INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

FUNCTIONAL CATEGORIES AND NULL SUBJECTS IN HEBREW AND CHILD HEBREW

by

IRIS ELISHA

A dissertation submitted to the Graduate Faculty in Linguistics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

1997

This manuscript has been read and accepted for the Graduate Faculty in Linguistics in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

29 Jan 1997 — Date
Chair of Examining Committee

1/29/97 — Date
Executive Officer

Helen Smith Cairns

Richard S. Kayne

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

FUNCTIONAL CATEGORIES AND NULL SUBJECTS
IN HEBREW AND CHILD HEBREW

by

Iris Elisha

Adviser: Professor Virginia Valian

This dissertation investigates the relation between the functional heads TP and AgrP and the use of overt and covert subjects across languages. This relation is first accounted for in Modern Hebrew, where both subject options are attested in different tense-person contexts. In a study of child Hebrew, 19 children ranging in age from 1;10 to 2;7 and in Mean Length of Utterance in Words from 1.40 to 3.01 were audiotaped in natural conversation. The study evaluates children's initial knowledge of functional categories, and determines when and how Hebrew speaking children acquire the grammatical constraints underlying their mixed language. The *Minimal Competence* model argues that children are endowed with a minimal structure that consists of categories, e.g., TP, and features, e.g., [finite], which are cross-linguistically selected. Since all innate categories are licensed directly by having content, overt subjects are not required to license them indirectly. AgrP is not a cross-linguistic category, requiring children to learn whether their target is of the

agreeing type. That learning occurs at the one-word stage in Hebrew. At the combinatorial stage, two distinct stages in the present data are observed: above MLUW 2.0, children show full competence of the mixed system in Hebrew. Observable development is attributed to performance and pragmatic factors. Below MLUW 2.0, children need to set Agr strength and determine which AgrP is projected in different structures. As early as Group I, all children distinguish between null subject contexts (producing less than 30% subjects in verbal utterances) and non-null-subjects contexts (producing on average more than 70% subjects). Yet, individual variation in Group I shows that production of subjects in non-null contexts is not uniform. The results indicate that children are attuned to inflectional affixation, specifically to tense and person, in producing sentences with and without subjects. The children who acquired the correct interaction between the matrices show the adult pattern as early as Group I; other children show a competence deficit by generalizing over the matrices in the wrong tense-person context. These findings are corroborated by cross-linguistic evidence.

Acknowledgements

The pleasant task of thanking all those who have accompanied me and this work to its end seems almost as difficult as it was writing it.

Following my family's heritage and love for languages - "a true treasure", my grandmother used to say, I became intrigued with languages. In undergraduate school, I was introduced to linguistics for the first time and was fascinated by the variety of issues, the questions, and the implication within this field. For that I have to thank all my undergraduate professors: Jonathan Fine, Malka Rappaport-Hovav, Susan Rothstein, and Joel Walters. The theoretical discussions with them lead me to seek answers in other fields, specifically language acquisition, which I have decided to undertake. The support and encouragement I have received from my professors, especially Susan Rothstein, made the trip to NY a possible adventure.

I have no words to thank the Linguistics department at the Graduate School for the warm reception I received upon arriving to NY, especially Judith Tucker. I would also like to thank all my friends, colleagues, and faculty members for the exciting years I have spent here both professionally and personally, and in memory of Tracey Forest.

Thanks also go to Roberta Zalkin for her warm welcome and

help over the years.

The long night discussions, comments, and judgments of my friends here and in Israel, especially that of Vera Albrecht, deepened and broadened my understanding of this work.

Gratitude is due to the members of my committee Virginia Valian, Helen Cairns and Richard Kayne, and also John Whitman, for their invaluable criticism throughout this dissertation. Special warm thanks go to Helen Cairns also for her support and confidence in me. I am indebted to Virginia Valian, for the hours spent, for the enormous encouragement, and especially for making it a lifetime learning experience.

Above all, this dissertation is dedicated to my family, to my parents, Moshe and Shoshana, and my sister Dorin, without whom I would have never succeeded and come thus far.

TABLE OF CONTENTS

Page

Page

PART III. THE DATA

LIST OF TABLES

CHAPTER

APPENDIX

LIST OF FIGURES

PART I: UNDERLYING SYNTACTIC STRUCTURES

Chapter One

Introduction

1.0 Underlying Theoretical Assumptions

In 1965, Chomsky suggested that '...as a precondition, [a child]...must posses first a linguistic theory that specifies the form of the grammar of a possible human language [i.e., Universal Grammar], and second, a strategy for selecting a grammar of the appropriate form that is compatible with the primary linguistic data' (ibid, p.25). Thus, Universal Grammar (henceforth, UG) must meet two conditions: First, UG must be compatible with the range and diversity of both existing languages and possible ones, excluding impossible languages. The second condition is that it must be sufficiently restricted and constrained so that the options it permits will allow the child to acquire the grammar on the basis of limited evidence.

In this work, I will focus on one grammatical area in UG,

namely that of functional categories. I will attempt to justify what I believe to be the necessary and sufficient initial structure which allows a child to acquire her/his target language. Furthermore, I will look at another variation exhibited among languages, namely, that of the null-subject phenomenon, and show that it can be derived and accounted for from a possible setting of functional categories, and once more look at the relevant child data. Thus, this thesis will be divided into three parts: In part I, I present the relevant syntactic structures and discuss functional categories and the use of subjects. These structures will represent the structure of the adult final stage, which is the stage the child will eventually have to reach. In part II, based on the analysis of adult grammar, I will propose the initial grammatical structure the child must be endowed with in order to reach the adult stage using the evidence available to her/him. Since the investigation focuses on adult and child Hebrew, part III presents naturalistic data collected from young Hebrew speaking children on the two related topics - functional categories (specifically that of verbal inflection) and null subjects. Comparative cross-linguistic data on subject production will also be presented in this part. I hope that the Hebrew data and its analysis will provide further evidence supplementing the ongoing comparative linguistic work on these issues.

This chapter lays out the theoretical framework assumed

and outlines the proposals that will be elaborated on in consequent chapters.

1.1 The Principles and Parameters Approach to Language Theory

The conditions on UG, as stated above, lead us '...to expect to find [...] a highly structured theory of UG based on a number of fundamental principles that sharply restrict the class of attainable grammars and narrowly constrain their form, but with parameters that have to be fixed by experience' (Chomsky, 1981: pp.3-4) - hence, the *Principles and Parameters* approach.

The relation between principles and parameters is neither straightforward nor uniform. Theoretically, it is possible that observable variation will be represented by parametric choice without being related to a universal principle.[1] On the other hand, when a principle IS specified, it does not have to be parameterized - in other words, it need not exhibit predictable variations. For example, the Case Filter which originally required all phonetically realized NPs to be assigned abstract Case (Chomsky, 1981) is claimed to apply universally, and has no parameterized alternates. The *Extended*

---

[1] Further investigation might reveal that this option does not exist, and that parametric variation is always derived from an abstract principle.

Projection Principle (henceforth, EPP; Chomsky, 1981), on the other hand, states the requirement that all clauses have subjects or, put differently, that 'every syntactic predicate must be syntactically saturated' (the *Predication Condition;* Rothstein, 1995: p.503), but leaves open to parameterization across languages the phonetic realization of the subject. In other words, the requirement for predicate saturation by a subject is universal; however, the requirement of an overt or covert subject is seen as a choice between two parameter values, [±null subject] - hence the term the *Null-Subject Parameter*.

To exemplify, within this framework, English-type languages were argued to be set to the negative value of the parameter, i.e., [-null subject], requiring the subject of tensed clauses to be phonologically realized, marking (1a) grammatical, as opposed to the ungrammaticality of (1b):

1.a. I ate an apple.
  b. *ate an apple.

In contrast, Italian-type languages and mixed languages, such as Hebrew, were argued to be set to the positive value, i.e., [+ null subject], allowing subjects of tensed clauses to be phonologically null, marking the equivalent of (1b) grammatical, as in (2):

2. axal-ti tapuax.
   ate-(1st+sg) apple
   'I ate an apple' (Modern Hebrew)

Conforming with the universality of the *Extended Projection Principle*, i.e., with the requirement that all tensed clauses have a subject, it has been suggested that null subject languages, which on the surface seem not to satisfy the universal principle and requirement, have a covert syntactic subject (namely, *pro*), licensed and identified under conditions that will be specified in subsequent chapters.

As noted, the *Principles and Parameters* approach to *Universal Grammar* provides us with a framework to account for all possible languages and their acquisition based on the evidence available to the child. To avoid running the risk of attributing every observable difference between languages to a parametric variation, thus inflating the number of parameters in the same way the number of grammatical transformations proposed in the 70s proliferated, "...we hope to find that complexes of properties differentiating otherwise similar languages are reducible to a single parameter, fixed in one way or another way" (Chomsky 1981: p.6). This is not to say that there cannot possibly be a one-to-one relation between a parameter and a specific construction. What is suggested is that, ideally, we do not want <u>every single</u> construction to enter into a one-to-one relation with a

distinct parameter. For example, the choice of an overt versus covert subject could reflect a real parametric choice, as explained above. Alternatively, that choice could be reducible to the setting of a more general abstract parameter having a complex effect, one of which is the [±null subject] property. I will subscribe to the latter view and expand on it in subsequent chapters where I will also discuss alternative accounts for this phenomenon, especially in light of its realization in Modern Hebrew. For expository purposes, I will go on using the term *Null-Subject Parameter* to exemplify other concepts and controversial issues.

Our goal is not only to find what the parametric options are, but especially in what components of the language they are to be found (Chomsky 1995). We assume that a language consists of two components: a lexicon and a computational system, and that 'UG must provide means to present an array of items from the lexicon in a form accessible to the computational system. We may take this form to be some version of X-bar theory' (Chomsky 1992: p.8). The lexicon consists of *substantive categories*, i.e., nouns, verbs, adjectives, and prepositions, and *functional categories*, i.e., Infl(ection) (possibly Tense and Agr), Comp(lementizer), Det(erminer), maybe Aspect, and so forth. Each of the lexical categories is actually a complex of morpho-phonological, formal and semantic features, which neither follow from the principles of UG, nor from language specific principles - any specification of those

general principles in a lexical entry would be redundant. For example, tensehood will not be specified in the lexical entry of any verb since it follows from its categorical property [+V].

It has been suggested that parameters of UG relate to the lexicon and not to the computational system. This is partially due to the fact that variation in the former is observable and can serve as the primary linguistic data (henceforth, PLD) the child needs to set the parameters in her/his language. Variation in the computational system, on the other hand, is not readily available as PLD. This suggests that there might not be actual variation in the computational component, and that parameterization is reduced to the lexicon component of the language, i.e., to the *formal features* of the lexical entries. But even here universality could apply if we assumed that the substantive categories are drawn from a universal vocabulary. This restricts parameterization even further so that it applies to the formal features of the non-substantive elements in the lexicon, i.e., to functional categories, and to general properties of lexical items, such as the *Head Parameter*[2] (see Borer 1984, Fukui 1988, Chomsky 1989).

Applied to the null subject parameter, the implementation of the EPP and the choice between obligatory and optional

---

[2] The *Head Parameter* differentiates between a language such as German in which verbs are head-final deriving the underlying (S)OV word order, and a language such as English in which verbs are head-initial deriving the underlying (S)VO word order.

subjects becomes a choice between formal features of functional categories, and more specifically, of Infl. This intuition was already expressed in Chomsky and Lasnik (1977), stating that 'a condition on Subject Deletion is, apparently, that the subject be indicated in the verbal inflection' (ibid, p.453). Though intuitive, the exact nature of that relation still eludes us. In Chapter 3, we will discuss this relation and derive the null-subject phenomenon from the setting of the functional categories TP and AgrP. We will also show that Case, associated with TP, seems to play as important a role as TP and AgrP in licensing null subjects.

1.1.1 The Principles and Parameters Approach to Language Acquisition

Not only are we interested in discovering the initial grammar (i.e., the initial UG setting) and the adult grammar (i.e., the final UG setting for the target language), but we are also interested in finding out the developmental stages exhibited in progressing from one grammar to the other (Weissenborn, Goodluck, and Roeper, 1992). Both the *Triggering* and the *Hypothesis Testing* approaches to language acquisition accept *Principles and Parameters* as a theory of language. They differ, however, in its application as a theory of language acquisition.

One of the questions language acquisition theorists have been debating within the principles and parameters framework, is the way in which experience, i.e., primary linguistic data (PLD) is used by the child to set parameters. This has direct bearing on what the initial parameter value setting is at the outset of language acquisition, and as a result, on the stages exhibited in the learning process.

As opposed to an inductive generalization learning mechanism, learning within a triggering approach progresses deductively. Since UG is innately based, its universal principles and parameters constitute the child's pre-linguistic knowledge. At that stage, the parameter values are either unset or set to an unmarked value. The data then play the role of triggering the setting of the correct value in case the initial setting was unset; or alternatively, in case there is an initial setting, confirm the initial unmarked one in the absence of evidence in favor of the more marked setting, or reset the value to the marked one, if evidence for it was found. In principle, the learning mechanism needs a single piece of relevant datum in the target language in order to proceed following one of these three options - triggering the setting of unset values, confirming the initial unmarked setting, or resetting it to the more marked value.

Crucially, a trigger must be constrained in such a way so that its effect is unambiguous. To exemplify, a trigger for the null subject parameter cannot be the presence versus

absence of subjects: Since English-type languages exhibit structures such as imperatives, in which subjects are grammatically missing, the trigger must be constrained to tensed clauses only. Furthermore, given the "logical problem of language acquisition" (Hornstein and Lightfoot, 1989), ungrammatical sentences lacking subjects may also constitute part of the child's evidence. Thus, if the trigger were the absence versus presence of subjects, the child would be misled by such ungrammatical sentences and consider them as the positive evidence to incorrectly (re)set the parameter value to [+null subject].[3]

Hyams (1986) suggested that the *designated (unambiguous) trigger* (to use Fodor's (1994) term) for the null subject parameter are expletives. Since expletive subjects are attested only in Non-Null-Subject languages, as the

---

[3] Assuming the data were "clean" and constrained as explained, under what circumstances, if at all, can the child take the absence of a structure as evidence for its ungrammaticality? In other words, if the child never hears a subjectless tensed sentence, can s/he take it to be non-existing in the target language? This type of evidence was referred to as *Indirect Negative Evidence*:

> 'A not unreasonable acquisition system can be devised with the operative principle that if certain structures or rules fail to be exemplified in relatively simple expressions, where they would be expected to be found, then a (possibly marked) option is selected excluding them in the grammar, so that a kind of "negative evidence" can be available even without corrections, adverse reactions, etc.' (Chomsky, 1981:p.9)

In order for such an operative principle to work, the terms "simple expression" and "where they would be expected to be found", and crucially "when...", must be precisely defined.

corresponding examples from English and Spanish show,

3.a. It seems that John is happy. (English)

b. 0 parece que Juan esta feliz. (Spanish)

their absence versus presence in sentences whose verbal predicate does not assign a thematic role to its subject serves to set apart the two language-types. This still does not provide a solution for the "logical problem of language acquisition", since it has not excluded possible ungrammatical sentences in which the expletive subject was wrongly omitted. Nor can it deal with mixed Null-Subject languages, which on the one hand classify together with Null-Subject languages in allowing for *pro* in contexts which license it; but on the other hand, classify together with Non-Null Subject languages in exhibiting overt expletives (Vainnika and Levy, 1995; but see Hazout, 1990).

To summarize, the advantage of the triggering approach is that it guarantees a rapid learning process which does not depend on the amount of data one hears, but rather on the type of data, i.e., on triggers. However, triggers must be constrained so that no misleading data, especially in the form of ungrammatical sentences, can affect the parameter setting leading the child to the wrong conclusion in her/his target language.

The *Hypothesis Testing* approach tries to circumvent the

problem of possible misleading input. It suggests that not only are all parameter values initially unset and at the child's disposal, but that the setting of the correct value proceeds through hypothesis testing. Following Chomsky (1965), the child is seen as constructing hypotheses (deductively) based on the innate component. Thus, UG restricts the child's initial hypotheses to a limited set of options s/he can choose from - a set which crucially lies within the boundaries of possible human language options, preventing the child from entertaining "wild" hypotheses. Based on these hypotheses, the child weighs the incoming evidence and checks it against each parameter value until the final setting is reached. S/he is not misled by single sentences, as all sentences can in principle constitute evidence for or against a parameter value. Evidence for one value accumulates until it outweighs the evidence for the other value.[4]

The main problem with this approach is that it does not constrain the data enough to allow for the rapid almost error-free process of language acquisition exhibited by children. Since the child does not rely on a single datum to set a parameter, s/he is evaluating and tabulating the data to decide whether what s/he has heard confirms or refutes the hypothesis. At this point, the same question raised earlier with regard to *Indirect Negative* evidence (see footnote 3)

---

[4] Obviously, evidence against the wrong value also constitutes evidence for the correct value.

must be addressed here as well: How much data are necessary to count as confirmation or disconfirmation of a hypothesis? Moreover, if children have to rely on the amount of data they receive, then a child who receives more data should set her/his parameter sooner than a child whose interaction with other speakers is minimal. Thus, we should observe timing differences among children in terms of parameter setting, and possibly, differences in the order in which parameters are set. This is not a problem unique to *Hypothesis Testing*. Within the *Triggering* approach, although triggers are designated by UG and specific, they are as much part of the child's input as any other piece of non-triggering evidence, which the child has to receive and incorporate in his/her grammar. Therefore, one could argue that, unless triggers are ordered, different children might receive a trigger, i.e., a certain piece of evidence, at different times affecting the order of acquisition and its timing in exactly the same way that has been argued for the "non-triggering" evidence within the *Hypothesis Testing* approach.

As a result, if we believe the relation between principles and parameters and the data to be highly constrained, both triggering and hypothesis testing might achieve the same results. For instance, if the data are clear and substantial, as in choosing between two options when most (if not all) of the data support one of them, tabulating the data and reaching the correct conclusion might be so rapid

that the weighing process would proceed and end undetected, giving the impression of a triggering effect. One possibility that would allow us to empirically choose between the two approaches is to look at areas of variation where more than one option of that variation is instantiated within one and the same language[5] and look at the hypotheses the child entertains. Following hypothesis testing, one strategy would be to shift from one parameter value to the other, or from one type of variation to the other, until there is enough evidence to outweigh one value and select the other value(s). This is not an option available if the child is susceptible to triggers, since their function is to trigger the correct parameter setting - hence eliminating the need for and the process of resetting the parameter value. On the other hand, if the child chooses a second strategy and waits till all evidence has been tabulated before reaching the final conclusion and does not go back and forth following the incoming data - at least in terms of production - we will once more be unable to decide between the two approaches. In both cases, the output of the correct setting will be the only observable output, while output derived from resetting of the incorrect value will be missing.

Both the theoretical discussion and the acquisition data presented in subsequent chapters will demonstrate the need to

---

[5] This is true whether a variant stands for a parameter value or for an effect of a more abstract parameter, as in the case of the so called *Null-Subject Parameter*.

redefine the *Null Subject* parameter. The Hebrew data will show both strategies to play a role. When the evidence is ambiguous children entertain more than one option at a time and make gradual decisions following closely the evidence provided by the overt inflectional morphology, i.e., by the features of the functional categories. When such evidence is unambiguous, the correct choice of inflection and subject use is immediately observable in the child's productions.

In the following sections, I will review some of the basic assumptions underlying the syntactic structure. Those will include the lexical level, i.e. the predicate level, and the functional level which is of specific interest to us as already explained. In addition, I will look at the typical relations instantiated at each level: thematic roles and subcategorization frames at the former level, and Case assignment and agreement and the latter level. In Chapter 3, it will be argued that not only inflectional morphology plays a crucial role in understanding the correct use of subjects, but so does the assignment of nominative Case.

1.2 Lexical and Functional Categories

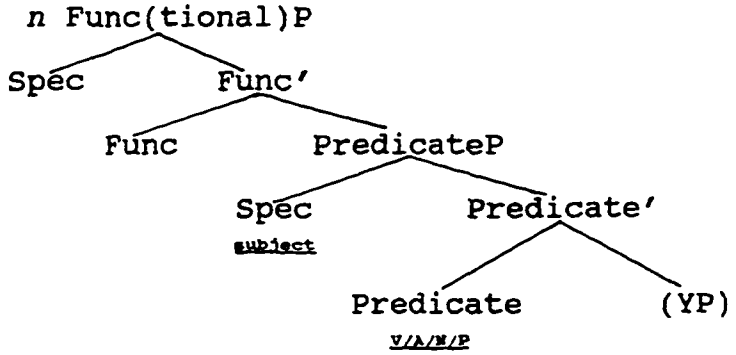
1.2.1 The Subject-Predicate Relation

Following Bowers (1993), we assume that predication relations are established at a level lower than the inflectional

functional heads. Those include thematic roles and subcategorization frames associated with lexical heads, especially nouns, verbs, adjectives, and possibly prepositions. We also follow Sportiche (1988), Koopman and Sportiche (1991) and others in generating the subject internal to the predicate VP, and extend this subject-predicate relation to all lexical categories, so that subjects are generated as a rule in [Spec, NP/AP(/PP)].

As opposed to thematic roles and subcategorization frames, other relations such as Case and agreement are established at the functional levels above the predicate level. The number of possible functional levels is represented by *n* in structure (4) below.[6]

4.



The range of *n* is controversial, and so is the question of

---

[6] Bowers (1993) postulated a functional level he calls Pr(edicate)P, selecting for all lexical categories. In contrast, the PredicateP level postulated in (4) is a lexical level standing for any of the lexical heads, which function as predicate heads. If put in one structure, then, Bowers' (1993) functional PrP would dominate the lexical PredicateP.

whether all languages specify all functional categories possible in UG, even if some are used vacuously. These questions are crucial for the theory of language acquisition as well, and play an important role in finding what the child's initial structure is. I will discuss those important issues extensively in Chapter 4.

In the following sections we will look at the level above the PredicateP, i.e., the functional level. The underlying assumptions will be based on the *Split-Infl Hypothesis* (Pollock, 1989), and its extension in Chomsky (1989, 1992). In Chapters 2 and 4, based on cross-linguistic evidence from adult and child language, I will show the need for further modifications of the underlying syntactic structure, and also show those modifications to be supported by more current research, specifically that of Chomsky (1995).

1.2.2 The Split-Infl Hypothesis - Pollock (1989)

Following Emonds's (1978) work on verbal inflection, a distinction was made between French-type languages and English-type languages. The former was suggested to have verb raising to Infl, whereas in the latter, Infl lowered to the Verb. Moreover, taking VP-adverbs to be base-generated adjoined to the VP and hence to the left of the underlying verb, verb movement to the left in French-type languages,

crosses over the adverb resulting in the order Verb-Adverb-Object as in (5a). In English-type languages, lowering Infl to the verb across the adverb surfaces in an Adverb-Verb-Object order, as shown in (6a):

5.a. Jean embrasse souvent Marie.
  b. *Jean souvent embrasse Marie.
6.a. John often kisses Mary.
  b. *John kisses often Mary.

The behavior of the English auxiliaries *be* and *have* demonstrated that the observation cannot be reduced to a difference between the verbal systems in each language-type. Since the auxiliaries exhibit the same properties as French verbs with regard to the adverb position, as shown in (7):

7. a. John has often kissed Mary.
   b. Mary was often kissed by John.

we need to find out what the former has in common with the latter, and how they differ from the lexical verbs in English-type languages.

Pollock (1989) suggested an explanation in terms of theta-theory. A verb in the Verb+Infl amalgam, whether created by verb-raising or Infl-lowering, must be able to theta-mark its complements at all levels. When Infl lowers to the

position of the verb and adjoins to it, the complex retains its ability to theta-mark the verb's complements. However, when the verb raises to Infl leaving a trace, it must still be able to head a theta-chain and "transmit" the theta-marking property to its trace which in turn will theta-mark the complements. Pollock has argued that only a strong Agr[7] will allow an adjoined element, the verb in this case, to head a theta-chain. Strong Agr is "transparent" in the sense that adjunction to it does not block theta-role assignment, and does not create a theta-criterion violation. On the other hand, weak Agr is "opaque", in the sense that adjunction to it blocks theta-role assignment so that the verb cannot head a theta-chain, hence violating the theta-criterion. Thus, Pollock argues that Agr is strong in French-type languages but weak in the English-type languages. Since Agr in French is strong, the verbs can raise to it without creating a theta-criterion violation. In English, however, raising to weak Agr is barred since it violates the theta-criterion.[8] Finally,

---

[7] At this stage, Agr is still regarded as a feature in Infl and not as an independent functional head.

[8] It is important to note that the chain created by lowering Infl is an improper chain (as the trace c-commands its antecedent) therefore the complex [$_{V}$Verb-Infl] will have to raise to the position of the trace adjoining to it or substituting for it at LF. Within the Minimalist framework, lowering is barred altogether, and instead a one step process of covert raising at LF takes place, assuming that the verbs in English have been mapped from the lexicon onto the syntax already inflected. This reduces the process of raising the verb to Infl to a process of feature checking rather than attaching the features to a bare form.

auxiliaries differ from true verbs in that they are not theta-markers. As such, they can raise to weak Agr without violating the theta-criterion.

This explanation can be further extended to negation, where NegP dominates VP and is dominated by IP. Given the explanation above, verbs in French, as well as English auxiliaries, which raise to Infl, will cross Neg (French *pas* and English *not*) as demonstrated in (8a) and (8b), as opposed to true verbs in English which will not (8c):[9]

8. a. Jean (n') embrasse pas Marie.
   John (*ne*) kiss NEG Mary
   'John does not kiss Mary'
   b. John has not kissed Mary.
   c. *John not kissed Mary.

However, when extended to infinitives, there seems to be a conflict between the strength of Agr and the strength of Tense - both features of IP. Since Agr in French is strong, it forces obligatory raising to it.[10] However, the examples in

---

[9] The disregards other operations relevant to English negatives but irrelevant to the issue at hand.

[10] This followed, first, from the "least effort" (Chomsky, 1989) condition by which shorter derivations are preferred over longer ones. In other words, one process of raising is preferred over a two-step derivation of first lowering Infl to the verb and then raising the complex [$_{V}$Verb-Infl] to the trace of Infl to create a proper chain (either by adjunction to the trace or substitution). This does not explain, however, why raising in this case is obligatory in

(9a-b) show that infinitival auxiliaries, including lexical *avoir*, raise only optionally to Infl. In addition, infinitival lexical verbs do not raise to Infl despite the strength of Agr, as shown in (9c-d):

9.a. ne pas être heureux.
ne NEG be(infin) happy
'not to be happy'

b. n'être pas heureux.
ne be NEG happy
'not to be happy'

c. ne pas sembler heureux.
ne NEG seem(infin) happy
'not to seem happy'

d. *ne sembler pas heureux.
ne seem NEG happy
'to seem not happy'

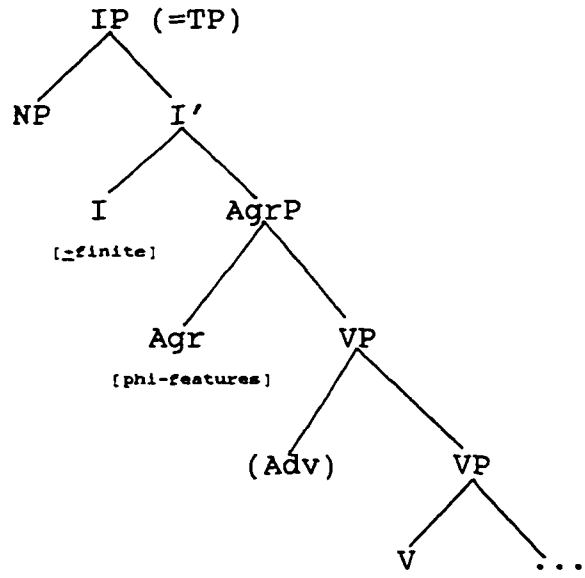
This is either an indication that the [-finite] feature of Tense in Infl plays a more prominent role than that of Agr, or alternatively, it shows the need for a different account where each feature preserves its strength without being affected by, or conflicting with the strength of the other feature.

---

the syntax and cannot be delayed to LF as in English. The assumption is that if the strong features are not checked in the syntax, they will "survive" at PF, and as they are not legitimate objects at PF, i.e., they cannot be interpreted by the articulatory-perceptual system, the derivation will crash.

Pollock advocates the latter and suggests to achieve the required feature independency by splitting Infl into two distinct functional categories where each functional feature heads its own maximal projection. The lower functional category AgrP, heading Agr, consists of the ϕ-features [person], [number], and [gender]. Dominating it is the functional head T(ense)P, consisting of the features associated with tense, i.e., [±finite] and presumably [±past] when [+finite]. The modified structure is presented in (10):

10.



The split of IP into two functional heads solves the problem of conflicting feature strength and accounts for the facts in (9). Thus, (9c) is accounted for by raising *sembler* ('seem') to Agr (being strong in French) but not to Infl/Tense, which

is [-finite] and assumed to be weak, as in (9d).[11] Since it is not a theta-marker, the auxiliary être ('be'), can either raise to Agr, and have Infl/Tense lower to it or raise to it at LF), resulting in (9a); or raise to both strong Agr and weak Infl/Tense, as in (9b).

Pollock's (1989) account provides a way to explain the differences between languages such as French and English by a parameterization of the functional features along a "weak" and "strong" argument based on thematic relations.[12] The consequences of this parameterization are reflected in the overt movement of lexical verbs in the syntax, as in French-type languages, as opposed to a covert movement of those verbs at LF, as in English-type languages.

1.2.3 The Split-Infl Hypothesis Extended - Chomsky (1989, 1992)

Pollock's (1989) work on the Split-Infl proposal generated even more interest in the structure of IP and its functional heads. Once the functional properties were dissociated, one of the questions raised was whether Tense dominates Agr

---

[11] Following the Minimalist framework, [-finite] plays no role at LF, i.e., it has no interpretation at LF, and therefore, it is deletable at that level.

[12] In the Minimalist program, the features will be reinterpreted in terms of their interpretability at LF. I will return to that in Chapter 2.

(following Pollock) or Agr dominates Tense.

There are two main arguments in support of Agr dominating Tense. If subject-verb agreement is an instantiation of government relations, Agr will fail to govern the subject raised above it if it is dominated by a higher maximal projection, namely by TP. In addition, there is morphological evidence from many languages showing subject agreement to be external to tense (Belleti, 1990).

On the other hand, Kayne's (1989) analysis of participle agreement in Romance languages supports Pollock's argument for having an AgrP intervening between TP and VP. However, contrary to Pollock, the AgrP assumed by Kayne is an instantiation of object-verb agreement and not subject-verb agreement. As his example, presented in (11), shows:

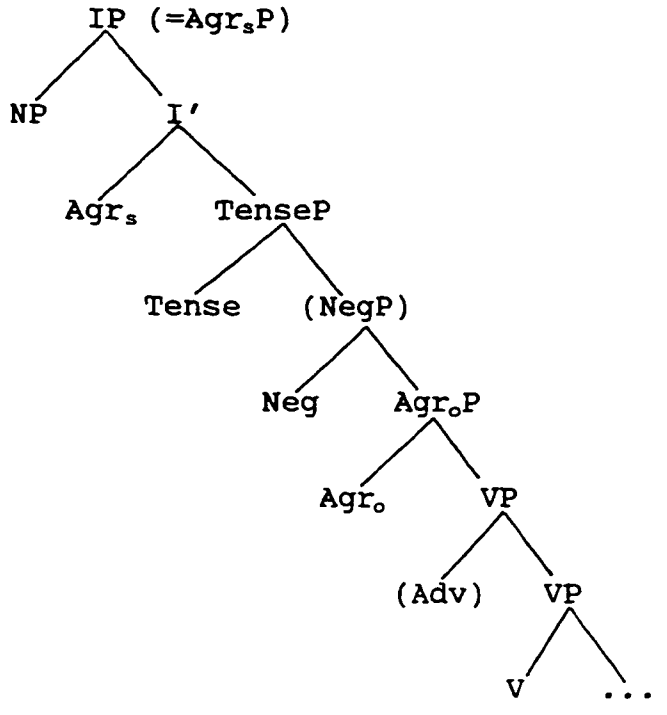
11. Je sais combien de tables ils ont repeintes
    I know how many of tables(fm-pl) they have repainted(fm-pl)

The past participle *repeint* ('repainted') agrees with its object, the fronted *wh*-phrase, and surfaces as *repeintes* (pl-fm). Under his analysis, Kayne suggests that the object *wh*-phrase has raised from its base-generated position and adjoined (first) to AgrP. Consequently, it enters in a government relation with the Agr head, to which the participle has adjoined, resulting in the agreement between the

participle and the raised object - hence, *repeintes(pl-fm)*. If the *wh*-phrase has not adjoined to AgrP, the past participle will surface without agreement - hence, *repeint*.

In order to reconcile the two sets of evidence, Chomsky (1989) assumes that object agreement as well as subject agreement are instantiations of a government relation between AgrP and its associated verb. Assuming, contrary to Pollock (1989), that there are no lowering processes only raising, there are still two possible processes for raising the subject and object: either the NP raises and adjoins to AgrP (as suggested by Kayne (1989)) so that the verb adjoined to Agr agrees with the NP adjoined to AgrP, or the NP raises to [Spec, AgrP] so that the agreement relation between the verb adjoined to Agr° and the NP is a Spec-head relation. In any case, we end up with a single agreement process, but two agreement sites, one for subject agreement, hence Agr_s; and one for object agreement, hence Agr_o, so that TP is both dominated by and dominates an instantiation of an AgrP category. The structure in (12) represents a modification of (10) reflecting the extension of the structure as explained above. The extended structure and the Spec-head relation is also used to unify the process of Case assignment. This is discussed in the next section.

12.



1.2.4 Case Theory

In previous sections we have discussed the functional level and relate it to the lexical level (PredicateP) it dominates. It was argued that subject-verb agreement is a relation mediated by AgrP. The verb raises from its base-generated position in PredicateP to the functional head of TP and the complex [$_T$Tense-Verb] raises to Agr$_s$°. The internal subject raises from its base-generated position in [Spec, VP] and eventually ends up in [Spec, Agr$_s$P], or adjoined to Agr$_s$P. Thus, subject-verb agreement is established in this spec-head relation in Agr$_s$P. Structural Case, to which we now turn, is also argued to be assigned in this spec-head relation in

Agr_sP. The functional head associated with Case is Tense, which ends up as part of the complex in Agr_sP, as explained.

Within *Principles and Parameters*, the *Case Filter* is seen as a universal principle that does not have any parameterized alternates. The traditional formulation of the *Case Filter* stated that 'every phonetically realized NP must be assigned (abstract) Case' (Chomsky 1986b: p.74). Case was assigned to a subject of a [+finite] clause or to an object of a transitive verb or preposition, under at least the condition of government (assuming an m-command, rather than a c-command definition of government when the subject was assigned Case). Thus, in nominative-accusative languages, an NP surfaced assigned nominative, accusative and oblique Case, in subject position and object position of verbs and prepositions, respectively.

Cross-linguistic investigation shows that not all languages realize Case in the same way. For example, in Chinese, Case has no overt realization, whereas in Latin, it is observable on all DPs. English and Hebrew represent language-types belonging to neither extreme as Case is realized on some DPs but not on all.

Putting TP aside, Case assignment by a lexical head is dependent on its feature specification. The lexical heads assigning direct Case, i.e., V and P, have in common the feature [-N], whereas the lexical heads which do not assign Case directly, i.e., N and A, share the feature [+N].

Following Chomsky (1986b), this difference amounts to the distinction between assigning *Structural Case*, assigned by the former, and assigning *Inherent Case* assigned by the [+N] categories to the complements they theta-mark. Thus, in the sentence *'the destruction of the city'*, the noun *'destruction'*, contrary to the verb *'destroy'*, cannot assign Case directly to the DP *'the city'* and therefore the dummy Case assigner *of* is inserted.[13] In early works the assignment of Structural Case was defined in terms of S-Structure configurations. In more recent work (Chomsky, 1989, 1992), however, in which the levels of representation are reduced to PF and LF, DPs are marked for Structural Case in the syntax but this relation is checked at LF.

Further investigation shows that not only phonetically realized NPs require or receive abstract Case. Traces of *wh*-movement also require Case and most importantly, in our case, referential *pro* receives nominative Case as the subject of a tensed clause, as the assignment of Case in this configuration cannot be barred. Apart from expletive *pro*, all other categories are arguments. Thus, if we assume that 'an argument must be visible for theta-role assignment, and it is Case that renders it visible' (Chomsky 1995: p.116), then the Case Filter must be reformulated in terms of arguments, i.e., in theta-theory terms, so that 'a chain is visible for theta-

---

[13] A different view is that the dummy Case assigner *of* is not a Case assigner but the morphological realization of inherent Case assigned by the noun or adjective.

marking if it contains a Case position' (ibid, p.119) - hence, the *Visibility Condition*.

Assuming two AgrPs, the highest one also associated with nominative Case assignment, Chomsky (1989, 1992)[14] suggests unifying the assignment of Structural Case to a Spec-head relation of agreement. Consequently, an object raised to [Spec, Agr_oP] and a verb raised to Agr_o° will enter in a Spec-head relation in Agr_oP, and will exhibit the dual relation of agreement and accusative Case. Similarly, a subject in [Spec, Agr_sP] and a tensed verb (adjoined to Agr_s° via adjunction first to Tense°) will carry the dual relation of agreement and nominative Case. Raising the verb and the subject takes place either in the syntax or at LF depending on the feature strength of the functional categories in a given language. Let us expand and elaborate on the above a little more.

Following Chomsky (1992, 1995; Chapters 1-3) and putting aside the head P, we assume that Structural Case depends on the characteristics of T and V. In most nominative-accusative languages, a [+finite] Tense is associated with nominative Case, and a [-finite] Tense is associated with null Case (assigned to PRO). A verb can either be [+Case] or [-Case]. The latter defines an unaccusative verb whose internal argument is theta-marked but not assigned Case. Therefore, the

---

[14] I will be assuming the earlier version of the Minimalist Program, that of (1992, 1993), rather than the later version (1995). In chapters 2 and 3, I will refer to the latest version and to its ramification for the proposals at hand.

internal argument will raise to the subject position and receive nominative Case assigned by Tense. In the former, in order to instantiate a Spec-head relation for both agreement and Structural Case mediated through Agr, V adjoins to $Agr_o°$, and the object raises to [Spec, Agr_oP] either in the Syntax or at LF, where overt or covert agreement is established and the object is assigned accusative Case. The verb further raises to the head T and with it to the head $Agr_s°$, creating the complex $[_{Agr}T\text{-}V]$. The subject (assuming VP-internal subjects) raises to [Spec, Agr_sP] where it enters in an agreement relation with the verb and is assigned nominative Case. Alternatively, Chomsky (1995) raises the possibility that nominative Case is assigned in a Spec-head relation in TP, so that the subject first raises to [Spec, TP] and is assigned Case by Tense°. As a second step, the complex in Tense° will further raise to $Agr_s°$ and the subject will further raise to [Spec, Agr_sP], entering once more in a Spec-head relation, this time of agreement only. I will adopt this possibility as a true option and demonstrate how it accounts for the present tense as opposed to the other tenses in Hebrew (see Chapter 2).

