2.1.1 The Production Task

An oral task was devised to test the hypothesis of the primacy of at among spatial prepositions in learners' speech. The elicitation of at was part of a larger experiment which included the elicitation of eight more prepositions (i.e. on, to, in, from, into, out of, across and through). The interviewer attempted to elicit at eight times by asking the learner about the position of some miniature toys in reference to locations drawn on a map. Special care was taken in disposing the objects so that in would not be acceptable as a substitute for at. If, for example, we wanted to elicit 'Mary is (waiting) at the post office', we would make sure not to put the toy in the building area but just outside it. If the

learner provided alternatives to at such as in front of, he or she was asked to describe the same configuration differently in order to elicit at instead of other zero-dimensional locations (these attempts were, however, often unsuccessful, cf. later sections).

48 Italian High School students took part in the experiment. They had been studying English for a minimum of two years and a maximum of seven, with an average of four.

A2.1.2 Results and Discussion

Table 1 shows the accuracy rank orders for the nine prepositions studied.

TABLE 1
Accuracy rank order of nine spatial prepositions

rank	prep	%	rank	prep	%	rank	prep	%
1	on	86.9	4	in	65.5	7	across	25.4
2	to	78.5	5	into	54.9	8	through	25.4
3	from	69.5	6	at	42.1	9	out of	22.5

At appears in sixth position. Thus, our hypothesis which predicted that at would be among the prepositions more frequently supplied in obligatory contexts was not substantiated. (It should be noticed, however, that for the other prepositions investigated the accuracy order confirms on the whole the predictions made on the basis of the componential analysis.)

An analysis was performed on the responses supplied instead of at. It showed 1, that the most frequent spatial terms used when at was not supplied were acceptable, and in fact more precise prepositions such as in front of and outside (51.4%), and 2, that in was incorrectly supplied in 38.9% of the answers. These results show that:

- a. the confusion between in and at is a wide-spread phenomenon.
- b. learners tend to express precise locations rather than general ones.

The use of in instead of at indicates that the learner has not acquired either preposition. The use of more precise relational terms, on the other hand, does not necessarily reveal a lack of knowledge on the part of the learner but certainly indicates additional complexity involved in the meaning of at. On the basis of these results we have isolated two main factors which we think contribute to the complexity of the spatial preposition:

1. Changing spatial representation. All objects in the real world have dimensions, but the appropriate use of at requires that those dimensions be mentally represented as non-existent. The semantics of at "is ultimately a construction of the human mind rather than a direct mapping onto some objective relation in the world" (Johnson-Laird, 1983:197). The confusion between at and in is probably related to this feature of the meaning of at. A building can be conceptualized as it is in reality, a three-dimensional object, or, abstractly, as a zero-dimensional point. Such a shift in conceptual representation is expressed in English by in and at respectively: 'I had lunch in my office' versus 'I was working at my office', 'there was a funny smell in the flat' versus 'Mary is at the flat'. The learner, who is exposed to both prepositions being used with the same reference object when the opposition of meaning is not obvious, may in fact be encouraged to think of in and at as two items in free variation : hence the high percentage of in being incorrectly used instead of at.

2. Vagueness. At can refer to both coincidence/inclusion and proximity. 'I saw her at the cinema sitting in the balcony' versus 'I'll meet you at the cinema', 'she works at a kiosk' versus 'she is waiting at the kiosk'. In these examples the meaning of at is determined mostly by pragmatic considerations (cf. Miller and Johnson-Laird's (1976) emphasis on the conventional nature of the interactions expressed by at).

Unplanned meetings can happen inside cinemas but planned ones normally take place outside them. One usually works inside kiosks but waits for people next to them. The vagueness of at may encourage learners to rely on prepositions whose meaning is clearer-cut and more independent from encyclopedic knowledge, e.g. near, by, in front of.

A2.2.1 The Comprehension Task

From the results of the production task two important issues concerning learners' competence remained unclear. First of all it was not known whether the employment of more precise prepositions instead of at was due to preference for the former lexical items (possibly because of the factors outlined above) or to lack of knowledge of the preposition. Secondly, because of the limited number of times the preposition was supplied we did not have sufficient indication of the actual meaning attributed by the learners to at. In consideration of these deficiencies another task was devised. Two hypotheses were set for verification:

- (i) learners comprehend at in its general locational meaning.
- (ii) learners tend to associate at with the meaning of coincidence and inclusion rather than proximity.

A comprehension task was devised to test hypotheses (i) and (ii). The experiment was divided into two parts. In the first part learners were asked to place objects according to a description of their location: e.g. 'Mary is at the bus stop'. In the second part learners were asked to differentiate between in- and at- locations: e.g. in the same picture one man was standing by a telephone booth, another man was inside it. The learner had to indicate which man was at the telephone booth. This task included a total of seven items : five in the first part, two in the second.

37 Italian High School students participated in this task. They had been studying English for a minimum of two years and a maximum of 11 years, with an average of six years. None of them had taken part in the previous experiment.

A2.2.2 Results and Discussion

The results of this task substantiated both our hypotheses (see Table 2). They show that at is understood as a general static locative. Learners more often associate its meaning with that

TABLE 2
Comprehension task on the meaning of at.

		Coincidence/ Inclusion		Proximity		Total
		Raw Scores	%	Raw Scores	%	
First Part	Acceptable	83	44.9	68	36.8	151
	Unacceptable	34	18.1	0	0.0	34
	Total	117	63.2	68	36.8	185
Second Part*	Acceptable	0	0	35	47.3	35
	Unacceptable	39	52.7	0	0.0	39
	Total	39	52.7	35	47.3	74

* Only the interpretation of at as proximity was correct in the second part of the task.

of coincidence and inclusion rather than proximity. Such an association may be as strong as causing an interpretation of at which is in conflict with the knowledge of the world. For example, in response to the stimulus 'the car is parked at the post office' some learners placed the car inside the post office. The tendency to attribute to at the meaning of coincidence and inclosure is

made particularly obvious by the results of the second part of the task. In a high percentage of responses learners incorrectly identified at with representations of enclosure rather than proximity when in the same stimulus situation the two notions were presented in opposition (e.g. one man standing in the telephone booth, the other standing beside the telephone booth).

A2.3. Conclusions

In this paper we have presented two aspects of the meaning of at which make it more complex than may be suggested by an analysis of semantic features. These aspects were isolated as 1. changing spatial representation and 2. vagueness. The results of both production and comprehension tasks indicate that our Italian learners of English have difficulty with both aspects. In production, in is often used instead of at when describing configurations of proximity rather than inclusion (e.g. 'Mary is in the station' instead of 'Mary is at/in front of the station'). The vagueness of the meaning of at, moreover, appears to encourage learners to avoid the preposition and to opt for semantically better defined terms. In comprehension, although at is understood as a general locational with both meanings of coincidence/inclusion and proximity, evidence is provided that learners tend to associate it with the former rather than the latter. The second task further shows that even at the comprehension level the opposition in - at is ill-defined. At is often given an interpretation of inclusion or coincidence when such an interpretation should be blocked either by the general knowledge of the world or by the simultaneity of the configurations of proximity and inclusion set in opposition.

The complexity of the meaning of the spatial preposition at, underestimated by a traditional componential analysis, appears to constitute a subtle but pervasive difficulty even for learners whose mother tongue possesses a feature of similar phonological and graphic form and of at least partially overlapping semantic content.

* International Review of Applied Linguistics, in press.

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APPENDIX B

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APPENDIX B1 Written task on relative clauses

Combine each pair of sentences given below into one single sentence. Use a relative pronoun -- e.g. who, which, etc.. The only type of combination allowed is illustrated in the following examples.

Example 1 Fido eats the plants. The plants are in the garden.

Combination: Fido eats the plants which are in the garden.

Example 2 Mr Smith will offer the firm to the woman. You don't like her.

Combination: Mr Smith will offer the firm to the woman who(m) you don't like.

Do not delete any preposition or any "than". When you find verbs such as "give to", "talk to", "talk about", "play with", retain the prepositions to, about, and with in transforming the sentences. Similarly, always retain "than" in expressions such as "more beautiful than" when combining the two sentences into one.

Do not change any specific word or any other part of the sentences if not strictly required by the transformation. In case you find the expression "less clever", for example, do not change it to "more stupid". Only essential modifications are allowed. (See examples 1 and 2)

1. I met the man. The man told you he was my brother.
2. I like the painting. Mary bought it recently.
3. Jane is the mother of the children. You were reading tales to them.
4. I hate the man. His dog wakes me up every morning at five o'clock.
5. John loves the girl. Andrew goes out with her.
6. Jack does not like the women. He is less intelligent than the women.
7. Tom likes the place. I am thinking of it.
8. Craig eats only the food. He himself cooks it.
9. My brother teaches the handicapped children. You were talking to them.
10. My dog plays only with the cats. He is stronger than the cats.