The question regarding non-verbal predicates still remains to be answered. Since non-verbal predicates do not raise to Tense, subject-predicate agreement and nominative Case assignment must be accounted for either at the predicate level or at a functional level resorting to additional processes. This will be the topic of the last section of this

chapter.

1.2.5 Extending FunctionalP as a Reflection of PredicateP

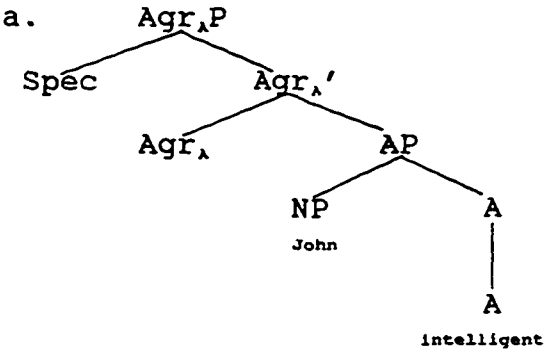
As defined, each predicate has at least one argument, the external argument, by which it is saturated. Consequently, each predicate "projects" to at least one level of AgrP to establish subject-predicate agreement. Furthermore, since Agr is a mere collection of ϕ-features not associated with a function or a position in the derivation, it is always a reflection of the agreement features of the category it dominates. Thus, an AgrP dominating a predicate will reflect the nature of the ϕ-features of that predicate: If the predicate is an AP, the ϕ-features will be of an adjectival nature, hence $Agr_{A}P$; if the predicate is nominal, the features of Agr will be nominal-like, hence $Agr_{N}P$, and so forth. Similar to verbal predicates and being associated with ϕ-features, non-verbal predicates will raise to the corresponding Agr^{0} either overtly in the syntax or covertly at LF.

Contrasting with verbal predicates, however, non-verbal predicates are not associated with a tense feature, and therefore, further raising to Tense is blocked. Nevertheless, in order to be interpreted at the PF and LF interfaces, Tense and its feature [+finite] must be attached to or checked by a

verbal element or copula, which are associated with this feature. In English, this is carried out by inserting *be*, either to support Tense or as a head of a VP dominating the non-verbal predicate. This process will be exemplified below.

To exemplify the above, let us look at a sentence such as *'John is intelligent'*.[15] The underlying structure that represents both the lexical level and the agreement functional level reflecting the features of the lexical predicate are shown in (13a), where (13b) shows also the target raising positions:

13.a.



(Chomsky, 1992: p.12 - adaptation)

13.b [...Agr$_S$...T...[$_{AgrAP}$ [$_{AP}$John [$_A$intelligent]]]]

In these structures, thematic roles and subcategorization frames have been established at the predicate level, i.e., within AP. Agr$_A$P dominates the predicate level reflecting the

---

[15] The account for nominal predicates will follow the same lines by exchanging the relevant category labels and lexical heads.

agreement features of the predicate head. As a second step, agreement relations between the predicate (*intelligent*) and its external argument (*John*) are established by raising the argument to [Spec, Agr_AP] and raising (overtly or covertly) the predicate head to adjoin to the Agr_A head.

14. [...Agr_S...T...[$_{Spec}$John$_i$ [$_{AgrA}$intelligent$_j$ [$_{AP}$ t_i [$_A$ t_j]]]]

Case, however, has not been assigned since adjectives do not assign Structural Case. In order to receive nominative Case, associated with Tense, the argument (*John*) will have to raise further to [Spec, TP] and then to [Spec, Agr_SP] and enter in a Spec-head relation with Agr_S to which Tense has adjoined. Contrasting with verbal predicates, adjectival predicates cannot raise to Tense. To use Rothstein's (1983) terminology, they do not have a slot to hang Tense onto as verbal predicates do. Thus, adopting her proposal and adapting it to more current theories, [+finite] Tense is an affix that must be attached or checked off. Since there was no verbal element inserted from the lexicon bearing that feature, one has to be inserted in the overt syntax. Hence the insertion of copula *be*.[16] Failing to insert the copula will result in an ungrammatical structure in which the [+finite] feature

[16] A different view of *be*-insertion is that *be* heads a VP level projected in the syntax under TP and above PredicateP. *Be*, then, raises to TP to check off its features.

survives to LF and PF unchecked, as in (15):

15. *John $[_{T'}\ T_{[+finite]}$ [intelligent/ a teacher]

Once *be* has been inserted under Tense°, or under VP (see footnote 16) and consequently raised to Tense, it will further raise to Agr_S°. Since the subject has not been assigned Case yet, it will raise from [Spec, Agr_AP] to [Spec, TP] and consequently to [Spec, Agr_SP]. In this Spec-head relation nominative Case is assigned[17] and a new agreement relation between the subject and the inserted copula has been established.

16. $[_{Spec}$ John$_i$ $[_{AgrS}\ T_k$ is$][_{TP}\ t_k\ [_{Spec}\ t_i\ [_{AgrA}$intelligent$_j$ $[_{AP}\ t_i\ [_A\ t_j]]]]]$

In Hebrew, the equivalent of the underlying structure in (13b), repeated below as (17a), is a grammatical sentence without a copula:

17.a. $[...Agr_S...T...[_{AgrAP}\ [_{AP}$John $[_A$intelligent$]]]]$

b. $[...Agr_S...T...[_{AgrAP}\ [_{AP}$Yoni $[_A$ xaxam$]]]]$

---

[17] As already noted, an alternative option is that the subject raises to [Spec, TP] where it is assigned Case, and only then it raises further to [Spec, Agr_SP]. This option is not presented in example (16).

In light of that fact we need to ask, what is the motivation for having a TP or Agr_sP in Hebrew present tense if all relations seem to have been established in a minimal structure consisting of only the lexical level and one functional level of AgrP dominating it? In Chapter 2, I will motivate the existence of a universal TP and thus claim it is obligatory even when it lacks phonetic content as in Hebrew present tense. The difference between the English and Hebrew-type languages, then, will not be accounted for by the existence versus absence of TP, but rather due to a different specification of the features in this category. On the other hand, I will argue against a universal Agr_sP also based on the data presented in Modern Hebrew, and will show this conclusion to be supported even for the English-type languages following Chomsky (1995).

1.3 Proposals and Chapter Description

Assuming parameterization is restricted and applies to the formal features of functional categories and to general properties of lexical items, the investigation of any phenomenon or structure in a language has to focus on two issues: Observable variation and its relation to functional categories.

Thus, to investigate the null subject phenomenon and the

implementation of the *Extended Projection Principle* (EPP), we need first to observe the usage of subjects across languages. As hinted above, and as it will be elaborated on in subsequent chapters, the conditions under which subjects are used are not straightforward. Languages differ not only in meeting or not a set of grammatical conditions regarding subject use, rather some languages are mixed in the sense that they allow both (or all) sets of conditions to apply within the language in complementary environments. Furthermore, even among those languages which are argued to represent a clean-cut dichotomy in subject use, we find grey areas where the original conditions do not apply. Rather, a different set of conditions, for example pragmatic ones, plays a role of allowing both language types to behave alike. Consequently, if we want to find how subjects are used and under what conditions, we need to note the exact observable facts and classify them accordingly, either by referring to pragmatic conditions or grammatical ones. Only at this point will we be able account for all the facts.

The acquisition data on subject use are very important both in describing the phenomenon and accounting for it. Since a child does not use the entire adult array of possibilities, at each stage we are actually looking at and concentrating on a fracture from a larger picture. At that time in development, that fracture represents the child's full picture. Observing those small fractures as they grow into the larger picture

might reveal the different possibilities of subject use and the conditions which underlie them till the (specific) adult stage is reached.

If we follow this line of research we find ourselves dealing with four major issues: The facts about subject use, and the facts about functional categories in adult language, with an emphasis on how the latter conditions the former. The same two issues apply in child language. Each of the four topics is a whole area of investigation in itself, which can keep us occupied (and has been) for a long time. Therefore, looking at all four areas together, the goal of this research is not to find conclusive answers to this intricate net, but to shed some light on how the system works in general. Thus, a complete picture of subject use cannot ignore the facts on functional categories. By the same token, subject use is another phenomenon that can demonstrate how functional categories and their features work. In a similar way, child language can shed more light on both issues, and in addition, the understanding of the grammatical systems and how the child uses them will help explicate the language acquisition process and the stages that were undertaken in reaching the adult stage. By this we have closed a circle. Finally, in the spirit of micro-parametric work (Kayne, 1996), I will focus on Modern Hebrew adding another facet to the comparative research.

In this work, then, each chapter is dedicated to a different issue. Moreover, each chapter will be related to the

others in the manner specified, so that a clearer picture is revealed. The following is a short chapter by chapter summary.

Chapter 2 presents the facts on functional categories and their feature specification, in Hebrew. We start with the assumptions made in this chapter in sections 1.2.3 and 1.2.4. We show that Hebrew matrix clauses are not necessarily [+finite]. Although the past and future tenses behave exactly as English, there is evidence that the present tense verbs are participles and not finite forms. The participle is associated with agreement features reflecting the predicate level but not the TP functional level. This leads to question the necessity of an Agr_sP above TP and to propose its redundancy and hence omission from the structure in Hebrew present tense. A similar view, will be advocated by Chomsky (1995). The functional features of the participle, i.e., both Tense and Agr, have a direct bearing on the obligatory realization of subjects in this tense in Hebrew, to which we turn in the following chapter.

In Chapter 3, we will present some milestone accounts for the *Null Subject Parameter*. All accounts divide the parameter into two sub-clauses, one in which *pro* is licensed (whether it is referential or expletive) and one in which referential is identified in addition to being licensed. Furthermore, all accounts relate subject realization to the setting of the inflectional functional heads. They differ, however, in how prominent a role those functional heads play in their account.

In one case, the focus is on the realization of subjects so that functional categories are defined in order to comply with the observed evidence. In a different explanation, subjects are not the focus of the account but rather an artifact. Thus, the functional setting is defined independently and based on more general features of the language and the realization of the subject falls from it. All accounts will be put to the test of Hebrew showing that the phenomenon is not as uniform as we want it to be.

The second part of this work is devoted to child language. Chapter 4 presents the controversy on the child's initial structure. The main controversy is whether the initial stage is characterized by the adult full array of categories both lexical and functional, or characterized by a limited structure consisting of the lexical level only. We will show both views to be inadequate and non-representative of the child's spontaneous production. The proposal that will be put forth is that the child's initial structure is minimal in the sense that it consists of a lexical level dominated by only the functional categories which are cross-linguistically specified. TP is defined as such a category and therefore it is part of the child's initial structure. Agreement, however, is not specified in all possible languages and therefore it is not part of the child's initial structure. In that structure, TP is licensed by one feature - finiteness. The child's task, then, is to learn the remaining features represented under TP

(e.g., [± past]) and the other functional categories dominated by or dominating TP. This proposal will be supported by cross-linguistic evidence.

Chapter 5 discusses the type of evidence the child needs to look at in order to acquire the conditions underlying subject use in the target language. It will be shown that children cannot solely observe the use of subjects in their language. The interaction between subject use and the inflectional system is crucial for the acquisition of the phenomenon. This will also be argued from the fact that other factors, not necessarily grammatical, play a role in the child's spontaneous production of subjects.

In part three, the data in Hebrew are presented and discussed in light of the theoretical framework. They will be shown also to confirm the proposals made in Chapters 4 and 5. The data have been collected from 19 monolingual Hebrew speaking children. The children range in age from 1;10 to 2;7, and in MLUW from 1.40 to 3.01, and are divided accordingly into three groups. The data were divided by Tense and agreement, specifically by [person] - 1st and 2nd person combined, and 3rd person.

The theories set thus far make both a tense distinction and an agreement (i.e., [person]) distinction bearing directly on the distribution of overt and covert subjects. The Hebrew data support both the tense and person distinctions relevant to subject use. Moreover, they support the minimal child

structure proposed in Chapter 4. Being minimal, in the sense explained above, it is impossible to predict how the course of development will proceed and what specific learning strategies different children will undertake. The data indeed show that children do not follow an initial default setting and do not make any prior decisions. They are receptive to the incoming data, and their production varies accordingly as early as Group I.

Chapter Two
The Specification of Functional Categories in Hebrew

2.0 Introduction

In Chapter 1, we have presented one of the underlying assumptions of the *Principles and Parameters* approach: that variation, i.e., parameterization, is restricted to formal features of functional categories. We have also suggested that, although possible, parameters should not account for constructions in a one-to-one relation. Put together, this view naturally extends to the realization of the *Extended Projection Principle* and the so called *Null Subject Parameter* (Chomsky, 1981), where the choice between realizing overt or covert subjects is related to a particular choice of formal features of functional categories.

Modern Hebrew serves as an interesting case study for subject use. The parametric option of realizing overt and covert subjects usually defines different languages. However, in Hebrew, this variation is attested within the language.

Given the underlying assumptions, Hebrew must have at least two sets of formal functional features each corresponding to one of the parametric options. Since the EPP is reduced to a [D] feature in TP (Chomsky, 1992, 1995)[1], and the realization of a subject is also associated with TP's Case assigning properties and its identification is conditioned by the specification of ϕ-features, both TP and AgrP's formal feature specification in Hebrew must be investigated. We hope this will provide the explanation and the conditions underlying the realization of subjects (at least) in Hebrew.

Despite the binary parametric system usually argued for, it will be shown that a [±Tense] distinction is not sufficient to describe the Hebrew tense system. In order to account for the behavior of the so-called present tense in Hebrew and its verbal paradigm, a third value, [0Tense], was traditionally argued for. The most straightforward interpretation of such a formal feature is that a null TP is not projected in clauses specified for this feature. It will be argued, however, that TP is a universal category that is always projected in root clauses and serves as the locus for nominative Case assignment. Thus, the projection of a TP specified for the feature [0] raises the question of its interpretability and its consequences in a derivation.

It will be argued that specifying a null Tense has

---

[1] A [D] feature can only be checked against the subject raised from its VP-internal position.

morphological and syntactic consequences. Morphologically, it defines a verb which lacks a tense affix, i.e., a participle. Syntactically, a verb specified for a null [Tense] feature does not need to check that feature and therefore it can also appear in clauses which do not select TP, such as Small Clauses. Such a verb will not raise to TP or above it, and will be licensed below TP. It will be further argued that TP, nevertheless, is not redundant. It is selected in finite root clauses and embedded finite clauses, i.e., CP clauses, since it is subcategorized for by C^{o}. Thus, TP will require a verbal element to raise to it to check the null feature. Since, we will argue, this feature is weak, raising the verb to it will take place at LF. [+Tense], on the other hand, is strong in Hebrew, and triggers obligatory raising to check its feature against the matching feature on the verb. Being specified for a strong [tense] feature, tensed verbs are necessarily selected only in clauses including TPs.

Similarly, the agreement features specified in the present tense differ from those exhibited in the other tenses. The difference will not be accounted for, however, by a different Agr specification. Rather it will be argued that only strong Agr are specified in the lexicon and that Agr associated with TP, i.e., Agr_sP, is obligatorily selected in the past and future tenses but only optionally selected in the present tense. In both present tense options, the participle will be licensed below TP, raising to the strong Agr head

dominating and reflecting the features of the verbal predicate. If Agr_sP is not selected, the participle agreement will be the only agreement features exhibited in the sentence. If, on the other hand, it is selected (as in the case of the inflected negative particle *eyn*), the strong agreement features will trigger the raising of a lexical element to support or check those features.

This challenges the structure we have presented in Chapter 1, since Agr_sP is not projected in all structures as it was initially argued. The discussion of those functional categories that are selected cross-linguistically in enumerations, such as TP, as opposed to structures which are not selected by all languages in all structures, such as AgrP, will be the core of the investigation throughout this work. It also raises an important question from the point of view of a child acquiring functional categories. In Chapter 4, we will argue that universal functional categories that are selected cross-linguistically do not require evidence for their existence, whereas functional categories that are optionally selected do.

This Chapter is organized around two more specific issues: First, we will look at the properties of Tense and Agr in Hebrew across tenses. Second, we will interpret these feature specifications to find out under what conditions each category is selected, and if it is selected how it affects the derivation of a given sentence.

2.1 The Specification of Tense and Agr in Hebrew

The *Split-Infl Hypothesis* and subsequent work expanding on it have left at least two important issues unanswered: Finding the actual array of functional heads in the lexicon, and the status of functional heads across languages. The framework presented in this work advocates that inflectional morphology is represented in the syntax. Since languages show morphological affixation for many more relations than subject and object agreement, it raises the question whether each of those affixes (or affix types) actually head their own functional category. In Hebrew, for instance, verbs combine a root and affixes in seven different patterns (termed *Binyanim)*,[2] so that a verb can be marked for reflexivity as demonstrated in (1):

1. ani mit-raxec-et
   I present+self-wash-sg-fm
   'I wash myself'

Thus, the first question is whether morphological affixes, such as the reflexive in (1), should be represented as independent functional heads, extending the *Spilt-Infl Hypothesis* to all possible inflectional functional affixes.

---

[2] See Berman (1978) for a more extensive description, and Berman (1986) for a shortened version with a special focus on the acquisition of the system.

One view is presented by linguists arguing against the *Split-Infl* hypothesis. For example, Iatridou (1990) argues for a universal TP but against a universal AgrP. A similar view is advocated by Chomsky (1995) arguing that AgrPs, which were postulated for theory-internal reasons, can be replaced by the addition of strong features in TP and additional layers of specifiers.

Though I will not attempt to settle the first issue, I will make claims about the second issue, trying to shed some light on the status of universal functional categories across languages. The structure presented in Chapter 1 included at least three functional projections: Agr_sP, TP, and Agr_oP. Although there is no morphological motivation for projecting Agr_o in English, the node has still been motivated for a uniform assignment of accusative Case in nominative-accusative languages.

Since functional categories are specified by UG, their selection from the lexicon across languages can take three forms: One possibility is that all functional categories are selected for a given derivation and are "on-line" in all languages alike. In languages where some of the functional categories do not play a real role in the syntax, they will be used vacuously or other functions would be assigned to them, as in the case of Agr_o in English. The second possibility is that initially no functional categories are selected and that when acquiring a target language the child will have to look

for evidence for the specific categories attested in her/his language. The third possibility amounts to the same set of functional categories in the adult language, but differs substantially from the point of view of language acquisition.

Assume there is a subset of functional categories which is universal, not only in the sense that it is specified in UG, but also in the sense that it is specified cross-linguistically in all languages and in every possible sentence.[3] This is the initial set the child is endowed with and for which no evidence is required. An example for such a functional category is TP. In addition, there is the set of functional categories which are specified in UG and therefore are also universal; yet they differ from the former in that they are parameterized across languages. The child, therefore, will have to look for evidence for them in her/his target language. An example for such a functional category is AgrP.

The view described by the third option is the view I will subscribe to in this work. Further evidence for it will be presented in Part II - *Underlying Child Structures*, especially in Chapter 4. From a syntactic point of view, I will concentrate on TP and AgrP in Modern Hebrew in this chapter. Although it is tempting to use the feature specification of TP and its properties in Hebrew to eliminate it altogether in the present tense, it will be shown that TP can be independently

---

[3] A *sentence* is seen here as an independent root clause, i.e., an independent CP (Bresnan, 1970; Rizzi, 1991; and many others).

motivated in the structure. This lends further support for the claim of its universality and cross-linguistic selection. AgrP, on the other hand, is not a category instantiated cross-linguistically and therefore independent evidence is needed for its selection. Since AgrP also differs from TP in that it plays no role at LF, it will be shown that only strong Agr features are specified in the structure and that its feature specification is not necessarily dependent on TP's.[4]

In this section, the feature composition of each functional category will be described and motivated. In section 2.2, we will motivate the existence of TP in Hebrew across tenses despite its different feature composition. Agr will be argued to have the same feature composition across tenses, so that the observable agreement differences between tense-types will reduce the option of selecting Agr. Finally, we will present the interpretation of the feature compositions and the interaction among them.

2.1.1 The Specification of Tense°

This subsection will focus on the specification of Tense in

---

[4] A similar conclusion is first reached by Chomsky (1995). However, he further argues for the complete elimination of Agr from the lexicon. At the end of this chapter, it will be shown that the option of selecting strong Agr features amounts to a true option which has derivational consequences in some constructions in Hebrew.

Modern Hebrew. It will be argued that the dual system of [±Tense] assumed for many languages is not sufficient to classify the tense system in Hebrew. The ternary system traditionally assumed for Hebrew will be explained and elaborated on focusing on formal features across tenses.

As noted above, many languages differentiate between tensed (finite) sentences and non-tensed (non-finite) sentences. The former is used to anchor the time reference of the sentence; its subjects are assigned nominative Case; it is selected as the complement of CP, and so forth. The latter is not selected in root clauses; it is not associated with time; its subject, *PRO*, when controlled is assigned Null Case, and so on. In Hebrew, this dual classification according to the tense dimension is insufficient. It describes the past and future tenses as opposed to the infinitives, however, it leaves out the present tense unaccounted for.

The present tense, or the *Benoni* (medial) as it has been referred to traditionally, is both similar to and different from the real [+Tense] verbs, i.e., the past and future tenses in Hebrew. It resembles the tensed verbs in that it appears in root clauses or embedded under a CP when a finite clause is subcategorized for, as demonstrated in (2):

2. ani mevina she hi mesayemet/syima/
   I understand that she finishes/finished/

tesayem/*le-sayem et limudeha.[5]
will-finish/*to-finish acc studies-poss(3-sg-fm)
'I understand that she is finishing (etc) her studies'

Conversely, the present tense and the other two tenses cannot appear in embedded clauses whose root verb subcategorizes for a non-finite clauses, as shown in (3):

3. hi yexola le-sayem/*mesayemet/*syima/
she can to-finish/*finishes/*finished/
*tesayem et limudeha kvar ha-shana
*will-finish acc studies-poss already the-year
'She can already finish her studies this year'.

Moreover, the subjects *ani* (I) and *hi* (she) are assigned nominative Case by the present tense verbs *mevina* (understand-sg-fm)) and *yexola* (can-sg-fm) in examples (2) and (3), respectively. Finally, all finite verbs can undergo subject-verb inversion. The process is taken to be an instance of T-to-C movement, possibly triggered by a strong feature in C° (following Rizzi's, 1991) *Wh*-criterion proposal), and *ha-yom* (today) is argued to occupy a Topic position so that the verb following it must have raised to C° and not to a head below CP:

---

[5] Though not marked, all finite verbs are specified for agreement features in both examples (2) and (3).

4. ha-yom, loeset/la'asa
   today chewing(pr-sg-fm)/past(sg-fm)
   ha-talmida mastik ba-she'ur.
   the-pupil(sg-fm) gum in+the-lesson.
   'Today, the pupil is chewing/chewed gum in class'.

Despite the above, the present tense differs in many respects from the tensed verbs. First, auxiliary *h.y.y.* (be) does not have a corresponding form in the present tense only in the past and future tenses. This lends support to the claim that there is no Tense feature to support.[6] Second, the present tense form plays the role of a participle in many different constructions. It serves as modifier to nouns agreeing in [number], [gender], and [definiteness]. Whereas, when it functions as the main (finite) verb, i.e., as the predicate, it does not agree in [definiteness], which is a DP property):

5.a. ha-yeled ha-coxek lo shama et sof
   the-child the-laugh(pr-sg-ms) not heard acc end
   ha-bdixa.
   the-joke
   'The laughing child did not hear the end of the

[6] The opposite is not necessarily true. In Arabic, among other languages, the present tense seems to be a real tense, yet an auxiliary does not appear in this tense as in Hebrew, allowing for verbless predicates in root clauses.

joke'.

b. ha-yeled [$_{VP}$coxek me otan bdixot].
the-child laugh(pr-sg-ms) from the-same jokes
'The child laughs/is laughing from the same jokes'.

It appears in adjunct Small Clauses (henceforth, SCs), which are argued to lack TP and with it lack also CP (see Shlonsky (to appear) for arguments in Hebrew):

6. ha-more nixnas la-kita
the teacher(ms) entered(sg-ms) to+the-class
[$_{SC}$shote kafe].
drink(pr-sg-ms) coffee
'The teacher entered the class drinking coffee'.

It is also used as a real participle following the auxiliary *h.y.y.* (be). Differing from English, the sentences in (7) do not have an aspectual interpretation to them, as demonstrated by the gloss. However, similar to English their time reference is determined by the main tensed verb, i.e., the auxiliary, denoting a past event and not a present event, had the time reference been determined by the participle.

7.a. (lo) hayi-ti holex le-sham etmol,
(not) was(1-sg) go(pr) to-there yesterday,
ilu haya li zman.

if was to+me time

'I would (not) have gone there yesterday, if I had had the time.' (Conditional)

b. (lo) hayi-ti holex le-sham harbe

(not) was(1-sg) go(pr) to-there a-lot

'I used to go there a lot' or 'I didn't use to go there a lot'. (Colloquial)

Furthermore, clausal negation precedes the main tensed verbs and never follows them to precede the participle (also demonstrated in (7))). Finally, we have demonstrated in (4) above that finite verbs can undergo subject-verb inversion. In complex tenses, then, only the auxiliary, i.e., the finite verb in those sentences, can invert with the subject.[7]

To sum up, it seems that the present tense in Hebrew functions mostly as a tenseless category, as a [+N] category. It also lacks morphological affixation for Tense. On the other hand, we have opened this discussion by showing that the participle can also function as a finite verb in root clauses, or finite embedded clauses, both including a CP subcategorizing for a TP. Thus, the participle seems to also occupy positions reserved for elements which exhibit tense properties. How do we reconcile those apparently contradicting facts?

---

[7] I will return to this fact in section 2.2, since this is one of the issues on which my account will differ from Shlonsky's (to appear).

The traditional leading view of the present tense in Hebrew is that it IS a participle, and as such it lacks tense. Linguists working on Hebrew differ, however, on how this feature is represented in the syntax. In *Modern Hebrew Structure*, Berman (1978) has argued that the tripartite system of tensed verbs, present tense, and infinitives can all be classified according to the Tense dimension by assigning three values corresponding to each group: (i) [-Tense] associated with non-finite forms, such as infinitives (e.g., *le-e'xol*, to-eat), and gerunds (e.g., *be-exol*, upon-eating); (ii) [+Tense] associated with finite forms, i.e., those specified for [±past] (e.g., *axal*, (he) ate; *yoxal*, (he) will-eat); (iii) [0Tense] associated with the medial participial form *Benoni* (e.g., *oxel*, (is) eating/eats).

Doron (1983) argued against the three value classification of Tense and suggested that a tripartite system can be achieved only if we assume two more dimensions. She suggested that sentences can be specified for agreement features, [Tense], and [past]. First, finite tenses include both the real tenses (past and future) and the present tense, hence their function as main predicates in full clauses (i.e., CPs). However, the dimension on which they classify together is agreement. All finite forms are specified for agreement, whereas non-finite forms lack agreement features. The real tenses and infinitives are defined according to the second dimension, namely tense, where the former is specified

[+Tense] and the latter [-Tense]. In contrast, the Benoni is not specified for [Tense] at all. The actual reflection of that property is the lack of auxiliary *h.y.y.* (be) in the Benoni, as opposed to it appearance in sentences with real tenses or infinitives. Finally, the real tenses are set aside as opposed to the Benoni and infinitives in that only the former are specified for [±past] features. The reflection of that property, according to Doron, is the lack of [person] agreement in both the Benoni and infinitives and their ability to negate with the negation particle *eyn*.

Summarizing both views and adapting them into the more current early *Minimalist* framework, we derive the following: Under both views, past and future sentences in Hebrew consists of both AgrP and TP, where the latter is specified [+Tense] and [±past]. Infinitival sentences have a TP which is specified [-Tense]. Berman (1978) and Doron (1983) differ with regard to the present tense (Benoni) specifications: Interpreting Berman, Benoni sentences have both AgrP and TP, the latter being specified as [0] indicating that the verb is tenseless. The lack of tense on Doron's account is derived by not specifying Tense at all, so that the present tense sentences have only the functional category AgrP and lack TP altogether. The immediate question that arises is which view better represents the Benoni sentences. In other words, do we have evidence for the existence of TP in all tenses in Hebrew? And if TP is projected, how do we interpret a "tenseless" TP,

i.e., a [0Tense]? This will be the goal of section 2.2.

2.1.2 The Specification of Agr^0

Before addressing the questions presented at the end of the previous section, we first have to spell out the properties of Agr in Hebrew. We have already noted that the verbal paradigm seems to differ in its agreement features across the tenses in Hebrew. An adequate explanation of those facts must take into account the possibility that agreement features and tense features are parameterized independently. Alternatively, as Doron (1983) suggested, it might be case that the two categories are dependent on one another, so that the choice of formal features in the one entails the feature specification of the other. The evidence presented in the next section will show that there is not a necessary dependency between Agr and Tense, and that different languages may choose different combinations of the parameterized formal features across categories.

In the finite tenses in Hebrew, i.e., past and future, Agr is specified for all ϕ-features, [person], [number], and [gender].[8] The paradigm in 3rd person past tense, presented

---

[8] Gender is not always distinctive in these tenses, but as this feature does not play a role in any of the relevant constructions, I will focus on the presence and absence of [person] and [number]. See also Chapter 3 below.

in Table 2-4 below, does not show a distinct affix for [person]. On the other hand, those forms are morphologically distinct, and differ from the other forms in the paradigm, resulting in six distinct forms for every [person]-[number] combination. Differing from Rapoport (1987), Shlonsky (to appear), therefore, suggests that those verbs are syntactically marked for [person], but that the feature is phonetically null. As a result, the feature must be checked against a matching feature in a functional head.

In the present tense, the verbal forms pattern with adjectives and nouns in being specified for only two of ϕ-features, namely, [number] and [gender]. This lends further support for the claim that the participle is licensed below TP and does not raise to it or above it. It does not coincide, however, with the possibility of the participle to undergo subject-verb inversion and "pick up" the [person] feature in Agr_s via head-to-head movement. In the following section, it will be argued that Agr_sP is not selected in the present tense, so that the source of agreement features exhibited in the present tense comes from a the Agr projection associated with the participle below TP.

The paradigms for two typical verbs in all tenses are given below, along with a paradigm for nominal and adjectival forms for comparison with the present tense.

TABLE 2-1. Inflectional Paradigm with Adectives

Number/ Gender	*GADOL - 'big'*		*MECOAR - 'ugly'*	
	Singular	*Plural*	*Singular*	*Plural*
msc.	gadol	gdolim	mexoar	mexoar-im
fem.	gdol-a	gdol-ot	mexoer-et	mexoar-ot

TABLE 2-2. Inflectional Paradigm with Nouns

Number/ Gender	*MORE - 'teacher'*		*CALAM - photographer*	
	Singular	*Plural*	*Singular*	*Plural*
msc.	more	mor-im	calam	calam-im
fem.	mor-a	mor-ot	calem-et	calam-ot

TABLE 2-3. Inflectional Paradigm for the Verbal Roots *h.l.x.* (go) and *y.x.l* (can) in the Present Tense

Number/ Gender	*H.L.X. - 'go'*		*Y.X.L. - 'can'*	
	Singular	*Plural*	*Singular*	*Plural*
msc.	holex	holx-im	yaxol	yexol-im
fem.	holex-et	holx-ot	yexol-a	yexol-ot

TABLE 2-4. Inflectional Paradigm for the Verbal Roots *h.l.x.* (go) and *y.x.l* (can) in the Past Tense

Number/ Gender	*H.L.X. - 'go'*		*Y.X.L. - 'can'*	
	Singular	*Plural*	*Singular*	*Plural*
1st	halax-ti	halax-nu	yaxol-ti	yaxol-nu
2msc	halax-ta	halax-tem	yaxol-ta	yaxol-tem
2fem	halax-t	-"- *	yaxol-t	-"- *
3msc	halax	halx-u	yaxal	yaxl-u
3fem	halx-a	-"-	yaxl-a	-"- *

TABLE 2-5. Inflectional Paradigm for the Verbal Roots *h.l.x.* (go) and *y.x.l* (can) in the Future Tense

Number/ Gender	*H.L.X. - 'go'*		*Y.X.L. - 'can'*	
	Singular	*Plural*	*Singular*	*Plural*
1st	e-lex	ne-lex	u-xal	nu-xal
2msc	te-lex	te-lx-u	tu-xal	tu-xl-u
2fem	te-lxi	-"- *	tu-xl-i	-"- *
3msc	ye-lex	ye-lx-u	yu-xal	yu-xl-u
3fem	te-lex	-"- *	tu-xal	-"- *

* These forms are being increasingly used instead of the formal grammatical forms. This is probably due to the fact that the gender distinction in the plural seems to be disappearing in Modern Hebrew.

To sum up so far, the Hebrew paradigm shows that both Tense and Agr are differently specified for when comparing the verbal paradigm in the present tense with the past and future tenses. In the former, the verbal paradigm lacks a tense specification. That raised the question, yet to be answered, as to the status of TP: either TP is projected with null features on its head, or the projection is missing altogether. Furthermore, the verbal paradigm in the present tense lacks the [person] specification suggesting the possibility that Agr_sP is not selected. In the real tenses, all three ϕ-features are specified, indicating the presence of Agr_sP.[9]

In the following sections, I will discuss the two main

[9] The importance of the feature [person] to the identification of null subjects will be discussed at length in Chapter 3.

proposals regarding TP - Doron's (1983), interpreted in current frameworks as suggesting not to project TP, versus Shlonsky's (1989, to appear) suggesting its projection with a null weak feature. The discussion will show Doron's proposal to be problematic if put to a cross-linguistic test, and argue for a universal TP even in the Benoni sentences in Hebrew. With respect to Agr, it will be argued that there is only one type of Agr specified in the lexicon, i.e., strong Agr. Furthermore, the selection of Agr features associated with TP is obligatory in the past and future tenses but is optional in the present tense. In section 2.3, I will put together all the conclusions and present an alternative account, diverging from Shlonsky (to appear) in arguing against his postulation of a null auxiliary in present tense sentences whose predicate is verbal.

2.2 Interpreting a "Tenseless" TP and Its AgrP

2.2.1 Against the Absence of TP in Root Clauses

Doron (1983) suggested that both the real tenses in Hebrew and the present tense, when selected in root clauses, are finite. Finite forms are distinguished by being specified for agreement features. Thus, if the structure is specified for agreement, it is automatically interpreted for tense, and an independent specification for a [Tense] feature becomes

redundant (Rapoport, 1987). Since TP is not specified for any features in the present tense, it is not licensed and hence not projected. Thus, only AgrP is selected in the present tense. TP is projected in the past and future tenses, despite the specification for Agr, since its head is independently licensed by the formal feature [past].

This account, then, suggests that root clauses, i.e., finite clauses, are always specified for Agr, and vice versa - if a clause is specified for Agr it must be finite. This also suggests that if we assume all root clauses to be cross-linguistically finite, then Agr must be a universal (cross-linguistic) category rather than TP. Both entailments are problematic.

The first claim is made on the assumption that non-finite clauses always lack agreement so that the presence of agreement marks a clause as finite. This argument does not hold cross-linguistically. In European Portuguese, for example, certain infinitives can be inflected for agreement features including all ϕ-features (see Raposo, 1987). Furthermore, there is evidence especially from Asian languages, such as Japanese or Chinese, that they only exhibit tense properties, or at least finite properties, but lack agreement features altogether. Of course one could argue that Agr is projected but that it is empty, as one might argue, for example, in the case of English past tense. However, an economical minimal theory would want to eliminate redundant

categories in the syntax rather than add them. Thus, claiming TP as the locus of finiteness anchoring the time reference of the finite clause, whether or not Agr is selected, is more attractive and accounts for all the cases raised above.

There is another way in which we can argue that the status of Agr differs from TP's. There are two types of agreement features, those which are part of a nominal head, and inflectional ones, which are specified on the predicate agreeing with a DP. The former are needed to interpret the DP at LF. They can be an intrinsic part of a DP such as [1st] and [singular] are an intrinsic part of the DP pronoun *'I'*; or they can be optional, such as the [plural] feature in *'linguists'*. In both cases, those features are crucial for the interpretation of the DP (at LF) and changing any of them would change the meaning of that DP. Inflectional agreement features, on the other hand, are not necessary for the interpretation of the predicate, and changing them would not change the meaning of the predicate. Chomsky (1995) suggested that weak Agr it not lexically specified. It has no interpretation at LF, nor a role in the overt syntax, hence its redundancy. Thus, he initially concluded that only strong Agr was listed in the lexicon as a category, triggering overt raising.[10] As opposed to agreement, Tense, finiteness and the [past] feature are necessary for the interpretation of the clause, and therefore, whether weak or strong they are listed

---

[10] A similar proposal was made by Rohrbacher (1992, 1994).

in the lexicon and selected in the enumeration.

To conclude, we have argued that TP, and not AgrP, is a universal category selected in all finite clauses. In addition to interpreting the finiteness of clauses and their time reference, Tense has remained the carrier of Case assigning properties:[11] It assigns nominative Case to the subject of a finite clause, and null Case to control PRO in non-finite clauses. The selection of Agr is parameterized across languages. Since only strong Agr is listed in the lexicon, the parametric option is between selecting Agr (with strong features) or not selecting Agr at all. As opposed to weak TP, weak agreement features are not listed separately in the lexicon.

These conclusions carry over to the Benoni sentences in Hebrew, so we assume that those sentences contain TP. Evidence for the selection of strong Agr will have to be established independently of TP.

Despite the selection of TP in finite clauses, the Benoni verb lacks a morphological Tense marker, and syntactically, I will argue, it need not raise to TP overtly or covertly. On this issue I diverge from Shlonsky. Raising the participle to TP under his proposal (reviewed in section 2.2.3) is triggered by a combination of a feature on the verb and the selection of a null auxiliary. Conversely, I will propose, that the

---

[11] This was one more incentive for Chomsky (1995) to eventually dispense of Agr altogether.

participle has no motivation of its own to raise, but that the universal specification of TP in finite clauses triggers its raising at LF to check the weak feature in Tense°. In the following sections, I will attempt to account for the "tenseless" TP in the present tense in Hebrew. Finally, it will be shown how Agr interacts with Tense to yield the morphological Benoni forms, keeping in mind that the present tense is different also in that its agreement features are specified for [number] and [gender] but lack [person] - another property typical of tenseless forms.

2.2.2 An Extended Structural Framework - Shlonsky (1989)

Shlonsky (1989) has presented evidence showing that the apparent peculiarity of agreement in the present tense in Hebrew is found in other Semitic languages, and even cross-linguistically. First, the data from Standard Arabic will be presented; then their implication will be carried over to Hebrew.

In Standard Arabic, verbs agree with their preverbal subjects in [gender], [number] and [person], as observed in the embedded clauses in (8). But when the subject is postverbal, the verb agrees with it only in gender, as in (9):

8.a. qult-u ?inna l-?awlaad ?akal-u l-
said(1-sg) that the-boy(ms-pl) ate(3-ms-pl) the-
ta?aam.
food
'I said that the boys ate the food'.

b. qult-u ?inna l-banaat ?akal-na
said(1-sg) that the-girl(pl-fm) ate(3-pl-fm)
l-ta?aam.
the-food
'I said that the girls ate the food'.

9.a. akal-a l-?awlaad l-ta?aam.
ate(ms) the-boy(pl-ms) the-food
'the boys ate the food'.

b. akal-at l-banaat l-ta?aam.
ate(fm) the-girl(pl-fm) the-food
'the girls ate the food'.

'An adequate account of these Arabic facts must explain how the grammar isolates gender from the other components of Agr, permitting the agreement-bearing verb to access it directly to the exclusion of person and number' (ibid, p.4).

As already noted, the verb in the Benoni in Hebrew has direct access to [number] and [gender] excluding [person]. In the past and future tenses, the verb has access to all three ϕ-features. This was demonstrated in the paradigms in tables 2-3 to 2-5 above, and is exemplified below for the present and

past tenses:

10.a. ani/at/hi lo mevina
I/you(sg-fm)/she not understand(fm-sg)
et ha-sipur.
acc the-story
'I/you/she do(es) not understand the story'.

b. ani lo hevan-ti et ha-sipur
I not understood(1-sg-fm) acc the-story
'I didn't understand the story'

c. at lo hevan-t et ha-sipur.
you(fm-sg) not understood(2-sg-fm) acc the-story
'You didn't understand the story'.

d. hi lo hevina et ha-sipur.
she not understood(3-sg-fm) acc the-story
'She didn't understand the story'.

Shlonsky proposed an account that would explain the facts in Standard Arabic and Modern Hebrew in a unified manner. First, he summarizes the observations under an implicational hierarchy, which he takes to be universal, and which is reminiscent of Rizzi's (1982) proposal with regard to null-subjects.

Implicational Hierarchy of Agreement Features

A. If a verb is inflected for number then it is also

inflected for gender [only if gender is distinctive in that form].

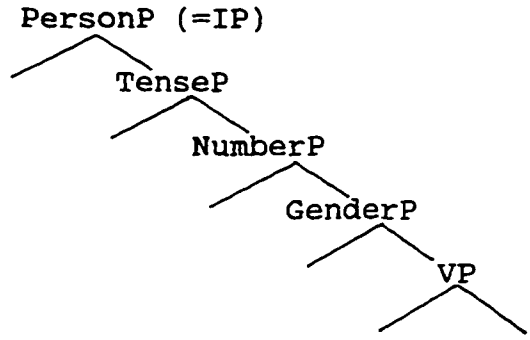
B. If a verb is inflected for person then it is also inflected for number.

Second, in order to capture this hierarchical dependency he proposes, in spirit of Pollock's (1989) Split-Infl theory, to split Agr further into its ϕ-features, so that each feature heads its own maximal projection. Subject to the condition on head movement (following the *Head Movement Constraint* (Chomsky, 1986a); henceforth HMC), the verb will raise from one head to another accessing each feature, i.e., functional head, separately. Following the implicational hierarchy and under the condition of the HMC, the order of the three functional heads is necessarily Gender° (closest to the verb), Number°, and Person°. As a result, the head Person°, cannot be accessed, i.e., raised to, unless the verb has first raised to Number° and so forth; otherwise it will constitute a violation of the HMC.

Shlonsky adopts Berman's (1978) [0Tense] specification for the present tense, as outlined in previous sections. He further assumes that the null feature is weak and therefore, opaque in Pollock's (1989) sense, blocking overt raising to it, and hence necessarily also across it (otherwise the HMC will be violated). Thus, if PersonP is located above TP dominating it, given the weak features of TP (and without

requiring additional stipulations), overt movement to Person° will be blocked, as in the present tense of Hebrew. The outcome is the extended structure given below (omitting irrelevant nodes):

11.



Consequently, and following the HMC, a derivation of a Benoni sentence proceeds as follows: First, the verb raises to Gender°, and then it proceeds to Number°. As Tense° is weak, the verb cannot raise to it, so Tense lowers to the verb adjoined to Number° (or raises to Tense covertly at LF). Moreover, the verb is not able to move across Tense° directly to Person°, as it will violate the HMC. Thus, the earlier observations are accounted for showing that '...the tenselessness and the absence of person inflection in the Benoni [i.e., present tense,] is not coincidental. The Benoni forms lack Person marking precisely because they are [0TENSE]' (ibid, p.19).

Shlonsky's account relies on the content and properties of TP. However, once he proposes to split Agr, the features specified in Person° must also be accounted for. In what

follows, it will be shown that claiming Person° to be null or weak will result in a redundancy in the structure. Whereas taking the other route of claiming Person° to be contentfull or strong will create a structure that will not converge at LF. Thus, following Elisha (1994), I will argue that the only conclusion one could reach is that PersonP, or Agr_sP (in early *Minimalist* terms) must be missing altogether. I will diverge from that account in arguing for a universal TP, as explained above.

2.2.2.1 Licensing Agr_sP in Hebrew Present Tense

In previous sections, we have argued for a null Tense° in the present tense in Hebrew, and for the absence of a [person] specification in its morphological paradigm. Shlonsky (1989) has argued that the latter can be derived from the properties of the former, if we adopt an extended version of the *Split-Infl* hypothesis in conjunction with the HMC. Blocking the verb from raising to TP and then further on to PersonP gave the right account for the facts. However, this is also where the argument ended. If Person° is a head that must be blocked from raising to, it must have some content, namely strong features, which cannot be ignored. For the sake of argument, I will assume that whether Person° is null or phonetically realized, it can be either weak or strong, so we need not consider all

four options but just the two relating to the "strength" of the head. Let us consider, then, the consequences of each option for the derivation of a simple sentence.

First, assume that, similar to Tense°, Person° is also weak. Following the same line of argumentation, the verb would be blocked from raising overtly to PersonP. If the verb cannot raise to either functional head, there is no motivation for inserting TP under PersonP, since a reverse order will yield the same result. In other words, there is no need to block movement to Person° since the category itself blocks overt movement to it, being weak. Raising at LF will not change any of the considerations above. Raising at LF will target the interpretable category, i.e., TP, but not PersonP (being an Agr category). Thus, either the participle will raise to TP and stay in situ without raising further to PersonP; or, if the order of the categories were reversed, it will target TP and move vacuously through PersonP. In both cases, only TP will play a role at LF whether it dominates or is dominated by PersonP.

If movement to PersonP must be blocked by inserting a weak TP below it, this must indicate that PersonP is strong. Thus, we must conclude that PersonP in the present tense is the same head across all tenses in Hebrew (a uniform, hence preferable assumption). Furthermore, similar to the past and future tenses, it is checked off against a matching feature on the verb. The only difference, then, between the present tense

and the other tenses is that TP in the former is null and weak, while in the latter it is specified for a strong [+Tense] feature and [past].

Following Shlonsky's account, the verb will overtly raise up to NumberP, and further raising will be blocked by the weak TP. Where does this leave the strong feature in Person°? If we allow it, following the GB framework, to lower to the verb in NumberP, then we have eliminated all what we have achieved in blocking the verb from reaching it. If, on the other hand, we do not allow lowering, following the more current view, we are left with a strong feature, which must have been checked in the syntax prior to LF. Since it remains unchecked and it is not a legitimate object in PF (there is no PF interpretation to a non-attached affix), the derivation will crash.

To sum up, we have seen that we cannot assume that Person° in the present tense differs from the same head in the other tenses along the same lines we have argued for Tense°. If we argued that both TP and PersonP were null and weak, we are merely describing the observable facts that the present tense in Hebrew lacks [Tense] and [person], rather than explaining them. Moreover, this argument entails that we do not need the extended structure of splitting Infl to Agr heads, as we need just say that Agr is deficient by being specified for only two of the ϕ-features. Under the second option, Hebrew has only one type of Person°. This head is specified for a strong [person] feature triggering raising to

it across tenses. Under the extended structure, TP will block movement to that head, however, it will leave the strong feature of PersonP unchecked. The derivation will then not converge.

There are two contradictory conclusions coming out of the arguments presented above: (i) [person] is strong across all tenses in Hebrew and therefore must be checked off before LF. (ii) the verb in the present tense must be blocked from raising to the position above TP, i.e., to Agr_sP (in early *Minimalist* terms) where [person] is specified. The only way to solve this contradiction is if we assume that Agr_sP is not selected in the syntax in Hebrew present tense. First, we can argue that Agr in Hebrew is uniformly strong. This is compatible with the claim that Agr has no interpretation at LF, and therefore, the only Agr that can play a role in the syntax non-redundantly is strong Agr. If it is selected from the lexicon it will trigger raising to it. However, since it is not a cross-linguistic category, it need not be selected, as in the present tense in Hebrew. This also solves the second problem. When the category is not selected there are no strong features to check off and no strong features stranded at LF and PF. The verb is selected specified for participle agreement features, which will be checked at a level below TP, hence the redundancy of Agr_sP, and the convergence of the derivation. I will return to the participle agreement in the following section.

In section 2.2.1, we have argued against Agr and for TP as cross-linguistic categories. Hebrew, then, is a "mixed" language in that its past and future tenses obligatorily select strong Agr, whereas in the present tense it is not selected, giving rise to the participle form in its sentences. This raises the question regarding the dependency and interaction between TP and Agr. Is it the case that as [+Tense] is associated with Agr_s in Hebrew, a null TP is associated with no Agr_s? In the following section it will be shown that this is not the case, since present tense sentences can exhibit Agr features above TP, so that selecting strong Agr from the lexicon is optional. This will also lend further support for the uniformity of Agr in Hebrew and its strength, since when it is selected in the present tense it is specified for all ϕ-features and triggers raising of a lexical element to check those features.

2.2.3 The Null Auxiliary Account of the Present Tense - Shlonsky (to appear)

So far we have reached the conclusion that the present tense in Hebrew is peculiar in several ways. It selects a null weak TP, as opposed to a strong [+Tense] category in the past and future tenses. Furthermore, it can optionally select Agr_sP, whereas the category is obligatorily selected in the past and

future tenses. We have accounted for the case when it is not selected and we have yet to account for the present tense configuration in which Agr_sP is possible. This will also serve as evidence against the total elimination of Agr from the lexicon (Chomsky, 1995).

Shlonsky (to appear) reaches a similar conclusion regarding the optionality of Agr_sP in the present tense. We differ, however, in that he assigns the sentences selecting for Agr_sP the structure of a complex tense, i.e., a finite verb played by a null auxiliary followed by a participle (the Benoni form). The sentences not selecting Agr_sP lack the auxiliary. I will argue against a null auxiliary in verbal clauses and show that it requires unnecessary postulations which still do not stand the test of the facts in Hebrew. This discussion is also important for arguing against null auxiliaries in child language (Chapter 4).

Shlonsky (to appear) also assumes the ternary tense system traditionally argued for Hebrew, and the use of the tenseless participle form as the productive form for the present tense. His solution for the participle's dual function as a tenseless form in sentences lacking TP and a finite form that necessarily carries tense, is to assume that the participle has one function only, namely it is a participle.

In some finite sentences, other than the present tense, the Benoni form can function as a true participle following the auxiliary *h.y.y.* (be). In the present tense, however,

there is a gap in the paradigm and there is no corresponding present tense form for the auxiliary. The presence of a Benoni form in a finite clause interpreted in time as present tense is taken to indicate that there must be a finite verb supporting the finite features and preceding the participle. Following Berman (1978), Shlonsky hence assumes that the auxiliary in the present tense is defective in the sense that it has no morphological realization, it is null. Yet at the same time, its syntactic properties are intact so it can occupy the position of a finite verb in the finite clause and precede the participle.

Since the null auxiliary is the finite verb which assumes all tense properties, the participle cannot possibly assume the same functions. Thus, the auxiliary is inserted under a VP dominating the predicate level and the Agr phrase above it. The auxiliary will raise to TP to check its features and then further to Agr_sP where it will enter in a Spec-head agreement relation with the subject raised to [Spec, Agr_sP]. The participle now cannot raise to TP and must be licensed under that projection. Thus, the participle's tenseless properties are now explained both morphologically by the lack of a tense suffix or prefix (as it is usually realized in Semitic languages), and syntactically by the inability to raise to the position of TP.

The lack of [person] agreement now also follows according to Shlonsky (to appear). As shown in Chapter 1, the agreement

projection above the predicate level reflects the properties of the predicate head, hence AgrPart(iciple)P, when the Benoni form is selected. Since [person] is associated with TP, the lower Agr cannot possibly include that feature. The participle will raise overtly to AgrPartP, and the subject will raise to [Spec, AgrPartP] where subject-predicate agreement is established. Since the participle has checked all its features it will not raise further. The null auxiliary, on the other hand, being finite, will raise to Agr_sP and check off its [person] feature. The subject will raise further to [Spec, TP] and then to [Spec, Agr_sP] where it will receive nominative Case by the complex [$_T$ T-Aux] and enter in a second agreement relation with the null auxiliary.

We have already noted that there are some problems with this account, mainly centering around the fact that the participle can be found in a position above TP despite all that has been argued for. This is demonstrated in the following examples:

12.a. bederex klal, ha-talmida hayta
usually the-pupil(sg-fm) was(sg-fm)
loeset mastik rak ba-hafaskot.
chewing(part-sg-fm) gum only in+the-recesses.
'Usually, the pupil used to chew gum only during recess'.

b. bederex klal, hayta ha-talmida
usually was(sg-fm) the-pupil(sg-fm)
loeset mastik rak ba-hafaskot.
chewing(part-sg-fm) gum only in+the-receses.

c.*bederex klal, loeset ha-talmida
usually chewing(part-sg-fm) the-pupil(sg-fm)
hayta mastik rak ba-hafaskot.
was(sg-fm) gum only in+the-receses.

d. bederex klal, ha-talmida loeset
usually the-pupil(sg-fm) chewing(part-sg-fm)
hayta mastik rak ba-hafaskot
was(sg-fm) gum only in+the-receses

e. bederex klal, loeset hayta
usually chewing(part-sg-fm) was(sg-fm)
ha-talmida mastik rak ba-hafaskot
the-pupil(sg-fm) gum only in+the-receses

f. ha-yom, loeset ha-talmida
today chewing(part-sg-fm) the-pupil(sg-fm)
mastik ba-she'ur.
gum in+the-lesson.
'Today, the pupil is chewing gum in class'.

In (12a), the adverbial is in Topic position and the sentence consists of a complex tense in its unmarked order. As subject-verb inversion is taken to be an instance of T-to-Comp, only a finite verb that can raise to Tense can also raise to Comp.

Hence the grammaticality of (12b) and the ungrammaticality of (12c). Contrary to what has been argued, the participle can at least raise to the position of the auxiliary undergoing copula-inversion, as shown in (12d). Following Borer (1994), Shlonsky (to appear) takes the instance of copula inversion as an instance of incorporation of the participle onto the auxiliary. Once incorporated, the new head can raise as one unit and undergo subject-verb inversion as in (12e). Shlonsky suggested that the null auxiliary is weak and has clitic properties that require it to be supported by a host, i.e., the participle.

The question emerging from this account is how the participle raised to the weak auxiliary. Not only is the auxiliary weak and therefore does not trigger overt movement to it, but it was claimed that the participle has been licensed and its features checked in AgrPartP, below TP.

Shlonsky attempts to solve the problem adding a functional layer below AgrPartP associated with strong features. Assuming that 'agreement projections are always layered above either lexical projections or functional projections in which features of lexical heads are checked' (ibid, p.60), he assumes that AgrPartP, as well, must be a reflection of such a core structure. Based on work by Belleti (1990) especially on Italian, this functional category is taken to be Asp(ect)P. Furthermore, the participle is assigned in the lexicon a feature [F] - a bundle of aspectual features

which is to be checked in AspP. In addition, AspP is endowed with a Tense feature that must be checked in TP so when the participle adjoins to AspP to check the [F] feature it inherits the aspectual feature that must be checked in Tense. These two features ensure that the participle raises to Asp°, and then will be forced to raise to TP. Given the *HMC* or *Relativized Minimality* the participle will first incorporate to the auxiliary and then moved to TP and further to Agr_sP.[12] In the stage of the derivation just described the structure converges as all relations have been established and all features checked.

Although the postulation of a null auxiliary is attractive and not implausible, as Shlonsky admits, it still raises some problems. First, the AspP adapted from Italian is problematic since Hebrew, as opposed to e.g. Arabic, has a tense verbal system and not an aspect-based verbal system. The complex tenses presented in examples (7) receive no aspectual interpretation. Thus, it is not clear how the aspectual bundle of features [F], proposed by Shlonsky, should be interpreted in Hebrew. Second, under Shlonsky's revised account, AgrPart dominates AspP. The latter, specified for [F], must check that feature in TP. Thus, the SC in example (5) repeated below,

---

[12] In the case of the realized auxiliaries, when those are strong they will raise overtly in the syntax and check the features of T°. The participle, endowed with the [F] feature will raise to Asp° overtly but only raise covertly to T° at LF.

13. ha-more nixnas la-kita
the teacher(ms) entered(sg-ms) to+the-class
[$_{sc}$ PRO shote kafe].
PRO drink(pr-sg-ms) coffee
'The teacher entered the class drinking coffee'.

can no longer be analyzed as laking TP, because it has an AgrPartP dominating AspP and hence it also has the feature [F] to check in TP. However, if TP had projected, the subject of the SC would have received nominative Case, which it obviously does not. Third, if we need to postulate a feature that will trigger raising the participle to Tense why do we need the auxiliary in the first place? Finally, since this [F] feature to be checked in TP is associated with verbs, why not use Tense itself as the triggering feature?[13] [14]

The arguments presented above argue against the stipulation of AspP with an additional feature [F] and therefore against their motivation - the stipulation of the

---

[13] Shlonsky (to appear) gives a partial answer to that showing how adjectives pattern in many ways with the participle, as opposed to nominals and preposition. Thus, he suggests a common feature which is not uniquely verbal such as [Tense]. This does not exclude, however, the possibility that adjectives (and actually only a specific class of adjectives) are set aside by a unique feature, excluding verbs.

[14] John Whitman (p.c) has suggested a modification on [F], proposing the feature to be a strong feature checked in Comp rather than in TP. This would trigger subject-verb inversion directly overcoming all the unnecessary steps. This, however, still leaves unanswered the SC problem. The SC does not project a CP, so the strong feature will remain unchecked.

null auxiliary.[15] In the final section of this chapter, I will present the conclusions emerging from the discussion, and hence an alternative account that will attempt to answer some of the issues addressed so far. Specifically, I will argue that raising the participle is triggered not by its need for feature checking (given that all its features have already been checked in AgrPartP below TP), but by its interaction with a UG principle which specifies that all finite clauses select TP.

2.3 An Alternative Account and Concluding Remarks

We started this chapter by raising two questions which emerged from the Spilt-Infl framework. The first issue addressed the question of how many functional categories are specified in the universal lexicon. I did not attempt to settle this issue here. The second issue addressed a different aspect of universality. We argued that either all categories specified by UG are selected by all languages alike in every sentence; or that there is one set of cross-linguistic categories, and a second set which is parameterized across languages. We

---

[15] The only structure in which a null auxiliary might still be motivated is in verbless predicates. Those predicates are not associated with Tense features and cannot raise to Tense under any guise (not even via subject-verb inversion), leaving Tense unchecked, requiring a finite verb to be selected for the enumeration.

argued for the second position.[16]

The discussion centered around TP and AgrP, the two categories that emerged from the extended Split-Infl framework. Another reason we focused on those two categories is because they seem to jointly account for the null-subject phenomenon, to which I will turn in the following chapter. Thus, our goal in this chapter was to describe the feature specification of the categories in Hebrew, and based on those formal features explain how they interact with one another in a given derivation.

We have shown that the present tense verbs in Hebrew are actually participles. It was initially argued that they lack a Tense marker morphologically and that syntactically they are licensed below TP and never raise to it. Thus TP was taken to be null and weak. On the other hand, we have shown that the participle can function as a true finite verb. One of the instantiations of that function was its ability to undergo subject-verb inversion, i.e., raise to Comp via Tense. It was also argued that even though in most cases the verb did not raise to TP, the latter was still selected in all finite clauses being a universal category. TP provides the time reference to the clauses and assigns nominative Case to its subject. We have also argued that had TP been eliminated, AspP could not undertake its Case assigning properties, since its

---

[16] Further evidence from a language acquisition point of view will be presented in Chapter 4.

subjects in adjunct *SC*s, for example, are not assigned nominative Case (see example 13).

In contrast to TP, we have maintained that Agr_sP is not a cross-linguistic category. Furthermore, we have shown that a weak Agr_sP cannot possibly play a role in the present tense in Hebrew. This conclusion was also supported by the fact that Agr is not an interpretable category. Therefore, to maintain the category as an independent projection selected from the lexicon, it must be strong and hence play a role in the syntax. We have argued that if Agr_sP is selected it is specified for all ϕ-features, which are uniformly strong and trigger raising to that category. Finally, the present tense participle verb was accounted for by demonstrating that Agr_sP is not necessarily selected in all tenses in Hebrew, the same way some languages do not select agreement features altogether. We have yet to show that Agr_sP can, nevertheless, be selected in the present tense. This also shows that the selection of Agr is not necessarily dependent on the feature specification of TP.

The negative particle *eyn* provides interesting evidence for the option of selecting Agr_sP even in the present tense. In (14a), the negative particle follows the subject and precedes the participle verb. In this configuration it is inflected for all three ϕ-features. In (14b), the negative particle *eyn* precedes the subject, and it is not inflected for any agreement features:

14.a. ha-yalda eyna lo'eset mastik.
the-girl NEG(3-sg-fm) chewing(pr-sg-fm) gum.
'The girl is not chewing gum'.

b. eyn ha-yalda lo'eset mastik
NEG the-girl chewing(pr-sg-fm) gum.

Shlonsky (to appear) argues that *eyn* is a negative head located above TP (see ibid, Chapter 4) and that its inflected and neutral instantiations can only be explained if we assume that the selection of Agr_sP is optional in the present tense. Thus, when it is selected, the particle adjoins to it to support the strong features[17] and surfaces as the inflected particle. The subject raises to [Spec, Agr_sP] establishing a second relation of agreement - with the negative particle.[18] When Agr_sP is not selected, *eyn* remains in its position above TP. The subject raises overtly to [Spec, TP] to receive Case (no further raising is motivated), and the participle raises to Tense° covertly. Note that if we followed Chomsky's (1995)

---

[17] This accounts for the fact that *eyn* cannot appear in tensed clauses.

[18] It is interesting to keep in mind (and I will return to this fact in Chapter 3) that pro-drop is possible in this configuration only in the 1st and 2nd persons but not in the third person:

(i) eneni/enex/*enena
NEG(1st-sg)/NEG(2nd-sg-fm)/NEG(3rd-sg-fm)
lo'eset mastik.
chewing(pr-sg-fm) gum.

proposal that not only is weak Agr not specified in the lexicon, but as a matter of fact also strong Agr is missing, i.e., Agr is not a functional category at all, we would have to assume two similar negative particles in Hebrew, which differ only in terms of inflection, one inflected and the other not, and we would not be able to account for the subject's change of position. (A final argument against the elimination of strong Agr from the lexicon is presented in footnote 19). Thus, I will continue to assume that only strong Agr is specified by UG in the lexicon.

To conclude, what are we left with? I would like to propose first that the participle, inasmuch as it is a verb, has a tense feature. This feature is morphologically null and syntactically does not need to be checked against a functional category. Therefore, when TP is not selected (as in SCs), the participle will raise to AgrPartP and remain in that position, all its features checked and agreement with the internal subject established. Tensed verbs, on the other hand, have an overt (strong) tense affix which must be checked against TP; therefore, they could never appear in clauses lacking TP.

If the clause, on the other hand, is a root clause, i.e., a CP, TP is automatically subcategorized for following UG principles. In the present tense, it will be specified for a weak null feature. Once more, the participle is licensed below TP and need not raise to it or above it. Thus, it is not the tense features on the verb which trigger raising. It is the

selection of TP by UG (as part of a CP), and in turn the feature in TP, which must be checked, that trigger verb raising. Since the feature in Tense is weak, raising will be postponed to LF. As a result, the participle will raise covertly to Tense°, whereas, the subject will raise overtly and be assigned nominative Case in [Spec, TP]. Only in cases where a strong C° has been selected (following Rizzi, 1991) will the participle raise overtly to check that feature before LF. As opposed to participle clauses, in addition to TP's strength, tensed verbs require overt raising and checking their strong features in the corresponding TP. In this case both TP and the tensed verbs trigger overt raising of the latter to adjoin to the former.

In addition, strong Agr_sP is not necessarily selected in all tenses. It is selected obligatorily in the past and future tenses and optionally in the present tense. When selected it is uniformly specified for all ϕ-features.[19]

---

[19] I leave open the question of *Pron* (Doron, 1983) - the realization of agreement features exhibited in sentences containing verbless predicates of the form in (i):

(i) dani hu (lo) Mar Smith .
dan he (not) Mr. Smith
'Dan is (not) Mr. Smith'.

Similar to the participles, Pron is not inflected for [person] agreement. On the other hand, it precedes the negation, whereas a participle verb would follow it, suggesting that Pron is higher than NegP and hence a realization of Agr_sP.

A second important point raised by the presence of *Pron* is Chomsky's (1995) proposal against specifying Agr as a functional category. How are pure (non-clitic) Agr features realized if there is no Agr category specified in the lexicon?

Given these facts and the cross-linguistic facts presented by the inflected infinitives in European Portuguese, and the absence of Agr altogether in some language, it does not seem implausible to assume that there is no necessary dependency between the features of TP and the selection of Agr. It seems that different languages select different formal feature combination of functional heads. Further research will have to look into the question of whether some combinations are excluded, i.e., not specified by UG.

Chapter Three
The Structure of Null Subjects and Its Application in Modern Hebrew

3.0 Introduction

The early versions of the *Empty Category Principle* (henceforth, ECP) stated that all empty categories must be properly governed. In later versions, we find a refinement of this requirement stating that empty categories must be licensed and identified. Null subjects, or *pro*, are no exception to that principle.

The existence of the pronominal non-anaphoric element *pro* has been derived from principles of UG. Within the *Government and Binding* framework (henceforth, GB; Chomsky, 1981), the *Projection Principle* (henceforth, PP) ensures that a thematically marked subject must be structurally present even if it is not phonetically realized, and the *Extended Projection Principle* (henceforth, EPP) ensures that a sentence must have a subject even if the verb does not thematically select it. Pro is licensed and identified under different

conditions in tensed sentences and in some non-finite contexts as in European Portuguese (Raposo ,1987, 1989), or in Italian (Rizzi, 1982, 1986).

Furthermore, the existence of *pro* can also be motivated independently applying the binding conditions. Whether an overt or covert subject is selected, the binding conditions apply in the same way:

1. ani/*pro* ra'iti et acmi/*oti/*et Yaron
   I/*pro* saw(1-sg) acc myself/*me/Yaron.

In both cases, only the reflexive direct object *acmi* (myself) is possible (following binding condition A), and neither the direct pronoun *oti* (acc+1sg, i.e., me), nor the name, marked accusatively, can be coreferent with the subject (following binding conditions B and C, respectively).

Once the empty category is motivated, its nature and properties must be derived. *Pro* cannot be any of the already motivated empty categories, i.e., PRO, an NP-trace, or a variable, due to its unique properties. Following Rizzi (1982, 1986) and Raposo (1987) it appears that *pro* is present only in contexts of Nominative Case assignment, excluding PRO and NP-trace, which are not assigned Case. Second, as Jaeggli & Safir (1989) point out (see their discussion on pp.16-20), *pro* patterns with pronouns in having a possible range of interpretation of expletives, referential pronouns, and

resumptive pronoun. All properties combined, *pro* is defined as [+pronominal, -anaphor].

The goal of this chapter is to explicate the Hebrew null subject data. Since we have assumed in previous chapters that parameterization lies in the properties of functional categories and in their formal features, the *Null-Subject Parameter* will be explained and derived from the setting of the functional heads Tense and Agr in Hebrew.

We will first present the facts in Hebrew (section 3.1.). The data will demonstrate that all tenses in Hebrew license *pro*, suggesting they share a common property. According to Rizzi (1982, 1986), the projection of Tense associated with nominative Case will be taken to be the licensing head across tenses. According to Speas (1994), neither Tense nor Agr play a direct role in licensing *pro;* rather it is the fact that they are licensed as projections via the content (phonetic and/or semantic) of their head which allows *pro* to appear.

It will also be shown that as the present tense differs from the past and future tenses in its Tense specification and the optionality of selecting Agr_sP, so the tenses also differ in the use of referential *pro*. These facts will be made to follow directly from one another, and will be based on the absence of a [person] feature in the present tense (based on Rizzi's (1986) identification convention). The lack of referential 3rd person *pro* across tenses will be explained under one type of accounts as a single-step process.

Alternatively, based on historical facts, I will suggest a gradual process accounting first for the impossibility of referential *pro* in 3rd person past tense, followed by a later similar process in future tense.

3.1 Two Sub-Parameters of the Null-Subject Parameter

One of the first observations made with regard to the null-subject (pro-drop) phenomenon was that it is associated with a range of other properties all characteristic of null-subject languages:

2.a. missing subjects; specifically, absence of expletive pronouns
b. free subject inversion in simple sentences
c. "long *wh*-movement" of the subject
d. empty resumptive pronouns in embedded clauses
e. apparent violations of the *[that-t] filter

(adapted from Chomsky, 1981; pp. 253-254)

Rizzi (1982) suggested that the properties defining the null-subject parameter are actually only properties (2a) and (2b). Crucially, he demonstrated that null-subject languages must obey all other constraints exactly as non-null-subject languages do. The apparent violations are derived from an

interaction between the first two properties.

To exemplify, the English counterpart of the classic Italian example in (3) is ungrammatical. The *wh*-movement of the subject from its underlying position (4c) across the *that* complementizer creates a *[that-t]* configuration, which is filtered out (4a). When the complementizer is absent, the extraction of the subject from its embedded position is possible, as demonstrated in (4b):

3.a. chi_i credi [(che) [verra t_i]]?

b. credi [che [e verra chi]]

4.a. *who_i do you think [that [t_i will come]]?

b. who_i do you think [0 [t_i will come]]?

c. you think [(that) [who will come]]

(adapted from Rizzi, 1982: p.117)

The account for the descriptive *[*that-t*] filter is subsumed under the ECP. In this configuration, the *wh*-phrase in [Spec, CP] of the higher clause cannot properly (antecedent) govern the trace in the subject position.[1] The possibility of (3a), in a null-subject language such as Italian, is explained under property (2b). The subject is in an inverted right-adjoined position, as demonstrated by the underlying structure in (3b).

---

[1] Following Rizzi (1990), this configuration violates Minimality (as defined in footnote 2). Since the complementizer *that* is a potential governor of the *t*, it intervenes between the higher *wh*-phrase and the variable it antecedent-governs.

In this position the subject is properly governed by the verb, so that "long-movement" is possible across the complementizer *that*, without violating the *ECP*.[2]

Configuration (5a) below represents the state of affairs that violates the *ECP* in general, also in Italian. In null-subject languages, since subject inversion is possible, the offending configuration can be salvaged and made to follow the *ECP* if the subject is inverted, as shown in (5b):

---

[2] At this stage, the representation will be done within a *GB* framework, assuming the following definitions as underlying and constraining all sentences (Chomsky, 1986a; Haegeman, 1991):

i. ***Empty Category Principle (ECP)***
An empty category must be properly governed; defined as such so that, A properly governs B iff A (i) theta-governs B, or (ii) antecedent-governs B:
(1) A theta-governs B iff A governs B and A theta-marks B.
(2) A antecedent-governs B iff A governs B and A is co-indexed with B.
(adapted from Chomsky, 1986a: p.17)

ii. ***Government***
A governs B iff
(1) A is a governor, i.e. a head or a co-indexed XP,
(2) A m-commands B, defined as A m-commands B iff A does not dominate B and every C (C = X^{max}) that dominates A dominates B, (ibid, p.7)
(3) no barrier intervenes between A and B,
(4) the minimality condition is respected.

iii. ***Minimality***
A governs B iff there is no node Y such that
(1) Y is a potential governor for B,
(2) Y m-commands B (see definition in (5(ii)),
(3) Y does not m-command A.
(adapted from Haegeman, 1991; p.404)

5.a. *Op_i...[$_{CP}$ Comp [e_i V...]

b. Op_i...[$_{CP}$ Comp [... V e_i ...]

Thus, contrary to what was assumed, Italian does not allow for "long *wh*-movement" of the subject, demonstrating apparent violations of the *[that-t] filter. The configuration in (6a) is as bad in Italian as in French or English, and the only explanation for the apparent violation in Italian is the possibility of configuration (5b). Therefore, the claim that Infl is a proper governor in null-subject languages allowing for configurations that are impossible in non-null-subject languages, cannot be maintained. As a result, it also excludes the possibility that null subjects are licensed via such an Infl head. Infl will be shown to play a role in licensing null-subjects only if additional conditions can be shown to hold at the same time.

We will turn to this issue in section 3.2 and 3.3. In the following section, we will present some facts on null subjects focusing on Modern Hebrew.

3.1.1 Some Facts about Null Subjects

When discussing null subjects, we need to distinguish between the appearance of *pro* in thematic contexts or non-thematic contexts. The distinction between referential and expletive

subjects, which depends on the thematic properties assigned by the predicate, hold and apply to subjects whether they are overt or covert.

The following Hebrew examples show that the conditions under which expletive *pro* and referential *pro* may appear differ:

6.a. *pro* efshar la-asot ha-kol im rak rocim.
pro possible to-do the-all if only want(pl-ms)]
'It is possible to do everything if we only want to'.

b. ani ma'amina [she [*pro* efshar la-asot
I believe(sg-fm) [that[*pro* possible to-do
ha-kol im rak rocim].
the-all if only want(pr-pl-ms)]
'I believe that it is possible to do everything if we only want to'.

c.**pro* ma'amina [she [*pro* efshar la-asot
pro believe(sg-fm) [that[*pro* possible to-do
ha-kol im rak rocim].
the-all if only want(pl-ms)]

d.*ani amarti [she [0 ma'amina [she...
I said(1-sg) [that [0 believe(sg-fm) [that...

e. *pro/ani* e(y)nni ma'amina [she...
pro/I Neg(1-sg) believe(sg-fm) [that...
'I do not believe that....'

f. pa'am, pro_i/ani_i he'eman-ti_i [she [*pro*
once, *pro/I* believed(1-sg) [that[*pro*
haya efshar la-asot ha-kol im rak rocim].
was possible to-do the-all if only want(pl-ms)]
'Once, (I) believed that it was possible to do everything if we only wanted to'.

g. pa'am, *pro_i/hu_i he'emin$_i$ [she...
once, **pro/he* believed(sg-ms) [that...

In the present tense in Hebrew, *pro* is licensed in non-thematic contexts in which it is also obligatory, in accordance with property (2a).[3] This is demonstrated in (6a). Embedding this sentence in (6b) will not change its status. The sentence will be grammatical because the embedded clause lacks an overt subject and has an expletive *pro*, and also because the root clause, in which the verb has a thematic role to assign to its subject, has a referential overt subject.

---

[3] There is some controversy as to the obligatoriness of expletive *pro* in Hebrew, as in some non-thematic contexts the pronoun *ze* (it/this) can optionally appear:

(i) (ze) margiz she ha-pgisha butla bli hoda'a me rosh
(it) annoys that the-meeting was-canceled without notification in advance
'It is annoying that the meeting was canceled without advance notice'

Hazout (1990) claims that the pronoun *ze* is not an overt expletive, but a pronoun that must appear in thematic contexts. I will not pursue this matter any further and will adopt his argument. This aligns Hebrew with the other null-subject languages in requiring obligatory expletive *pro*. See Vainikka and Levy (1995) for a different view.

Were we to omit the referential subject and replace it with referential *pro*, the sentence would be ungrammatical, whether in root clause, as demonstrated in (6c), or embedded (cf.6d). Referential *pro* is possible in the present tense only when the inflected negative particle *eyn* is selected (cf. 6e). In the past and future tenses, expletive *pro* is also obligatory (cf.6f). Those tenses, however, contrast with the present tense regular verbs in that referential *pro* in 1st and 2nd persons is possible, also demonstrated in (6f). Finally, referential *pro* is barred in <u>all</u> tenses when it denotes 3rd person (cf.6g).[4] How can these facts be accounted for?

One of the underlying assumptions we have made in Chapters 1 and 2 was that parametric variation is restricted and accounted for by the parameterization of formal features

---

[4] Borer (1983, 1989) has argued that under certain conditions referential *pro* is possible in 3rd person past and future only, if it is c-commanded by an NP in a higher clause. According to my dialect and that of other Hebrew native speakers, this is not possible in the past tense. It is possible under strict conditions with a future form, if it can receive an imperative interpretation and if the reference is transmitted by the <u>closest</u> c-commanding NP:

(i) Talila amra <u>le-Itamar</u>$_i$ she *pro*$_i$ yavo
Talila said to-Itamar that will-come(sg-ms)
'Talila told Itamar <u>to come</u>.'

(ii) *Talila$_j$ amra <u>le-Itamar</u> she *pro*$_j$ tavo
Talila said to-Itamar that will-come(sg-fm)
'Talila told Itamar that she will come.'

(iii) ?Talila$_j$ amra she *pro*$_j$ tavo
Talila said that will-come(sg-fm)
'Talila said that she will come.'

Richard Kayne (p.c.) has suggested that the facts in (i) are compatible with a control configuration so that the empty category might actually be *PRO* rather than *pro*.

of the functional categories in the lexicon. We have looked at TP and AgrP in Hebrew showing that there is a difference between the formal features specified in Tense and Agr in the present tense, on the one hand, and past and future tenses, on the other hand. The variation under the EPP should, then, be accounted for by referring to the setting of these functional heads. Table 3-1 summarizes the distribution of *pro* in Hebrew, showing that it reflects the variation in the functional categories.