11. Last night Lucy quarrelled with the man. You met his children.
12. Mr Jones does not like the girl. Mrs Boland offered the job to her.
13. Peter goes out with the people. He is younger than them.
14. The cat opened the box. The cat was playing with the box.
15. My father knows the police officer. You need to see him.
16. Snoopy sleeps in the kennel. The kennel is in the garden
17. My mother is an expert in the subject. Your brother is writing a book on it.
18. A car killed the dog. That boy used to give food to the dog.
19. I met that friend of yours. His mother died recently.
20. Tom goes to school with the girl. Mr Brown will interview her tonight.
21. Mum lost the address. The address was on the living room table.
22. Fido does not fight with other dogs. He is bigger than them.
23. Tom wants the toy. The toy fell behind the chair.
24. Chris will marry the girl. Her beauty is famous in the whole city.
25. I phoned the minister. I had already written a letter to him.
26. David is training with the players. He is less experienced than them.
27. Mr Greer will invite the secretary. You met the secretary in his office.
28. Piero is playing with the little boy. His name is Andrew.
29. The blackbird's nest is in the tree. Chris used to play behind the tree.
30. Mary and Ann are going on holiday with the nice girl. She had tea with us the other day.

APPENDIX B2 Written task on spatial prepositions

Read the whole sentence or the whole passage before inserting any prepositions. Fill in each blank with one of the prepositions listed below.

at
in
on
to
from
into
out of
across
through

Example Michael can't sleep well at night. He lives ... a busy area.

Completion: Michael can't sleep well at night. He lives in a busy area.

1. The meal was ready. Everybody came into the kitchen and sat down ... the table.
2. The only copy of that book that I had disappeared yesterday ... my table. I am going to keep all my books ... the cupboard from now on.
3. Rosicchio, Jane's rabbit, loves to sleep ... the carpet in the living room.
4. Tom lives in Mayfield Street. His house is on one side of the street and the school is on the other. To go to school Tom just has to walk ... the street.
5. When we came ... the cinema it was raining. So we took a taxi and went straight home.
6. It takes five minutes to walk ... Princes Street to Queen Street.
7. Michael and Ann parked the car in front of the house. They opened the door and the moment they got ... the house they realized that thieves had been there.

8. Helen lives ... a big city.
9. In the room there is a cat which is sitting by the window. The cat is looking ... the glass at the bird outside.
10. Every year swallows spend the winter ... warm climates and migrate ... a cooler climate at the beginning of the summer.
11. I left the garden door open. Please don't let your dog come ... the garden. It would destroy all the flowers.
12. The mouse came out of his hole and ran ... the floor to the other side of the room.
13. Paul saw Charles ... the ticket office. They were both buying tickets for tonight's performance.
14. Jim lives in London. His grandfather went all the way ... Rome to visit him at Christmas.
15. The lake was so rough that the boat could not get ... it. The passengers on the other side had to postpone their trip.
16. Mrs Jordens was terrified. Every door and every window had been securely locked. Yet there was an invisible presence in the room. The ghost must have passed ... the walls.
17. The typical Londoner does not live in the city. He lives in the suburbs and travels ... his office every morning.
18. I must buy more shampoo. There is only a little left ... the bottle.
19. The driver was driving very fast. The engine started to smoke. He just had the time to jump ... the car before it caught fire.
20. Mary is standing ... the sink washing the dishes.
21. I found the book ... your desk upstairs.
22. He knocked on the door. Nobody answered, so he opened the door and walked ... the room.
23. John moved the big chair ... the first floor up to the second floor.

24. Dr Gullivan is reading in his office. Somebody knocks on his door.
He gets up and walks ... the room to open the door and see who it is.
25. I am going down ... the shop. Do you need anything?
26. He tried to carry some water ... his hand but all the water fell
... his fingers.
27. The window was open so a bird flew ... the room.
28. Jack will meet us ... "La Catena".
29. Firemen are often called to get children's heads ... gates and
railings.
30. Jane got a job. She works ... the cash register in Mr Brown's shop.
31. During the football match last week, our goal keeper scored a goal.
He kicked the ball. The ball went all the way down the football
field ... his goal to the opposite goal.
32. Mary's father lives on the other side of a big farm. When Mary goes
to visit him she has to walk ... the farm.
33. Where are you going next summer? I am going ... Spain.
34. My rabbit was born ... my house.
35. Ann wants to go to St Andrew's from George Square. The quickest
way is ... the Castle.
36. It was Maria's birthday. Michael went to a flower shop. He stood
in front of the window for a few minutes not knowing what to buy.
Finally he walked ... the shop and bought some roses.
37. Mr and Mrs Brown usually spend their weekends ... Venice. Last
Sunday night when they were coming back ... Venice their car broke
down. They had to walk ... the nearest station and take a train home.
38. Many people were standing ... the platform waiting for the train to
come.

39. Chiara is travelling on the train. Her rabbit is travelling ... the seat near her. While Chiara is asleep the rabbit gets ... its box and starts running around the compartment.
40. Prudence's house is on the south bank of the Mississippi. Pat's farm is on the north bank of the river. When Prudence wants to visit Pat, she must get ... the river.
41. John has gone to buy an icecream. He is ... the kiosk over there.
42. Peter and Jeffrey live on one side of the wood. The nearest town is on the other. In order to go ... the town they have to walk ... the wood.
43. The students were very noisy. So the teacher walked ... the class and called the principal.
44. Can you see the fly in the bottle? It fell ... the bottle a few minutes ago.
45. Where shall we go this weekend? We could go ... my parents' bungalow.
46. The Martins like spending time outdoors. Last Sunday they went to the river Po and had a picnic ... the grass.
47. We leave ... New York at 5 o'clock and we get to Washington before 10.
48. How did the prisoner manage to escape? ... a hole in the wall.
49. Mr Robinson is standing ... the blackboard writing the exercise for tomorrow.
50. Andy left the record ... his pillow.
51. Tom was having a bath when his friend rang the bell. He got ... the bathtub and went to open the door.
52. It takes two hours to fly to London ... Milan.
53. The table was against the wall by the door. Helen pushed it ... the door so that nobody can now get into the room.

54. It was a hot afternoon. Tom and Hilary went ... the beach.
They played with the sand and then ran to the sea and jumped
... the water.
55. The baby was sleeping ... his father's shoulder.
56. Somebody just passed a sheet of paper ... the gap under the door.
57. There are many igloos ... the North Pole.
58. Peter has just arrived at the station. He has to rush because his
train comes ... Glasgow and stops at Edinburgh only for a few
minutes.
59. When you arrive at Dover there is a frequent ferryboat service
... the Channel.
60. There are two men working ... the roof today.
61. The prisoner pushed a packet of desperate letters ... the bars of
the window.
62. All the children ran ... the school as soon as it started snowing.
They spent a couple of hours throwing snowballs at each other.
63. Italy won again. Paolo Rossi, the national football hero, kicked
the ball ... the German goal in the very last minute of the match.
64. "Knock, knock": somebody is ... the door.
65. Tomorrow I am going ... London to visit Uncle William. Would you
like to come along?
66. The road is blocked. Two men pushed a big tree right ... it.
67. As soon as we walked ... the restaurant the waiter told us that the
restaurant was full.
68. I saw John hurry ... the office immediately after I heard him have
a violent argument with the manager.
69. In attacking the village, the soldiers ran ... the high grass
so that the Indians did not see them until they came out into
the open.

70. Margaret keeps her boyfriend's photo ... the mirror ... her room.
71. Every morning dozens of people queue outside the hospital laboratory
Only a few lucky ones get ... the laboratory and have their tests taken.
72. Mary found her grandmother's diary ... the attic of her house.
73. My cousin is coming ... the States next summer. He will be in
Italy for a month.
74. Dad can drive you ... the hospital. You don't need to walk there.
75. When it rains very hard, water comes ... the roof.
76. The keys are ... my pocket.
77. The vase is ... the television set.
78. David sat ... the piano and started to play.
79. There is a path which divides the forest into two parts. One half
belongs to Lord Hepton and the other to Lord Sussex. Nobody is
allowed to go from one part of the forest to the other. But last
night I saw a man run ... the path and disappear into Lord Sussex's
forest. Early this morning he was found dead.
80. Every evening Jennifer sees a rabbit in her vegetable garden.
She has to run ... the house to chase it away.
81. After twenty-one days all the eggs began to crack and, one by one,
the birds came ... the shells.

APPENDIX B3

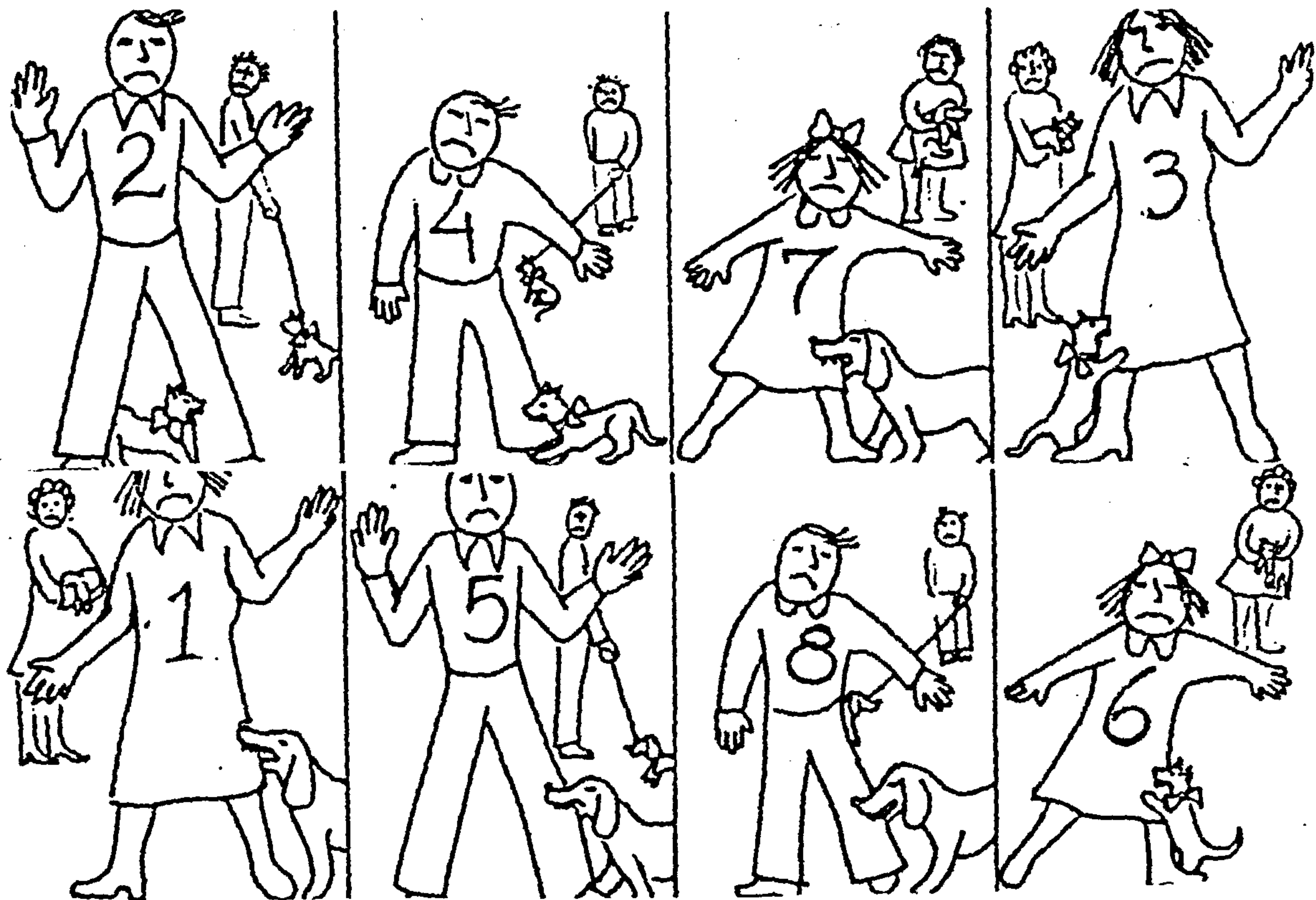
Oral task on relative clauses

Instructions were given orally both in English and Italian (see section 4.3.3.2 of the main text). In this task learners were required to identify numbered characters out of the sets of pictures given below. The verbal stimulus used for this task was the frame who is No.X? Further details about the task can be found in sections 4.2.3.4 and 4.3.2.1.