Table 3-1. Referential and Expletive *Pro* across Tenses in Hebrew

Content/Person	*Present*	*Past/Future*
Expletive *pro*		
regular verb:	yes	yes
Referential *pro*		
regular verb:		
1st & 2nd	no	yes
3rd	no	no
eyn(+infl.):		
1st & 2nd	yes	irrelevant
3rd	no	irrelevant

Concentrating on 1st and 2nd person, the examples in (6) and the summary in Table 3-1 indicate that referential *pro* is possible in the past and future tenses when regular verbs are selected, but it is not possible in the present tense. Only

when *eyn* is selected in the present tense, is referential *pro* possible in 1st and 2nd person contexts in this tense. In Chapter 2, we have argued that present tense verbs are actually participles that lack a tense specification and, more importantly, select for Agr_sP only optionally. When Agr_sP is not selected the participle surfaces with participle agreement features projected below TP. The lack of Agr_sP also entails the lack of the feature [person]. In this case, referential *pro* is not available. When Agr_sP is selected, its features cannot be supported or checked by the participle, and unless a lexical element is inserted to support these features the structure will not converge. Since the particle *eyn* is optionally inflected for all ϕ-features, it can support the feature of Agr_sP, including [person]. Only in this configuration will referential *pro* be allowed in 1st and 2nd persons in the present tense exactly as in the past and future tenses. In those tenses Agr_sP is obligatorily selected and referential *pro* is always an option.

Table 3-1 also shows that all tenses allow for *pro* in non-thematic contexts. This is also exemplified in (3). This indicates that expletive *pro* is licensed under a set of conditions which requires the tenses to share certain properties. In Chapter 2, we have argued that despite the different feature specification, all finite sentences select a TP, which is associated with nominative Case assignment in these clauses.

To sum up, the distribution of null subjects seems to be closely related and possibly explained by both the similarities and differences in the feature specification of the functional heads in Hebrew. This description will have to be formalized in a more systematic way so that it can also be applied cross-linguistically. This is the aim of the following sections.

3.2 Licensing Heads and Identification Conventions

In this section, I will present some milestones in the explanation of the null-subject phenomenon. Our main goal is to explain the Hebrew facts and from it to predict what strategies Hebrew speaking children would undertake to acquire these facts. The Hebrew data serve a second purpose of "testing" the cross-linguistic validity of the different theories proposed to account for null subjects.

Since Rizzi's (1982, 1986) seminal work, subject *pro* has been argued to be licensed via Agr (in Infl), and especially via "rich Agr(eement)", associated with Case.[5] Null objects are also licensed by a Case assigning head, though not a

---

[5] Rizzi's (1982) original proposal was that since Agr is a bundle of ϕ-features, it will be able to function as a referential pronoun if it is specified for [+pronoun] - an option reserved for null-subject languages. In that case it will also absorb nominative Case, so that a lexical subject cannot appear without violating the Case filter, hence the appearance of *pro*.

functional head, i.e., the verb.[6] Under the original proposal, then, Agr both licenses and identifies the empty category. Rizzi (1986) proposed to separate the two processes requiring two separate sets of conditions, as required for the other empty categories, i.e., a licensing condition (under government) and an recoverability condition (under special binding conditions).

Thus, to license *pro*, it must be governed (but does not need to be properly governed) by a licensing head. Licensing heads are parameterized across and within languages: Languages will either have no heads that can license null arguments, some heads that license them, or all heads licensing null arguments. Given the important role of Case, Rizzi (1986) restricts the condition on the appropriate licensing heads in footnote 25: 'The licensing principle would then be that *pro* can occur when it is coindexed with a [pronominal] Case slot in its governing head' (ibid, p.525).

Sano and Hyams (1995) have argued that pro is licensed under Spec-head agreement with a lexical head. The addition of the lexical head to the licensing condition ensures that the verb has raised and adjoined to the Case assigning functional head in the syntax. This coincides with Belleti's (1990) claim that null-subject languages are usually languages with overt

---

[6] Hence the theory of null arguments, more properly termed *Pro Drop Theory*. As I will focus on *pro* in subject position, I will continue to refer to the phenomenon as the *Null Subject Parameter*, keeping in mind that I am not advocating the existence of such a parameter *per se*.

verb raising, and explains the subject-verb inversion property of null subject languages: When the subject has remained in its underlying VP-internal position, the verb will raise across it to adjoin to the functional head above it, deriving the Verb-Subject order.

In addition, to "recover" the content of *pro*, the licensing head and its features will bind *pro* by special conditions and under the convention that says:

> 7. 'Let X be the licensing head of an occurrence of *pro*: then *pro* has the grammatical specification of the features on X coindexed with it'.
>
> (Rizzi, 1986; p.520)

Since not every licensing head can identify *pro* as referential, Rizzi proposed a scale on identification. When no agreement features are specified, expletive *pro* is the only element that may appear. The feature [number] is needed to identify non-referential arguments, i.e., quasi-arguments, such as subjects of weather verbs (this type of *pro* can be found in a language such as Yiddish). Finally, only [number] and [person] combined can identify referential *pro*.[7]

Dechaine (1993) has argued for the addition of a subclause to convention (7) to account for the Hebrew facts.

---

[7] As we have already noted in Chapter 2, Shlonsky's (1989) extended split structure is reminiscent of this scale.

I will return to her modification in section 3.4.3.1.

Jaeggli and Safir (1989) have also proposed a modification of the convention in (7) to account for the German facts. German seems to be a counter-example to Rizzi's convention, since it licenses null subjects, but despite the fact that its paradigm is specified for [person], referential *pro* is not possible.[8] Jaeggli and Safir (1989) attribute the impossibility of German to identify referential *pro* to the fact that it is a V2 language. In this language, the Case-governing category is in Comp (and not in Tense) where the strong Finite Operator is (see Platzack and Holmberg, 1989). According to their agreement principle 'Agr can identify an empty category as thematic *pro* iff the category containing Agr Case-governs the empty category' (ibid, p.35). In terms of the convention in (7), *pro* is coindexed with Comp, which lacks agreement features, and therefore *pro* cannot be identified by Comp.

Both Rizzi's convention and Jaeggli and Safir's modification can be interpreted within a Split-Infl framework. *Pro* is first licensed in [Spec, TP] via Tense° to which the verb raised (overtly or covertly). Second, it is identified in

---

[8] This is also problematic in light of languages such as Russian, which also have a rich agreement paradigm. Benedicto (1994) argues that Russian both licenses and identifies *pro*. With respect to the latter, she argues that the overt subject pronouns are clitics on the verb, so the subject position is occupied by *pro*. Nevertheless, the obligatoriness of these clitics indicates that Russian should be accounted for under different conditions than those argued for in typical null-subject languages.

[Spec, AgrP] via Agr°, to which the complex [$_{T}$T-V] raised, establishing a Spec-head agreement relation. Similarly, in German, *pro* should be able to raise to [Spec, CP] and agree with the complex that has raised from Agr° to adjoin to Comp. This still does not account for the facts in German. One possibility is to interpret both principles via cyclic movement. Although *pro* ends up agreeing with the complex head of the verb adjoined to Tense (the licensing head) adjoined to Agr (the "feature identifier"), *pro* still needs to be licensed first and then identified. In languages where the Finite Operator is in Tense, *pro* will first raise to [Spec, TP] and be licensed. It will further raise to [Spec, AgrP] and be identified. In German, once *pro* has raised to [Spec, CP] to be licensed by Comp (by being coindexed with it), it can no longer be identified since the agreement features in the lower AgrP projection are no longer accessible.

Apart form these modifications, no other identification convention has been proposed. Moreover, referential *pro* can be identified by means other than agreement. It can be licensed and identified by a higher NP under c-command (Borer, 1989; but see footnote 4). In languages which do not make use of agreement features, identification might proceed via topic or subject control (see Huang, 1989).[9] This is also problematic in light of languages, such as Swedish, which exhibit no

---

[9] I will not review or attempt to account for the identification process in Asian languages, as it is irrelevant for Hebrew and the data from Child Hebrew.

verbal agreement and yet do not allow their subjects to be identified by a discourse topic. We will return to this type of languages in section 3.3.

At this point, suffice it to say that it seems that identification is more language(type)-specific, whereas there seems to be a general agreement that licensing null subjects is carried out under the same conditions cross-linguistically. As a result, most researchers are more intrigued by the licensing condition on null subjects, i.e., with the parameter in UG, than with the identification conditions.

To sum up, the *Null Subject Parameter* is defined in UG as a parametric choice on Case assigning heads, which are either [+licenser] (in null-subject languages) or [-licenser] (in non-null-subject languages). This proposal, however, reduces the variation across languages to an arbitrary choice in UG: Italian Tense happens to license subject *pro*, whereas English Tense does not. Although this might be the actual state of affairs accounting for the variation, Adams (1987) has suggested deriving the parameter from general properties of UG, such as canonical government. Speas (1994) chooses a similar path and derives the distribution of overt and covert subjects from a universal Economy principle. In the following section, we will elaborate on the latter, since Speas' proposal seems most promising for accounting for the Hebrew facts.

3.3 Licensing Null Subjects by Principles of UG

3.3.1 An Observation on Null-Subject Languages - Morphological Uniformity

In order to account for the licensing heads in a non-arbitrary way, it is, first, necessary to find what the language types have in common. Based on their observation of some languages, Jaeggli and Safir (1989) present their version of the *Null Subject Parameter*. It will be shown that their proposal falsely predicts the appearance of *pro* in languages that do not license it and fails to explain its absence in others. Consequently, Speas (1994) proposes to capture the similarities among null-subject languages and the distinctions between them and non-null-subject languages by resorting to a universal principle of Economy.

Jaeggli and Safir (1989) observe that 'Null subjects are permitted in all and only languages with morphologically uniform inflectional paradigms' (ibid, p.29). *Morphological Uniformity* is defined as in (8):

> 8. An inflectional paradigm P is a language L is morphologically uniform iff P has either only underived inflectional forms or only derived inflectional forms (ibid, p.30).

To exemplify, English is considered a non-uniform language: It

makes use of verbal base forms, i.e., morphologically non-derived forms, such as *'work'* as in *'I work'*. At the same time and within the same paradigm, it uses derived forms such *'work+s'* as in *'s/he works'*. Since English fails to fulfill the requirement for morphological uniformity, it does not license null subjects. In contrast, Jaeggli and Safir predict that Semitic languages always license *pro* since they are by definition morphologically uniform. As a rule, their verbal paradigms combine a consonantal root together with a vocalic inflectional tier, creating a form which is always complex, always derived, hence morphologically uniform. Finally, as already noted, Chinese (and other Asian languages) is not inflected for <u>any</u> agreement features. Therefore, its verbal paradigm is non-derived and falls also under the definition of morphological uniformity, licensing null subjects.[10]

The contribution of Jaeggli and Safir (1989) to the ongoing discussion is to avoid the stipulation that heads are parameterized in UG with respect to their licensing properties. Instead of reducing the *Null-Subject Parameter* to an arbitrary choice between licensing heads, they attempt to explain why a head is a licenser in one language and not in

---

[10] It is important to note that Japanese, for example, is inflected for tense and mood. Thus, it is inaccurate to claim it is has a non-derived paradigm. It can either be described as morphologically derived, affixed for Tense and Mood, or non-derived by lacking agreement features. If the latter is what Jaeggli and Safir intended, their definition will have to be modified to refer to agreement affixes and not affixes in general.

another. Their response is based on the observation of verbal morphological paradigms. They have demonstrated that only languages that have derived or non-derived forms license null subjects. In other words, a Case assigning head can be a null subject licenser only if its verbal paradigm is uniform.

The *Null-Subject Parameter* presented by Jaeggli and Safir (1989) makes some wrong predictions. It predicts the possibility of null subjects in Scandinavian languages which do not show any agreement markers. Consequently, they should behave as Chinese in allowing all range of *pros*, but they do not (Platzack, 1987).

It also predicts the possibility of licensing *pro* in English, in its past tense paradigm. Jaeggli & Safir explain the failure of English past tense to license *pro* by stating that 'we do not expect expletives to drop in only the past tense paradigm, but not in the present tense paradigm' (ibid, p.30). In other words, it is not likely that a Case assigning head would be a licensing head in one tense but not in another. The English case shows that mixed paradigms cannot choose both parameter options of licensing and not licensing null subjects. It is enough that one paradigm is non-uniform for the non-licensing head option to be set and for that head to be the one operating across paradigms, regardless of their uniformity.

A similar argument was presented with regard to Hebrew. Jaeggli and Safir predict that Semitic languages will always

license *pro* since they have inherently complex (derived) forms and therefore are always morphologically uniform. The Hebrew facts we have discussed in section 3.1 support their claim. Thus, when Hebrew is referred to as "mixed", the observation is made with respect to its identification condition and not to its licensing condition.

According to Jaeggli and Safir (1989), then, licensing heads are set only in languages with morphological uniform paradigms. This observation, however, still does not seem to be explanatory enough. It presents another property distinguishing null-subject languages, but it does not explain why a language with such morphological paradigm should license *pro*.

3.3.2 Deriving Null Subjects from Principles of Economy

Speas (1994) attempts to derive the distribution of overt and covert subjects across languages following general principles of UG. The account she presents will explain the observation made by Jaeggli and Safir (1989) and derive it from a universal Principle of Economy.

The discussion in Speas (1994) revolves around a similar issue already raised in Chapter 2: '...whether [Agr] is present as an independent syntactic head prior to LF' (ibid, p.184). In Chapter 2, we have argued that Agr is not a cross-

linguistic category and therefore independent evidence is required to specify it in the lexicon. Thus, a parameterized option distinguishes between languages that exhibit agreement features and those which do not. In East-Asian languages which do not make use of agreement features altogether, there is no motivation for specifying AgrP in the lexicon; hence, the projection cannot be selected in an enumeration. In languages that do have agreement features, an AgrP projection is selected in the syntax. Yet, following Rohrbacher (1992), Speas assumes two types of agreement features correlating with verb movement paradigms: Strong agreement features and weak agreement features. This distinction corresponds to a second parametric option among languages with agreement features.

When agreement features are strong, they are specified independently in the lexicon, and selected from it heading their own maximal projection in the syntax. Their corresponding verbs, then, are inserted from the lexicon in their bare form. Consequently, the verb will have to raise in the syntax to adjoin to the strong affixes. When agreement features are weak, they do not have an independent lexical entry. As a consequence, verbs with weak agreement morphology are selected from the lexicon already inflected, and the functional head that is projected to check those features is selected without content (since the affixes are on the verb). Being already inflected, the verbs need to raise to Agr only at LF. Thus, languages with strong agreement morphemes are

also languages with V-to-I raising (accounting also for their option to invert with the subject if the latter does not have independent motivation to raise), whereas languages with weak agreement features do not have verb raising in the syntax.[11] [12]

Differing from Rohrbacher (1992), Speas (1994) associates these properties with the property of licensing null subjects. The latter follows from a Principle of Economy that states the following:

9. Project XP only if XP has content. (ibid, p.186)

If a projection has no content it cannot receive an interpretation, and therefore, it will violate the principle.

---

[11] In Chapter 2, we have discussed a similar option arguing that only Agr with strong features can be selected. We diverged from Chomsky (1995) who claimed that no Agr, whether weak or strong, heads its own maximal projection. We also diverge from Speas (1994). What we find problematic with her proposal is that an empty Agr projection which has no semantic content nor phonetic content and hence no interpretation at either interface is nevertheless projected. Following her account, weak Agr is projected in languages which show somewhere in their paradigm even residual agreement affixes (e.g. Swedish), although she says, 'I do not know how the presence of residual agreement would lead to the postulation of an Agr projection' (ibid, p. 197). It is also important to note that following her proposal the present tense in Hebrew will have to project a contentless Agr_sP, which we have argued against, and falsely predict that the present tense does not license null subjects. Below, I will show that there is a way out of this problem based on the properties of Hebrew as a Semitic language.

[12] Following Speas (1994), since Swedish exhibits participle agreement and adjective agreement, an AgrP projection will be selected in the enumeration. Given that its verbal paradigm lacks agreement features, AgrP will be selected without content.

To qualify as having content, either the head X^0 or [Spec, XP] must be filled. The former must be selected with either content interpretable at PF or at LF. Since agreement is not interpretable at LF, only overt agreement affixes can give content to an Agr head. Speas further assumes that movement of a lexical head to adjoin to an empty Agr cannot give it content. Therefore, if a head was selected without content from the lexicon (as argued for languages with weak agreement) only raising a maximal category to its Spec can license this category. In other words, in languages with weak morphology, the agreement affix is base-generated on the verb. As a result, the head will not raise in the syntax and the projection will not be licensed violating the Economy principle. As explained, the only way to license the Agr projection is by filling its [Spec, AgrP] position requiring the overt subject to raise to that position.[13]

---

[13] Why can only an overt subject raise to [Spec, AgrP] to give content to this category? What follows from Speas' proposal is that an expletive *pro* cannot raise to [Spec, AgrP] to give it content since an expletive null subject has neither a phonetic matrix nor a semantic one. Given that it is not interpretable at either interface, it also raises a serious question whether the category is justified (Picallo, p.c.). Referential *pro*, on the other hand, is thematic and therefore having semantic content could raise to [Spec, AgrP] and license the category. However, it cannot have semantic content unless it is identified and in a language with weak agreement features referential *pro* cannot be identified. This leads us in a circular argument and has the undesired effect of reducing licensing to identification.

Consequently, although Speas' proposal seems to account for languages with strong Agr or no Agr, it still has problems in explaining the weak paradigms in languages that do not license null subjects.

On the other hand, in languages with strong Agr, Agr is base-generated as an affix in Agr^0, providing content to the head of the projection and hence licensing the maximal projection. Verb movement is obligatory to support or check the strong features. Since AgrP is licensed, the subject need not raise from its verb-internal position whether it is overt or covert. Finally, in languages that lack Agr altogether, no AgrP is projected, and therefore, no licensing is needed, satisfying vacuously the Economy principle.

Finally, in languages that do not specify Agr in the lexicon, licensing AgrP is not applicable, hence the Economy principle is not violated. If all other functional categories selected in an enumeration are licensed via content in their heads, null-subjects will be licensed too.

Speas (1994) has succeeded in replicating the observation made by Jaeggli & Safir (1989) classifying together languages with strong Agr with languages that lack Agr, as opposed to languages with weak Agr (but see footnote 13). In addition, her proposal has accounted for this observation by deriving it from a universal principle of Economy and associating it with licensing null subjects universally. Finally, the former has also accounted for the property of verb raising found in null-subject languages explaining also the property of subject-verb inversion associated with these languages.[14]

---

[14] Adams (1987) also proposes an account based on a general property of UG. She proposes a *Directional Government Parameter* (i), and the *Theory of Pro-drop* (ii) is stated in

We have concluded section 3.1 by arguing that the null subject facts in Hebrew can be directly related to the formal feature specification of Tense and Agr. What we have not presented yet is the exact formalization and configurations in which the latter license and identify the former. In the following final

---

terms of this parameter:

(i) Direction of government is a parametric choice. Government only takes place in the chosen direction.
(ii) The position and content of *pro* must be identified.
  a. The position of *pro* is identified by a governing head.
  b. The content of *pro* is identified by coindexation with the proper features.

Thus, in a language with SVO word order, the verb canonically governs to the right. In such languages licensing null subjects will be possible only if they also have free word order. In this case the subject and verb can invert, so that the verb is found to the left of the subject, governing it in the canonical direction, and hence licensing *pro*. As opposed to Speas (1994), then, verb movement is not derived from the licensing configuration, but rather is a crucial property that feeds it.

Adams' account makes an interesting prediction with regard to SOV V2 languages such as German. Since German is OV, the verb should canonically govern its subject to the left. In root clauses, the verb must raise to Comp and another lexical XP must raise to [Spec, CP]. When the subject does not raise, it remains in [Spec, IP] with the verb in Comp to its left against the canonical direction barring licensing of an expletive *pro* in this configuration. This prediction is falsified given sentences such as (iii):

(iii) Mir scheint *pro*, dass diese Hitze bis zum
to-me seems *pro*, that this heat until to-the
Herbst dauern wird.
fall continue will
'It seem to me that this heat will continue till the fall'.

Following Speas (1994), licensing expletive *pro* in this configuration is possible since the IP (or Agr_sP) is licensed by the strong agreement features on its head, not requiring a lexical subject to raise to give it content and license it.

section we will apply the proposals by Rizzi (1986) and Speas (1994) deriving the null subject facts described earlier.

3.4 Accounting for Null Subjects in Modern Hebrew

Rizzi (1986) has argued for the separation between a licensing condition and an identification convention. This accounts for languages, or paradigms, that can license null subjects but are not "rich" enough to identify them. According to Rizzi, the licensing configuration is one that involves a licensing Case assigning head, whether lexical or functional, and a null argument coindexed with it. Speas (1994) avoids the stipulation that some heads license null subjects and some do not. Proposing an Economy Principle, she is able to account for at least three properties of null-subject languages: Verb raising, subject-verb inversion, and the licensing of null subjects. We have shown that her proposal is not without problems (see footnotes 11 and 13).

In the following section, I show that a modification of some of Speas' assumptions can solve the problem the Hebrew data raise for her account. In the final two sections, we will concentrate on the identification of referential *pro*. Following Rizzi (1986), it will be shown that the lack of [person] can explain the absence of referential *pro* at least in 1st and 2nd persons. With respect to 3rd person, many

accounts have tried to deal with the lack of referential *pro* in this context (Borer, 1989; Dechaine, 1993; Vainikka and Levy, 1995; Shlonsky, to appear; and others). The core of the discussion revolves around the fact that some null-subject languages allow for 3rd person *pro* to be identified and some do not, irrespective of the identification of *pro* in 1st and 2nd contexts. Any account explaining one paradigm will have to take into account the other paradigm. The accounts reviewed below attempt to explain the gap in the Hebrew null subject paradigm in a uniform way across all tenses. What these accounts do not take into consideration is the historical facts that indicate that at least until the early 1930s, Hebrew classified with languages such as Spanish and Standard Arabic in identifying referential 3rd person *pro* in both past and future tenses. Thus, an alternative explanation will be proposed to account for this fact.

3.4.1 Licensing *Pro* Across Tenses in Hebrew

In section 3.1.1, we have presented the Hebrew facts and shown that expletive *pro* is licensed across all three tenses in Hebrew. According to Rizzi (1986), the projection of Tense associated with Case assignment was taken to be the licensing head across tenses.

According to Speas (1994), Case is not part of the

licensing configuration, nor is TP crucial for licensing *pro*. To license *pro*, TP and, for that matter, all the categories projected in the syntax need to be licensed via content in their heads. Since the importance of nominative Case to the licensing configuration was derived by looking at languages such as Italian and European Portuguese (in which *pro* is licensed also in non-tensed contexts), Speas' proposal will have to be reanalyzed against such languages.

The fact that *pro* is licensed in all tenses in Hebrew is also compatible with Jaeggli and Safir's (1989) observation and application to Semitic languages: Since verbs are always derived in such languages, the paradigm qualifies as morphologically uniform and licenses *pro*.

This property of Semitic languages can also be related to Rohrbacher's (1992) verb-raising paradigm. According to Rohrbacher, a paradigm is strong when there are distinctive affixes for 1st and 2nd person at least in one number and a distinct singular affix in one person. The Hebrew present tense paradigm does not have [person] and therefore it fails to abide by the generalization. This entails that the agreement affixes in the present tense are weak. How is this entailment to be reconciled with the conclusion we have reached in Chapter 2 that morphological agreement in Hebrew is strong, and only under such conditions Agr is projected?

Verbs in Semitic languages are derived by a combination of two independent tiers: The consonantal tier of the root,

e.g. *h.l.x.* (go) representing the lexical content, and a tier of vowels (sometimes aided by other consonants) that provide the functional content, such as agreement, tense, and so forth, e.g. *halax-ti* (the infixes represent past tense whereas the suffix refers to 1st person singular, i.e., 'went-I'). Each of these tiers must have an independent lexical entry since in the absence of one not only will the semantic interpretation be incomplete, but there will not be a phonetic interpretation for either tier. Thus, to derive a verb both tiers must be drawn from the lexicon and combined for an interpretation at both interfaces. Having a lexical entry, the functional affixes qualify as strong, following Rohrbacher's generalization and trigger raising. Since Hebrew, then, has only strong features, AgrP is either projected with content or not projected at all in the absence of such features.

In the present tense, the only agreement features which are specified are those associated with the participle. Thus, AgrPart(iciple)P is licensed since its head dominates the phonetic content of the participle agreement affixes. Tense lacks phonetic content, but it is licensed by its semantic content, which renders it interpretable at LF. As both categories are licensed, there is no need for a lexical subject to raise to Spec of either category, hence the appearance of *pro*. *Pro* will probably still raise to [Spec, TP] and be assigned nominative Case by Tense. Agr_sP is not projected at all since there are no overt agreement features

corresponding to this category. The category is projected in the present tense only when the inflected negative particle *eyn* is selected, and in the past and future tenses.

Speas' (1994) proposal, together with the modification on Hebrew, has succeeded in deriving the licensing of null subjects from general principles instead of a stipulation on licensing heads in UG. Since TP is always licensed at least via semantic content in its head, the null-subject variation lies in the parameterization of Agr. Languages are first divided into those which specify Agr in the lexicon and those which do not. The latter licenses null subjects in case all other projections are also licensed. Second, languages which specify agreement either have strong agreement features or weak agreement features. Only the former is specified in the Agr head licensing the AgrP projection and with it also null subjects.

To sum up, we have shown that with some modifications both proposals (Rizzi, 1986; Speas, 1994) can account for the fact that all tenses in Hebrew, despite their different feature specification, can license *pro*. Following Rizzi (1986), it was the projection of the nominative Case assigning TP that licenses *pro*. Whereas following Speas (1994), it was the fact that all heads, especially Agr, are licensed in the syntax by virtue of having either semantic or phonetic content in their heads. In subsequent chapters I will follow mainly Speas (1994), but keep in mind that her proposal might need to

be modified to include the assignment of nominative Case as part of the licensing configuration (a similar suggestion was made by Rohrbacher, 1992).

Identification follows a different set of conditions as it will be argued in the following sections. Most proposals account for the presence of a referential *pro* by attributing it to the feature [person]. They differ in the configuration in which [person] plays the role of identifier. Table 3-1 has shown that the distribution of referential *pro* differs between 1st and 2nd person contexts and 3rd person contexts. The following final sections will elaborate on these issues, respectively.

3.4.2 Identifying *Pro* in 1st and 2nd Person Contexts

In section 3.1, we have argued following Rizzi (1986) that the Null Subject Parameter has two subclauses. The licensing subclause defined the universal parametric option. In other words, languages divide to those which license null subjects and those which do not. The second clause defined the identification of referential *pro*, which Rizzi acknowledged obeyed different conventions across languages: In some cases those fall under Control conditions in subordinate clauses (Borer, 1983, 1989; Huang, 1986, 1989), in others *pro* is identified by a topic, agreement, and so forth. In languages

that use agreement features in their paradigm, Rizzi (1986) proposed a scale for identification, where [person], he argued, was the discriminating feature for identifying referential *pro*.

In Chapter 2, we have argued that [person] can be specified for only if Agr_sP is selected. We have demonstrated that the present tense selects Agr_sP optionally, as opposed to the past and future where it is selected obligatorily. When a regular verb is selected in the present tense it exhibits participle properties and lacks both a Tense marker and Agr_sP. Since all agreement relations have been established below TP in the present tense, we have argued against the existence of Agr_sP and with it the associated [person] feature. Lacking this feature, under Rizzi's (1986) proposal, identification cannot proceed. When the inflected negative particle *eyn* is selected, however, Agr_sP is selected in the present tense. With the selection of the functional category, [person] is specified for giving rise to the possibility of null subjects in the 1st and 2nd persons.

In the past and future tenses, a strong Tense along with strong Agr_s is obligatorily selected. The verb is marked for both Tense and [person] (in addition to [number] and [gender]) and referential *pro* is identified.

To sum up, we have shown that Agr_sP is selected irrespective of the feature specification of Tense. Furthermore, it is its selection and with it the feature

[person] that seems to identify referential *pro*, at least in 1st and 2nd persons. Looking at the paradigms that select Agr_sP, it is obvious that a second condition is required, since despite the [person] specification, 3rd person referential *pro* in not possible. We now turn to this issue.

3.4.3 Identifying *Pro* in 3rd Person Contexts

In Chapter 2 (Tables 2.3 to 2.5), we have presented the verbal paradigm of the three tenses in Hebrew. Following the morphological paradigm, we have presented the null subject facts the way they have been traditionally portrayed and hence accounted for. In this section I will argue that the facts are somewhat different from what they have been portrayed and that no account has taken into consideration the historical facts that shed a different light on the distribution of subjects in Hebrew.

The accounts I will review in this section attempt to give an answer to a partial current situation, in other words, to the fact that 3rd person contexts do not identify referential null subjects. This contrasts with languages such as Italian, Spanish, and Standard Arabic in which null subjects are identified in this context. The historical facts suggest that Hebrew followed the latter pattern at least until the early 1930s. Therefore, the different state of affairs

attested today might be a result of a single change targeting 3rd person contexts resulting in the observed null-subject gap. Alternatively, the change might have first targeted one tense context and then spread throughout the paradigm resulting in the uniform pattern observed today. The historical facts seem to support the second option.

Before turning to the two alternatives, let us recapitulate the facts on the 3rd person paradigm in order to show why it is not possible to account for it in the same way we have accounted for the obligatoriness of overt subjects in the present tense.

When Agr_sP is selected it is specified for all ϕ-features, i.e., [person], [number] and [gender]. In the future, although some of the forms are not distinct, there are three distinct prefixes corresponding to the feature [person] in each number combination (the latter emerging as suffixes). In the present tense the inflected particle *eyn* shows ten distinct forms in the three-feature combination.[15]

---

[15]

Person	*Singular*	*Plural*
1st	e(y)ne(ni)	e(y)nenu
2nd(fm)	e(y)nex	e(y)nxen
2nd(ms)	e(y)nxa	e(y)nxem
3rd(fm)	e(y)nena	e(y)nan
3rd(ms)	e(y)neno	e(y)nam

Similarly, in the past tense, there are six distinct forms (disregarding [gender]) corresponding to the person-number combinations. In this tense, however, the agreement affixes are suffixes, and as already noted in the previous chapter, the 3rd person differs from the two other paradigms in that it is not marked for an overt [person] feature but only for a suffix marking [number] and [gender]. Nevertheless, it is distinct by virtue of not corresponding to any of the other 1st or 2nd forms, and thus can pick the referent in discourse unambiguously exactly under the same conditions that it is picked in a sentence in Spanish or Arabic.[16]

Thus, the future tense marks [person] morphologically and syntactically, whereas the past tense marks it either syntactically with a null affix (Shlonsky, to appear), or pragmatically by being unique among the other person markings. If a single explanation is to account for the 3rd person facts, it cannot resort to the absence of the feature [person] *per se* as the cause for the absence of referential *pro* in this context.

A second set of facts related to the distribution of subjects, specifically that of 3rd person, is found when looking at scripts in Hebrew from the beginning of the century. The examples presented below are taken from Milshtein's (1985) book documenting letters and songs written

---

[16] Shlonsky (to appear) has argued that the past tense has a uniform paradigm of six distinct forms, and that 3rd person is syntactically marked by a null [person] affix.

by the Hebrew national Poet Rachel and the biographical notes and quotes made by people who knew her.[17] The year in which those quotes were made are marked next to each example.[18]

10.a. lo *pro* azva et ha-igul ad
not *pro* left(sg-fm) acc the-circle until
she-nigmar kol ha-rikud
that-finished all the-dance.
'She [Rachel] did not leave the (dancing)
circle until the dance was over. (after 1909)

b. laxen *pro* zaxra et ha-yamim
for-that *pro* remembered(sg-fm) acc the-days
ha-ele be-xiba.
the-those in-affection.
'That is why she [Rachel] remembered those days
with affection'. (1911)

c. ma shlom aba? agav orxa? ha-kibel *pro*[19]

---

[17] The translation from Hebrew and possible misinterpretations are mine.

[18] Note that none of the examples presented qualifies under topic or diary drop (Rizzi, 1994; Haegeman, 1990)

[19] There are two ways to ask a yes-no question in Hebrew: One using the question marker *ha-im* (which literally means 'the-if'), as in (i),

(i) ha-im hu kibel et mixtavi?
Q he received(sg-ms) acc letter-my?
'Did he receive my letter?'

or by using only the definite article *ha* (the) cliticized onto the verb in an inverted structure, where the subject appears to the right of the verb as in (10c).

How is father? by the way? the-received *pro*

et mixtavi?

acc letter(+poss-1st-sg)?

'...Did her (father) receive my letter?

(letters from the years 1919-1920)

d. ani memaheret li-gmor, kedey

I hurry(pr-sg-fm) to-finish, so

she *pro*[20] yelex od ha-yom.

that *pro* will+go(3rd-sg-ms) already the-day

'I am in a hurry to finish [writing the letter], so that it may be sent already today'

(letters from the years 1921-1925)

These examples and many more indicate that null subjects were both licensed and identified in 3rd person contexts in Modern Hebrew.[21] A second stage that seems to have taken place is reflected in the description of Hebrew grammar in *'A Text Book of Israeli Hebrew'* Rosen (1966). This later stage argues for a difference between the future tense and past tense in Hebrew. Rosen (1966) (and others; Nativa Ben-Yehuda, p.c.)

---

[20] If the verb has raised and adjoined to the complementizer *she* (that) so that *she-yelex* (that-will+go) is in Comp, then *pro* is actually inverted and should be positioned after the verb and not preceding it. This will support both Adams' (1987) and Speas' (1994) accounts for licensing *pro*.

[21] Some informants even consider these sentences grammatical. The scale within the younger generation is defined from heavy and literary to ungrammatical.

claims that the future tense has three distinct person prefixes, and as a result, referential null subjects are possible in this tense. On the other hand, comparing the past tense with the present tense, he argues against a [person] feature in the past tense and with it the need for overt 3rd person subjects. At this point no informants or documentation was found to confirm this claim.

If Rosen's description reflects an actual intermediate stage governing the production of subjects, a single process targeting both past and future tenses alike cannot be argued for. On the other hand, if we restrict the account to present facts only (which have changed since Rosen's documentation), all 3rd [person] contexts must be accounted for in the same way. In section 3.4.3.1, some accounts arguing for a single-step explanation will be reviewed. In section 3.4.3.2, I will suggest an alternative explanation attempting to incorporate the historical facts.

3.4.3.1 The Single-Step Solution for 3rd person *Pro*

Advocators of the single-step solution attempt to find the common denominator that will account for the gap in referential *pro* in 3rd person contexts. The accounts I review in this section are all based on the absence of a morpho-syntactic [person] feature from 3rd person paradigms.

Doron (1983) provides a similar account to that of Rizzi (1982) by which Agr can optionally absorb Case. Since Agr is specified for all ϕ-features, and those, in turn, match the three ϕ-features of the empty category in subject position, the result is a clitic configuration. In this configuration when Agr has absorbed Case, the subject pronoun cannot be spelled out as it lacks Case and will violate the Case filter. In the present tense, there is a mismatch between the ϕ-features of the underlying empty NP and the features of Agr in Infl - the latter lacking [person]. As a result, Agr cannot qualify as a clitic, and nominative Case must be obligatorily assigned to the subject.

As we have already explained, even if we rule out the past tense (since it lacks an overt affix despite its distinct unique form), there is still no possible way we can argue for a mismatch in feature specification in the future tense or when the particle *eyn* is selected, and therefore Doron's argument cannot be used to explain the 3rd person paradigm across tenses.

Similarly, Dechaine (1993) proposes a solution in terms of missing [person] specifications. First, she suggested that there actually is a referential <u>obligatory</u> *pro* in 3rd person contexts and that what we observe as subject pronouns are a spell-out of agreement features in the appropriate tense. These so-called pronouns, or *H* pronouns (as she termed them following Rapoport; 1987) lack a [person] feature, following

similar arguments presented in Benveniste (1966). Consequently, the sentence in (11a) has the structure in (11b) rather than (11c), omitting irrelevant functional projections:

11.a. hi mora.
she teacher(sg-fm)
'She is a teacher'.

b. $[_{TP}\ pro_i\ [_{T'}\ hi_i\ [_{NP}\ mora]]]$

c. $[_{TP}\ hi_i\ [_{T'}\ 0_i\ [_{NP}\ mora]]]$

In this configuration, the *H* pronoun *hi* (sg-fm), which is specified for [number] and [gender] only, cannot referentially identify *pro*. Consequently, Dechaine has modified Rizzi's (1986) identification convention (as already noted) adding a clause by which in the absence of a [person], i.e., when only [number] and [gender] are specified, *pro* will receive the default value for [person], i.e., 3rd person (see ibid; p.408). With the addition of the modifying clause, *H* referentially identifies *pro* indirectly.

The same reasoning is applied in the past and future tenses. She argues that 'in the '3rd person', because agreement is associated only with...[number], it cannot identify *pro* as a referential element' (ibid, p.417). Hence the ungrammaticality of (12):

12.* pro_i axal-a_i et ha-glida
ate(sg-fm) acc the-ice-cream

In this configuration only an *H* pronoun can identify *pro* indirectly. Being specified for [number] and [gender] it will evoke the additional identification clause and *pro* will receive the default 3rd person interpretation.

13. pro_i hi_i axal-a_i et ha-glida
she ate(sg-fm) acc the-ice-cream

Two main problems arise with this account. First, it is not clear why the agreement spell-out specified for [number] and [gender] can evoke the [person] default identification clause, while the same features specified but not spelled out, as in (12), cannot. In other words, why do we need to insert *H* instead of having the agreement features on the verb evoke directly the clause and identify *pro* by default? Secondly, the *H* pronoun was inserted in sentences, such as (13), because the paradigm lacks a [person] marker that could directly identify *pro* as it does in 1st and 2nd person contexts. Once more, this account cannot be extended to the future tense nor to sentences with *eyn* since in those paradigms [person] is specified.

The solution must lie elsewhere. Since we have not abandoned the proposal that [person] is a key feature of the

explanation, Shlonsky (to appear) suggests looking for the solution in the pronominal system, rather than the inflectional functional system. Briefly, he suggests (following Ritter, 1994) that the pronouns are DPs with an internal "split" structure, so that DP dominates a Num(ber)P category. The feature [person] is specified in D° and must be checked by lexical content. Thus, there are two different types of 3rd person *pro*. One type is Num°P; since it is phonetically null it cannot support or check the feature in D° and the structure crashes. This type is attested in languages such as Hebrew, Finnish, and others. The second type is D°, hence it lexically supports the feature and licenses the projection. This type is attested in Italian, Spanish, and Standard Arabic-type languages. Thus, Shlonsky reduces the difference between the two null-subject language types to a parameterized option between two types of 3rd person *pro*. Given that the parameter was set differently for Hebrew in the past, it will be necessary to conduct a historical investigation to check whether the features Shlonsky associates with languages such as Spanish or Arabic used to exist in Hebrew, at the time when 3rd *pro* was possible. I tend to think that there was not such a drastic change that can support that proposal.

3.4.3.2 The Non-Single-Step Solution for 3rd person *Pro*

The alternative account I suggest for the absence of referential 3rd person *pro* in Hebrew also relies on the absence of the [person] feature. However, it takes into account the possibility that more than one change has occurred and that more than one trigger has led to the current state of affairs. It might even be possible that we are in the midst of a process that will result in restricting the identification of referential *pro* to 1st and 2nd persons past tense only.

A comparison between present tense and past tense paradigms offers a possible trigger for the change and for the fact that it has first targeted the past tense, rather than the future tense. If we compare the root *h.l.x.* (go) in both the present and past tenses, both paradigms combine the root with infixes. The infixes are different reflecting the different tenses. Thus, we derive *holex* (go-sg-ms) and *halax* (went-sg-ms). Although both forms are not marked for additional affixes, they are interpreted by the unmarked [-plural, -feminine] features, since the positive value of these features corresponds to overt affixes. Moreover, we have argued that *halax* can only be interpreted as 3rd person since it is distinct from 1st person *halax-ti* (went-1st+sg), and 2nd person *halax-ta* (went-2nd+sg+ms), as opposed to *holex* (go-sg-ms) which cannot correspond to a unique [person] since all present tense singular masculine subjects in all persons use

the same form, i.e., *holex*. Nevertheless, the lack of overt 3rd person marking and the morpho-phonological similarity between the two forms might have triggered a reanalysis of 3rd person past tense forms as lacking person syntactically.

Unless we find evidence for a stage when the future tense exhibited similar properties to that of the past tense, i.e., when *pro* was used in 1st and 2nd person contexts but not in 3rd person context, we cannot argue for a single process targeting simultaneously the future and past tenses. There are two on-going processes that might explain why the future tense is becoming non-null-subject across persons, not only in 3rd person.

First, speakers of Hebrew tend to treat both 1st and 3rd person contexts similarly prohibiting referential *pro*. It was suggested that a morpho-phonological process might have assimilated 3rd person forms with 1st person forms in the future tense, eliminating the distinctiveness between the two (Dorit Ravid, p.c.). This in itself is not enough to eliminate the possibility of referential *pro* in 3rd person. In Spanish, for example, the subjunctive exhibits a similar morphological pattern but still allows null subjects in all persons.

The additional change the future tense is undergoing is the substitution of the 2nd person future forms for the imperative forms. This is forcing speakers to use a subject if they refer to a future event, otherwise the sentence will receive imperative force.

The two processes together, i.e., the loss of distinctiveness between 1st and 3rd persons, on the one hand, and between the imperative and 2nd person future, are forcing the Hebrew speaker to use subjects more often in the future tense and treat it increasingly as a non-null-subject paradigm despite its morphology.

To sum up, the single-step solution has looked for a common property that might explain the gap in the 3rd person paradigm in a uniform way. As we have shown, each account raises some problems, and all ignore the fact that Hebrew used to be a null-subject language of the Spanish or Standard Arabic type. If present-day Hebrew is to be accounted for as other mixed null-subject languages, such as Finnish (Vainikka and Levy, 1995), it must have undergone other changes which separates it from the Arabic null-subject type and groups it together with the mixed null-subject type. On the other hand, the non-single-step explanation suggests no such drastic changes. It suggests a gradual change which seems to be triggered mostly by pragmatic factors, resulting on the surface in a uniform gap in 3rd person contexts. At this point, it might be the case that Hebrew speakers, especially children who are acquiring the language, are treating the 3rd person uniformly as a non-identifier for referential *pro*. But at the same time they are treating the first person future forms as requiring subjects - an unexpected fact found in my child data if we maintain that the future tense is a null

subject paradigm (see Chapters 6 and 7 and the Appendix).

3.5 Summary and Predictions for Child Hebrew

In this chapter, I have attempted to present an account of the Hebrew null subject facts and derive the distribution of overt and covert subjects from the feature specification of the Tense and Agr functional heads.

We have followed Rizzi (1986) in separating the so-called *Null Subject Parameter* into a licensing clause and an identification clause. The Hebrew facts support the two separate sub-clauses since all tenses license *pro* but identification is restricted to certain contexts. According to Rizzi (1986), the common licensing head that allows all tenses to license *pro* directly is Tense°, associated with nominative Case. Following Speas (1994), neither Case nor Tense play a crucial role in licensing *pro*. *Pro* is licensed indirectly via the application of an Economy principle and the fact that both TP and AgrP have independent content in Hebrew that licenses the projections, eliminating the need for an overt subject to license them.

It was also suggested that since TP is specified in the lexicon in all possible languages, it is also licensed cross-linguistically. Thus, the variation between overt and covert subjects is reduced to a parameterization of Agr: to whether

or not it is specified and to the strength of its features when it is.

It is interesting to note that it would be enough for a child acquiring a (referential) null subject language to hear one sentence with referential *pro* to conclude that her/his language licenses null-subjects. According to Rizzi (1986), the child will immediately set Tense as [+licenser] in Hebrew. Following Speas (1994), the input will indicate that whatever functional heads are selected they are licensed. For Tense, s/he will still need to acquire the peculiar feature specification in the present tense. For Agr, since only overt Agr can project a functional category in the syntax, s/he will have to pay very close attention to the morphological paradigm to find out what Agr projections are selected in her/his language.

Identification of referential *pro* requires, in addition to licensing, access to the feature [person]. The absence of this feature in the present tense contributed directly to the absence of referential *pro* in this tense. Nevertheless, the presence of the feature was not enough to identify referential *pro* in 3rd person contexts in the past and future tenses, or when selecting the inflected negative particle *eyn* in the present tense. This was still explained by resorting to the feature [person] but in different configurations and under different conditions.

The last issue raises another interesting point with

respect to child Hebrew. If there are two axes, one separating present tense from the past and future tenses, and a second one separating 1st and 2nd persons from 3rd person, will the differences be observable in the use of subjects by children? Will the child use more subjects in 3rd person present tense given the "double" requirement for overt subjects?

In Part II, I will "rewrite" Chapters 2 and 3 in terms of child language. In this part, I will investigate the setting of formal features in TP and AgrP, the implications of their status cross-linguistically, and their relation to the production of subjects in child language in general, and in particular, in child Hebrew to which I turn in Part III.

Part II: Underlying Child Structures

Chapter Four
The Initial State of Functional Categories

4.0 Introduction

In part I, we have presented the underlying syntactic structure assumed for adult speakers. Two types of functional categories emerged: universal categories specified in all possible languages, such as TP, and categories to which language-specific evidence is required to project the head, such as AgrP. Following mainly Speas (1994), we derived the distribution of null subjects directly from the setting and content of these functional categories.

Since our linguistic goal is to find the underlying Universal Grammar deriving the adult setting, we are similarly interested in child grammar to help achieve this goal.

Thus, this chapter focuses on the initial child structure. Based on the assumptions for adult grammar, we propose a corresponding child structure. In this structure,

categories, such as TP which we have argued to be cross-linguistically specified, will be those categories the child is endowed with and for which s/he does not require evidence to postulate their existence. On the other hand, categories such as AgrP are not specified a priori and the child will need evidence for their existence. Thus, the child's initial structure is minimally specified based on cross-linguistic requirements. This will be referred to as the *Minimal Competence Hypothesis*.

Following Speas' (1994) Economy principle, a head can project to a maximal projection only if it has either semantic or phonetic content. Thus, the assumption that TP is universally projected entails it must have content even in child language; whereas AgrP will be projected only if there is evidence that it has content. The features that provide TP with its semantic content are [±finite], [±past], and so forth. Since, however, a [±past] interpretation is not possible if TP is not first interpreted as finite, and since some languages specify finiteness but not [±past] (see Huang, 1989 on Chinese), we once more attribute to the child structure only what is cross-linguistically specified, i.e., a finite/non-finite interpretation.

Following the Hebrew data on finiteness, we have argued that the present tense is non-finite in form but can function as a finite form in finite clauses, i.e., when the head of CP selects TP. Thus, the two parameterized options for

interpreting a clause as finite are [+F] and [0F].[1] The former will be given a time reference via its [±past] features, whereas the latter, which is not specified for these features, will be interpreted by default - present tense, in Hebrew. It will be shown that the data presented from child language can be explained assuming the child is using both parameterized options in root clauses. Yet, s/he assigns them a different function and interpretation: [+F] is associated with finite forms describing on-going events, whereas [0F] is restricted to non-finite forms used mainly for requesting.

The specification of semantic content in Tense, under both parameterized options, accounts for the fact that both finite and non-finite clauses in child language license in many cases null subjects. These data will be presented in section 4.2.

In the first part of the chapter, section 4.1, I will argue for the *Minimal Competence* model. I will argue against the structure proposed by the *Full Competence* model (Poepple and Wexler, 1993) by which children are initially endowed with the adult full structure. I will argue against the acquisition process proposed by the *Maturation Hypothesis* and their

---

[1] Platzack and Holmberg (1989) argue for a Finite Operator, i.e.,[+F], associated with nominative Case and parameterized between being specified in Tense or in Comp. The latter accounts for the raising of verbs to the second position following a topicalized element in [Spec, CP] in V2 languages. Given the data in Hebrew and the discussion in Chapter 2, I argue for an additional parameterized option, i.e., [0F], also associated with nominative Case.

initial PredicateP structure as the only initial structure available to children. Since all theories assume the child is endowed with the lexical predicate level, their initial structure will be incorporated in the larger minimal model.

In the second part, I will present evidence from German, Hebrew and English supporting the *Minimal Competence* model. I will argue for an early finite/non-finite distinction in all three languages (excluding other functional distinctions), early assignment of Case (in Hebrew) supporting the existence of TP/CP, and an explanation of child English based specifically on the parameterized [+F]/[0F] option.

4.1 Full Competence or PredicateP - Maturation vs Continuity

The relation between child grammar, i.e., the initial stage, and adult grammar, i.e., the final stage, is at the core of our investigation. For whatever reasons we are willing to admit, it is obvious that the child is not fully in possession of the adult final stage, although s/he speaks some form, or a subset form of the adult grammar. Hence, the investigation revolves around questions regarding the knowledge the child is endowed with, and the way it is represented in the course of the acquisition process. In this chapter, I will focus on the child's initial structure and the knowledge of functional categories, and relate it to the structures and assumptions we

have made for adult grammar.

Assuming the *Principles and Parameters* theory of language, the child's innate knowledge consists of a core grammar of the universal principles and parameters. Yet, as some linguists suggest, the universality of these principles does not necessarily entail their accessibility at the initial stage, or that they must be obeyed by children. One possibility is that the access to some principles is blocked by a process of maturation (Borer and Wexler, 1987; Radford, 1990; Guilfoyle & Noonan, 1992). Valian *et al.* (1995) even suggest that a principle can be initially violated, as they argue it is the case with the universal *Extended Projection Principle*.

Following the discussion in Chapters 2 and 3, we have concluded that TP is a universal, cross-linguistically specified category associated with finite features and nominative Case assignment (see also footnote 1). AgrP, on the other hand, is neither specified in the lexicon nor selected cross-linguistically unless it exhibits overt strong features. How do these conclusions hinge on child structures: First, given that languages differ in the number of functional categories they use and in the properties associated with their heads, it is reasonable to assume that the child's initial structure is specified for only those functional categories commonly required by all languages, e.g. TP but not AgrP. We will refer to this approach as the *Minimal Competence*

model. If the child's initial structure is specified for more categories than the target language requires (a possibility derived from arguments set forth by the *Continuity* approach or the *Full Competence* approach), the process of eliminating the excess categories might proceed undesirably using negative evidence.[2] Moreover, the only evidence to confirm that the child's initial structure has more categories than required in the target language would be if the child used those categories non-vacuously by inventing "wild" forms. For example, children endowed with a structure containing Agr_sP in Hebrew present tense, would have to invent new forms that are specified for [person] in order to use the functional category non-vacuously. Yet, there is no evidence that children invent such structures or forms.

Second, the argument that the child's initial structure must be minimal and contain no more than the categories required by all languages, raises the question of how minimal the structure really is. It might be the case that the child has access to less than the categories required in the target language and that the initial structure does not project, for example, functional heads. This is argued for by the *Maturation* approach, or the PredicateP model.

It is sometimes difficult to assess the data presented and decide which of the two hypotheses, i.e., *Continuity* or

---

[2] This would be a classic case of a subset problem subsumed under the *Subset Principle* (Berwick, 1985).

Maturation, they support. This is due in part to the objective differences among children, and especially to the differences among languages from which the data are drawn. In comparing the same sentences in Hebrew and English, for example, Hebrew speaking children will be observed to use inflectional morphology (at least that of agreement); whereas the English speaking child will not since her/his language does not use morphological affixes to the same extent. Consequently, data from the latter might give the impression that the child starts off with no functional categories; as opposed to data from the former, which might be brought to make an opposite claim. Yet, both approaches might be correct but at different ages in children, and in different languages.

In this section we will compare the two extreme approaches, i.e., the PredicateP model following a *Maturation* approach, and the *Full Competence* model within the *Continuity* approach, and point out some of the problems they raise. Based on this comparison and the discussion on adult grammar presented in Chapters 2 and 3, it will be concluded that the child must be endowed with a minimal structure that includes the predicate level dominated by only those universal functional categories that are also specified cross-linguistically, i.e., by *universal core structures* (to use Shlonsky's (to appear) terminology).

4.1.1 Maturation - The PredicateP Hypothesis

All approaches agree that the child is endowed with a lexical predicate level. They differ in whether or not they also assume a functional level above it initially, and what that level consists of if it is projected. Thus, we will start by presenting the lexical level. The *Maturation* approach argues this level to be the only level the child initial structure consists of.

Though agreeing that functional categories are part of UG, maturationalist views, as presented by Radford (1990) and others, claim that functional categories are not operative in early child grammar. Therefore, children below the age of 24 months (±20%) produce utterances which lack functional elements and related categories (such as subjects). This is demonstrated by the examples from Allison Bloom (age 22 months) below:

1.a. Baby eat cookies.
  b. Eat apple juice.
  c. Walking around.[3] (Radford, 1990: p.2)

Instead of,

---

[3] Note that Radford does not refer to the gerundive *-ing* ending in (1c) as functional.

2.a. ***The*** baby eat***s*** (***the***) cookies.

b. *Someone* eat***s*** (***the***) apple juice.

c. *Someone* ***is*** walking around.

According to Radford (1990), the examples in (1) demonstrate that children at this stage are not merely producing lexical items, but that they have also acquired their categorizational properties. He argues for this from the observable facts that the morphological inflection on the lexical items is used *productively; selectively* across categories, e.g. attaching the *-ing* inflection to verbs but not prepositions; *contrastively* within categories, e.g. attaching plural inflection to plural forms; and *appropriately*, e.g. using past inflection in past context.

Moreover, Radford suggests that the early structures are not only categorical in nature, but rather categorical-thematic, i.e., involving also semantic relations. Thus, every category has a thematic function, assuming that "...every child constituent theta-marks or is theta-marked by any sister constituent which it has" (ibid, p.46). Consequently, an XP that does not have a sister constituent cannot be assigned a theta-role. Furthermore, as thematic constituents are typically lexical and not functional[4] (Abney, 1987), and if

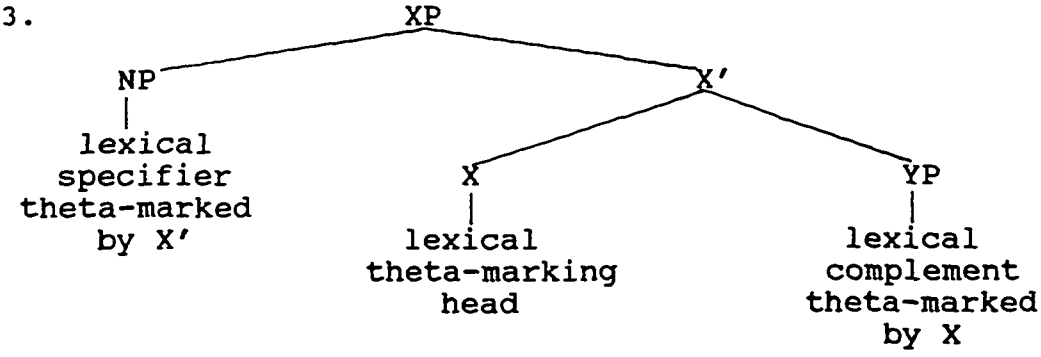
---

[4] The reverse does not necessarily hold: Some lexical items do not assign theta roles, and some functional categories do. For example, passive verbs and "raising" predicates, such as *seem/likely*, do not assign a thematic role to their subjects. Conversely, Chomsky (1986a) suggests that

we agreed that the early child structures were purely thematic, then it would follow that early child structures are also purely lexical, and non-functional.

Following this line of reasoning, Radford (1990) concludes that early child structures consist of lexical categories inter-related by theta-marking between sister constituents. Thus, he proposes the structure in (3) (omitting irrelevant details) for children's early structures. In this structure, all categorical-thematic relations have been defined. Moreover, an XP-internal subject has been sanctioned in the [Spec, XP] position through categorical and thematic selection.

3.



(adapted from Radford, 1990: p. 46)

Advocators of the *Maturation* approach argue that the structure above represents the root clause in child language. This structure differs from the adult's in that it is missing the functional levels dominating the predicate level, and with

---

some modals theta-mark their VP complements.

them it is missing relations such as Case, agreement, and so forth. Guilfoyle and Noonan (1992), however, base their maturation proposal on arguments by Fukui & Speas (1986) and Fukui (1988, 1993, 1995) that some languages, such as Japanese, make use only of lexical categories since they do not have functional categories altogether. Thus, the structure in (3) is a possible adult root clause. Since the lack of functional categories is a possibility attested in UG, a child grammar lacking functional categories falls within the domain of possible languages. Thus, they argue for early child grammar to be purely lexical. Once the functional categories mature, they will become accessible for the child to acquire them if there is evidence for their projection in the target language.

One of the main arguments against a *Maturation* approach is that it has very little explanatory force. A maturation process is turned to in order to describe the absence of grammatical categories, their emergence, and their order of appearance. This reduces the acquisition process to a stipulation on the type and maturation timing of categories.

Moreover, this hypothesis claims that movement from one developmental stage to the other is not necessarily driven by a trigger in the linguistic environment, but by maturation processes by which a parameter emerges only when biologically programmed to do so (Borer and Wexler, 1987). Thus, in the absence of some principles or parameters, the child might

invent "wild" grammars that violate UG resulting in the extreme consequence of discontinuity in the development. Borer and Wexler (1987) argue that this is not the case, since the order in which the principles and parameters mature reflects what the child "needs" and uses at a given stage in development. Only at the stage when the child is able to comprehend and produce complex clauses, will the relevant principle mature, and vice versa. In spite of the argument against it, the maturation process remains a possible description of the facts but does not provide an explanation for them.

Guilfoyle and Noonan (1992) proposed a modified maturation hypothesis, the *Structure Building Hypothesis*. Following their proposal, all principles of UG are available from the outset of language acquisition and do not mature (this part follows the *Continuity Hypothesis* to which we turn below). The maturation part of their proposal comes to play in the structures of grammar. They argue that in contrast to UG principles, structures of grammar mature. Therefore, if some structures are not yet available, but the principles operating on them are, those principles will apply vacuously until the structures mature and become available. Guilfoyle and Noonan's modified maturation proposal provides an explanation for the delayed emergence of functional categories after lexical categories. This does not compromise the availability of the principles of UG, and therefore it circumvents their possible

violation.

Guilfoyle and Noonan (1992) also claim that functional categories mature as a category at one time, and not as separate heads maturing at different times. However, this does not mean that all categories emerge at the same time. In fact, they claim that if it is the case that some languages lack functional categories altogether, like in the Japanese case they present, the child might need evidence for the presence of each category separately. Thus, "once the maturationally determined propensity to perceive functional categories is acquired, such notions as the salience of an individual functional category in the input bears on the timing of its emergence" (ibid, p.251). Although they do not define saliency, we could imagine that one possible criterion for a salient category is having overt, as opposed to covert, inflectional morphology. We would expect the former to trigger the emergence of the corresponding functional projection earlier than the latter. The process by which those individual functional categories are acquired is exactly that advocated by the *Continuity Hypothesis*, i.e., triggering data.

Although I agree with the observation that functional categories do not all emerge at one time, I find the maturation explanation for their delayed emergence unnecessary. Their approach predicts a timing difference in the emergence of mature functional categories based on their saliency. This creates a redundant process of double delay:

The first delay comes about when functional categories emerge after lexical categories - due to maturation. Given that in some languages that require functional categories there is no observable stage that lacks functional categories altogether, it puts the need for an initial maturational delay into question. The second delay comes about after the functional categories have matured and become available in principle. At this point, some functional categories will emerge earlier than others based on saliency - so that non-salient functional categories are delayed. Thus, if the acquisition of functional categories is delayed due to the non-saliency of the category in the input, why do we need to resort to a maturation process to explain the delay? Assuming saliency and frequency, instead of maturation, languages that have been observed to lack some of the functional categories, can be looked at as languages in which those categories were neither salient nor frequent.

To sum up, following the *Maturation Hypothesis*, children initially lack all functional categories. Consequently, their initial structure consists of the basic subject-predicate relation, and the thematic roles and the subcategorization frames associated with the head of the predicate, hence the term *VP-Hypothesis* (Valian ,1991) or more appropriately the *PredicateP Hypothesis*. According to this approach, the emergence of functional categories is triggered by a maturation process. We have argued that this reduces the acquisition process to a stipulation on the functional heads;

it runs the risk of creating structures that violate UG; and in order to circumvent the above, we need to separate between maturing structures and non-maturing principles. This process creates an unnecessary redundancy as the emergence of maturing structures will be delayed once, as a group, based on maturation, and second, as separate heads, based on triggering input from the linguistic environment.

4.1.2 Continuity - The Full Competence Hypothesis

Advocators of the *Continuity* approach present evidence for the early existence of functional categories.[5] Under the *Strong Continuity* approach, they argue that children have ALL the functional categories required in their language. Poepple and Wexler (1993) refer to this as the *Full Competence Hypothesis* (henceforth, FCH) claiming children to initially have the adult full competence.

Full competence refers to the underlying knowledge of a speaker, i.e., UG, and in this discussion, to the knowledge of functional categories. However, not all functional categories are used cross-linguistically. Thus, we need to distinguish between what is known as part of UG and what is, then, specifically required in a given language. The latter is

---

[5] In many cases, however, the crucial data are presented from longitudinal studies limited to small samples of children in various languages.

either equal to UG or a subset of what it allows.[6] Thus, the controversy is not whether or not the child knows the universal functional categories, but whether s/he knows which of those are required and used in her/his language, i.e., have content in the target language. With this distinction in mind we can now turn to the problems raised by this hypothesis.

First, we have already concluded that different languages require different functional categories. Thus, languages differ in the subset of functional categories they use from the universal pool (but see footnote 6). However, if there is no difference between child competence and adult competence, as argued by the FCH, and all children start off with the same underlying structure, it necessarily follows that there is one underlying adult structure. To have a single adult structure cross-linguistically, it follows that it must consists of the maximum range of categories used by a possible language, regardless of whether or not they are used in other languages. For instance, if we take into account only two languages, such as German and Swedish, where the former but not the latter exhibits agreement, the *Full Competence Hypothesis* would have to claim that both languages have a TP, a CP and AgrPs. Despite the lack of agreement features in Swedish, AgrP will still be specified in every derivation, but used vacuously

---

[6] As already noted, Fukui and Speas (1986) analyze Japanese as lacking functional categories altogether. This allows for the opposite extreme, defining a possible language which makes use of all the functional categories specified in UG.

since it has no content in this language.

On empirical grounds, this is difficult to show because in the absence of "wild" forms indicating the existence of excess categories, there is no evidence for the use of vacuous categories.

The motivation for the *Full Competence Hypothesis* has been made on learnability grounds. Poepple and Wexler (1993) argue for the model's learnability force '... since any theory which assumes that the child has less competence would involve more learnability. That is, the Full Competence Hypothesis has no developmental question associated with it...' (ibid, p.18). Applying Occam's razor, the underlying universal structure does not undergo developmental changes, nor does the computational device applied to it in deriving different sentences. As a result, the acquisition process is accounted for using fewer steps and postulating fewer mechanisms and is, therefore, more explanatory (see also Pinker, 1984).

However, their model does not consider the distinction we made between knowledge of a category and knowledge of whether it has content in a given language. When this distinction is made, their model cannot circumvent the learnability questions it faces. Although the learnability load is reduced by providing the child with the relative order in which the functional categories are projected, this model does not provide any information about the categories that are actually used in the target language. Under the FCH, the child has to

consider each category and decide whether or not it has content in her/his language. If it has content it would play a role in the derivation; if not, computing it would apply vacuously.[7]

In that sense, the child's task is the same as when provided with no "on-line" functional categories. In both cases, UG and the categories specified in it are part of the child's underlying knowledge. Under the PredicateP model, the child has to learn which of the categories specified in UG is required, i.e., has content (semantic, phonetic or both), and in what order they appear in the structure in her/his language. Under the Full Competence model, although the categories in UG have been organized in a universal structure, the child still has to learn which of the categories specified has content. Thus, the only advantage the FCH has over a model that lacks all functional categories, is that it initially specifies the relative order of the functional categories.

Second, this model also faces some problems on theoretical grounds. It was argued on Economy grounds (Speas, 1994) that a category is licensed if it is interpretable either at LF or PF (or both). Therefore, postulating the existence of all universal functional categories regardless of whether they have content violates the Economy principle. To

---

[7] Anticipating the discussion on the *Minimal Competence* model, this model requires the child to look for evidence for non-core structures, such as AgrP, and not for evidence for core structures, such as CP, TP, and so forth.

avoid this violation, the child will have to force content on the vacuous categories, resulting once more in "wild" forms, which we have already argued against their existence. If the economy principle were to be modified so that in the absence of content the categories are processed vacuously, Occam's Razor will be violated since the same derivation can be computed and accounted for without this redundant step.

A similar objection can be made from the point of view of the child's parser. For example, if AgrP is underlyingly present as part of the child's initial structure, it will also be present in Swedish - a language which lacks agreement. As a result, the child's parser will try to force a parse using the given category but will obviously fail. As parser failure in not necessarily an indication for the need to reset or change the grammar (Valian 1990) (if it were the case, we would be resetting our grammars to the last day), the child will continue to assume the extended structure and the use of all categories in it and never acquire the target language. A possible way to circumvent parser failure is to invent "wild" forms that will allow a non-vacuous parse of all categories. As we have already noted, there is no evidence for such a strategy being used by children.

Finally, Full Competence is in itself a relative concept which depends on the theory of functional categories one assumes. There is a controversy whether the *Split-Infl Hypothesis* (Pollock, 1989 and see opposing arguments in

Iatridou, 1990; Chomsky, 1995) should be applied to the letter. That is, every functional element in every possible language will head its own maximal projection. Poepple and Wexler (1993) looked for CP, TP, and AgrP in child German because those are the categories found in adult German. Similarly, CP and TP - but not AgrP - were looked for in child Swedish. However, given the hypothesis above, adult German, for example, would also be specified for AspectP. Yet Poepple and Wexler do not consider Aspect a separate functional element in adult German, and therefore, they do not need to account for its absence or existence in child German. If Aspect is a separate functional head and it is absent in child language, that would obviously pose a problem for their Full Competence model. Thus, the model is limited, despite its aspiration, because the range of "full" competence depends on which functional elements are considered as such.

To summarize so far, we have presented three main objections to the *Full Competence Hypothesis*: The model proposes that there is no difference between adult and child competence, thus attempting to eliminate the process - and with it the problems - underlying the acquisition of the adult structure. Yet, it disregards language-specific differences the child must come to learn. Although the model provides all functional categories underlyingly, the child still needs to learn which of those are required and used in her/his language and which are to be used vacuously. Consequently, the

learnability issues remain unchanged. From a theoretical point of view, it violates principles of Economy, and its definition of "full" competence is limited to depend on the number and type of functional categories assumed.[8]

In order to circumvent the problems raised by both the *Maturation* approach and the *Full Competence* model within the *Continuity* approach, I argue for a minimal structure that includes both the lexical/predicate level and a level of those functional heads which are cross-linguistically specified. It will be shown that there is no delay in the emergence of these categories. Since, following the Economy principle those categories need to be licensed by content (as defined), it will be argued that one property is sufficient to license the category. For example, the child need only acquire that TP can be [finite], or [±past] in order to give content to that category and hence license it. Where there is delay, it

---

[8] Two other objections to the *Continuity Hypothesis* are raised by Guilfoyle and Noonan (1992): First, the explanation for developmental change and progress is argued for resorting to syntactic triggers. Consequently, those triggers must be easily available to children and appear frequently in their input. Yet children ignore those triggers until a given point where the related principles become operative - a delay which is not easily accountable given the characteristics of triggers. A second problem is the choice of triggers, which being syntactically and theory motivated, are not easily identified. For example, Valian (1990) demonstrated that all the triggers postulated for setting the null-subject parameter fail. This resulted either because the triggers did not restrict enough the input from which the child was drawing her/his evidence, and therefore, misleading input was not excluded; or because they restricted the input so much, that the child's parser was unable to assign an interpretation to the relevant sentences in the input.

appears in two areas only: a delay in the acquisition of the remaining properties (formal features) in the already selected categories, and a delay in the emergence of categories which are not cross-linguistically specified. In both cases, I follow the *Continuity Hypothesis* and argue for the acquisition based on linguistic input triggering the change.[9] The *Minimal Competence* model will be the focus of the next section.

4.1.3 Continuity - The Minimal Competence Hypothesis

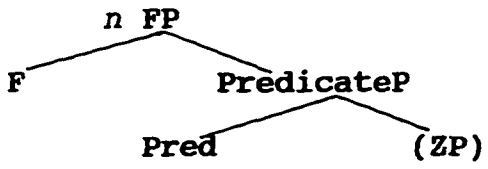
Given the arguments against the *Full Competence Hypothesis* and the *PredicateP Hypothesis* presented in previous sections, our goal is to find a minimal initial structure compatible with the data, together with an acquisition process that will lead to the adult structure in a systematic and accountable way.

The PredicateP level is the basic lexical level attested in every adult structure, and therefore, it is also the minimal child structure agreed upon by all acquisition hypotheses. The structure below presents the PredicateP level dominated by a Func(tional)P level, where the number of functional categories attested in a language is represented by *n* (omitting irrelevant structure):

---

[9] Within this hypothesis, Guilfoyle and Noonan's (1992) "saliency" suggestion might come to play a role in the order of acquisition of the remaining categories and formal features.

4.



Contrary to the *Maturation* model, the *Minimal Competence* model assumes the knowledge and use of functional categories, but it contrasts with the *Full Competence* model in advocating a minimal rather than maximal knowledge of the functional categories. The argument for a minimal structure will be argued on two levels: First, the initial structure consists of the minimal number and type of functional categories required in all possible languages. Second, the properties associated with those categories are also those minimally specified in all possible languages.

The *Minimal Competence* model is based directly on the discussion and conclusions we have reached in previous chapters on adult grammar. We have first concluded that root clauses (or CPs) obligatorily select for finite TP, which provides the sentence with its time reference. As such, TP is interpretable at LF even if it is not interpretable at PF, i.e., when it is null as in the case of Hebrew present tense. We further associated Tense with nominative Case assignment.[10] Since CP and TP are cross-linguistically

[10] Although the [+F] operator and with it Case are located in Comp in V2 languages (Platzack and Holmberg, 1989), the argument can still be maintained, since CP is also a universal core structure, and it is this category that selects TP in finite clauses.

specified, they are also given a priori to the child, who does not require evidence for their existence. Complying with the Economy principle, these projections must be licensed by given content, semantic or phonetic, requiring at least one of their properties to be specified a priori in the child's structure. The immediate question that arises is, what is that feature or property?

Based on the *Minimal Competence*, an obvious answer would be that it must be a universal property specified across all languages. This might be problematic in light of languages that can be argued to lack functional categories altogether. Fukui and Speas (1986) and Fukui (1988, 1993, 1995) argue for Japanese to be such a language, despite its ability to mark tense and mood.

Contrary to Fukui and Speas, Huang (1984, 1989) argues for a universal TP even for Chinese, a language that is less specified for functional elements than Japanese (Jaeggli and Safir, 1989). He has claimed that although tense and agreement are absent in Chinese, this is not to say that Chinese does not have a TP projection: 'There is reason to believe that the relevant factor that allows a lexical subject [,assigning Case to it,] is the *finiteness* of a sentence, and that different languages may encode finiteness with different elements of AUX' (Huang 1989, p.189). In other words, although Chinese does not encode finiteness via morphological Tense, it still does so by using an auxiliary system, where Aux in TP encodes

finiteness.[11]

We are now assuming TP, CP and a finite interpretation as part of the initial structure the child is endowed with and for which no evidence is required. Following Platzack and Holmberg's (1989) Finite Operator parameter, we can refine the requirement. Since a root clause is a CP whose head selects a finite TP, [+F] is automatically selected with the CP-TP pair, either not specified for a position, or specified for in an unmarked position, either in Comp° or in Tense°.[12] In addition, since a finite interpretation can also be assigned to Tense specified [0F], as we have shown in Hebrew present tense, the child is given this parameterized option along with

---

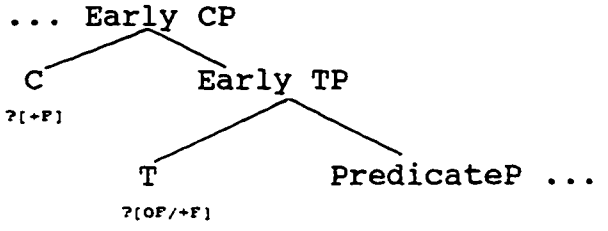
[11] Although we will not follow Fukui and Speas (1986) and Fukui (1988, 1993, 1995) but accept Huang's (1984) account it is important to understand the ramifications of their argument. If they are right in arguing that there is at least one language that lacks functional categories altogether (e.g. Japanese), it follows that the child (minimal) structure must be even more minimal than we have assumed. It can only consist of the lexical categories at the PredicateP level as core structures, and all functional categories will have to be classified as non-core structures. Being non-core structures, the child will have to learn them and look for evidence for their existence. In that case, going back to the structure in (4), UG will specify the range for the number (*n*) of functional categories starting with zero.

Although we can still argue for an initial CP-TP pair associated with [+F], the learnability strength of the *Minimal Competence* model will be lost and the child's acquisition task will be exactly as the one argued under the *Full Competence* model.

[12] The structure in (5) below represents the Child Initial Structure. This structure might be incomplete in the sense that as investigation proceeds, *universal core structure* might be extended to include other categories, and with it the child structure will also be extended.

the other parameter. The structure in (5) demonstrates both the initial child structure the *Minimal Competence* argues for, and the parameterized options under the functional categories.[13]

5. *Child Initial Structure*



If one of the projections is licensed via [+F] or [0F] what feature licenses the other category?

Since the first parameter states that the operator is either located in CP or TP, I would like to suggest that the child who is endowed with the structure in (5) looks for evidence to set the parameter one way or the other. Whatever the outcome is, the unspecified category will violate the Economy principle unless it is also assigned content. This will force the child to look for appropriate content and trigger the acquisition of [±past] for Tense, [+wh] for Comp, and so forth. Given CP, TP, and [0F/+F] (and Case assignment associated with the latter), the child's learnability task is to acquire the remaining formal features associated with the

[13] At this point, I will not assume a possible null finite operator in CP, as argued for TP. The consequences of such a parameterized option will have to be further investigated.

functional categories, and classify the incoming data assuming the existence of these categories.

Contrasting with core structures, non-core structures, such as AgrP, are part of UG, but are not cross-linguistically selected. Therefore, they are not postulated until evidence for them is found in the incoming input. In this case the Economy principle is also preserved since only with evidence for their interpretation at LF and/or PF, will the projection be selected and licensed.

Consequently, the learnability question is reduced to the acquisition of functional categories which are not cross-linguistically specified and to the formal features of the cross-linguistic functional heads, excluding the feature or operators specified a priori - [0F/+F].

The parameterized finite option of specifying tense as either [0F] or [+F] makes a very interesting prediction. Recapitulating, the [0F] operator in Hebrew allows Tense to be interpreted as finite, with a default specification on its time reference. The corresponding verbal forms, which are not specified for a tense feature or rather are specified for a [0] feature, surface as non-finite forms. In child language, the specification of both parameter values, prior to setting the correct value for the target language will surface as a syntactic option of using both finite forms and non-finite forms in root clauses.

There is a lot of cross-linguistic evidence for this

stage in which finite forms and non-finite forms are used interchangeably in root clauses. Wexler (1994, 1996) has termed it the *Optional Infinitive* stage referring to the option between finite and infinitive forms. Most of the evidence has been reported from Germanic languages, showing that children do not only distinguish finite and non-finite forms, but that they distinguish between the two forms also syntactically. In Germanic V2 languages, the [+F] operator specified in Comp forces the finite verb to raise to the second position, while Spec is filled by the extraposition of a subject, an object, or an adverbial. In contrast, non-finite verbs do not raise to TP or CP.

Interestingly, Sano and Hyams (1994) and Sano (1995) have demonstrated that in null-subject languages, the same stage is characterized by using optional participles and not infinitives. Thus, Roeper and Rohrbacher (1994) remark (fn. 19, p.19) that the *Optional Infinitive* stage is better termed the optional 'non-finite matrix clause'.

I would like to propose that the specification of the [0F/+F] operators in child language entails the possibility of using the corresponding forms in root clauses. Beyond that, the two verb forms perform a different function syntactically, as observed in languages exhibiting verb movement, and semantically by interpreting [+F] as finite describing on-going events and [0F] as non-finite lacking a time reference and used mostly for requesting. Moreover, *Minimal Competence*

argues for a stage in which CP, TP, and the finite operators are specified but no other properties of CP and TP have yet been acquired. Thus, at this early stage embedded clauses have not been produced yet, and the [-F] interpretation does not seem to be an option for the child. Infinitives, marked [-finite] in adult grammar, are still possible if they are the only non-finite form exhibited in a language (e.g. German). In languages exhibiting more than one non-finite form (e.g. bare stems, gerunds, and so forth), there does not seem to be a unique choice as to which non-finite form is selected. Once the child acquires additional CP/TP-related properties, these specifications might need to be reviewed.

Different interpretations were proposed to account for this optional stage in an attempt to explain why despite their knowledge of finite forms, children do not abandon the use of non-finite matrix clauses (Boser *et al*, 1992; Poeppel and Wexler, 1993; Wexler, 1994, 1996; Rizzi, 1994a, 1994b; Radford 1994, Roeper and Rohrbacher, 1994, Whitman, 1994; and many others). This stage is especially puzzling because non-finite matrix clauses do not seem to be attested in adult languages.