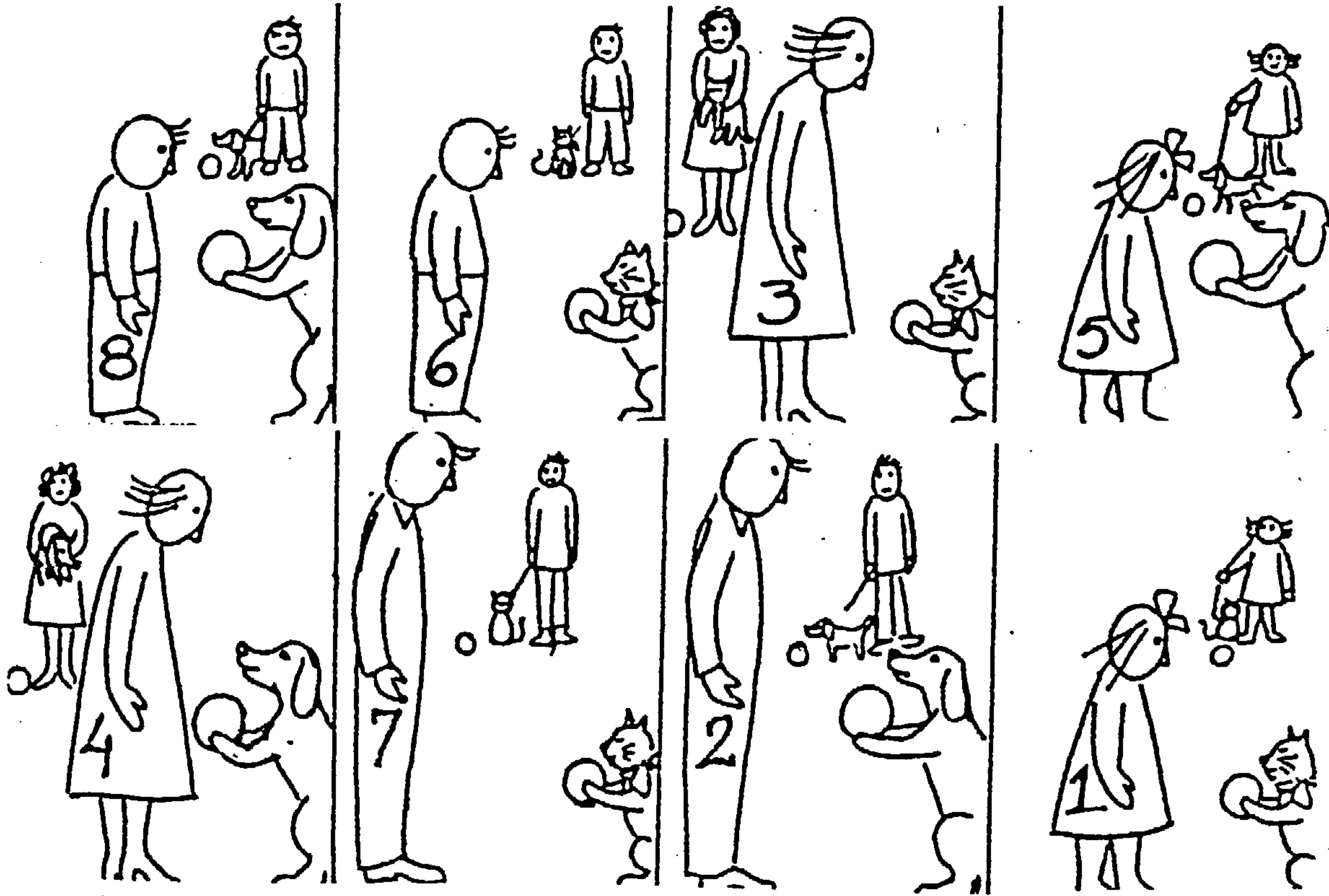
SUBJECT



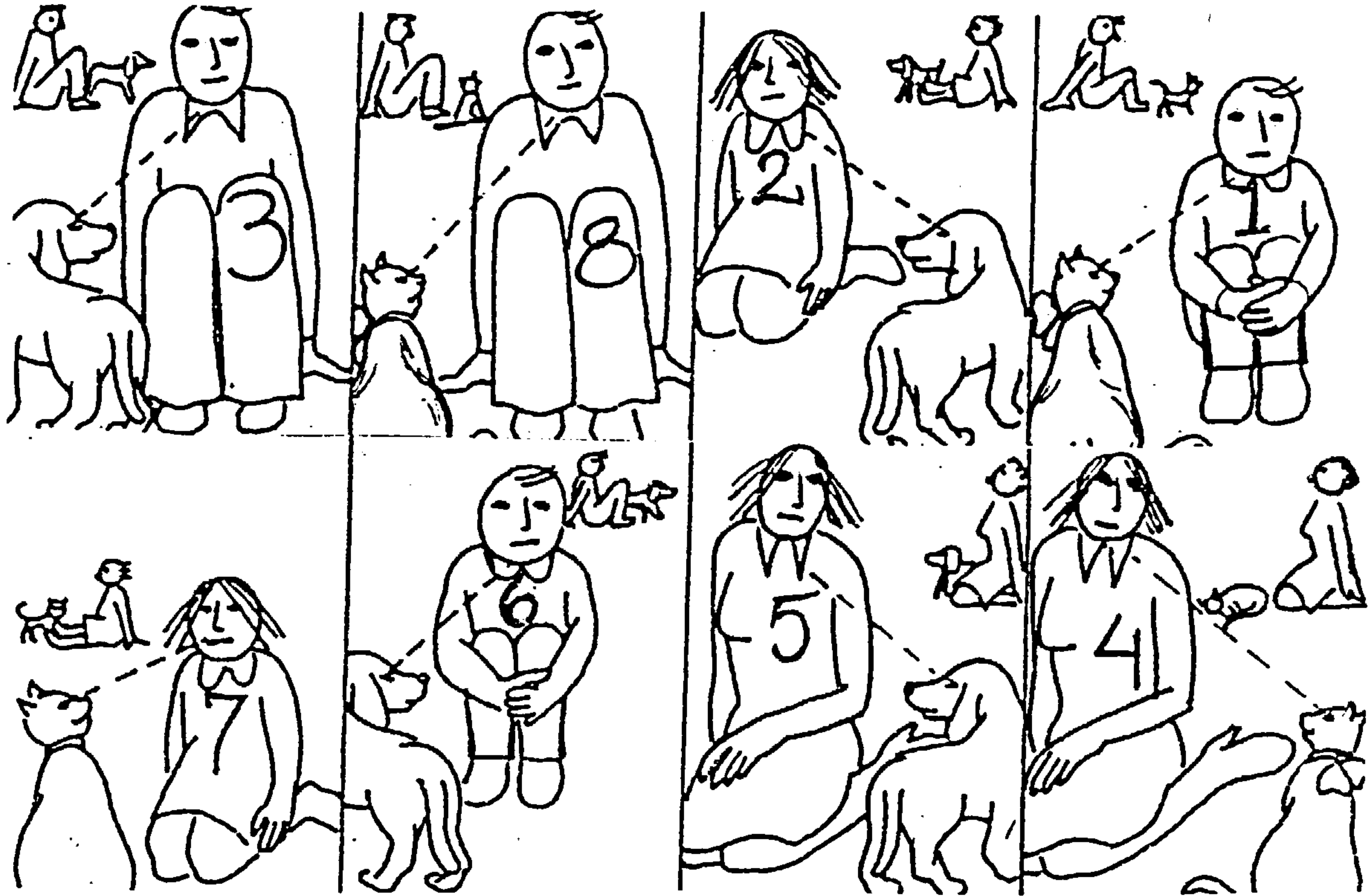
DIRECT OBJECT



INDIRECT OBJECT



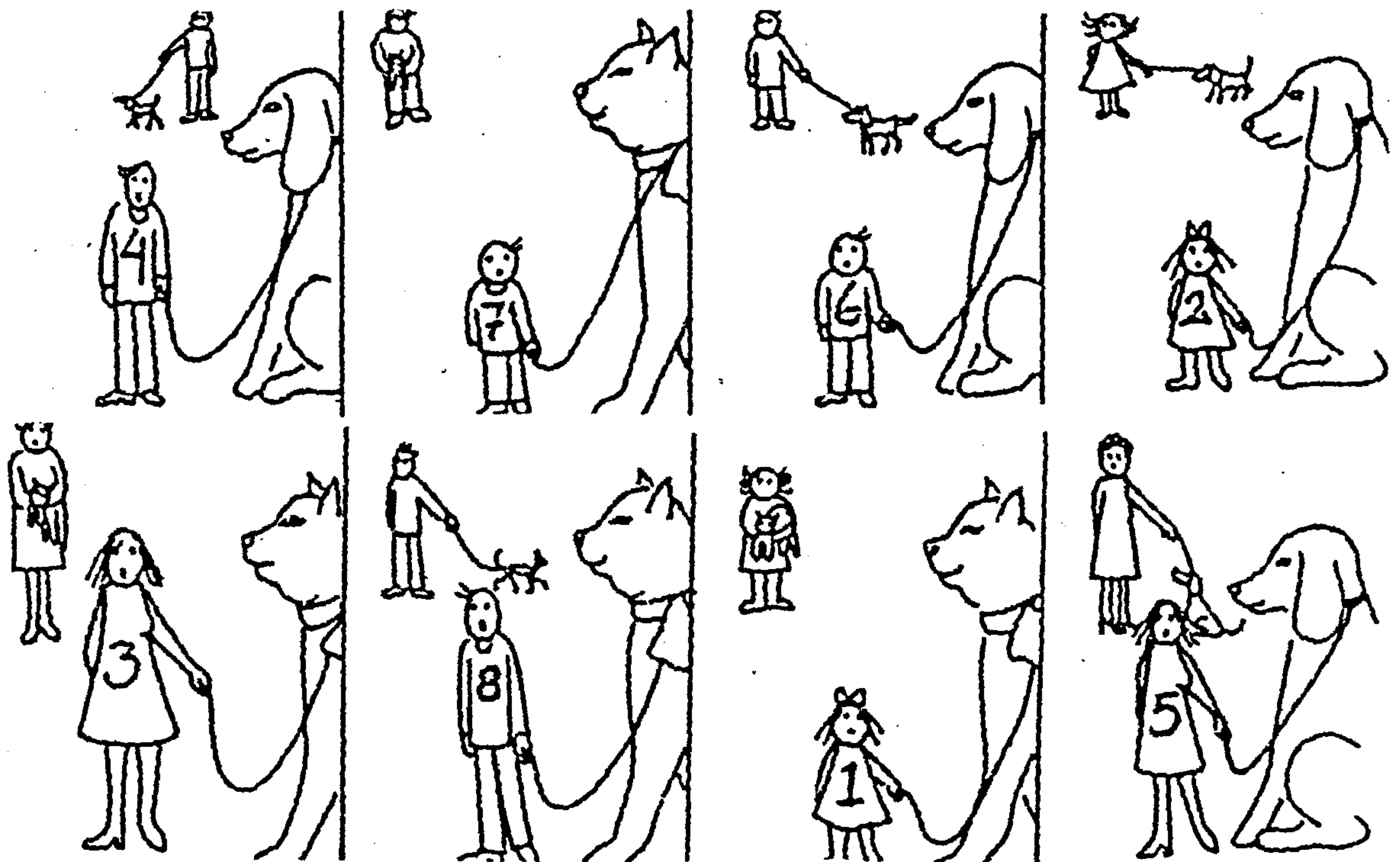
OBLIQUE OBJECT



GENITIVE



OBJECT OF COMPARISON



<u>NP positions</u>	<u>Expected answers (examples)</u>
S	: No. 3 is the girl who is singing
DO	: No. 7 is the man who the dog is biting
IO	: No. 6 is the boy who the cat is giving the ball to
OO	: No. 2 is the girl who the dog is looking at
G	: No. 3 is the woman whose bag the dog is biting
OC	: No. 7 is the boy who the cat is bigger than

APPENDIX B4

Oral task on spatial prepositions

Instructions were given orally both in English and Italian (see section 4.3.3.2 of the main text). In this task learners were required to answer questions about the location or the movement of some movable objects in relation to some reference objects. The objects were a simplified map, a box, a table, a chair and miniature toys of various kinds (see task questions). The questions which were asked and the expected answers are given below. Further details about the task can be found in sections 4.2.2.5 and 4.3.2.2 of the main text.

<u>Questions</u>	<u>Expected answers</u>
1. Where is Mary (M.)?	(She's) <u>at</u> the station.
2. Where is the box?	(It's) <u>on</u> the table.
3. Where is M. now?	(She's) <u>in</u> the castle.
4. Where is John (J.) going?	(He's going) <u>into</u> the castle.
5. Where are the children going?	(They're going) <u>to</u> the park.
6. What is J. doing?	He's going <u>from</u> the fountain to the lake.
7. What is J. doing now?	He's coming <u>out of</u> the post office.
8. Where is the car going?	(It's going) <u>across</u> High Street.
9. What did J. do?	He went <u>through</u> the building.
10. Where are J. and M.?	(They are) <u>at</u> the post office.
11. Where is the horse?	(It's) <u>in</u> the park.
12. Where is the swan?	(It's) <u>on</u> the lake.
13. Where is M. going/walking?	(She is going/walking) <u>to</u> the ice cream kiosk.
14. What is the horse doing?	(It's) jumping <u>from</u> the table to the chair.
15. What is J. doing to the car?	He's pushing it <u>out of</u> the garage.
16. Where is the swan swimming?	(It's swimming) <u>across</u> the lake.
17. What is J. doing to the car?	He's pushing it <u>into</u> the garage.
18. What am I doing to the rubber?	You're pushing it <u>through</u> the rubber case.
19. Where is M.?	(She's) <u>at</u> the bus stop.
20. Where is the horse jumping?	(It's jumping) <u>into</u> the box.
21. Where is the horse now?	(It's) <u>in</u> the box.
22. Where did Peter (P.) go?	(He went) <u>to</u> the bank.
23. What is P. doing now?	He's climbing <u>from</u> the box onto the roof of the house.
24. What did the horse do?	It jumped <u>out of</u> the box.
25. Where is P.?	(He's) <u>on</u> the horse.

QuestionsExpected answers

- | | |
|--|--|
| 26. What did the white car do? | It went <u>through</u> the tunnel. |
| 27. Where is M. running? | (She's running) <u>across</u> the square. |
| 28. Where is J. waiting
for his friend? | (He's waiting for his friend) <u>at</u> the chemist's. |
| 29. Where is the white car? | (It's) <u>on</u> the tunnel. |
| 30. Where is the horse going? | (It's going) <u>to</u> the fountain. |
| 31. What did the horse do? | It jumped <u>from</u> the chair to the table. |
| 32. Where did P. go? | (He went) <u>into</u> the house. |
| 33. What am I doing to the car? | (You're) pushing it <u>across</u> Queen Street. |
| 34. What happened to the swan? | It fell <u>through</u> the tube. |
| 35. What did M. and J. do? | They walked <u>out of</u> the castle. |
| 36. Where did the accident
happen? | (It happened) <u>at</u> the junction. |
| 37. Where is the match? | (It's) <u>on</u> the box. |
| 38. Where is the match now? | (It's) <u>in</u> the box. |
| 39. Where am I putting the
match? | (You are putting the match) <u>through</u> the box. |
| 40. Where is the car going? | (It's going) <u>to</u> the castle. |
| 41. Describe M.'s route. | She went <u>from</u> the bus stop to the railway
station. |
| 42. What did P. do? | He drove <u>out of</u> the tunnel. |
| 43. What is the horse doing? | (It's) galloping <u>across</u> the table. |
| 44. Where is J.? | (He's) <u>at</u> the bank. |
| 45. What is J. doing now? | He's going <u>into</u> the bank. |
| 46. Where is P.? | (He's) <u>in</u> the house. |
| 47. Where is the cat? | (It's) <u>on</u> the cupboard. |
| 48. Where is P. going? | (He's going) <u>to</u> the lake. |
| 49. What did M. do? | She went from the sink to the cupboard. |
| 50. What did P. do? | He came <u>out of</u> the house. |

QuestionsExpected answers

- | | |
|-----------------------------------|--|
| 51. Where is the cat going? | (He's going) <u>into</u> the kitchen. |
| 52. Where is the horse jumping? | (It's jumping) <u>through</u> the ring. |
| 53. What is the cat doing? | (It's) going <u>across</u> the kitchen. |
| 54. What is the goose doing? | (It's) coming <u>out of</u> the cupboard. |
| 55. Where is the goose? | (It's) <u>in</u> the cupboard. |
| 56. Where is the goose going? | (It's going) <u>into</u> the cupboard. |
| 57. Where am I putting the pen? | (You're putting it) <u>across</u> the door. |
| 58. What is Mr Smith doing now? | He's going <u>through</u> the door. |
| 59. Where is the dish? | The dish is <u>on</u> the sink. |
| 60. Where is the car parked? | (It's parked) <u>at</u> the post office. |
| 61. What did John do? | He walked/went <u>from</u> the flat to the bank. |
| 62. Where are the clothes? | (They're) <u>in</u> the washing machine. |
| 63. Where is M. going? | (She's going) <u>to</u> the sink. |
| 64. Where is the dish now? | (It's) <u>in</u> the sink. |
| 65. Where did the car stop? | (It stopped) <u>at</u> the entrance to the tunnel. |
| 66. Where is the salami? | (It's) <u>on</u> the washing machine. |
| 67. What is the airplane doing? | (It's) flying <u>from</u> Milan airport to Rome airport. |
| 68. Where is the train going? | It's going <u>to</u> the station. |
| 69. Where is the train going now? | (It's) going <u>into</u> the station. |
| 70. What did the cat do? | It came <u>out of</u> the kitchen. |
| 71. What did the cat do? | It went <u>through</u> the kitchen. |
| 72. Where is the tin rolling? | (It's rolling) <u>across</u> the map. |

APPENDIX C

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APPENDIX C1

Computer printouts pertaining to relative clauses

C1.1 Guttman scalograms : written task, formal group.
The three orderings.

AH

ITEM..	COMP	GENIT				OBLOBJ				INDOBJ				OBJECT				SUBJECT				
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	TOTAL		
	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR			
V	1		1		1		1		1		1		1		1		1		1			
R	6	1	0	111	0	111	0	111	0	111	0	111	0	111	0	111	0	111	0	11		
I	1	1	1	ERR1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
T	1		1		1		1		1		1		1		1		1		1			
F	5	1	4	61	5	51	0	101	0	101	0	101	0	101	1	91	1	91	1	10		
O	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
R	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	4	1	7	11	7	11	0	01	0	01	1	71	1	71	1	71	1	71	1	8		
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	3	1	2	01	2	01	1	11	1	11	0	21	0	21	0	21	0	21	0	2		
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	2	1	12	01	11	11	12	01	10	21	2	101	1	111	1	111	1	111	1	12		
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1	1	5	01	5	01	5	01	5	01	5	01	5	01	0	51	0	51	0	5		
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	0	1	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	1		
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SUMS		31	10	31	10	19	30	17	32	9	40	4	45	4	45	4	45	4	45	49		
PCTS		53	37	63	37	39	61	35	65	10	82	0	92	0	92	0	92	0	92	24		
ERRORS		0	7	5	2	0	1	1	2	3	0	3	0	3	0	3	0	3	0	24		
STATISTICS..																						

COEFFICIENT OF REPRODUCIBILITY = 0.7104
MINIMUM MARGINAL REPRODUCIBILITY = 0.7109
PERCENT IMPROVEMENT = 0.2075
COEFFICIENT OF SCALABILITY = 0.7176

00 > IO

ITEM.. COMP		GENITIVE		INDOBJ		OBLOBJ		OBJECT		SUBJECT		TOTAL				
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
	I-ERR-----		I-ERR-----		I-ERR-----		I-ERR-----		I-ERR-----		I-ERR-----		I-ERR-----			
F	1		1		1		1		1		1		1		1	
O	6	1	0	121	0	121	0	121	0	121	0	121	0	121		12
R	1	-----ERR			1		1		1		1		1		1	
M	1		1		1		1		1		1		1		1	
	5	1	6	51	5	61	0	111	0	111	0	111	0	111		11
	1			I-----ERR			1		1		1		1		1	
	1		1		1		1		1		1		1		1	
	4	1	5	11	5	11	0	61	0	61	1	51	1	51		6
	1		1		1	I-----ERR			1		1		1		1	
	1		1		1		1		1		1		1		1	
	3	1	7	01	3	41	5	21	5	21	0	71	1	61		7
	1		1		1		1	I-----ERR			1		1		1	
	1		1		1		1		1		1		1		1	
	2	1	9	01	5	21	7	11	0	01	3	51	0	51		0
	1		1		1		1		1	I-----ERR			1		1	
	1		1		1		1		1		1		1		1	
	1	1	4	01	4	01	4	01	4	01	4	01	0	41		4
	1		1		1		1		1		1	I-----ERR			1	
	1		1		1		1		1		1		1		1	
	0	1	1	01	1	01	1	01	1	01	1	01	1	01		1
	I-----		I-----		I-----		I-----		I-----		I-----		I-----			
SUMS	31	13	21	25	17	32	10	31	9	40	3	45		45		49
PCTS	63	37	49	51	35	65	37	63	10	82	6	94		94		32
ERRORS	0	6	5	7	0	3	5	0	4	0	2	0		0		
STATISTICS..																

COEFFICIENT OF REPRODUCIBILITY = 0.8912
MINIMUM MARGINAL REPRODUCIBILITY = 0.6973
PERCENT IMPROVEMENT = 0.1939
COEFFICIENT OF SCALABILITY = 0.6404

0C > G

ITEM..	GENITIVE				COMP				OBJOBJ				INDOBJ				OBJECT				SUBJECT				TOTAL
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
F	1-ERR-----				1-ERR-----				1-ERR-----				1-ERR-----				1-ERR-----				1-ERR-----				1
O	5	1	0	121	0	121	0	121	0	121	0	121	0	121	0	121	0	121	0	121	0	121	0	121	12
R	1-----ERR1				1				1				1				1				1				1
M	1				1				1				1				1				1				1
	5	1	5	61	6	51	0	111	0	111	0	111	0	111	0	111	0	111	0	111	0	111	0	111	11
	1-----ERR1				1				1				1				1				1				1
	1				1				1				1				1				1				1
	4	1	5	11	5	11	0	61	0	61	1	51	1	51	1	51	1	51	1	51	1	51	1	51	6
	1				1-----ERR1				1				1				1				1				1
	1				1				1				1				1				1				1
	3	1	3	41	7	01	5	21	5	21	0	71	1	61	1	61	1	61	1	61	1	61	1	61	7
	1				1				1-----ERR1				1				1				1				1
	1				1				1				1				1				1				1
	2	1	6	21	0	01	0	01	7	11	3	51	0	01	0	01	0	01	0	01	0	01	0	01	0
	1				1				1-----ERR1				1				1				1				1
	1				1				1				1				1				1				1
	1	1	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4
	1				1				1				1				1				1-----ERR1				1
	1				1				1				1				1				1				1
	0	1	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1	01	1
	1-----				1-----				1-----				1-----				1-----				1-----				1
SUMS	21	25	31	10	10	31	17	32	9	40	3	46	3	46	3	46	3	46	3	46	3	46	3	46	49
PCTS	49	51	63	37	37	63	35	65	10	82	0	94	0	94	0	94	0	94	0	94	0	94	0	94	34
ERRORS	0	13	6	1	0	2	5	1	4	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	34
STATISTICS..																									

COEFFICIENT OF REPRODUCIBILITY = 0.8844
MINIMUM MARGINAL REPRODUCIBILITY = 0.6973
PERCENT IMPROVEMENT = 0.1871
COEFFICIENT OF SCALABILITY = 0.6100

C1.2 Guttman scalograms : oral task, formal group.
The three orderings.

AH

ITEM..	GENITIVE				OBJLOBJ				INDOBJ				OBJECT				SUBJECT				
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL		
	I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I																				
F	1				1			1			1			1			1				
O	6	1	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51			
R	I-----ERRI				1		1		1		1		1		1		1				
M	1				1			1			1			1			1				
	5	1	0	21	2	01	0	21	0	21	0	21	0	21	0	21	0	21			
	I-----ERRI				1		1		1		1		1		1		1				
	1				1			1			1			1			1				
	4	1	9	01	9	01	0	91	0	91	0	91	0	91	0	91	0	91			
	I-----ERRI				1		1		1		1		1		1		1				
	1				1			1			1			1			1				
	3	1	3	01	3	01	0	31	3	01	0	31	0	31	0	31	0	31			
	I-----ERRI				1		1		1		1		1		1		1				
	1				1			1			1			1			1				
	2	1	14	01	14	01	14	11	13	11	1	131	0	141	0	141	0	141			
	I-----ERRI				1		1		1		1		1		1		1				
	1	1	13	01	13	01	13	01	13	01	13	01	0	131	0	131	0	131			
	I-----ERRI				1		1		1		1		1		1		1				
	0	1	2	01	2	01	2	01	2	01	2	01	2	01	2	01	2	01			
	I-----I-----I-----I-----I-----I-----I-----I-----I																				
SUMS	41	7	43	5	29	19	31	17	16	32	2	46		48							
PCTS	85	13	90	10	60	40	65	35	33	67	4	96									
ERRORS	0	2	2	0	0	3	3	1	1	0	0	0		12							
STATISTICS..																					