The [0F/+F] parameter predicts such a developmental stage, which the child will outgrow once s/he has set the parameter to its correct value in the target language. More importantly, my claim was not based on child language but rather on an adult option that can now be assigned to the child explaining this peculiar stage, without resorting to

additional stipulations. The fact that in Hebrew, a null-subject language the [0F] option surfaces as a participle rather than an infinitive lends support to Sano and Hyams (1994) and Sano (1995), but again from the point of view of adult grammar, showing this option to be a true option in UG.

To sum up this section, the goal was to establish what the child initial structure is. We have reviewed two hypotheses differing in the process of acquisition they propose, and crucially in the child initial structure.

The *Full Competence* model fails not in the process but in the child's initial structure it proposes. Although it argues for a TP and CP (and ALL functional categories) as part of the initial structure, the child will still have to look for evidence for the non-vacuity of those categories. Still assuming the *Continuity Hypothesis* and its developmental process, the *Minimal Competence* model I propose argues for a different structure. Under this model, the categories are given and evidence is required for their properties alone, not for their existence. Those categories that are not specified in all languages, require evidence for having content in the target language before they are added to the minimal structure. As a result, the learnability task has been reduced to the second type of categories, and the model complies with Economy principles, since all the categories have content, and therefore, are licensed.

Contrasting with the *Continuity Hypothesis*, the drawback

of the *Maturation Hypothesis* (in both versions) is the acquisition process it proposes. Although a maturation model might be made to work theoretically (see Bertolo, 1996), its explanatory force seems weaker as compared with other models. The *Minimal Competence* model, on the other hand, has provided an explanation for the delay in the emergence of certain functional categories based on their universal properties rather than a maturation process. Since only core structures are provided initially without the need to be acquired, it necessarily follows that they will exist before non-core structures, which have still to be acquired once evidence for them is found.

This categorical distinction provides empirical grounds for choosing between the two *Continuity* models: If we find a delay in the acquisition of non-core structures, such as AgrP, and delay in the acquisition of core features, such [±past], while we find evidence for systematic use of core structures, a minimal structure would be supported over a full structure.

The *Minimal Competence* model does not directly answer the question how minimal the child initial structure is. It allows the structure to be as extended or as limited based on cross-linguistic evidence. If Huang (1984, 1989) is correct in his analysis of Chinese, and that analysis can be extended to other Asian languages, then there is justification based on theoretical, empirical and learnability grounds for the specification of at least TP and CP as part of the child

initial structure. Notwithstanding this conclusion, the MCH model can lack all functional categories if there is conclusive evidence that at least one adult language lacks them.

Finally, we have shown that the finite operators initially specified are parameterized between a [+F] option and a [0F] option. This predicts a stage in which the children are using both finite forms associated with the former and non-finite forms associated with the latter.

In the second part of this chapter, I will present cross-linguistic evidence for the use of TP (and CP) very early on supporting the *Minimal Competence* model. Specifically, we have already noted that there is a vast literature on the optional non-finite stage. However, in most cases the data show evidence for the acquisition of other CP/TP related properties. Consequently, the data I will present focus on very young children who can be observed to make a finite/non-finite distinction, but who do not distinguish verbal forms based on other properties, such as [±past].

4.2 Cross-Linguistic Evidence for the Minimal Competence Model

The production of functional categories at a very early stage argues against the Maturation approach, but it will not allow

us to make a direct claim about the early existence of CP and TP and finite operators. We are interested then in finding an early stage in which the properties of Tense° have not been fully acquired (e.g. lack of [±past]) but where a [0F/+F] associated with nominative Case is specified either in TP or CP. If such a stage exists it will lend support to the structure presented in (5) and to the universal claim for a TP level, supporting the *Minimal Competence* model.

We assume the structure in (5) as the underlying child structure and further assume that movement processes within this structure are equally constrained in children as in adults. Thus, any evidence found for verb raising from its base-generated position in the PredicateP will necessarily involve a functional level and a functional head to which the verb has adjoined. It is not surprising then that most of the work on early child structures has looked at raising languages, especially V2 languages and SOV V2 languages, as explained in the previous section (see also footnote 1).

Most of the evidence comes from observations of verb placement, which distinguishes between finite forms in second position and non-finite forms in final position (in SOV languages). This is observable via their relative position to negation, since the former precedes negation whereas the latter follows it.

6.a. [$_{CP}$Das Kind$_i$[$_c$will$_j$ [$_{TP}$ t_i nicht [$_{VP}$sitzen t_j] t_j]]]

the child wants not sit.

'The child does not want to sit'

These facts are also observable from the use of modals in second position, the use of participles in last position (Verrips and Weissenborn, 1992).

Additional evidence comes from the observation that finite verbs are placed correctly in second position following not only topicalized subjects, but also topicalized objects (Meisel and Müller, 1992). Meisel and Müller (1992) argue for the existence of TP from copying constructions, in which the finite verb is found in both its base generated final position and in a higher second position.[14]

The problem with some of those data is that they show at the same time the emergence of non-core structures, such as AgrP, or non-core properties, such as the insertion of modals under TP or CP. Some researchers associate verb movement with acquisition of subject-verb agreement (Meisel, 1990; Meisel and Müller, 1992). This suggests the child has outgrown the

---

[14] Platzack (1992) has attempted to reanalyze the data presented from child Swedish (Platzack, 1990), to see whether functional categories could still be argued for. His findings were inconclusive since at the very early stages verb movement, negation placement and so forth, are either undetectable or not used, and therefore, cannot serve as evidence for or against the existence of functional categories. This demonstrates the empirical problems we are faced with and a possible explanation for the controversy presented above.

initial stage argued for by the minimal structure in (5). On the other hand, if no previous stage can be found in which those non-core structures were absent in the data, these data would constitute evidence against the *Minimal Competence* model and for the *Full Competence* model.

The evidence I will present in the following section from Clahsen (1986, 1990) and Clahsen and Penke (1992) argues for the former rather than the latter.

4.2.1 Evidence from Verb Raising

Clahsen (1986, 1990) argues for the lack of AgrPs and a structure similar to the one proposed in (5), while Clahsen and Penke (1992) present evidence for the finiteness distinction based on the form of verbs and their use.[15] I will proceed with Clahsen & Penke (1992).

As opposed to English, German has only one non-finite form (excluding imperatives) that children need to be aware of, namely infinitives, such as *arbeiten* (to work). Similar to English, the future tense consists of a (finite) modal followed by a non-finite form. Yet, the German future employs the same non-finite infinitive form, whereas English uses the base form of the verb:

---

[15] Berman (1983, 1986) has found similar evidence in child Hebrew. We will return to her data in section 4.2.2.

7. Ich werde *arbeiten.*
   I will-1sg work/*to-work

Even in the Cologne dialect, where a complex tense corresponding to the present progressive in English is possible, the auxiliary *be* is followed by a preposition *am*, followed by the same non-finite form:

8.a. Ich bin am arbeiten
   I am (prep) work
   'I am working'
  b. Ich war am arbeiten
   I was (prep) work
   'I was working'

Thus, a child in the early stage we are considering will be able to notice very early on that there are two types of verbs which differ structurally, semantically, and morphologically. Since non-finite verbs do not raise to TP or above it (see discussion on Hebrew participles in Chapter 2), and the German underlying word order is SOV, non-finite verbs are structurally found in final position. Semantically, such verbs refer to requests, i.e., irrelais events; and morphologically, they are inflected for an *-n* affix. All other verbs are classified as finite verbs: They appear in V2 languages in second position; they denote events anchored in time, and are

inflected for various affixes that generally (though not uniquely) differ from those affixed onto non-finite forms.

Clahsen and Penke found a differentiation in the use of verbal affixes corresponding to the finite/non-finite distinction. They report that children use verbs inflected for *-n* as infinitives and produce them in final position despite the fact that verbs ending with this affix can also be in the indicative in 1st and 3rd plural forms in adult German. In contrast, other affixes such as *-t* or *-st* are associated with finite forms, and only those raise to the V2 position associated with [+F] (Platzack and Holmberg, 1989).

More specifically, Clahsen (1986, 1990) has demonstrated that children at the outset of combinatorial speech use verbs mostly in their bare form (using no inflection) or in their infinitive form using the *-n* marker. Furthermore, the use of the marker *-t* was claimed to be a finite marker or a transitivity marker, but not an agreement marker, as it is for the adult speaker.

Clahsen (1990) has proposed to capture that difference by suggesting that,

> ...the children's lexicon contains elements that are categorized as [+F(inite)] in phase II/III and that the highest phrase structure position ... is a projection of the feature [+F]... . Elements marked with [+F] in the lexicon are base-generated in the position [+F] occupies... . In contrast to the adult language, the interpretation of [+F] in phase II/III does not involve subject agreement and complementizers have not yet been identified. (ibid, pp.381-382)

Thus, finite elements, including finite affixes, are base-generated under the functional position occupied by [+F], whereas the non-finite elements are inserted from the lexicon inflected with the *-0* or the *-n* affixes and remain in that position. In the latter case, the child structure will consists of only a VP level, i.e., the PredicateP level.

According to Clahsen, the maximal projection dominating the PredicateP level contains the [+F] operator, but is underspecified with respect to its syntactic category, hence FP. It can become TP in non-V2 languages, or CP in V2 languages, once either category is recognized. If the latter is recognized then we still need to account for the acquisition, selection and insertion of TP under CP.

The structure presented by Clahsen differs from the proposed structure in (5) in several theoretical aspects. First, they differ in the theoretical motivation behind the functional categories. Clahsen's FP is underspecified categorically but is specified for [+F], requiring the child to both specify the category and find evidence for the existence and projection of the other functional category. In (5), both categories are given a priori and need no evidence for their existence. This is based on the minimal requirement for their specification in all possible languages. [+F] will be specified in TP and reset to CP in V2 languages, or it might be unset until evidence for either category prevails.

Second, under his structure non-finite verbs are VPs

lacking a functional level. Some of the examples Clahsen presents contain a subject predicated of a non-finite verb as in (9):

9. ich Schaufel *haben*.
   I shovel have
   'I have a shovel'. (ibid, p.375)

In the absence of TP it is not clear how the verb will assign nominative Case to the subject pronoun *ich* (I).

As explained in the previous section, the discussion of Hebrew present tense participles has provided a solution by which we can claim the child follows a UG option attested in an adult language. Non-finite forms in child language are specified for [0F], in the same way that adult Hebrew present Tense is specified for [0Tense/0F]. In both grammars, Tense is associated with nominative Case assignment.

To sum up, the data presented by Clahsen (1986, 1990) and Clahsen and Penke (1992) support the claim for an early finite/non-finite distinction associated with the core structures CP and TP, and crucially, excluding the non-core structure AgrP. This distinction was emphasized by the production of unique function-form pairs associating finite verbs with one set of affixes and non-finite verbs with a different affix.

The Hebrew data presented in the following section will

support that observation. It will also show that this distinction can be observed as early as the one-word stage. This will argue against the PredicateP structure in combinatorial speech. We will also present evidence for the early assignment of Case at this stage arguing against the possibility that the non-finite clauses are VPs.

4.2.2 Evidence for TP and Finiteness in Early Hebrew

The data presented from Germanic V2 languages, especially those exhibiting underlying SOV word order support a very early structural distinction based on finiteness (Clahsen, 1986, 1990; Clahsen and Penke, 1992; Meisel and Müller, 1992; Verrips and Weissenborn, 1992; and references cited therein). Similar results have been found for French - a (non-V2) SVO language (Déprez and Pierce, 1993; Meisel and Müller 1992; Verrips and Weissenborn, 1992).

A bigger challenge for the existence of a functional level, in general, and CP-TP associated with [0F/+F], in particular, comes from languages where verb raising is not observable in the syntax, either since it is delayed to LF, or masked by other movements. Although the evidence cannot come from the placement of the verb, we can still look at their form, and see whether the two types can be associated with other distributional evidence, demonstrating that a finiteness

distinction has been made.

Although we are interested in the child's knowledge at the outset of combinatorial speech, i.e., when we are able to find evidence of a syntactic structure, the one-word stage in Hebrew reveals some interesting facts.[16] There is already evidence at this age for a finite distinction and crucially evidence that other properties of Tense have not been acquired yet, supporting the claim made by the *Minimal Competence* model. This also shows that once children start producing more than one-word combinations, the adult structure (or at least most of it) must already be in place arguing against the PredicateP model.

4.2.2.1 Finite vs Non-Finite Forms in Early Hebrew

According to Berman (1980, 1986), the one-word-stage in Hebrew is not homogenous. A temporal progression with respect to verb usage can be observed along three stages. The first stage is characterized by the use of imperatives with an instrumental-type function to get people to do things for, to, and with the child. The imperative usually takes the unmarked masculine

---

[16] Verb placement relative to negation cannot be used in Hebrew, despite being a raising language, since the common negative element *lo* cliticizes onto to the verb preceding it. Thus, if the verb raised, negation would raise with it masking the effect. Relying on other temporal adverbials or on copula raising will defy our purpose. Once those elements have been acquired, the child has long out-grown the early TP stage.

form, e.g. *bo* ('come'), but sometimes we find the more marked feminine form, e.g. *boi*.[17]

The second stage is characterized by the addition of infinitives. Infinitives at this stage are mostly used in their bare forms, without the infinitive marker *le-* ('to'). For example, instead of *le-axzik* ('to hold'), the child would use the bare form *axzik* (hold). Bare infinitives are associated with actions the child is doing by her/himself. The period of bare infinitives is overextended and can be found also in older children, as observed in the example from BL:[18]

10. roca oci [=le-hoci] daf [referring to my bag]
want-sg-fm take-out [to-take-out] page
'I want to take out a page'. BL23(2:184)

At the third stage, a final finer grained classification

---

[17] The latter seems to be related to the pragmatic surroundings of the child. For example, AG, in my sample, has two older sisters who play with him constantly. As a result, he seems to overextend the use of feminine endings across the board, including when referring to himself.

[18] The overextension of the period of infinitives seems to reflect the extensive use of this form in the adult language, either in addressing the child or other adults: (i) the infinitives are used in nursery style. (ii) They are used instead of imperatives to direct the child to do things, e.g. *li-shon* ('to-sleep), meaning 'it is time to go to sleep'. (iii) In formal Hebrew, negated imperatives are a combination of the negator *al* and future tense forms, e.g. *al toxal axshav mamtakim* (not eat-fu-2-sg-ms now sweets = 'Don't eat sweets now!'). The more common form uses the regular negator *lo* followed by the infinitive, e.g. *lo le-exol axshav mamtakim* (not to-eat now sweets).

of verbs is made. At this stage, still producing one-word utterances, Berman reports the emergence of both present and past tense forms. Since those verbs are not combined with temporal adverbials, we can only use context to decide whether these forms are associated with the adult function, i.e., denoting present and past tense events. Berman demonstrates that these forms are not adult-like, lacking [±past] distinction, but are adult-like being finite forms, contrasting with the imperatives and infinitives. In what way, then, do these verb forms differ?

Berman argues that each form corresponds to a different class of verbs. Therefore, the difference reduces to a semantic difference rather than a syntactic one. I found Berman's description to conform to my data as well. She describes the use of present and past forms as follows:

> ... initially children use present-tense forms for durative activities such as... *mesaxek* 'is playing', as well as for statives such as *roce* 'want'..., whereas the past-tense is used initially with end-state or punctual verbs such as *nafal(ti)* '(I) fell' or *nishbar* 'broke, got broken'" (Berman, 1986: p.269).

Consequently, we do not find forms such as *sixakti* (played-1-sg), along *mesaxek* ('(is) playing') showing a tense contrast. Nor do we find *nofel* ('(is) falling') contrasted with *nafal(ti)* ('(I) fell'). Crucially, the present and past forms are not distinguished according to the adult [±past] Tense distinction. This supports my claim that in early stages children do not produce verbs distinguished in Tense

properties other than finiteness. Tense properties, such as [±past], will be acquired later.

To sum up so far, Hebrew speaking children at this age use the present and past tense forms as one class of verbs denoting finite events (distinguished internally according to verb classes), as opposed to the second class of non-finite verbs, including the imperatives and bare infinitives, denoting requests.

Berman (1983) suggests that children start encoding the [±past] tense distinctions when they start to recognize the different inflectional patterns for each tense. There are verb patterns in which the present and past tense forms cannot be distinguished on the basis of their forms. For example, from the root *k.n.s* (go in) we derive one form *nixnas*, which means both 'goes in' and 'went in'. Using common morphological present tense patterns, children, however, overregularize such exceptions, forcing a distinction between the two tenses. For example, the roots *s.x.k* (play), as in *mesaxek* (plays-pr-sg-ms), or *r.x.c* (wash-oneself), as in *mitraxec* (wash-oneself-pr-sg-ms), appear with an *m-* marker, which Berman (1983) takes to be a present tense marker *par excellence*. By analogy, children use this marker on the *k.n.s.* root, and derive the non-existing form *mikanes* (goes in), and keep the correct form *nixnas* for past tense use only.

This child strategy is important in understanding how children make use of functional distinctions. Once children

start to recognize the relation between form and function, they try to keep it paired neatly, avoiding exceptions that might create a possible confusion between the two. Such behavior has already been demonstrated in the previous section for German speaking children. A similar argument will be made from child English in the following section.

In section 4.2.3, I will argue that English speaking children use two forms - bare forms and *-ing* forms. In adult English, both forms are analyzed as non-finite, however, early child English associates with each a different function. The former will be associated with a non-finite function and a [OF] specification of TP. The *-ing* forms, in contrast, despite their adult form, will be associated with a finite function and a [+F] specification.

Before turning to the English data, we will present yet another aspect of Child Hebrew lending further support for the existence of TP at a very early age, namely the assignment of nominative Case, focusing on the pronominal system.

4.2.2.2 Nominative vs Accusative Pronouns in Early Hebrew

There are two sets of pronouns in Hebrew - nominative pronouns and objective pronouns (including also pronominal adjuncts). Nominative pronouns are free morphemes, whereas, objective pronouns are bound forms. The latter are derived by

cliticizing ϕ-features denoting a referent on a marker or a preposition: In forming direct objects, they cliticize onto the accusative marker *et*, and when forming indirect objects or adjuncts they cliticize onto the appropriate preposition. When followed by a nominal DP, the marker and prepositions appear in their non-bound form.

Interestingly, Hebrew speaking children do not confuse the two sets of pronouns, and never use accusative or oblique forms in the nominative position. The opposite, using nominative forms in objective positions, is sometimes found. We will argue that it is not due to the absence of a Case system and the inability to distinguish between the forms, but rather to the morpho-phonological exception and complexity of some case-marked pronouns.

In a study of cased-marked pronouns in Hebrew, Rom and Dgani (1985) focused on the acquisition process of the following forms: The possessive marker *'shel'*; the accusative marker *'et'*; and the locative preposition *'al'* ('on'), all in their bound forms. In their study, they asked children questions that were designed to elicit case-marked pronouns as a response.

Their results show different response patterns according to age, indicating that case-marked pronouns in Hebrew are problematic for children. Most importantly for this discussion, they concluded that prior to age two 'children do not produce the three case-marked pronouns in a <u>productive</u>

manner. Their responses are either no response, or use of the child's proper name with no preposition' (ibid, p.67, the underlining is my addition).

Their response pattern is problematic for a number of reasons. First, what Rom & Dgani (1985) consider an incorrect response is, for example, an answer *'here'* to a question such as *'On whom shall we put the hat?'* (ibid, p.76 - their Appendix). Given the frame of their experiment, and the practice session they have conducted with the children, this is definitely the wrong response, and it can be taken to indicate that the cased-marked pronominal system has not been acquired yet. Nevertheless, it does not serve as conclusive evidence for the absence of a Case system, but at most as evidence for the absence of the pronouns in question.

A similar claim was made when children used the appropriate preposition but avoided the use of a pronoun by using a nominal DP. Presented once more with the question *'On whom shall we put the hat?'*, the child provided an answer such as *'al ha-yeled'* (on the-child). Although, this is not the correct pronominal response, which bears on the question of the acquisition of pronouns, it is still a correct response, both structurally and in context.

Berman (1986) attributes the problem of the pronominal system to the morphological properties of pronouns. The pronouns are synthetic, marking cliticization of inflection on a marker or a prepositions, and where pronominal inflection is

irregular it is inconsistent across persons, e.g. *shel+i* (of+I = mine) versus *al+ay* (on+I = on me).

The youngest subject in my sample, YY (MLUW 1.40), fits very closely what Rom and Dgani (1985) have reported. YY seems to be using the same avoidance strategies reported for the youngest children in their study. We can conclude that the child lacks those case-marked pronouns, but we cannot extend this conclusion to include the absence of the Case system as a whole. What the children seem to be doing is avoiding the use of the complex cased-marked pronouns. To find evidence for the use of a Case system nevertheless, we need to look at the pronouns children DO use.

The youngest children in my study (see Chapters 6 and 7) seem to restrict the use of the accusative marker *'et'* to pronouns, especially the pronoun *'ze'* (it/this). For example, YY used the accusative marker with the pronoun *'ze'* (this) 31 times, once in its contracted form, once with a name, and four times in its bound form.

It is important to note that there is no morphological distinction in *'ze'* (it/this) used as a subject or an object. Therefore, the only way to distinguish the two functions is by using the accusative marker, so that in object position *'et ze'* (acc this) must be used. Thus, even if children restrict their usage to *'et ze'* (acc this), and have not yet acquired the different bound forms of the accusative marker, the acquisition of a Case system can be revealed if they

consistently differentiate between using *'et ze'* in object position and *'ze'* in subject position, never interchanging the two.

Indeed, Hebrew speaking children use the pronoun *'ze'* a lot. Most importantly, when in subject position, especially in verbless predicates, they use the bare pronoun, without any additions. But when in object position they always use the accusative marker with the pronoun. Moreover, there was never an instance of *'et ze'* used in subject position, and I found only three tokens of *'ze'* used in the object position without the accusative marker, all three following the verb want. For example,

11. ani roca ze.
I want(sg-fm) this TR110(1:287), MLUW 1.87

Radford (1990) takes the acquisition of the morphosyntax of nominative case to be the indication that children have necessarily also acquired the conditions under which Case is assigned, i.e., *'...* by an agreement-marked I to its DP subject/specifier.' (ibid, p.177). One might object, however, that this differentiation is based on a Case distinction and claim that the acquisition of the morphosyntax of the pronominal system is a mere reflection of thematic roles not mediated by any functional category. In other words, a pronominal agent is expressed in one way, as opposed to a

pronominal theme which is expressed in a different way, incorporating *'et'*. In both cases the child has not necessarily acquired the Case system.

One way in attempting to answer that question is to tease apart thematic roles from their syntactic positions. This is possible if we look at constructions where movement and raising have occurred, especially in those constructions where raising is motivated by the need for Case, as in passive constructions. At this early age, below MLUW 2.0, it is impossible to find such constructions. There were, however, some interesting examples that might shed some light on the above.

In all three examples below, the children misplaced one of the arguments: In (12), the pronoun *'ze'* is the subject of the verb *shayax* (belong) (12b). However, the child misplaced the argument and positioned it after the verb (improper subject-verb inversion). Although it is the thematic subject, it is the structural object. If the child is analyzing *'et'* as a thematic marker, the different location of the argument should not change its form, since in both positions it has the same thematic role. If the child, however, analyzes *'et'* as an accusative marker where a different structural position is marked differently, the misplaced argument should be marked with *'et'* according to its position and not thematic role. The second option is borne out (12a).

12.a. efo shayax et ze?
where belong(pr-sg-ms) acc this
YY22(1:205), MLUW 1.40

b. efo ze shayax?
where this belong(pr-sg-ms)
'Where does this belong?'

The next two examples, similarly, demonstrate that children are sensitive to the structural position of the element and not to its thematic role. In both examples, the verb does not assign a thematic role to the subject position, so a thematic subject is not possible. In (13) the verb assigns accusative Case to its object, and the subject position should remain empty, as Hebrew licenses expletive null-subjects (13b). Nevertheless, YY inserts a demonstrative in subject position. This is not a topicalized object, and being in the structural position of a subject the demonstrative is not preceded by *'et'*. Once more, the differentiation cannot be a thematic one, as there is no thematic role to assign to the subject, and the demonstrative in that position is marked as a syntactic subject.

13.a. M: lo carix.
no need(pr-sg-ms)
'There is no need.'
C: ze lo carix.

this no need(pr-sg-ms)

YY22(364:1), MLUW 1.40

b. lo carix et ze / et ze, lo carix
no need acc this / acc this, no need
'There is no need for this / for this, there is no need'.

In the last example, the verb also does not assign a thematic role to its subject. Being an unaccusative verb it does not assign accusative Case to its object either. The child uttering (14a) treats the verb as a regular transitive verb and inserts *'ze'* (it/this) in subject position. The grammatical sentence should have been derived by either leaving the subject position "empty", i.e. structurally filled with expletive *pro*, or by raising the object to the subject position to receive Case (14b).

14.a. tiri [=tir'i] ze higi'a ha-stav.
look(sg-fm) this arrived(sg-ms) the-fall.

DA25(2:574), MLUW 1.92

b. ... 0 higi'a ha-stav / ha-stav higi'a
'Look the fall has arrived.'

In sum, even if children lack other properties such as raising, or the conditions for licensing *pro*, or the thematic

characteristics of some verbs, the insertion of the demonstrative *'ze'*, bare or preceded by the accusative marker *'et'*, is not motivated by thematic considerations, but by structural considerations. This shows that the children know how to assign structural Case, at least for the pronouns they use. The prediction would be that Case assignment will be extended to other types of pronouns and nominals once those are acquired.

To sum up so far, the distributional facts regarding the use of the accusative marker and the pronoun *'ze'* (this) support the idea that the child has knowledge of the Case system. The restriction of the pronominal system to usages of the pronoun *'ze'* (it/this) seems to be due to a morpho-phonological complexity of the system and does not bear on the acquisition of Case, or application of the Case Filter.

This also supports the argument for a gradual acquisition of the system as a whole: As TP is specified but most of its features have not yet been acquired, so does the Case Filter apply on a restricted nominal system.

To conclude the section on child Hebrew, we have presented evidence for a finite distinction and the assignment of Case associated with this feature. Together with the absence of production of other TP-related properties, in particular a [±past] distinction, we have lent further support to the *Minimal Competence* model.

We now turn to the last section presenting supporting

evidence from child English. The data will be accounted for by referring to the parameterized [0F/+F] proposal. We will also show that the child is forcing a unique function-form interpretation on the restricted verbal system s/he has acquired.

4.2.3 Evidence for a Finite/Non-Finite Distinction in the Absence of Verb Movement

We have already observed that it is easier to argue for the existence of early functional categories when the verb raises in the syntax and adjoins to a functional head. The evidence can be taken directly from the position of the verb, its form, its relative placement to negation, and so on. However, in the absence of overt raising or overt verbal inflection, evidence needs to be found elsewhere. Though the task might be difficult, we cannot simply rely on the findings above and carry the conclusion over to languages like English.

At the end of section 4.1.3, we have concluded that since CP, TP and the finite operators are specified a priori, the child will look for evidence to match the structure available. Thus, we are looking for an early stage where the child distinguishes between finite and non-finite forms, but at the same time shows no use of other CP or TP properties.

In section 4.2.1, we have referred to the optional 'non-

finite matrix clause' stage. In English, this stage is characterized by the use of non-finite forms, such as bare forms and *-ing* forms, along with verbs inflected with the 3rd person present tense *-s* marker. At the same time, we also find optional uses of modals, auxiliary *do*, and other elements indicating that the child has acquired other TP related properties beyond finiteness. Children at this stage have outgrown the stage we were opting for, so it can neither support nor refute the *Minimal Competence* model.

Consequently we need evidence from children who are at the outset of combinatorial speech and hence have not yet acquired any properties associated with Tense excluding finiteness. The data presented in section 4.1.1 from Allison Bloom (Radford, 1990) support this stage. Quantitative data are provided by Valian (1991) on the youngest-MLU child (MLU 1.53) in her corpora. Some aspects of the child's speech are summarized below:

> 'This child not only used subjects less than any other child, but had few personal pronouns as subjects, no modals, no semi-Aux's, and no regular past tense. There were, however, two infinitives, [...], and one subordinate clause. <u>While not presenting a complete consistent picture</u>, this child came closer to fitting the VP description than did any other.' (ibid, pp.77-78) [the underlining is my addition]

The absence of systematic productions of 3rd person singular present tense *-s* marking, the past tense inflection *-(e)d*, the *to*-infinitive, auxiliaries and so on, all associated with Tense, might suggest the absence of TP altogether supporting

the PredicateP level, as suggested by Valian (1991). Alternatively, following the *Minimal Competence* proposal, TP is present and so are the [0F/+F] operators. However, in the absence of other properties, the finite property in Tense is expressed differently in child English as compared to adult English.

The following examples from child MLU 1.53 (Valian, 1991) will illustrate the proposal I am about to make:

15. a. Get the stroller.
    b. Birdie eat.
    c. Make pennies now.
    d. Right, trying to go through it.
    e. He riding.

The examples in (15d)-(15e) contain non-finite verbs in root clauses. The examples in (15a)-(15c) are more problematic to classify given the morphological properties of English. A non-inflected form, such as *get*, can either be a base form, an infinitive lacking the infinitival particle, a finite present tense verb (used with all persons except 3rd person singular), or an underspecified finite form (marked for finiteness but neither for the past/non-past distinction, nor for agreement) (Radford, 1994).[19] I will assume that these forms are non-

[19] This was the option Radford (1994) initially proposed, though, as his argument proceeded, he demonstrated that this option cannot be correct.

finite forms along with Valian (1991), Boser *et al.* (1992), Sano and Hyams (1994), Sano (1995), Roeper and Rohrbacher (1994), Wexler (1994, 1996), Whitman (1994), and many others. In addition, I will argue that for a child to produce a non-finite category expressed by distinct forms, the child must either be interchanging them randomly, unaware of the appropriate context associated with them, or attributing to them a grammatical distinction be it semantic or syntactic. I will argue that the child is forcing a syntactic finite/non-finite distinction to match the underlying structure s/he has. Thus, the child is using *-ing* forms to express what a regular finite verb would express, and using bare forms to express requests not anchored in time, i.e., denoting a non-finite interpretation. The proposal is based on child MLU 1.53, and it requires future investigation with a larger sample of children to confirm or refute it.

4.2.3.1 The Structure of Non-Finite Matrix Clauses in English

The debate around the structure of apparently non-finite matrix clauses has taken two sides. We have already referred to one school of thought which argues that the clauses such as those presented in (15) above are VPs supporting the

PredicateP model.[20] The second school of thought, following Boser *et al.* (1992), Whitman (1994) and others, advocates the *Strong Continuity Hypothesis* and claims that these root clauses are adult-like in structure and contain TP as well as CP, and as such are finite. Since, however, they agree that the lexical verbs in those clauses are non-finite, they argue that the sentence becomes finite by the insertion of a null copula in TP. In V2 languages, this element is argued to be located under CP, on a par with other finite forms in the adult grammar.[21] The corresponding structure for the clauses in (15b) and (15e) would be the one given in (16a) and (16b) respectively, omitting the irrelevant AgrP levels:

16.a. $[_{TP}$Birdie$_j$ $[_{T'}e_i$ $[_{VP}t_j$ $[t_i[_{VP}t_j$ $[_{V'}$eat]

b. $[_{TP}$he$_j$ $[_{T'}e_i$ $[_{VP}t_j$ $[t_i[_{VP}t_j$ $[_{V'}$riding]

---

[20] The absence of a TP level is motivated differently among different researchers: For example, Roeper and Rohrbacher (1994) argue for the absence of TP based on recent work within the Economy of Principles framework (Speas, 1994; Rohrbacher, 1992) - see Chapter 3 above for the details of this proposal). Wexler (1996) argues for the absence of TP based on the assumption that the D feature of Tense and Agr_sP is both [-interpretable] (a possibility not attested in adult languages) and [+interpretable] (the adult option) in child English. The first option will allow the child to check that feature against either Tense or Agr_s, but not both. This double checking is required and made possible if the D feature were [+interpretable]. Wexler argues that the child, then, has a choice between omitting TP or AgrP.

[21] An account along the same lines was offered for the present tense in adult Hebrew (Shlonsky, to appear), reviewed in Chapter 2 in this work.

The main argument put forth against the null auxiliary proposal is that it predicts the impossibility of null subjects at this stage. The argument goes as follows: Following Speas' (1994) Economy principle, for CP and TP to be projected they must be licensed either by content in the head position, or alternatively, by raising a subject to their Spec. Consequently, since Tense° or Comp° (in V2 languages) are supported by a finite null copula, lacking lexical content, [Spec, CP/TP] must alternatively be filled.[22] This predicts the obligatory presence of subjects in non-finite matrix clauses. However, as the examples in (15) demonstrated, this prediction is not borne out.

Following the discussion on Hebrew present tense presented in Chapters 2 and 3, the argument against the null copula that was based on the argument for null subjects in child language does not hold. We have argued that the verbs in this tense are participles, i.e., non-finite forms lacking Tense, and hence will not raise to TP or above it. We have also argued independently that since TP is universally selected in finite clauses, it is also selected in the present tense, though it is phonetically null. The choice between selecting [0Tense] or [+Tense] in root clauses seems to be parameterized across languages. In both cases, Tense is

---

[22] In V2 languages, we cannot resort to the possibility of a topicalized object or adjunct to fill [Spec, CP], as it seems to be the case that when a null-auxiliary is present, only the subject can topicalize.

interpretable at LF, and hence has (semantic) content that licenses the projection. As a result, a subject pro is licensed. A similar argument can be made for the null auxiliary proposal in child language.[23] Although the argument against a null copula cannot be based on the existence on null subjects in child language, it can still be argued against based on the arguments made against it in adult Hebrew in the same context (see Chapter 2).

In what follows, I will show that the data from child MLU 1.53 can be best explained if we assume that the child is using both parameterized options of [0F]/[+F] in root clauses. Eventually, she will have to learn that English allows for the latter option in finite clauses and the former will be replaced by [-F] in embedded clauses.

The data from child 1.53 (and others) have presented a study case demonstrating the production of different non-finite forms in the absence of finite forms. Following adult classification, bare forms and *-ing* forms[24] have been classified as non-finite forms also in child language. Thus,

---

[23] Note that in both the argument against the null auxiliary proposal and the argument refuting it, only licensing *pro* was dealt with, not its identification. I will follow Sano and Hyams (1994) in assuming that identification in child languages proceeds via a discourse topic, similar to what has been argued for in East-Asian languages.

[24] Non-finite forms include also *-en* forms. However, those appear later than *-ing* forms and indicate a more advanced developmental stage than the one argued for by the *Minimal Competence* model. Therefore, I will concentrate on bare forms and *-ing* only.

they are base-generated under VP and remain in situ in English obviating the need for a TP (or CP) functional level. This also entails that in child English there is no syntactic difference between a bare form, e.g. *eat*, and a gerund form, e.g. *eating*. This raises the question of why the child should then use two morphologically distinct forms to express the same syntactic function?

Advocators against the TP level in non-finite matrix clauses might argue for two reasons children might use different forms which perform the same syntactic function. One reason would follow similar lines argued for by Berman (1983, 1986) for child Hebrew (section 4.2.2), where each verb form corresponds to the semantics of verb-types. The second reason is that children are confused as to the proper function of each non-finite form in context, leading them to alternate between the forms freely and arbitrarily.

The first possibility can be refuted by evidence from Roeper and Rohrbacher (1994), who present data from Adam (Brown, 1973; CHILDES database, McWhinney and Snow, 1985) arguing for a non-finite stage lacking subjects. Some of the examples they provide for this stage in Adam's speech are presented below:

17.a. where go? (ADAM01)
b. where going? (ADAM13)
c. where gone? (ADAM18)

Following Berman (1983, 1986), the argument was that if the affixes differ semantically by being associated with different verb classes, then one and the same verb cannot be inflected by an affix associated with a different verb class. For example, if *-ing* is associated with durative verbs, *-en* or *0* cannot be associated with durative verbs too. This predicts that one and the same verbal root cannot have different forms, as exemplified in (17). Hence, the non-finite forms cannot be distinguished semantically based on verb classes.

The following child-parent conversation provides an example arguing also against the verb forms differing pragmatically:

18. P: What are you doing? You're dancing....
    P: Dancing.
    C: Hopping.
    P: Hopping?
    C: Hopping. Dancing.
    P: Jumping.
    C: Yeah.
    P: Oh, good. You doing some jumping?
    C: Mommy jump.

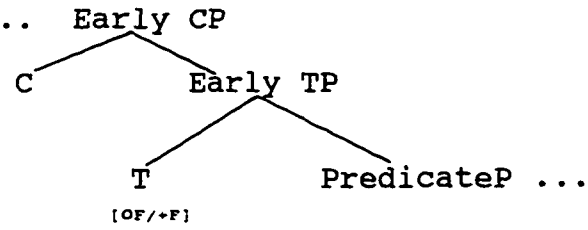
There is an obvious change of meaning in changing the verb form from *jumping* to *jump*. However, this distinction is neither semantic nor pragmatic. The *-ing* forms are used as

finite verbs to describe the on-going event and we found this to be the case with the child's other *-ing* forms. It seems to be a preliminary use of a temporal reference with verbs. In contrast, the bare form functions as a non-finite verb used in requesting the mother to do something. This distinction corresponds to the syntactic finite/non-finite distinction we have described above. A similar differentiation is found when looking at this child's other verb forms. The *-ing* forms are always used to describe or refer to on-going events. This child-parent conversation also refutes the second option of the child using randomly the two forms without distinguishing their function.

To summarize so far, child MLU 1.53 used two initial verb forms, *-ing* forms and bare forms, both of which are analyzed as non-finite in adult English. In adult grammar such forms are also structurally analyzed as occupying a position below TP, either AspectP or PredicateP. Most researchers argue for the second option in child English. This raised the question of why should the child use two non-finite forms unless there is a distinction between them (excluding the possibility of arbitrary usage). We have demonstrated that the difference between the two forms as used by child MLU 1.53 does not correspond to a semantic difference nor to a pragmatic one. The difference in usage seems to correspond to a restricted finite/non-finite distinction, describing on-going events as opposed to requesting, namely a syntactic distinction.

Our initial discussion has suggested that given the specification of CP, TP and the [0F/+F] operators in early structures, the child will try to map the incoming data to match the initial structure repeated below:

19.