COEFFICIENT OF REPRODUCIBILITY = 0.9583
MINIMUM MARGINAL REPRODUCIBILITY = 0.7708
PERCENT IMPROVEMENT = 0.1875
COEFFICIENT OF SCALABILITY = 0.8102

OO> IO

ITEM..	COMP	GENITIVE			INDOBJ			OBJLOBJ			OBJECT			SUBJECT			TOTAL
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1		
		I-ERR-----I															

COEFFICIENT OF REPRODUCIBILITY = 0.9792
MINIMUM MARGINAL REPRODUCIBILITY = 0.7708
PERCENT IMPROVEMENT = 0.2083
COEFFICIENT OF SCALABILITY = 0.9991

OC> G

ITEM..	GENITIVE			COMP	OBJLOBJ			INDOBJ	OBJECT			SUBJECT				
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	TOTAL	
	I-ERR-----			I-ERR-----			I-ERR-----			I-ERR-----			I-ERR-----			
F	1			1			1			1			1		1	
O	6	1	0	51	0	51	0	51	0	51	0	51	0	51	5	
R	1	-----ERR1					1			1			1		1	
M	1			1			1			1			1		1	
	5	1	2	01	0	21	0	21	0	21	0	21	0	21	2	
	1			1	-----ERR1					1			1		1	
	1			1			1			1			1		1	
	4	1	9	01	9	01	0	91	0	91	0	91	0	91	9	
	1			1			1	-----ERR1					1		1	
	1			1			1			1			1		1	
	3	1	3	01	3	01	0	31	3	01	0	31	0	31	3	
	1			1			1	-----ERR1					1		1	
	1			1			1			1			1		1	
	2	1	14	01	14	01	14	01	13	11	1	131	0	141	14	
	1			1			1			1	-----ERR1				1	
	1			1			1			1			1		1	
	1	1	13	01	13	01	13	01	13	01	13	01	0	131	13	
	1			1			1			1			1	-----ERR1		
	1			1			1			1			1		1	
	0	1	2	01	2	01	2	01	2	01	2	01	2	01	2	
	I-----			I-----			I-----			I-----			I-----			
SUMS	43	5	41	7	29	19	31	17	16	32	2	46			48	
PCTS	90	10	85	15	60	40	65	35	33	67	4	96				
ERRORS	0	0	0	0	0	3	3	1	1	0	0	0			8	
STATISTICS..																

COEFFICIENT OF REPRODUCIBILITY = 0.9722
MINIMUM MARGINAL REPRODUCIBILITY = 0.7708
PERCENT IMPROVEMENT = 0.2014
COEFFICIENT OF SCALABILITY = 0.8788

C1.3 Guttman scalograms : oral task, informal group.
The three orderings.

AH

ITEM.	COMP	GENITIVE		OBLOBJ		INDOBJ		OBJECT		SUBJECT		TOTAL		
ORESP.	0	1	1	0	1	0	1	0	1	0	1	0	1	
I	1	1	1	1	1	1	1	1	1	1	1	1	1	
N	6	1	0	01	0	01	0	01	0	01	0	01	0	0
F	1	1	ERR	1	1	1	1	1	1	1	1	1	1	
O	1	1	1	1	1	1	1	1	1	1	1	1	1	
R	5	1	0	11	1	01	0	11	0	11	0	11	0	1
E	1	1	1	1	1	1	1	1	1	1	1	1	1	
L	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	1	3	01	3	01	0	31	0	31	0	31	0	3
	1	1	1	1	1	1	1	1	1	1	1	1	1	
	3	1	6	01	6	01	3	31	3	31	0	61	0	6
	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	1	12	01	12	01	12	01	11	11	1	111	0	12
	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	14	01	14	01	14	01	14	01	14	01	0	14
	1	1	1	1	1	1	1	1	1	1	1	1	1	
	0	1	0	01	0	01	0	01	0	01	0	01	0	0
SUMS	37	1	38	0	29	7	28	10	13	23	0	38	38	
PCTS	97	3	100	0	76	24	74	26	39	61	0	100	100	
ERRORS	0	1	1	0	0	3	3	1	1	0	0	0	0	10
STATISTICS..														

COEFFICIENT OF REPRODUCIBILITY = 0.9561
MINIMUM MARGINAL REPRODUCIBILITY = 0.8463
PERCENT IMPROVEMENT = 0.1096
COEFFICIENT OF SCALABILITY = 0.7143

ITEM.	COMP	GENITIVE		INDOBJ		OBLOBJ		OBJECT		SUBJECT		TOTAL	
RESP.	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
I	1	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
N	6	0	01	0	01	0	01	0	01	0	01	0	0
F	1	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
O	1	1	1	1	1	1	1	1	1	1	1	1	
R	5	0	11	1	01	0	11	0	11	0	11	0	11
E	1	1	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
L	1	1	1	1	1	1	1	1	1	1	1	1	
	4	3	01	3	01	0	31	0	31	0	31	0	31
	1	1	1	1	1	1	1	1	1	1	1	1	
	3	6	01	6	01	3	31	3	31	0	61	0	61
	1	1	1	1	1	1	1	1	1	1	1	1	
	2	12	01	12	01	11	11	12	01	1	111	0	121
	1	1	1	1	1	1	1	1	1	1	1	1	
	1	14	01	14	01	14	01	14	01	14	01	0	141
	1	1	1	1	1	1	1	1	1	1	1	1	
	0	0	01	0	01	0	01	0	01	0	01	0	0
	1	1	1	1	1	1	1	1	1	1	1	1	
SUMS	37	1	38	0	28	10	29	7	19	23	0	38	38
PCTS	97	3	100	0	74	26	76	24	39	61	0	100	
ERRORS	0	1	1	0	0	4	3	0	1	0	0	0	10
STATISTICS..													

COEFFICIENT OF REPRODUCIBILITY = 0.9561
MINIMUM MARGINAL REPRODUCIBILITY = 0.8463
PERCENT IMPROVEMENT = 0.1096
COEFFICIENT OF SCALABILITY = 0.7143

ITEM.	GENITIVE				COMP				OBJ				INDOBJ				OBJECT				SUBJECT				
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
N	6	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
F	1	1	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
O	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
R	5	1	1	01	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	1
E	1	1	1	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
L	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	1	3	01	3	01	0	31	0	31	0	31	0	31	0	31	0	31	0	31	0	31	0	31	3
	1	1	1	1	1	1	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	3	1	6	01	6	01	3	31	3	31	0	61	0	61	0	61	0	61	0	61	0	61	0	61	6
	1	1	1	1	1	1	1	1	1	1	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	1	12	01	12	01	12	01	11	11	1	111	0	121											12
	1	1	1	1	1	1	1	1	1	1	1	ERR	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	14	01	14	01	14	01	14	01	14	01	14	01	0	141									14
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	ERR	1	1	1	1	1	1	1	1	1	
	0	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SUMS	38	0	37	1	29	7	28	10	13	23	0	38													38
PCTS	100	0	77	3	76	24	74	26	39	61	0	100													
ERRORS	0	0	0	0	0	3	3	1	1	0	0	0													8
STATISTICS..																									

COEFFICIENT OF REPRODUCIBILITY = 0.9647
MINIMUM MARGINAL REPRODUCIBILITY = 0.8463
PERCENT IMPROVEMENT = 0.1184
COEFFICIENT OF SCALABILITY = 0.7714

00 > IO

00 > G

C1.4 Analyses of variance : the two tasks, the two groups,
 the two retention strategies.

The written versus the oral task

BMDP2V FORMAL GROUP COR DATA W V U 1								
ANALYSIS OF VARIANCE FOR 1-ST								
DEPENDENT VARIABLE - B1								
	B2	B3	B4	B5	B6			
SOURCE	SUM OF SQUARES		DEGREES OF FREEDOM		MEAN SQUARE	F	TAIL PROB.	GREENHOUSE GEISSER PROB.
1	MEAN	1899802.77778	1	1899802.77778	436.78	0.0000		
	MODE	103469.44444	1	103469.44444	23.79	0.0000		
	ERROR	408861.11111	94	4349.58629				
2	CATED	283505.55556	5	56701.11111	74.83	0.0000	0.0000	0.0000
	CH	35422.22222	5	7084.44444	9.35	0.0000	0.0000	0.0000
	ERROR	356138.88889	470	757.74232				
EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT								
ERROR TERM	GREENHOUSE-GEISSER		HUYNH-FELDT					
2	0.7438		0.7865					

The formal versus the informal group

BMDP2V ORAL TASK COR DATA F V 1								
ANALYSIS OF VARIANCE FOR 1-ST								
DEPENDENT VARIABLE - B1								
	B2	B3	B4	B5	B6			
SOURCE	SUM OF SQUARES		DEGREES OF FREEDOM		MEAN SQUARE	F	TAIL PROB.	GREENHOUSE GEISSER PROB.
1	MEAN	826837.54250	1	826837.54250	229.53	0.0000		
	LEARN	7060.79831	1	7060.79831	1.96	0.1692		
	ERROR	302592.69006	84	3602.29393				
2	CATED	533255.50116	5	106651.10023	129.14	0.0000	0.0000	0.0000
	CL	4734.57092	5	946.91418	1.15	0.3350	0.3327	0.3334
	ERROR	346853.80117	420	825.84238				
EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT								
ERROR TERM	GREENHOUSE-GEISSER		HUYNH-FELDT					
2	0.6719		0.7116					

Pronoun versus noun retention

BMDP2V RETENTION GROUP F1 V 1								
ANALYSIS OF VARIANCE FOR 1-ST								
DEPENDENT VARIABLE - R1								
	R2							
SOURCE	SUM OF SQUARES		DEGREES OF FREEDOM		MEAN SQUARE	F	TAIL PROB.	
1	MEAN	12585.30605	1	12585.30605	473.54	0.0000		
	LEARN	36.93396	1	36.93396	1.39	0.2418		
	ERROR	2232.48465	84	26.57720				
2	RETENTION	2151.41906	1	2151.41906	30.47	0.0000		
	RL	1404.07023	1	1404.07023	19.89	0.0000		
	(ERROR)	5931.04605	84	70.60769				

APPENDIX C2

Computer printouts pertaining to spatial prepositions

C2.1 Guttman scalogram : written task, formal group.

ITEM..	ACI	OUT		THP		INT		AT		IN		FRO		ON		TIO		TOTAL	
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	9	1	3	3	0	8	0	8	0	8	0	8	0	8	0	8	0	8	8
O	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
R	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	8	1	6	4	1	3	2	2	1	3	0	4	0	4	0	4	0	4	4
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	7	1	3	2	2	5	4	3	2	5	0	7	1	6	0	7	0	7	7
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	6	1	4	1	4	1	0	5	3	2	1	4	0	5	0	5	1	4	5
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	5	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	4	1	6	0	6	0	6	0	6	0	1	5	1	5	2	4	1	5	6
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	3	1	1	3	1	0	4	0	4	0	3	1	2	2	0	4	0	4	4
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	2	1	7	0	6	1	7	0	7	0	6	1	4	3	5	2	4	3	7
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	1	6	6	6	6	0	5	1	6	0	6	0	6	0	6	0	1	5	6
	1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		1	ERR		
	1	2	3	2	0	2	0	2	2	0	2	0	2	0	2	0	2	0	2
SUMS	31	13	31	19	31	19	30	19	20	29	17	32	15	34	13	36	11	38	49
PCTS	59	31	63	37	63	37	61	39	41	59	35	65	31	69	27	73	22	78	
ERRORS	0	7	1	7	6	5	6	1	2	7	3	5	2	2	5	0	9	8	68

49 CASES WERE PROCESSED
0 (0% 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8458
MINIMUM MARGINAL REPRODUCIBILITY = 0.6689
PERCENT IMPROVEMENT = 0.1769
COEFFICIENT OF SCALABILITY = 0.5342

70% criterion level

C2.2 Guttman scalogram : oral task, formal group.

O-C performance analysis, core prepositions

ITEM..	THR	ACR	OUT	AT	INT	IN	FRO	TJO	ON	TOTAL			
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	TOTAL
P	1	1	1	1	1	1	1	1	1	1	1	1	
F	9	0	0	0	0	0	0	0	0	0	0	0	0
O	1	ERR	1	1	1	1	1	1	1	1	1	1	
R	1	1	1	1	1	1	1	1	1	1	1	1	
	8	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	ERR	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	7	1	0	1	0	1	0	1	0	1	0	1	1
	1	1	1	ERR	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	6	3	1	2	1	3	0	4	3	1	0	4	4
	1	1	1	1	ERR	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	5	5	0	4	1	0	5	3	2	3	0	5	5
	1	1	1	1	1	ERR	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	4	5	0	5	0	5	0	4	1	0	5	0	5
	1	1	1	1	1	1	ERR	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	.3	14	0	14	0	13	1	13	1	9	3	1	14
	1	1	1	1	1	1	1	1	ERR	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	2	10	0	10	0	9	1	8	2	9	8	2	10
	1	1	1	1	1	1	1	1	1	ERR	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	1	8	0	8	0	8	0	8	0	7	0	2	8
	1	1	1	1	1	1	1	1	1	ERR	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	
	0	1	0	1	0	1	0	1	0	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	
SUMS	47	1	44	4	45	3	39	9	37	11	32	16	48
PCTS	98	2	92	8	94	6	81	17	77	23	67	33	60
ERRORS	0	1	0	4	1	3	3	7	3	4	6	7	0

48 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8611
MINIMUM MARGINAL REPRODUCIBILITY = 0.8089
PERCENT IMPROVEMENT = 0.0602
COEFFICIENT OF SCALABILITY = 0.3023

O-C performance analysis, at prepositions

ITEM..	THR	ACR	OUT	INT	IN	ATPLUS	FRO	TTO	ON	TOTAL			
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	TOTAL
P	I	I	I	I	I	I	I	I	I	I	I	I	
F	9	0	0	0	0	0	0	0	0	0	0	0	0
O	I	ERR	I	I	I	I	I	I	I	I	I	I	
R	I	I	I	I	I	I	I	I	I	I	I	I	
	8	0	0	0	0	0	0	0	0	0	0	0	0
	I	I	ERR	I	I	I	I	I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	7	2	1	1	2	0	3	0	3	0	3	0	3
	I	I	I	ERR	I	I	I	I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	6	2	0	1	1	0	2	1	1	0	2	0	2
	I	I	I	I	ERR	I	I	I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	5	7	0	6	1	4	3	4	0	7	1	6	7
	I	I	I	I	I	ERR	I	I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	4	10	0	10	0	9	1	5	3	7	0	10	10
	I	I	I	I	I	I	ERR	I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	3	11	0	11	0	10	1	8	3	6	5	2	11
	I	I	I	I	I	I	I	ERR	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	2	0	0	0	0	7	1	7	1	5	3	7	0
	I	I	I	I	I	I	I	I	ERR	I	I	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	1	6	0	6	0	6	0	5	1	6	0	4	6
	I	I	I	I	I	I	I	I	I	I	ERR	I	
	I	I	I	I	I	I	I	I	I	I	I	I	
	0	1	0	1	0	1	0	1	0	1	0	1	1
SUMS	47	1	44	4	45	3	37	11	32	16	22	26	48
PCTS	98	2	92	8	94	6	77	23	67	33	46	54	60
ERRORS	0	1	0	4	1	1	0	6	6	10	4	8	0

48 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8472
MINIMUM MARGINAL REPRODUCIBILITY = 0.7708
PERCENT IMPROVEMENT = 0.8764
COEFFICIENT OF SCALABILITY = 0.3333

C2.3 Guttman scalograms : oral task, informal group

O-C performance analysis, core prepositions

ITEM.	INT		OUT		AT		ACR		THR		TTO		IN		FRD		ON		
RESP.	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
	I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		
P	1		1		1		1		1		1		1		1		1		1
I	9	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
N	1	I-ERR			1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	8	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
I	1		1	I-ERR			1		1		1		1		1		1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	7	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
I	1		1		1	I-ERR			1		1		1		1		1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	6	1	1	01	1	01	0	11	1	01	0	11	0	11	0	11	0	11	1
I	1		1		1		1	I-ERR			1		1		1		1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	5	1	1	01	1	01	1	01	0	11	1	01	0	11	0	11	0	11	1
I	1		1		1		1		1	I-ERR			1		1		1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	4	1	6	11	7	01	7	01	6	11	6	11	1	61	1	61	0	71	1
I	1		1		1		1		1		1	I-ERR			1		1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	3	1	10	01	9	11	10	01	10	01	10	01	5	51	5	51	1	91	0
I	1		1		1		1		1		1		1	I-ERR			1		1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	2	1	3	01	3	01	3	01	3	01	3	01	2	11	1	21	1	21	2
I	1		1		1		1		1		1		1		1	I-ERR			1
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	1	1	5	01	5	01	4	11	5	01	5	01	4	11	4	11	5	01	3
I	1		1		1		1		1		1		1		1		1	I-ERR	
N	1		1		1		1		1		1		1		1		1		1
F	1		1		1		1		1		1		1		1		1		1
P	0	1	2	01	2	01	2	01	2	01	2	01	2	01	2	01	2	01	2
I	I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		
SUMS	28	1	28	1	27	2	27	2	27	2	14	15	13	14	9	20	8	21	29
PCTS	97	3	97	3	93	7	93	7	93	7	48	52	45	55	31	49	28	72	
ERRORS	0	1	0	1	0	2	1	2	1	1	1	2	6	3	2	0	6	0	34

29 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8697
MINIMUM MARGINAL REPRODUCIBILITY = 0.8008
PERCENT IMPROVEMENT = 0.0690
COEFFICIENT OF SCALABILITY = 0.3462