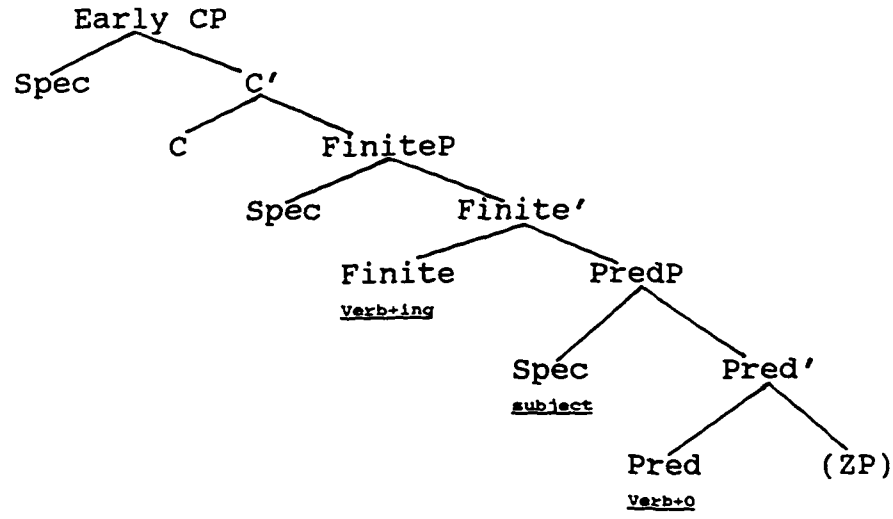


Thus, given the production of *-ing* and bare forms, these forms have assumed the function of finite verbs and non-finite verbs, respectively. Moreover, given the use of the verbal forms in the child-parent conversation in (18), it is obvious that the child is aware of the fact that *jump* and *jumping* have the same root but that the latter is distinguished by adding an affix. Thus, I would like to propose that in the absence of any other affixes, the child takes the *-ing* affix to be a strong affix base-generated under TP (adapting Rohrbacher's (1992) proposal). Although overt verb movement is not a possibility attested in adult English, it is an option in child language once *-ing* is assumed to be strong. The specification of *-ing* under TP will force the verb to raise to that position to attach to the affix. [+F] receives an interpretation restricted to on-going events, since the finer distinction of [±past] has not been acquired yet. Bare verbs,

on the other hand, are base-generated in VP inflected for [0Tense/0F]. Therefore, they will not raise to Tense in the syntax exactly as in Hebrew. [0Tense] is also interpretable at LF, but instead of being interpreted as anchored in time, i.e., finite, it is interpreted with an imperative force. Since Tense in both cases has semantic content, following Speas (1994), the TP projection is licensed and an overt subject need not raise to [Spec, TP] to license the position, hence the observation of null subjects at this age.

The child at this early stage seems to be executing both finite options - [+F] and [0F]. At this early stage, s/he has two distinct and crucially unique form-function pairs: the -*ing*-finite pair and *0*-non-finite pair. The following structure represents the syntactic (surface) position of each form:

20.



Once the child starts acquiring other properties of TP, s/he will realize that English finite clauses are only [+F], and do

not have the option of being [0F] as in Hebrew. This might be triggered by the observation that matrix *-ing* forms are always accompanied by a copula, and that a copula, or for that matter other verbs, always carry a [±past] distinction in finite, i.e., CP, clauses. The *-ing* forms will cease to be treated as finite, and an AspectP projected below TP will be added and assume the structural position for checking *-ing*.[25] Bare forms will undergo very few changes, the major one concerns the realization that [0Tense] is not an option for root clauses in English. The non-finite forms will have to be reanalyzed as [-F] in embedded clause, or as lacking a Tense projection altogether (Stowell, 1981).

To conclude this section, we have presented data from a young English speaking child (Valian, 1991). We have shown that at MLU 1.53 she was producing mainly two verb forms, one inflected and one bare, both non-finite in adult terms. We have attempted to account for the distribution of the two verbal types based on the *Minimal Competence* model. We have suggested based on that model that the child might force a

---

[25] It is important to note that although the relative order between the early TP and CP has been fixed, it does not exclude the possibility that other functional phrases intervene. As long as the child adds categories and inserts them in their correct relative position in the structure, there is no reason to have a fixed order in the acquisition of functional categories, either across or within languages. Similar arguments are made by Roeper and Rohrbacher (1994), Radford (1994) and others. This contrasts with Rizzi's (1994b) view who claims that functional categories are acquired by their order of projection in the structure.

finite/non-finite interpretation on the verbs she used keeping a unique function-form pairing. Looking through her transcripts we found a clear distinction between *-ing* forms interpreted as finite and bare forms interpreted as non-finite.

4.3 Summary and Conclusions

The first goal of this chapter was to argue for a child initial structure that will be compatible with both the range of possible adult structures and the data from child language. The relation between adult and child structures was defined and derived via the proposal made by the *Minimal Competence* model.

The model has proposed an initial child structure endowed with all and only the functional elements specified in all possible languages. Thus, the initial structure the child brings to the task of language acquisition includes at least CP, TP, a finite/non-finite interpretation and the assignment of Case.

The adult and child structures differ in that the child has to acquire the functional categories which are not specified cross-linguistically. Similarly, s/he will have to acquire the remaining functional features that were not specified initially. The early finite/non-finite distinction

seems related initially to the description of on-going events and making requests, respectively, lacking the finer tense classification. Finally, the Case system seems operative, but again in a restricted manner applying only to those nominal elements the child has already acquired.

The parallelism between adult and child grammars enables us to account not only for the acquisition of the structure but also for other related phenomena, such as the possibility of null subjects in child grammars even in adult non-null-subject languages. Following the universal Economy principle proposed by Speas (1994), we were able to relate the functional categories TP and AgrP and the availability of null subjects in a similar way in adult and child grammars alike.

Chapter Five

Subject Use in Child Language

5.0 Introduction

A straightforward definition of the *Null-subject Parameter* states that languages are classified into languages which require obligatory subjects in certain contexts, and languages which do not require obligatory subjects in the same context. In Chapter 1, we have presented the current view arguing that parameterization is to be found in the lexicon, specifically in the functional category system. Thus, we have argued against the existence of a *Null-Subject Parameter per se*, and attempted to explain this property and other related properties, e.g., the possibility of subject-verb inversion, and so forth, from the setting of inflectional functional heads complying with a general Economy principle (Speas, 1994).

Nevertheless, it might still be the case that in order to apply the Economy principle correctly, specifically finding what functional categories are selected in the target language

and whether they have content, the child will have to look directly for evidence for subject use. Hyams (1983, 1986) seminal work, suggested accounting for the null-subject phenomenon via the specification of inflectional heads, in particular that of AG(reement). Nevertheless, the focus in the acquisition literature has been on the production and knowledge of overt and covert subjects, rather than on the conditions underlying the licensing and identification of null subjects. If the child's initial hypothesis is based on the obligatoriness versus optionality of subjects, the child can follow two possible routes in acquiring the final setting in the target language. First, her/his initial assumption *or* initial value can be set to either the null-subject option or the non-null-subject one. The initial value will either be reset to the correct value given appropriate triggers in the target language, or remain unchanged in the absence of evidence to the contrary (*Triggering* approach). Alternatively, children can have both values available to them and the appropriate value will be evaluated and set with incoming data (*Hypothesis Testing* approach).

The goal of this chapter is to assess the single and dual value approaches and see whether observing subjects directly can help the child set properly the functional categories in her/his language for a correct application of the Economy principle. It will be shown that given parser limitation and misleading input the child must be observing the behavior of

subjects in general and not one type or the other following a single value approach. Furthermore, it will be shown that the observation of subjects alone cannot guarantee that the child will conclude whether her/his language is null-subject or not. Since the Economy principle establishes a relation between specifiers and heads, children must be attuned to the content of both positions or at least to the content of the functional head since the observation of subjects, i.e., the specifier position is insufficient.

Finally, the view that missing subjects in early child grammars are necessarily derived solely from a grammatical setting will be challenged. It will be proposed that performance factors also contribute to the omission of subjects. The two approaches, the grammatical-based one and the performance approach, will be put to the test when we discuss cross-linguistic evidence from child language in chapters 7 and 8. In the final section, I will review some cross-linguistic studies investigating the production of subjects in child language. In chapter 8, I will discuss their findings and compare them with the findings from the Hebrew study (Chapters 6 and 7).

5.1 Applying the Economy Principle - Specifiers vs Heads

In previous chapters, we have motivated the relation between

formal features in functional categories and the requirement for overt and covert subjects. We have shown that one possible way of relating the two categories was via the application of an Economy principle (Speas, 1994), where the presence of an overt subject in [Spec, XP] depends on whether X^0 has content (semantic or phonetic). Consequently, the choice between obligatory overt subjects and covert subjects is not viewed as a parameterized option *per se*, but rather as a variation which results from complying with the Economy principle.

Although we argued against a null-subject parameter *per se*, a child acquiring the language might still benefit from observing whether or not the target language requires overt subjects. If her/his language requires overt subjects, the child will conclude that the functional head, whose Spec is filled with the subject, lacks content (semantic or phonetic). If subjects are not obligatory, the child will conclude that the corresponding functional head has content, allowing for the covert subject to remain in situ.[1] Alternatively, in observing the behavior of functional categories and inflectional morphology, the child will be able to conclude whether or not the target language licenses *pro*.

In this section, it will be shown that the observation of

---

[1] Similarly , if the child observes a subject in a non-emphatic inverted position, as in mixed languages, it will confirm the fact that the functional head in question has content (to which the verb has raised and adjoined). In this case the subject can remain in its VP-internal position and need not raise to the Spec of the functional category to license that projection.

overt and covert subjects alone cannot guarantee the correct application of the Economy principle. Although subject use can support the child's conclusion, s/he will still have to look at the morphology and behavior of functional categories in order to conclude whether her/his language is null-subject or not. This claim finding will be supported by the Hebrew data. It will be shown that where the morphology is unambiguous the child's production of subjects follows the adult pattern. But where morphology is ambiguous, children's production of subjects may vary (see Chapters 7 and 8).

In the remaining sections, I will present two main views attempting to account for children's early production of subjects. The grammatical approach debates the assumption that the child starts with either a single value or a dual-value setting. The Performance approach questions the child's omission of subjects in non-null-subject languages as a grammatical option.

5.1.1 Observing Subject Use - Single/Dual Value Approaches

The application of a *Parameter Setting* model to language acquisition implies that the overt/covert subject option is initially set to a single value specifying one option or the other. In the presence of relevant triggering input, the

initial value will be reset to the other subject-option value (the *Triggering* approach). The *Hypothesis Testing* approach also assumes a theoretical parameter model, yet it does not apply it to a theory of language acquisition. The hypothesis requires, by definition, that both parameter values are at the child's disposal. Under both models, input plays a crucial role in setting the correct value. In the former, it will either confirm the given value or force the child to reset it purely deductively.[2] In the latter, it will provide the proof to be weighed as to which of the two initial values must be set.

Advocators of the single value approach need to answer the question, what should be the initial value? In order to answer that question different factors must be taken into consideration. For sake of argument, we first assume the child to observe the behavior of subjects independently of any other facts. We further assume the data to be unambiguous, disregarding *The Logical Problem of Language Acquisition* (Hornstein and Lightfoot, 1981). Under those conditions non-null subjects languages (which allow in principle only obligatory subjects), form a subset of the null subject languages (which allow both overt and covert subjects). Given the *Subset Principle* (Berwick ,1985), the initial value is that of the subset language-types, i.e., non-null subjects.

---

[2] There is no obvious theoretical reason, however, why this approach cannot also be applied to a setting where all values are initially available.

Valian (1990) demonstrated that neither single value in itself can guarantee the child's acquisition of the phenomenon. This is due to parser limitation and to the fact that after all the data are not unambiguous and clean and can mislead the child if s/he has only one value to consider the input with.

The initial setting of [-null subjects] dictates that a grammatical sentence in the language fed by this grammar is one in which all tensed clauses have subjects. Thus, if the target language is of the null-subject type and the child hears a sentence without a subject, s/he will not be able to parse it as a sentence in her/his language. Hyams (1994) argues that parser constraints promote rather than block development. She argues that '... within parameter theory it is precisely the assumption of a failed parse under some parameter value that triggers the resetting to the other value'(ibid, p. 295). Valian (1990), however, argues that

> The child cannot appreciate that the incoming data contradict her initial value, because she only has the initial value with which to interpret her data. The child has *data*, but not *evidence*. Evidence is data under an interpretation. Only interpreted data confirm or disconfirm a principle. (ibid, p.109)

This will lead the child to discard the crucial input as ungrammatical instead of using it as positive evidence to switch to the correct parameter value in her/his language.

Moreover, Valian claims that as long as the child has to deal with misleading evidence (even if she is able to parse

it), s/he will not be able to differentiate between a grammatical setting that should trigger resetting, and an ungrammatical setting, which should be discarded. For example, in English, a non-null subject language, there are three types of subjectless sentences which appear quite regularly in the child's input (at least the last two): ungrammatical sentences lacking subjects, pragmatically-acceptable sentences, such as *wanna play?*, and imperatives, such as *play with your baby sister!*. Under the assumption that the child is observing only the presence versus absence of overt subjects and is making no ancillary assumptions in analyzing such sentences, s/he will take all three categories as positive evidence to wrongly switch to the null-subject value, instead of labeling them ungrammatical, grammatical under special conditions, or irrelevant (being non-tensed clauses), respectively.

One obvious solution is to start the child off with the assumption that subjects are optional instead of obligatory (as initially suggested in Hyams' (1983, 1986) seminal work). This will first circumvent the parser problem. The [+null-subject] setting states that all tensed sentences have structural subjects, yet their phonological realization is optional. Under such definition, all incoming sentences, in both language types, are properly parsable. This does not solve, however, the problem of misleading input. The three subjectless categories noted above in the English example will be parsed in accordance with the [+null-subject] setting and

confirm the wrong value. This is also part of the problem that has already been discussed, i.e., the subset problem. The only way to override the subset problem is to introduce external mechanisms.

Acknowledging the lack of negative evidence, a different kind of evidence was proposed to circumvent the subset problem. *Indirect negative evidence* (Chomsky, 1981; Lasnik, 1983) proposes that observing the absence of strings in the input, where they would have been expected were the child's grammar different, constitute additional evidence for the child's current grammatical option. Thus, when set to the initial null-subject option (disregarding misleading input for the time being), hearing both types of strings, i.e., including subjects in emphatic contexts and excluding them in non-emphatic contexts, will confirm that the target language is of the null-subject type; whereas, hearing only strings with subjects and provided with the indirect negative evidence of never hearing strings without subjects, will confirm the child's hypothesis that her/his target language is of the non-null-subject type.

This solution is problematic especially within the framework it is proposed. Evaluation is not part of the terminology of a deterministic deductive theory such as parameter setting. In order to appreciate what has not been said, the child should be able to evaluate what the incoming data have provided, as well as what they have not. Indirect

negative evidence can only be appreciated if we are willing to give up the *Triggering* approach for the *Hypothesis Testing* approach, and the single initial value for the dual or multi-value setting.

This is not without problems. Once we take into account misleading input, it will rule out the indirect negative evidence by providing positive counter-evidence for resetting the value to the incorrect one. Within the *Hypothesis Testing* approach providing the child with both values and with a procedure for evaluating the incoming data, will circumvent both the parser and misleading input problems. Within a *Triggering* approach, unless UG restricts the child's search space to exclude misleading input, s/he will not be able to reach the right conclusion with respect to subject use in her/his language.

Hyams (1986, 1987) has suggested restricting the child's search space to observe only expletives or referential pronouns in non-emphatic contexts. Her argument is based on the fact that expletives, such as *it* and *there*, do not exist in null subject languages, but are obligatory in non-thematic contexts in non-null subject languages. Similarly, referential pronouns are only used in null subject languages in emphatic contexts but are again obligatory in non-null subject languages in both emphatic and non-emphatic contexts.

Hyams proposes that this will solve the two problems raised above: First, as the child is not looking at subjects

in general but at expletives or referential pronouns in particular, the three subjectless categories will not play a role of misleading the child. Second, she also succeeds in eliminating the subset problem, by creating new set relations: Instead of having the languages nested within one another, they are now mutually exclusive, having both categories in question or neither. As a result, starting the child with any single value or both will guarantee the correct final setting. Following her suggestion, then, perceiving expletive pronouns in the data should inform the child that the target language s/he is exposed to is not null-subject but rather non-null-subject, and vice versa. The same argument holds for referential pronouns in non-emphatic contexts.

Hyams' (1986, 1987) proposal, however, does not take into consideration mixed languages. In languages, such as Hebrew, expletives seem to be optional (but see Chapter 3, footnote 3). Similar results are found with other mixed languages, such as Finnish, as reported by Vainikka and Levy (1995). They also claim that mixed null-subject languages use referential pronouns in both emphatic and non-emphatic contexts, so that looking at referential pronouns will not disambiguate the data either.

A different type of objection is found in Valian (1990). She argues that looking at a restricted set of subjects is problematic for the same reason that looking at subjects in general was. When set to the [-null subject] value the child's

parser is fed by a grammar which does not allow for expletives. As such, how would a child, whose target language is non-null-subject, appreciate the expletives in the input when her/his grammar can only analyze them as referential pronouns and never as expletives? Actually, this problem will not be solved if we start the child off with the other value. If the grammar is set to appreciate the difference between referential and non-referential arguments, how can a child be forced to perceive expletive constructions without subjects, and take those as positive evidence to reset the initial value, and not discard them as ungrammatical, or acceptable under pragmatic or discourse conditions?

When the parameter is defined so that the child either observes subjects, in general, or expletives or pronouns in non-emphatic context, in particular, the only possible way to circumvent the parser problem is if the child has access to all values initially. This will also allow the child to overcome the problem of misleading input:

> Parser failure will not work as a cue to grammar change because the child cannot [and should not] be shielded from misleading data - ..., because misleading data is informative, once the child has two analyses for them, which she can then evaluate. (Valian, 1993: p.201)

Hyams (1994) argues that Valian's model creates both a learnability problem and a computational problem: If the child has access to all values, s/he is actually entertaining more than one grammar, where it is not clear what the evidence

would be to reject one over the other. From a computational point of view, the child would have to start off with all the values of the entire set of parameters. S/he will have to memorize all different parses, compare them and analyze them, and the younger '...[the child is]...the more representations/grammars/parses...[s/he] must cope with' (ibid, p. 296).

Valian (1994) offers a solution to the computational problem. She suggests avoiding explosion of parses by limiting the child's parses to input sentences only. Within input, explosion can also be avoided if the child applies the two parameter values to a subset of the data, i.e., to those which are ambiguous. Thus, she introduces the term *evidence set* defined as follows: 'Each parameter defines an evidence set. Each value is associated with the structures whose presence or absence is directly entailed by the parameter...The evidence set tells the parser what to look for...' (ibid, p.281).[3]

---

[3] Kim's (1993) comments on Valian (1990) attempt to solve the problems raised above without giving up the single-value solution. He claims that there is no reason for the child to fall in the misleading input trap, if we ensure that parameters are listed with error-types, some of which induce a change and some not. For example, an imperative is of an error-type the child should ignore, as the parameter will be reset only based on tensed declarative sentences. Kim's *error-types* seem to be the complement set of Valian's *evidence set*. For parser failure, he does not seem to suggest a proposal different from Valian's after all. He suggests a single value setting but with access to all parameter values, so that unparsable input will be checked against the other values before it is labeled ungrammatical and discarded. Valian (1993) addresses several additional problems with his proposal to which the reader is referred.

The discussion and controversy between *Triggering* and *Hypothesis Testing* touch upon one of the main problems in parameter theory: defining the abstract parameter. Specifically to the null-subject discussion, the question is what the parameter is about, i.e., obligatory versus optional subjects, expletives, or maybe tensed clauses. The null-subject phenomenon has several related properties one of which might be the abstract parameter responsible for the other properties as well. Kim (1993) claimed that the null-subject parameter is but an arbitrary name and that "...it could have been named after any of the other effects that it purportedly induces (e.g., *the overt expletive parameter* [,following Hyams (1986)]...) ..." (Kim, 1993, p.188). As the effects should not be mistaken for the parameter, the "name" (to use Kim's terminology) we give this phenomenon is extremely important - not as a name *per se*, but as recognition of the true nature of the phenomenon. Choosing the "right" property, for example, expletives, inflection, subject-verb inversion and so forth, will present the child with the desired unambiguous input, or with the restricted enough input that will allow a quick efficient process of weighing and choosing between two parameter values. Failing to find the piece of datum that accounts for the acquisition of a parameter goes hand-in-hand with defining the parameter correctly.

In conclusion, both the syntactic accounts and the learnability analysis have demonstrated that it is very

unlikely that children can look at subjects in isolation and conclude whether their language is null subject or not. In addition, we have not been able to isolate a designated trigger due to cross-linguistic variation among null and non-null-subject languages. Thus, it seems that the child must look for evidence for a cluster of properties, one of which is the absence or presence of *pro*, rather than looking for a unique trigger.[4] Combined, these properties will guide the child in finding whether or not the functional projections in the target language have independent content, requiring an overt lexical subject or allowing *pro*. The former can be viewed as the true parameterized option, whereas the latter is only a property resulting from the necessity to comply with the universal Economy principle.

Having a set of properties to look for, the child can still choose different strategies for producing subjects. First, in order not to violate the Economy principle, the child might decide to be "on the safe" side by using subjects all the time. The cross-linguistic data reviewed in Chapters 7 and 8 will argue against this strategy. The second option will allow children not to produce subjects in their early utterances. If the *Minimal Competence* model presented in Chapter 4 is correct, then children's initial structure

---

[4] I am not rejecting completely the idea of a designated trigger in the input. It might be a plausible solution if we were able to define the abstract parameter correctly cross-linguistically.

consists of universal core categories, which have content in all languages and therefore are licensed by definition. Thus, they comply with the Economy principle without requiring the presence of an overt subject, hence the observation that early child grammars lack subjects.[5]

Once children observe that their language is one which exhibits agreeing forms, s/he will have to look for evidence for the strength of Agr and for the AgrPs selected in different structures. A regular system of affixation can inform the child about the properties of Agr in the target language. When the agreement system is less than clear or ambiguous, the child might temporize its acquisition, and different children might choose different routes to overcome the ambiguity or unclarity of the data.[6]

So far we have discussed children's production of subjects from a purely syntactic point of view. However, there might be other factors affecting the child's production of subjects. Even if the child knows that subjects are required by her/his grammar, s/he might be still producing less

---

[5] As already noted in Chapter 4, identification will probably proceed along the same lines argued for Asian languages, i.e., via discourse topic, binding a subject in Topic position (Hyams 1994; Sano and Hyams; 1994, Rizzi 1994b).

[6] We would expect children acquiring a language which exhibits no agreement features to continue using null subjects. If in time they come across evidence showing residual agreement, they might need to reanalyze the functional categories in their language and the use of subjects implied by the new setting.

subjects than required due to performance limitations, such as memory load, processing difficulties and so forth.

In the following section, I will review some of the arguments for and against the competence and performance approaches. The data discussed in Chapters 7 and 8 will provide evidence supporting a competence model affected by performance factors.

5.2 Competence vs Performance Factors in Early Subject Productions

The Competence Deficit approach and the Performance Deficit approach attempt to account for children's omission of grammatical elements. With respect to the null subject phenomenon, they try to explain why children acquiring even non-null-subject languages still omit subjects in their early production of sentences. Under the Competence Deficit approach, the low production of subjects is viewed as a syntactic phenomenon and a true grammatical option exercised by children even if their target language does not exhibit this syntactic option. In other words, children's initial structures allow them to use null subjects under syntactic conditions they will have to outgrow. Under the Performance Deficit approach children exhibit the correct syntactic option of their target language, however, it is masked in production

due to performance limitations.

5.2.1 Performance Accounts

Bloom (1990, 1993) and Valian (1991) argue for the Performance Deficit approach and against the view that children's early grammars, specifically English, exhibit the wrong grammatical option in their target language.

Bloom (1990) argued that the length of verb phrases varies as a function of subject use, and as a function of subject type. He showed that verb phrases were the shortest when a lexical subject was present, longer when a pronominal subject was present and the longest when no overt subject was present.[7] This is what we would expect '...if children were operating under performance limitations' (Valian, 1991:p.32).

---

[7] Hyams and Wexler (1993) discuss Bloom (1990) and argue against his method and results. To describe but one objection, his count was based on phonetic complexity arguing that on average lexical subjects are longer and hence more costly than a pronoun or a covert subject. If we look at the pronominal system in Hebrew, it is not clear why *ima* ('mother') should be more costly than *ani* ('I') or *anaxnu* ('we'). Moreover, if phonological complexity plays a role in processing along with words and morphemes, then the VPs Bloom has looked at should have been controlled in the same way for phonetic complexity and length separating, for example, *sharpened* from *fix* (ibid, Table 3: p.500). Hyams and Wexler (1993) tested five Italian adult speakers and found the same VP-length trends as a function of subject type. This demonstrates that even if the VP length varies in the above mentioned way, it cannot possibly be a processing problem if it is attested in adult speakers and especially when found in adult speakers of a null subject language.

In Valian's (1991) study, the lowest-MLU group (Group I) produced 69% of subjects as opposed to the comparable Italian group which produced only 30%. Even if we break Group I to two sub-groups excluding child MLU 1.53, as Valian suggests, this child still produces 55% subjects in verbal utterances. Moreover, in no group was there a stage in which a sudden change in subject use could be observed suggesting resetting from a null subject option to a non-null subject option. Valian concluded that '...despite their inconsistent usage, Group I understands that sentences require overt subjects' (ibid, p.76).[8] Similarly, the Italian children Valian (1991) reported understand that their language requires null subjects and produce subjects and pronouns accordingly. Interestingly, there is cross-linguistic evidence suggesting that in both language types, subject use gradually increases till it reaches the adult production means. Similar results were observed in my study of Hebrew speaking children (see Chapter 7). Since it cannot be explained via a common grammatical option, this common increase in subject use can only be explained through performance factors: Young children cannot

---

[8] Valian (1991) presented evidence not only from the production of null subjects but also from the use of other Infl related elements. According to Hyams' (1986) *pro*-drop theory, English speaking children start with the null subject option predicting the absence of Infl related elements. Valian showed that the acquisition of those elements occurred between Groups II and III in her study, whereas the increase in subject use occurred between Groups I and II. This demonstrated that Hyams' original prediction was not borne out and argued against her *pro*-drop hypothesis.

produce utterances beyond a certain length and therefore to reduce cost and processing loads, they omit certain elements in their utterances. Specifically, subjects are omitted for pragmatic reasons being "old" information, for phonetic reasons appearing in the unstressed utterance initial position (Gerken, 1991) and so forth.

To conclude, the fact that children acquiring a null-subject language produce subjects less often than children acquiring a non-null subject language suggests that children are operating on two different grammatical options. No abrupt change indicating the acquisition of a new syntactic option is observed, arguing against the hypothesis that children start off with the null-subject setting (Hyams, 1986). Finally, the gradual increase in subject use common to both null and non-null-subject languages suggests a common development across children. Since the increase in subject use cannot be accounted for by resorting to a grammatical change, it is best characterized by performance limitations across children disregarding the target language.

5.2.2 Competence Accounts

The grammatically-based accounts do not dismiss the Performance Deficit explanation as a supplement account for

it as the main explanation for the initial subject production in early utterances.

There seems to be a general agreement that children acquiring a null subject language operate with the correct grammatical option for their language. Similarly, the identification of referential *pro* proceeds as in the adult language.

The main controversy lies in the status of null subjects in non-null subject languages. Since this is not a grammatical option in the target language, it raises some questions with respect to the properties of the empty category and the position in which it is licensed and identified. The most straightforward and hence prevailing account is that children start off with the same *pro* element attested in null-subject languages (Hyams, 1983, 1986). Thus, it is licensed either in its base-generated position in [Spec, VP] or in [Spec, IP] to which it has raised. Identification in the absence of agreement features, at this early stage, is argued to proceed via a discourse topic provided by the context.

This view is also held by Roeper and Rohrbacher's (1994). Analyzing the production of *wh*-questions in Adam's transcripts (Brown, 1973; CHILDES database McWhinney and Snow, 1985), they argue that Adam's initial questions lack finite distinctions and agreement features, and hence lack TP and AgrP. The initial question then consists of a VP (licensed by the lexical verb), and a CP (licensed via the [+*wh*] feature in

Comp). Being both licensed projections, and the only projections attested in the child's structure, complying with Speas' (1994) Economy principle, an overt lexical subject is not required. They also argue that *pro* is identified by a discourse topic. They do not specify though the configuration in which this is possible. The problem is that in the structure of Adam's questions, the Topic position, i.e., [Spec, CP], is occupied by the raised *wh*-word, barring *pro* from raising to that position.

In Chapter 4, we have argued for a different structure following the *Minimal Competence* model. The model was able to achieve the same results without compromising the presence of TP and at the same time reduce the child's learnability task. I will continue to argue for that model rather than for Roeper and Rohrbacher's (1994) model.

The empty category argued for by Rizzi (1994a) is also licensed in [Spec, IP/AgrP], though he claims, it is not *pro*. The empty category, he termed *null constant*, is defined as <-anaphor, -pronominal, -variable>, rather than <anaphor, +pronominal,-variable>, defining *pro*. The *null constant* must be licensed in an A-position and identified by a c-commanding discourse-linked null operator, if such a configuration exits. If the *null constant* is located in [Spec, IP/AgrP] (the canonical A-position) where [Spec, CP] c-commands it, the latter must contain a discourse-linked operator in order to identify the *null constant*. Since English lacks such an

operator, the *null constant* will not be identified. If CP is missing, as Rizzi (1994a) claims for child English, there is no c-commanding specifier that must contain a null operator to identify the *null constant*. In the absence of the c-commanding configuration the *null constant* is attested in [Spec, IP].[9] Although Rizzi argues for the *null constant* to be licensed in [Spec, IP/AgrP], since he also argues this is the highest projection in child English, his analysis falls under the *Topic Drop* proposals, where identification of the empty category is concerned.

Following most *Topic Drop* accounts, *pro* is licensed not in [Spec, VP] or [Spec, IP], but in Topic position, i.e., [Spec, CP] (Hyams, 1994; Sano and Hyams, 1994). The basic idea behind Topic Drop and Diary Drop (Haegeman ,1990) is that clause initial subjects in matrix declaratives can be elided. In V2 languages, the V1 position can be filled by any topicalized element, which can be elided as well. This explains why we find object-drop in V2 languages, but we find an asymmetry between subject-drop and object-drop in a non-V2 language such as English (Bloom, 1990; Hyams and Wexler, 1993; Wang *et al.*, 1992).

Hyams (1994) argues that the empty category attested in child English is *pro* licensed in [Spec, CP]. Hyams claims that

---

[9] I will not pursue this view since we have argued for an initial CP in child language (see Chapter 4). The presence of early CPs is also supported by Adam's questions (Roeper and Rohrbacher, 1994).

the Null Argument Parameter defines all languages as licensing null subjects where the variations are restricted to identification. The parameter states that '*pro* is licensed under Spec-Head agreement in A/A'-position' (ibid, p.33). She argues that the default setting for licensing null subjects is in Spec-IP, the canonical A-position. When IP includes rich enough agreement, as in null-subject languages, *pro* will also be identified. Since Agr in Infl is not rich enough, identification of referential *pro* is barred in English. A second position in which *pro* can be licensed under the parameter is in [Spec, CP]. The [Spec, CP] position will become an A-position only if it is construed with a subject bearing an agreement index, which CP will inherent via transitivity (following Rizzi, 1991). Hyams claims this is the case of early *pro* in English. In this position, *pro* can be identified via a discourse topic as in the Asian null-subject languages.[10]

Furthermore, Hyams proposes that the unmarked parameter setting is the one in which *pro* is licensed and identified in a canonical A-position (as in null-subject languages). Since in child English referential *pro* can only be identified in [Spec, CP], i.e., a non-canonical A-position derived by movement, Hyams assumes this move is costly. This explains why

---

[10] Since objects do not agree in English, raising them to [Spec, CP] will not create an A-position. Thus, object *pros* cannot be identified, hence their exclusion and the subject/object drop asymmetry found in child English.

English speaking children use *pro* less than, for example, Italian speaking children. Secondly, since identification is carried out via discourse Topic (see also Jaeggli and Hyams, 1988; Sano and Hyams, 1994) the English speaking child will have to learn the conditions for topic identification in English and its restrictions to apply in sentences such as *wanna go?*. This will result in a gradual process of acquisition since the child has to learn the discourse conditions for English. Consequently, no abrupt change resulting from a parameter resetting will be observed. Thus, without resorting to a performance explanation, Hyams accounts for the findings in Valian (1991) - for the higher rates of subject use in non-null-subject languages as opposed to null-subject ones, and the gradual increase of subject use - and maintains a grammatical parameter-based explanation.

The main problem with Hyams' account is first the assumption that all languages are null-subject languages reducing variation to identification of *pro*. This would entail that all languages have expletive *pro* but differ with respect to referential *pro*. We have already shown in Chapter 3 that languages differ along both conditions. Furthermore, It is not clear what would motivate the English speaking child to raise the subject to [Spec, CP]. Finally, since the Italian speaking child is operating with the adult grammatical *pro* option, why should s/he show gradual increase in subject use as the English speaking child? Hyams predicts gradual increase in the

latter but not in the former, whereas Valian (1991) reports a common process for both early grammars.

To summarize, the Competence Deficit accounts attempt to provide an explanation for children's early production of subjects by claiming children do not initially understand the grammatical constraints the target language is subject to. There seems to be a general agreement that null subjects produced by children acquiring null-subject languages are instances of *pro* licensed and identified as in the adult language. The controversy lies within the production of subjects in non-null subject languages. Once more, there seems to be agreement that the identification in such cases is based on discourse topic. Accounts differ with respects to the licensing condition. Rizzi (1994a) argues for a null constant rather than *pro* licensed in [Spec, IP/AgrP] when the c-commanding CP contains a discourse-linked operator or when CP is missing altogether. The former accounts for child grammar in V2 languages, whereas the latter accounts for child English. Hyams (1994) requires *pro* to raise to [Spec, CP], rendering the A'-position into an A-position, in which it can be licensed and identified by a discourse topic. Roeper and Rohrbacher (1994) argue that this position is occupied by the *wh*-word in Adam's production of questions so that *pro* is licensed in its base-generated position in [Spec, VP].

An additional argument against the proposals reviewed in this section is that the assumptions they make to do not

coincide with the *Minimal Competence* model for which we have argued in Chapter 4. Nor do they explain the increase of subject use across language types and across children. I will return to both issues in Chapter 8 where these proposals will be put to the test of cross-linguistic evidence. In the final section, evidence for early subject productions will be reviewed from languages that exhibit different properties with respect to subject use.

5.3 Cross-linguistic Evidence for Early Subject Productions

5.3.1 Early Child English

Valian (1991) set out to investigate subject use in a comparable study of American and Italian children (the latter will be reviewed in section 5.3.2). Valian's sample consisted of 21 American English speaking children (12 girls and 9 boys). They ranged in age from 1;10 to 2;8, and in MLU from 1.53 to 4.38, and were divided into four groups. Group I ranged from MLU 1.53 to 1.99; Group II from MLU 2.24 to 2.76; Group III from MLU 3,07 to 3.72; and Group IV from MLU 4.12 to 4.38.

Valian reported the biggest change in subject use between Groups I and II, whereas other related changes were found mainly between Groups II and III. We will concentrate, therefore, on Group I. She reported a mean percentage of 69%

(s.d. = 12) subject use in Group I. The percentage of subject use increased to 89% (s.d. = 4) in Group II (with slightly more increase in the other two Groups). The comparable percentages for parental use is 96% (s.d. = 4) for Group I, 98% (s.d. < 2) for the remaining Groups.

Roeper and Rohrbacher (1994) have looked at the Brown (1973) corpus (CHILDES database, McWhinney and Snow, 1985) and specifically on files from Adam. They focused on the production of *wh*-questions and negative declarative in Adams first 18 files; in file 01 Adam was 2;3 and 2;11 in the last file they have looked at. Their findings show a 67% production of subjects in *wh*-sentences. This finding is similar to Valian's (1991) overall data for Group I in her sample, but is much lower than the almost 100% subject rate she reports for *wh*-questions.

Roeper and Rohrbacher claim that their findings are misleading since if the *wh*-questions are divided into finite and non-finite clauses, the results come out differently. Their finite count was based on subject-verb agreement (e.g. the use of 3rd person singular *-s* in the present tense). Specifically, they counted a *wh*-question finite if it '...contained a (finite) auxiliary (have or be), modal (can, must, etc.) or expletive (do) and as non-finite if ...[it]... did not contain such an element' (ibid, p.11: fn.13).

Subject use under this division shows a sensitivity to finiteness. In finite *wh*-questions, which are crucially not

productive in the first 10 files,[11] subject use goes up to 95%. In contrast, in non-finite clauses, subjects are used only in 48% of the *wh*-questions. Finally, once finiteness starts being productive around files 10 and 11, a drop in null subjects can be observed. Roeper and Rohrbacher (1994) conclude that 'null subjects are restricted to non-finite (non-agreeing) clauses and vanish from the latter once finite (agreeing) clauses begin to take over' (ibid, p. 15).[12]

These findings support the *Minimal Competence* model I have proposed in Chapter 4, and the claims I make therein for both child Hebrew and child English (for a discussion of these findings see Chapter 8).

5.3.2 Early Child Italian

Valian (1991) has compared the data she has collected from the American children with data from Italian children. There were 5 children in the Italian corpora. They were audiotaped in 11 15-30 minutes sessions beginning at age 1;6 or 1;7. The sessions took place once a month except in the two-months

---

[11] It would be interesting to see whether those files can still show sensitivity to finiteness in *wh*-questions if finiteness is defined as I proposed for child MLUW 1.53 (Valian, 1991) in Chapter 4.

[12] it would be interesting to find out whether the same finiteness sensitivity is found in affirmative declarative sentences as well.

summer break. Since the transcripts were relatively short, the data were pooled together and divided into Time I and Time II. In Time I the children were about 1;6 to 1;10, whereas in Time II they were 2;0 to 2;5. Compared with the American children in the first two groups, the Italian children were younger than the children in Valian's (1991) Group I, but slightly older in Time II. At Time II, they were slightly younger than the children in Valian's Group II.

Focusing on utterances with verbs, Valian reported that 'from Time I to Time II the overall proportion of subject use stays constant at about .30 (average s.d. = .08), less than half the average usage of Group I Americans [and slightly more than half the use reported in the youngest-MLU child]' (ibid, p.46). An internal division shows that at Time I most of the subjects (21%, s.d. = 4) are post-verbal, whereas in Time II the production of pre-verbal subjects has almost doubled, from 9% (s.d. = 6) to 15% (s.d. = 5).

In Chapter 8, these findings will be analyzed in light of Speas' (1994) Economy principle, and the account provided for child Hebrew.

5.3.3 Early Child Portuguese

A similar study of early subject productions was set out to test the production of Portuguese speaking children (Valian,

and Eisenberg (1995). In this study, 20 children (7 girls and 13 boys) were audiotaped in natural conversation and play in one session. The children ranged in age from 2;0 to 2;10, and in MLUW from 1.58 to 4.75.

For comparative purposes, we will concentrate on verbal utterances. Verbal utterances used in the analysis consisted of matrix clauses, embedded clauses, and *wh*-questions, since there was no apparent difference in using subjects with any of the three clause types.