O-C performance analysis, at+ prepositions

ITEM.	INT	THR		ACR		OUT		ATPLUS		TTO		IN		FRO		ON		TOTAL				
RESP.	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	TOTAL
	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	
P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
I	9	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	0
N	1	I-ERR	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	8	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	0
I	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	7	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	0
I	1	1	1	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	6	1	1	01	0	11	1	01	1	01	0	11	0	11	0	11	0	11	0	11	0	1
I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	5	1	3	01	3	01	2	11	3	01	1	21	0	31	0	31	0	31	0	31	0	3
I	1	1	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	4	1	8	01	7	11	7	11	7	11	4	41	4	41	1	71	0	81	2	61	8	8
I	1	1	1	1	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	3	1	8	01	8	01	8	01	8	01	8	01	3	51	4	41	1	71	0	81	8	8
I	1	1	1	1	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	1	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	2	1	2	01	2	01	2	01	2	01	2	01	1	11	1	11	1	11	1	11	1	2
I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	1	1	3	01	3	01	3	01	3	01	3	01	2	11	2	11	3	01	2	11	3	3
I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	I-ERR	ERR	1	1	1	
N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P	0	1	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	01	4	4
I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SUMS	29	0	27	2	27	2	28	1	22	7	14	15	12	17	9	20	9	20	9	20	29	
PCTS	100	0	73	7	73	7	77	3	76	24	48	52	41	59	31	69	31	69	31	69		
ERRORS	0	0	0	2	0	2	1	1	1	4	4	7	5	2	2	0	5	0	5	0	36	

29 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8621
MINIMUM MARGINAL REPRODUCIBILITY = 0.7854
PERCENT IMPROVEMENT = 0.0766
COEFFICIENT OF SCALABILITY = 0.3571

T-L performance analysis

ITEM	INT	AI		TIR		ACR		OUT		TTO		IN		FRD		ON		TOTAL	
PESP.	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	
	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	
P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
I	9	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
N	1	1-ERR	1-ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	8	1	1	01	0	11	0	11	0	11	0	11	0	11	0	11	0	11	1
	1	1	1	1-ERR	1-ERR	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	7	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
	1	1	1	1	1-ERR	1-ERR	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	6	1	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0	01	0
	1	1	1	1	1	1-ERR	1-ERR	1	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	5	1	3	01	2	11	3	01	2	11	0	31	1	21	1	21	0	31	3
	1	1	1	1	1	1	1	1	1-ERR	1-ERR	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	1	2	11	2	11	2	11	1	21	3	01	2	11	2	11	1	21	3
	1	1	1	1	1	1	1	1	1	1-ERR	1-ERR	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	3	1	5	01	5	01	5	01	4	11	4	11	1	41	3	21	2	31	5
	1	1	1	1	1	1	1	1	1	1	1	1	1-ERR	1-ERR	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	1	4	01	4	01	3	11	4	01	4	01	4	01	3	11	2	21	4
	1	1	1	1	1	1	1	1	1	1	1	1	1	1-ERR	1-ERR	1	1	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	1	1	6	01	6	01	6	01	6	01	6	01	6	01	5	11	6	01	6
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1-ERR	1-ERR	1	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	0	1	7	01	7	01	7	01	7	01	7	01	7	01	7	01	7	01	7
	1	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	1-ERR	
SUMS	28	1	26	3	26	3	24	5	24	5	21	8	21	8	18	11	9	20	29
PCTS	97	3	90	10	90	10	83	17	83	17	72	28	72	28	62	38	31	69	
ERRORS	0	1	0	2	0	2	0	4	0	1	3	4	6	2	5	0	2	0	32

29 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS.

COEFFICIENT OF REPRODUCIBILITY = 0.8774
MINIMUM MARGINAL REPRODUCIBILITY = 0.7969
PERCENT IMPROVEMENT = 0.0805
COEFFICIENT OF SCALABILITY = 0.3962

The written versus the oral task : core prepositions
(O-C performance analysis)

BMDP2V FORMAL GROUP COR DATA W V O									
ANALYSIS OF VARIANCE FOR 1-ST									
DEPENDENT VARIABLE - A1P1 A1P2 A1P3 A1P4 A1P5 A1P6 A1P7 A1P8 A1P9									
A2P1 A2P2 A2P3 A2P4 A2P5 A2P6 A2P7 A2P8 A2P9									
SOURCE									
SUM OF DEGREES OF MEAN F TAIL GREENHOUSE HUYNH									
SQUARES FREEDOM SQUARE PROB. GEISSER FELDT									
PROB.									
1	MEAN	2807820.04167	1	2807820.04167	486.31	0.0000			
	ERROR	271362.18096	47	5773.66342					
2	MODE	17115.85185	1	17115.85185	11.43	0.0015			
	ERROR	78593.48148	47	1672.20173					
3	PREP	246263.08333	8	30782.88342	49.47	0.0000	0.0000	0.0000	
	ERROR	233960.69444	376	622.23589					
4	MP	40003.10648	8	5000.38831	13.96	0.0000	0.0000	0.0000	
	ERROR	134639.56019	376	358.08394					
ERROR EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT									
TERM GREENHOUSE-GEISSER HUYNH-FELDT									
3		0.7173	0.8283						
4		0.7975	0.9363						

The written versus the oral task : at+ prepositions
(O-C performance analysis)

BMDP2V FORMAL GROUP COR DATA W V O ATPLUS									
ANALYSIS OF VARIANCE FOR 1-ST									
DEPENDENT VARIABLE - A1P1 A1P2 A1P3 A1P4 A1P5 A1P6 A1P7 A1P8 A1P9									
A2P1 A2P2 A2P3 A2P4 A2P5 A2P6 A2P7 A2P8 A2P9									
SOURCE									
SUM OF DEGREES OF MEAN F TAIL GREENHOUSE HUYNH									
SQUARES FREEDOM SQUARE PROB. GEISSER FELDT									
PROB.									
1	MEAN	2973696.00000	1	2973696.00000	320.36	0.0000			
	ERROR	268587.77778	47	5714.63357					
2	MODE	8005.67130	1	8005.67130	4.80	0.0335			
	ERROR	78444.10648	47	1669.02394					
3	PREP	257217.25000	8	32152.15625	32.75	0.0000	0.0000	0.0000	
	ERROR	229174.97222	376	609.50790					
4	MP	37938.41204	8	4742.30150	13.92	0.0000	0.0000	0.0000	
	ERROR	128073.81019	376	340.62184					
ERROR EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT									
TERM GREENHOUSE-GEISSER HUYNH-FELDT									
3		0.7136	0.8234						
4		0.7814	0.9143						

The formal versus the informal group : core prepositions
(0-C performance analysis)

ANALYSIS OF VARIANCE FOR 1-BT								
DEPENDENT VARIABLE - P1								
	P2	P3	P4	P5	P6	P7	P8	P9
SOURCE	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE	F	TAIL PROB.	GREENHOUSE GEISSER PROB.	HUYNH FELDTPROB.	
1	MEAN	1583564.14067	1	1583564.14067	387.72	0.0000		
	LEARN	5761.48555	1	5761.48555	2.14	0.1478		
	ERROR	202080.84634	75	2694.41128				
2	PREP	370459.76602	8	46307.47073	71.49	0.0000	0.0000	0.0000
	FL	40059.14842	8	5006.89393	7.73	0.0000	0.0000	0.0000
	ERROR	388625.76644	600	647.70961				
ERROR TERM								
EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT								
2	GREENHOUSE-GEISSER		HUYNH-FELDT					
	0.8552		0.9624					

The formal versus the informal group : at+ prepositions
(0-C performance analysis)

ANALYSIS OF VARIANCE FOR 1-ST									
DEPENDENT VARIABLE - P1									
	P2	P3	P4	P5	P6	P7	P8	P9	
SOURCE		SUM OF SQUARES	DEGREES OF FREEDOM		MEAN SQUARE	F	TAIL PROB.	GREENHOUSE GEISSER PROB.	HUYNH FELD T PROB.
1	MEAN	1776123.31873	1		1776123.31873	680.22	0.0000		
	LEARN	5003.34212	1		5003.34212	1.92	0.1704		
	ERROR	193222.10086	74		2611.10947				
2	PREP	360569.01131	8		45071.12641	71.29	0.0000	0.0000	0.0000
	PL	44763.46161	8		5595.68270	8.85	0.0000	0.0000	0.0000
	ERROR	374263.00331	392		632.20440				
ERROR TERM									
EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT									
2		GREENHOUSE-GEISSER			HUYNH-FELD T				
		0.8643			0.9780				

The formal versus the informal group : core prepositions
(T-L performance analysis)

ANALYSIS OF VARIANCE FOR 1-ST								
DEPENDENT VARIABLE - P1								
	P2	P3	P4	P5	P6	P7	P8	P9
SOURCE	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE	F	TAIL PROB.	GREENHOUSE GEISSER PROB.	HUYNH FELDT PROB.	
MEAN	914433.27537	1	914433.27537	331.77	0.0000			
LEARN	5818.81649	1	5818.81649	2.11	0.1504			
ERROR	204703.18351	73	2796.04245					
PREP	180736.37101	8	22592.04638	38.57	0.0000	0.0000	0.0000	0.0000
PL	19665.84287	8	2458.23034	6.37	0.0000	0.0000	0.0000	0.0000
ERROR	231368.96232	600	385.41474					
ERROR TERM								
EPSILON FACTORS FOR DEGREES OF FREEDOM ADJUSTMENT								
2	GREENHOUSE-GEISSER	HUYNH-FELDT						
	0.9001	1.0000						
NUMBER OF INTEGER WORDS OF STORAGE USED IN PRECEDING PROBLEM 1548								
CPU TIME USED 4.893 SECONDS								

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