The 20 children were divided into three groups. Group I consisted of 7 children ranging in MLUW from 1.58 to 1.93. Group II consisted of 10 children ranging in MLUW from 2.06 to 2.94. Finally, Group III consisted of the remaining 3 children ranging in MLUW from 3.35 to 4.75. This last group was reported to be adult-like in its production of verbs and subjects.

The results obtained for Group I are 28% (s.d. = 20) subject use in verbal clauses. This mean increased to 38% (s.d. = 17) in Group II, and 57% (s.d. = 22) in Group III. The comparable adult usage was 56% (s.d. = 6) subjects, demonstrating the adult-like production of Group III.

To be able to appreciate those findings we need to look at the Portuguese facts which are unique in the null-subject traditional typology. Following Valian *et al.* (1995), we will concentrate on Brazilian Portuguese (henceforth, BP). Contrasting with null subject languages such as Italian or

Spanish, BP does not have a paradigm which uniquely identifies all persons. The 1st person singular is unique and distinct from all other person/number combinations. In the plural, there are two 1st person forms, one which is unique across all person/number combinations and is used when a null subject is used, and a second form which takes the same verbal form as the 2nd and 3rd person singular. Hence, 2nd and 3rd persons differ in number, i.e., singular forms are different from plural forms, but they do not differ in person, i.e., 2nd and 3rd persons (within each number) share the same verb endings.

In Chapter 8, an explanation analysis based on the Hebrew data and the proposals made so far will be suggested.

5.3.4 Early Child Korean

In the null subject typology, Korean lacks ϕ-features and is considered a null subject language of the Discourse Topic type (see Huang, 1989; and the discussion in Chapter 3). Kim (in press) argues that Korean serves a counterexample to Jaeggli and Safir's (1989) *Morphological Uniformity* principle. Its verbal paradigm is "mixed" so that one and the same paradigm exhibits both derived verbs of the form stem+affix, alongside non-derived verbs of the form stem+0.[13] Adults are reported

[13] In Chapter 3, we have already noted that morphological uniformity needs to be modified and based on agreement affixation rather than general affixation. Speas' (1994)

to use subjects between 35% - 45% when talking to children, and at a lower rate of 31% when speaking to other adults.

Kim (in press) has looked at the production of null subjects in three children studied longitudinally. The children were audiotaped in natural conversation and play. P was studied between the ages 1;7 and 3;3 in 60 to 90 min. sessions every two weeks. C was studied from the age of 1;10 till 3;5 in 60 min. sessions every two weeks. J was studied between the ages 2;0 to 2;11 in 30 min. sessions every week. In order to compare these data with those reported in the literature, we will concentrate on the production of subjects in verbal clauses.

Kim suggests that Korean children start producing sentences consisting of predicates only, i.e., with 0 production of subjects. This finding is seen in P's early data at the ages of 1;7 and 1;8. Subject proportions increase as a function of age in two of the three children - J seems to have reached the adult stage in subject use when studied. P's subject use in the final session at the age of 2;6 was 39%. Since she already produced 39% subjects at the age of 1;10, the remaining sessions till age 2;6 vary in subject use ranging between 22% and 50%. C starts off with 15% which increases to 36% by the age of 2;6. Subject use in the

---

revised *Morphological Uniformity Hypothesis* suggests to restricting the definition of derived and non-derived forms depending on the features exhibited in the language. Thus, since Korean lacks agreement altogether, there is no question of it being derived or not.

sessions in between vary and range between 13% and 53%. Finally, J starts off with 42% subject use at the age of 2;0, which stabilizes at 39% by the age of 2;4. At the age of 2;1, we find production of 53% as well. Thus, all three children have acquired the adult pattern of 35% - 45% subject use around the age of 2;0.

5.4 Summary

This chapter closed the theoretical part which investigated the functional categories and their relation to null subjects in both adult and child grammars.

Following Speas (1994), we have argued for the emergence of overt subjects in cases where the functional heads are empty in the syntax. The relation between the specifier and its head raised a question with respect to the input the child must be aware of. Specifically, we asked whether the child could pay attention solely to the presence or absence of subjects in order to conclude whether her/his language is null-subject or not.

The cross-linguistic variation among both types of languages together with other factors, such as parser limitation and misleading input, led us to conclude that the child cannot observe subjects alone in order to guarantee the correct application of the Economy principle. The child must

either independently consider the content of functional heads, observing overt morphology and so forth, or be attuned in addition to subject use.

In part III, data from Hebrew speaking children will be presented (Chapters 6 and 7) to shed some light on the choices and strategies child follow to acquire the setting of functional categories and their formal features, and with them the use of subjects. In Chapter 8, the cross-linguistic evidence reviewed in this chapter and the findings from my Hebrew study will be discussed in light of the earlier proposals.

Chapter Six

Method

6.1 Children

Data were collected from 23 children (10 boys and 13 girls), using a cassette tape recorder. Four tapes were discarded for the following reasons: for two of those children (1 girl and 1 boy) one session was taped but the second session was being postponed over and over by the parents, exceeding our requirement of no more than 5 days between sessions. An attempt to tape a new first session was faced with the same problem. For the third child (1 girl) two sessions were taped, however, due to her shyness, the content of the tape was both unclear (mainly whispers) and insufficient (mostly the mother and experimenter's attempts to get her to talk). For the last child (1 girl), two sessions were taped, however, we found out later that the child has spent her first two years in the USA and even had some scattered English words in her vocabulary; an experience which might have also affected her syntax, rendering her not completely monolingual.

Thus, our final data pool includes 19 monolingual Hebrew-speaking children, ranging in age from 1;10 to 2;7, with an average age of 2;2 (s.d. = ;3). Sixteen of those children were recruited from seven kindergartens and three from friends of the author. Seventeen children live in the same city and thus go to kindergartens in the same area; parents' socio-economic status ranges from working class to upper middle class.

6.2 Procedures

In order to select the children and allow them to get fully acquainted with the observer (IE), the children were seen in their kindergartens on alternate days two weeks prior to taping. During that time, the observer actively participated in their daily activity (from playing in the yard, to reading books, to helping with their meals). Once a comfortable relationship was established, two audiotaped sessions were held no more than five days apart.

The first session was half an hour. The child was engaged in natural conversation and play with one parent (usually the mother) or both parents. This session was held to get the child comfortable in an individual session and taping. The first sessions also provide parental input for later investigation of its relationship and effects on child speech.

In this session, my participation was mostly passive. I

played the role of observer, unless referred to by parent or child. This gave me the opportunity to mark down clarifying context notes, especially with regard to syntactic subjects which were referred to by pointing or by other body language cues.

The second session was 1 hour. The child was engaged in conversation and play with the observer (IE). Parents were not required to sit in this session. Most of these sessions took place in the kindergartens, unless it was necessary to hold the session in the child's home (due to weather conditions which prevented the session from being held in the kindergarten). Twelve (second) sessions were held in the kindergartens, and seven at home. In the latter, the parents either played a passive role in the session or were absent altogether. Ideally, conditions in the two sessions would have been identical, but parental schedules prevented that procedure. Since the children were very familiar with the observer by the time of the second taping session, no distortions in the child's speech were expected.

6.3 Materials

In order to maximize child participation, the children were told to pick out whatever game, toy or book they wanted to play with or read. In cases where their choice elicited only

restricted or no conversation, we looked together for something different to do. As all the kindergartens I worked with were supervised by the Israeli Ministry of Education, the creativity and variation of the teachers ranged within a dictated curriculum and materials, so that most materials, i.e., books, toys, games and so forth, used in both sessions across children, were either the same or similar, minimizing material diversity across children.

6.4 Transcriptions

Each 1 1/2 hours of speech was transcribed by the observer (IE) and checked by another listener. When discrepancies appeared between the two, they were resolved by a third listener. A few months later the transcriptions were rechecked one last time by the author.

As the tapes were in Hebrew, Roman characters were used for the transcriptions. The result was a transcription special for Hebrew, marking some phonetic distinctions. In particular, "@" was used for schwa sounds; "c" for /ts/ sounds; "x" for the glottal fricative sounds; and "'" was used to mark vowel separation as opposed to diphthongs. For example, the vowels "ai" of the verb *ra'iti* (saw-1st-sg), are not pronounced as the diphthongs in words such as *five* or *page*, but as two separate vowels, marking three syllables rather than two:

"ra", with a vowel as in *cup*; *"i"* pronounced in terms of length longer than the lax vowel in *sit*, but shorter than the tensed vowel in *see*; *"ti"*, pronounced with the same vowel as in the previous syllable. Phonological particularities of children's pronunciation were transcribed only in verb inflection and other functional elements. When not crucial for our discussion, for example, if the child said *mitiya* instead of *mitriya* (umbrella), the word was transcribed in its correct form.

Unintelligible utterances in whole or in part were marked (unin), or by a dash(es) in parentheses standing for an unintelligible syllable(s). A star, "*", was used to mark an unintelligible consonantal verbal root, where the rest of the root and crucially its inflection were intelligible. Doubtful utterances in whole or in part were also put in parentheses.

Finally, a tilde, "~", was used to mark vowel liaison, where it had an ambiguous interpretation between inflectional forms. For example, in *ani~(i)cayer* (I~will-draw), the liaison and assimilation obscure the true inflection of the verb. As a result, *ani ecayer* (or *acayer*) (I 1st+sg-will-draw) sounds more like *ani yecayer* (I 3rd+sg-will-draw). The latter is actually used in colloquial Hebrew, and is becoming more and more the acceptable form marking the disappearance of [person] distinctions in the future tense.

On site clarifying notes, including the general surroundings, important actions, body language cues, objects

of attention, and descriptions of games played, were added in square brackets (following MacWhinney and Snow, 1985).

6.5 MLU Calculations

As Hebrew is a semitic morphologically rich language, it is not readily translatable into Brown's (1973) procedures of morpheme calculations. For example, *I worked* would be calculated as having 3 morphemes, *i.e.* I+work+ed. However, its Hebrew counterpart *ani avad-ti* encodes more morphological information: The consonantal root tier *?.v.d.* is combined with the vocalic tier *a-a* which encodes the past tense and the verb class, and the suffix *ti* which encodes agreement information, i.e., 1st person and singular. If each distinction were included and counted separately, the sentence would be calculated as having six morphemes. When gender is distinctive, as in the 2nd and 3rd persons, seven morphemes would be calculated, as opposed to the three in English.

Lee's (1974) *Developmental Sentence Scoring*, based on her *Developmental Sentence Analysis*, is as problematic as Brown's (1973). This is due to the fact that both procedures were originally based on English which is a minimally inflected language. Lee's (1974) sentence scoring is based on the following categories: Noun modifiers, pronouns, main verbs, secondary verbs, negatives, conjunctions, interrogative

reversals, *wh*-questions and sentence points.

The first two categories can be directly applied to Hebrew. However, the verbal categories are based on an impoverished morphological system, so for example past *ed* in English counts as 2 points, but as we have seen above, a verb in the past tense in Hebrew includes agreement morphology as well, which is not taken into account in Lee's scoring. Moreover, her system is based on the English tense and aspect system, so that secondary verbs are also calculated given usage of present and past participle. In contrast, Modern Hebrew does not have an aspectual system but rather uses a tense system and verb classes typical in Semitic languages. Lee's negative and conjunction scoring can be applied, though only if modified, since she emphasizes contractions, which are derived not only by a morphological process but by a phonological process particular to English. *Wh*-question scoring can be applied if the particulars of *wh*-question contructions in English are ignored. For example, interrogative inversion cannot be applied to Hebrew, since Hebrew uses mainly intonation for marking questions or adds interrogative words and markers without subject-verb inversion.

Finally, a sentence point marks the grammaticality of a sentence, including correct word order, especially in adverb placement. If children apply the same initial mechanisms and derive the *yes-no* question *'You want to get spanked?'*(ibid,

p.164) in both languages, they will be scored differently compared with the adult language. In Hebrew, they will be scored with 1 sentence point, marking the grammaticality of the sentence. In English, however, they will receive 0 sentence points, since such sentences were considered ungrammatical by Lee.[1] A similar problem is found with adverb placement. Children in both language-types could be placing adverbs in the same position,[2] but as word order in Hebrew is relatively free, most adverb placements are grammatical and will be scored as such, as opposed to their ungrammaticality in English. Thus, children whose level of proficiency is similar and should be scored similarly, will end up being scored differently. The English speaking child will be marked down compared with the Hebrew speaking child, not because their knowledge differs but because their target languages, with which they are compared, differ morphologically and syntactically.

According to Berman (p.c. 1991), root and verb class are neither distinctive nor productive until the age of 3 and can therefore be counted as one. She suggests a different

---

[1] Note that the ungrammaticality of *yes-no* questions using intonation is controversial since some English speakers find them grammatical (Virginia Valian, p.c.).

[2] This is only if we accept Pollock's (1989) proposal for a base-generated Adverb position by which relative verb placement can be fixed and observed. If we follow other proposals (e.g. Iatridou, 1990), different adverb types are placed in different positions in the sentence marking different scopes.

measuring procedure, *Semi-Automatic Coding*, which involves 10 different categories encoding both syntactic and morphological information, or using age as an independent ranking mechanism.

In order to avoid an inflation of morphemes, which would make the comparison with English impossible, and to avoid crediting the child with distinctions s/he may not be making, and as my data were not longitudinal, I calculated *Mean Length of Utterance* in words (henceforth, MLUW). In the spirit of Brown's (1973: p.54) rules, I made some adaptations, where there was observable variation of omission and inclusion of morphemes across children. In the following subsections, I will present the different categories used in the MLUW count and include examples from my data. Each example will be referred by the child's initials, age, session and number of utterance. For example, BL23(1:116) stands for the child's initials (BL), her age (2;3 - 2 years and 3 months) and in parentheses the session (1st or 2nd), and the utterance number (counting only the child's) in that session (116).

6.5.1 *To*-Infinitives

The use of bare infinitives by the younger MLUW children disappears as MLUW increases. Thus, we first find utterances such as (1a), and later proper use of the infinitive particle as in (1b):

1.a. ani roca-axzik. (3 words)
I want(fm-sg) hold(bare)
'I want to hold' BL23(1:116), MLUW 2.11

b. an' roca li-rot et ze. (6 words)
I want(fm-sg) to-see acc this BL23(1:361)

Consequently, I assumed that the *to-infinitive* construction could not be learned as a single morpheme/word but rather as a derived form. Therefore, it was calculated as 2 words, so that utterance (1a) counted as 3 words, whereas utterance (1b) as 6 words.

6.5.2 Definite Article

The definite article was calculated as a separate word so that *ha-tapuax* ('the-apple') was counted as two words.

6.5.3 Prepositions

Prepositions in Hebrew are either bound or free, and as such were consistently treated as a separate word:

2.a. be-simla aduma... (3 words)
in-red dress...

'In a red dress...'

b. al gag adom... (3 words)

on roof red...

'On a red roof...'

When the utterance is indefinite, the preposition directly precedes the noun, as in (2a) and (2b). In definite utterances, the preposition precedes the definite article which cliticizes onto the noun (3a). The definite article was then added to the word count. When the preposition is bound, it still precedes the definite article, *'be+ha-simla ha-aduma...'* (in+the-red the-dress). However, the preposition and definite article cliticize (or contract) onto each other forming the combination *'ba'* instead of *'be+ha'*. The count was done by analogy to the occurrences of free prepositions, so that (3a) and (3b) consist of the same number of words, irrespective of the type of preposition:

3.a. al ha-gag... (3 words)

on the-roof

b. ba-bayit (=be+ha-bayit)... (3 words)

in+the-house...

6.5.4 Accusative Marker

The accusative marker *'et'* in Hebrew was tabulated as one word. However, as it always precedes definite DPs, e.g. *et ha-bayit* (acc the-house) it can be contracted to a cliticized form *'ta-bayit* (acc+the-house). In those cases it is not clear whether the children learn the contracted form as one morpheme or as a derived form that was contracted. Thus, I calculated *''ta'* as one word as opposed to *'et ha-...'* as two words.

Apart from the morpheme-to-word translation, all other considerations of MLU calculations followed Brown (1973). MLUW was calculated for each session; the average between the two MLUWs was used as means of comparison and for ordering the children in all tables.

6.6 Utterances Used in Analyses

6.6.1 Discards

There were four classes of child utterances that were initially removed from the analyses. The first class consisted of utterances unintelligible in whole or in part, interrupted utterances, and hesitations (all of which were also excluded from the MLUW calculations). The second class consisted of single word/expression assents or dissents. The third class

consisted of imitations,

> ...confined ... only to overt, immediate repetitions [following the adult utterance, where the adult production was not in itself an imitation of the child's previous utterance. Excluding] imitations in which there were changes... including exact repetitions...echoes of the final few words in sentences, and repetitions with changes in word order. (Ervin-Tripp, 1973:189) [the square brackets are my addition]

Finally, the class of routines, including expressions such as *ma shlomxa?* ('how are you'), verbal games, songs and so forth, which were repeated with no variation from one use to the other, were discarded.

The column labeled *discards* in Table 6-1 combines all four classes described above, and presents the number of utterances classified as such per child.

6.6.2 Usable Utterances

The class of usable utterances was further divided by tense, though, some subclasses were not used in the calculations. Those subclasses appear in Table 6-1 labeled *Other*, *Indeterminate*, *[-verb] present tense*, and *acceptable*. In the following, I will describe each class and explain why it was removed from the final analysis. Once removed we are left with the class of usable utterances used in the analysis and divided by tense.

6.6.2.1 The Class of "Other" Utterances

Existential Sentences. Those sentences are construed in Hebrew present tense using *yesh* ('there is') and *en* ('there isn't'), and the verb 'be' in the past and future tenses. As the semantic subject in this construction, whether verbal (in the past and future tenses) or non-verbal (in the present tense), follows rather than precedes the verb/form, existential sentences were counted separately.

4.a. yesh kan harbe cva'im.
there-are here many colors
CL22(2:191), MLUW 2.84

b. en lax agilim.
there-are-not to+cl(fm-sg) earrings
'You don't have earrings' CL22(2:403)

Similarly, we counted separately the present tense construction *hine + DP* (here (is) DP), which is interpreted as a combination of an existential and a locative. In the past and future tenses, this construction is construed as a regular existential sentence using 'be' plus a locative adverb. For example,

5.a. hine cfarde'a.
here frog

'There is a frog here/This is a frog, here'

CL22(2:193), MLUW 2.84

b. hayta/tihiye po cfarde'a.
was(3-sg-fm)/will-be(3-sg-fm) here frog.
'There was/will be a frog here'.

Expletives, Imperatives and Infinitives. Since these categories either require an empty element which is not *pro*, or require *pro* licensed or identified under different conditions than those used for referential *pro* in root clauses, utterances containing Expletives, Imperatives and Infinitives were not included in the analysis.

Embedded Clauses. Two types of embedded clauses were counted. The first was sentential complements or adjuncts introduced by a complementizer, such as *she* (that), *kshe* (when), *ki* (because), *im* (if), whether embedded in the child's own matrix clause or uttered in response to the adult matrix clause:

6.a. *mexasa she lo iye [=yihiye] lo kar.[3]
cover(pr-fm-sg) that not will-be(ms-sg) to+him cold
'I am covering him so that he won't be cold'

AG2(2:249), MLUW 2.09

b. ki hu- hu mixayex [=mexayex].

---

[3] Note that the matrix clause is ungrammatical lacking a subject but the embedded clause is grammatical in itself.

because he- he smile(pr-ms-sg)

'Because he is smiling' AG23(2:423)

The second type of embedded clause was sentential complements lacking an overt complementizer, as demonstrated in (7a), where (7b) is its correct counterpart:[4]

7.a. roca ani~ishmor lax ota?

want(fm-sg) I~will-keep+an+eye to+cl(fm-sg) her

'Do you want me to keep an eye on her for you?'

DS22(2:556), MLUW 2.45

b. roca SHE ani~ishmor lax ota?

want(fm-sg) that I~will-keep+an+eye to+you her

'Do you want that I keep an eye on her for you?'

All embedded clauses were counted separately and divided in exactly the same way as matrix clauses, in order to enable us to compare the acquisition of the tense system and the null subject phenomenon on both levels. The very low production of embedded clauses did not allow us to make a meaningful analysis of these data. The findings across children are presented in Tables 1-D, 2-D, and 3-D in the Appendix.

---

[4] ECM constructions are not possible in *believe*-like contexts in Hebrew.

6.6.2.2 The Class of Indeterminate Utterances

This class was divided to two sub-classes, [-verb] indeterminate and [+verb] indeterminate.

Indeterminate Non-Verb Utterances. This category consisted of usable utterances whose category and category level could not be determined. Such elements could be zero level categories, or X^{max} playing the role of either an IP, a complement or a subject (see explanation in *Present Tense* below). Moreover, as we excluded subject *wh*-questions in verbal categories, we also excluded them in verbless predicates as in *mi ze?* ('who this?' = 'who is this?'). Finally, utterances of the form "where NP?" which are colloquial present tense existentials where included in this category, as opposed to their counterparts "where DP?", i.e., "where is DP?", which are clear present tense verbless IPs.

Indeterminate Verb Utterances. This category included utterances whose verbs could not be classified for a variety of reasons. First, the younger MLUW children tended to produce some verbs omitting the initial syllable which carried inflectional information regarding the tense of that verb. For example, *sim* (put), could be the grammatical imperative form, or the stem of the colloquial imperative *tasim*, of the infinitive *la-sim* (to-put), or of the future forms *asim, tasim, yasim, nasim* (will-put 1st+sg, 2nd+ms+sg,3rd+ms+sg, 1st+pl, respectively).

Second, some verbs were clearly tensed, but were produced in response to generic sentences lacking subjects. Since generic sentences do not require subjects, it is not clear whether the child's response omitting the subject was an elliptical VP answer, an imitation of the experimenter's omission in the generic utterance, or a production of a grammatical sentence based on her/his knowledge of generics.

8. Exp: hine yofi. asit levad. ve ma anaxnu
here great. did(2-fm-sg) alone. and what we
osim im mispara'im? ma osim?
do(prs-ms-pl) with scissors? what do(pr-ms-pl)?
'Great. you did it by yourself. And what do we do with scissors? what does one do?'
Child: gozrim.
cut(prs-ms-pl).
'one cuts/*(we) cut'. TR111(2:127), MLUW 1.87

Similarly, when replying to yes-no questions in tenses and persons where *pro* is grammatical, it is not clear whether the response is a sentence consisting of *pro*, or an elliptical answer consisting of the VP only. On the surface the two phrase types are indistinguishable.

9. Exp: ma asit?
what did(2-fm-sg)?

'What did you(2-fm-sg) do?'

Child: herbacti le Gad ve ipalti et Adiga'il
hit(past-1-sg) to Gad and tripped-over(1-sg) acc Adiga'il [=Aviga'il]
'I hit Gad and tripped over Aviga'il'

AA26(1:323), MLUW 2.24

Although the child's utterance is grammatical without the subject, being 1st person past tense, it is not clear whether she is applying that rule or responding to the Do-type question.

Thus any type of response where the child's knowledge of the true subject was questionable was removed. This also includes responses to subject *wh*-questions and subject relative clauses. Finally, sentences containing post-verbal subjects posed the same problem when their alleged subject did not agree with the verb (10a vs 10b). In these cases, the child might be analyzing the NP as a complement instead of a subject:

10.a. nafal alav even.
fell(**ms**-sg) on+him stone(**intrinsically fm**)

BL23(1:263), MLUW 2.11

b. nafla alav even
fell(**fm**-sg) on+him stone
'A stone fell on him'

Third, some verbs which were clearly marked for tense and had a subject were still unclassifiable as their specific tense was indistinguishable due to ambiguous inflection. As a result, they could not be classified under any given tense, and therefore were removed altogether:

11. sevivon istovev [=mistovev/yistovev...?].
top turn(ms-sg)[turns/will-turn...?]
NZ22(2:29), MLUW 2.13

6.6.2.3 Verbless Utterances in the Present Tense

Given the existence of verbless predicates in Hebrew present tense, this tense was divided into [-verb] and [+verb] predicates. Verbless predicates were further divided into two. One set of utterances contained a subject in addition to the verbless predicate; pronominal subjects and lexical subjects were counted separately. A second set contained verbless utterances without subjects, counting separately those which are "purely" ungrammatical without a subject, and those where the subject omission was pragmatically acceptable, as in (12).[5]

---

[5] Across all 19 children, there were 9 tokens of acceptable verbless predicates without subjects. Five of them were produced by GV, who produced the same type of utterance exemplified in (10) for all tokens. The low count is probably due to the fact that many verbless predicates without subjects

12. lo naxon.
    not true.
    'It/this is not true' GV23(2:233), MLUW 2.40

Moreover, the lack of copula in the Hebrew present tense as in *ima ba-bayit* (Mommy in+the-home = 'Mommy is at home') renders affirmative verbless predicates without a subject indistinguishable from non-sentential maximal phrases. In the examples above, the omission of the subject *ima*, leaves us with the PP *ba-bayit* ('at home'). As a result, the PP cannot be conclusively classified since it can function as an object, an adjunct, or as a predicate lacking a subject. The same argument can be made for all verbless predicates. Because of their intermediate status we could not assess possible omissions of subjects in verbless predicates. The data are presented in Tables 1-A and 1-B in the Appendix and in Table 6-1, but no attempt was made to analyze them.

6.6.2.4 Acceptable Utterances

Following Chomsky (1965), we distinguish two concepts, grammaticality, belonging to the study of competence, and acceptability, belonging to the study of performance. Chomsky

---

can be analyzed as DPs, APs, PPs, and so forth, and therefore were classified as uncountable utterances.

was primarily interested in those sentences which are fully grammatical but yet score differently on acceptability. For example, self-embedded constructions such as *'the man who the boy who the students recognized pointed out is a friend of mine'* (Chomsky, 1965: p.11) score the worst on unacceptability, but are fully grammatical. As pragmatics forms an integral part of the study of performance, what is equally interesting are those sentences which are ungrammatical but still acceptable, either due to direct context or to other general pragmatic principles.

Two sets of data are hence distinguished. One set consists of the "pure" utterances, either ungrammatical and unacceptable, or grammatical and acceptable. The other set consists of utterances that are ungrammatical but acceptable (there were no examples of grammatical unacceptable utterances). Acceptable utterances were, however, included in parallel tables, so that these data are presented in two versions (when relevant): Version A, consists of the "pure" data of the grammatical and ungrammatical sentences only (grammaticality was defined by the syntactic requirements presented in Chapters 2 and 3 and will be recapitulated below for each tense). Version B adds the acceptable sentences, where the conditions under which a sentence is acceptable differ, and no attempt was made to analyze them at this point. We can distinguish two types of acceptable utterances in the data.

Generally Acceptable Utterances. First, present tense utterances containing verbs such as *'want'*, *'can'*, *'know'* and so forth. When either questioned (13a) or negated (13b) those were acceptable without a subject despite its grammatical requirement in the present tense:

13.a. rocim she ani~avi et ha-sipur?
want(pl-ms) that I~bring(fu-1st-sg) acc the-story?
'Do you want me to bring the book (with the story)?' SA24(1:239), MLUW 2.51

b. lo roce.
not want(ms-sg)
'I don't want' YY22(1:107), MLUW 1.40

Those contrast with sentences, as in (14), which are ungrammatical and not acceptable (unless ellipsed, see explanation below):

14. *mesaperet le-pinuki.
tell(fm-sg) to-pinuki (name)
'She tells/is telling to Pinuki'
YY22(2:223), MLUW 1.40

The corresponding declarative affirmative sentences of (13a) and (13b) are low in acceptability, and as such they were counted as ungrammatical together with sentences such as (14).

Present tense generics in Modern Hebrew are also acceptable without a subject. In those cases the subject is the equivalent of *'on'* in French, or *'people/one'* in English, and the verb is inflected for plural and masculine agreement:

15. axshav osim kaze.
    now do(pl-ms) like-this-one(ms)
    'Now one does it like this one'
    GK22(1:321), MLUW 2.04

Acceptable past tense utterances differ from acceptable present tense utterances in the type of verb and type of verb pattern that is used. Most acceptable utterances were unaccusatives (16a-b), and some were in a passive verb pattern (16a):

16.a. nishbar le-aba
    broke/broken to-daddy
    'Daddy's (tape-recorder) broke/was broken' or
    '(the tape recorder) that was in Daddy's care
    broke/was broken'. DA25(1:49), MLUW 1.92
  b. nafal [referring to the toy we were playing with)
    fell DA25(2:321), MLUW 1.92

In all those cases, the subject is recoverable from context.

Two acceptable sentences in the past tense were generics,

as in example (17):

17. la-gan shel(i) natnu gam
to+the-kindergarten of(1st-sg) gave(3rd+pl) also
kise shel yom'ledet.
chair of birthday.
'Someone also gave a (ceremony) birthday-chair to my kindergarten' TR110(1:179), MLUW 1.87

None of the past tense acceptable utterances included verbs of the type reported for the present tense acceptable utterances. One unaccusative was found in the present tense, used by child MLUW 2.11, and only one generic was reported in the future tense by child MLUW 3.01.

Acceptable Utterances in Context (Elliptical DO or HAPPEN). Contrasting with the acceptability of the constructions above, which is due to general pragmatic principles, some utterances are acceptable due to DIRECT verbal context, i.e., in ellipsed contexts. For example, the child might respond to questions of the type *'what are you doing?'*, *'what did he do?'*, or *'what happened to him/you?'* and so forth, by using the verb in the correct form, but omitting the subject that was given in the question:

18. Expr: ...ve ma hu ose kan? kan hu poteax
and what he does here? here he opens

'ta-eynaim?

acc+the-eyes?

Child: soger et ha-eynaim.

closes acc the-eyes SA24(1:50), MLUW 2.51

In all those cases the subject of discussion has been established enabling the child to give an elliptical answer, omitting the subject. But it is hard to determine whether such utterances are IPs or VPs in Hebrew. In English the acceptability of an answer such as *'playing with the ball'*, as opposed to the unacceptability of 'am playing with the ball' leads us to assume that the acceptable answer is not an I' level category, i.e., a predicate which needs to be saturated by a subject (Rothstein, 1983, 1991), but rather a lower level category such as AspectP (see also Chapters 2-3) or a plain VP. A similar decision was made for Hebrew. As a result, those ellipsed utterances were not taken to be sentences missing a subject and were not included in versions A and B of the tables. Those utterances were, however, added to a third version of tables (Tables 1-C and 2-C in the Appendix) in order to receive a fuller picture of the child's usage and productivity. The data presented in these tables do not materially change any of the conclusions drawn below.

6.6.2.5 Summary of Usable Utterances Excluded

Four classes of intelligible utterances were removed and not included in the final analysis. Those are labeled "discards" in Table 6-1, and constitute 38% of all child utterances. Second, since the main goal was to study the use of subjects and the licensing and identification of null subjects, I have focused on tensed clauses, calculating separately matrix and embedded clauses. Any type of non-tensed utterances, as explained above, was excluded. They are labeled "other" in Table 6-1, and constitute 12% of the total child utterances. Third, any utterance that could not be unquestionably classified as a tensed IP, or where the tense type was unclear (since subject requirements differ across tenses in Hebrew) was excluded. Such categories were labeled "indeterminant" since given at least one element, be it their category, tense and so forth, they could not be classified unambiguously. They constitute 28% of the total of child utterances. Fourth, this lead to the exclusion of verbless predicate lacking a copula in Hebrew (constituting 7% of the total), and to the exclusion of acceptable sentences which are analyzable under a different set of conditions (constituting 1% of the total of child utterances). In the following section, I will present the data that were used in the analyses. These data constitute 14% of the total.

6.6.2.6 Utterances Used in Analysis

Present Tense. The present tense [+verb] utterances were divided into those containing subjects and those lacking subjects. A further division of both types of subjects was carried out based on person and number.[6] Since [person] is not distinctive in this tense, the count was based on subject use when a subject was present, or contextual discourse when the subject was missing. For the number count, inflectional morphology was used. This would enable us to compare all tenses, especially the past tense where person agreement *IS* distinctive. In terms of null subject use, the present tense licenses expletive *pro* but since it does not identify referential *pro*, referential subjects are obligatory in this tense.

Past Tense. In the past tense, predicates are always verbal. Thus, all past utterances were divided into two sets: Verbal utterances including subjects and verbal utterances lacking subjects. Both types of subjects were divided by person, because 1st & 2nd person null subjects, i.e., *pro*, are grammatical, but 3rd person *pros* are not. An overall null subject category would not be instructive when a tense-internal distinction is being made based on person. Third

---

[6] Given the frequent use of pronoun *'ze'* (this/it) in early child utterances, it was counted separately, though not analyzed separately, in addition to the pronominal count divided by person.

person contexts were further divided to separate lexical and pronominal subjects. All classifications were done on the basis of inflectional morphology in addition to subject use, where the latter was available.

Since 3rd person verbs are ungrammatical without a subject, it was again necessary to tabulate separately the acceptable utterances, which are included in the Version B tables in the Appendix (and in version C).

Future Tense. This category was divided as the past tense, with the same restriction of acceptability as opposed to grammaticality made on 3rd person subjectless utterances. However, as only child MLUW 3.01 produced acceptable utterances (one generic), which did not change the average of her group, Version B of the future tense is presented only for the first table and not repeated redundantly for all tables in this tense. Recall that in terms of null subject use we claimed that the distinctive person morphology is undergoing a process of change. Put together with the use of future forms as imperatives, requiring the use of subjects to distinguish the two functions, the future tense is becoming non-null subject.

Table 6-1, summarizes all the utterances that have been transcribed across 19 children. The children are presented in ascending order of MLUW. Each column is labeled according to the corresponding class of utterances described in the text.

The last column refers to the actual utterances used in the analysis and calculations to be presented in the last two chapters. Although many utterances had to be excluded as they did not provide scorable data (the actual frequency and percentages are presented in Table 6-1 and in section 6.6.2.5), all tenses (with the future tense to a lesser degree) provide a number of utterances that permit a meaningful analysis. In the last section, I will review the measures that were tabulated over these usable utterances.

Table 6-1. Summary of Utterance Classification and Use

	MLUW	AGE	Total	Discard	Other	Indet	[-verb] prst	acc	Final Utts.
	1.40	2;2	1399	484	92	633	49	7	134
	1.67	1;11	689	253	47	295	44	4	46
	1.70	1;11	789	248	115	212	74	13	127
	1.86	1;11	1199	404	58	336	141	4	256
	1.87	1;10	816	345	94	259	56	9	53
	1.92	2;5	1049	465	113	286	72	17	96
	2.04	2;2	1204	403	154	361	107	12	167
	2.09	2;3	1118	461	148	249	136	13	111
	2.11	2;3	897	382	119	239	56	24	77
	2.13	2;2	980	418	145	254	33	8	122
	2.24	1;10	1135	421	194	257	62	19	182
	2.24	2;4	792	261	107	268	27	9	120
	2.24	2;6	873	417	127	201	79	14	135
	2.40	2;3	1084	474	162	219	104	11	114
	2.45	2;2	865	244	143	266	74	3	135
	2.51	2;4	1135	433	92	314	55	22	219
	2.60	2;6	602	203	96	141	32	7	123
	2.84	2;2	1068	365	98	225	111	10	259
	3.01	2;7	1217	420	252	219	78	23	225
Grand n=19									
Mean	2.17	2;2	996	373	123	274	73	12	141
s.d.	.40	3	207	89	47	100	33	6	62
%			100	38	12	28	7	1	14

6.7 Measures

Since tense, and especially tense morphology, plays a crucial role in the acquisition of the null subject phenomenon, we tabulated each measure for each tense separately. As a result, the number of usable utterances for each measure was smaller once divided by tense and further by person. Therefore, we did not tabulate differences between person and number, as an additional division would have reduced the frequencies in each category to a number that would not have enabled us to make any meaningful tabulations or reach any meaningful conclusions.

The same measures were tabulated for grammatical and ungrammatical sentences (version A), for the acceptable utterances included (version B), for the elliptical-DO type utterances (version C), and for embedded clauses (version D).

6.7.1 Subject Use Across Tenses

Proportion of subject use was measured for each of the tenses separately. The denominator consisted of the verbal occurrences in that tense, excluding those whose lack of subject was defined as acceptable in version A and including them in version B. The numerator consisted of all subject occurrences in the tense. (see Tables 1-A, 1-B for the present

tense; 2-A, 2-B for the past tense; 3-A, 3-B for the future tense in the Appendix). In the present tense we also calculated proportion of subject use in [-verb] predicates. The denominator consisted of all [-verb] predicates (see Tables 1-A and 1-B in the Appendix). However, we have not analyzed those data, as explained above.

As the data from [-verb] predicates in the present tense were not informative, there was no point in measuring total subject use. Overall subject use could be tabulated over verbal predicates only, excluding [-verb] predicates. This would also serve as a means of comparison with other data reported in the literature. An overall tabulation would be instructive, for example in English, where the requirement for subject use is the same across tenses. In Hebrew, however, as each tense defines a different set of requirements with regard to subject use (see Chapters 2 and 3), an overall subject count in [+verb] predicates across tenses could not be interpreted.

6.7.2 Subject Use Divided by Person

Given the Extended Projection Principle (EPP) and predicate saturation, each [+verb] sentence contains a subject position to be filled (at matrix level) either lexically, or by a pronoun, or by *pro* (null-subject). However, as the conditions

for subject use not only differ among tenses but sometimes within a tense (see Chapter 3), it was important that we measure subject use as a function of person. Since the crucial distinction seems to be between 1st & 2nd person, on the one hand, and 3rd person, on the other, all utterances were divided to two contexts: 1st & 2nd context and 3rd context. For 1st and 2nd contexts, the denominators consisted of the number of verbs inflected for 1st or 2nd person, singular and plural. For 3rd context, the denominator consisted of the number of verbs inflected for 3rd person, singular and plural.[7] The numerator consisted of the subjects used in the relevant person context. Consequently, the complement number for 1st & 2nd person subjects was the 1st & 2nd person *pro*, adding up to 100% subject positions used with 1st & 2nd person verbs. Similarly, the complement for all 3rd person subjects, lexical and pronominal, were 3rd person *pros*, adding up to 100% of subject positions used with 3rd person verbs (Tables 4-A, 4-B, 5-A, 5-B for the present tense; 6-A, 6-B, 7-A for the past tense; 8-A, 8-B, 9-A for the future tense in the Appendix).

This measure allows us not only to receive a truer picture of subject use when it is dependent on person

---

[7] As already explained, [person] is not distinctive in the present tense. Therefore, context was used to mark the distinction. This accounts for some of the frequency discrepancies found between the general count and the context count in present tense. The latter was a little lower, due to the inability to always make a conclusive distinction based on context alone when the subject was missing.

distinctions, but also to look at the same distinction in the other tenses. Despite the fact that the present tense does not make person distinctions and the future tense is losing the distinction, if children are learning the tenses and the null subject phenomenon through the acquisition of person and carry it over to other tenses, we will observe a distinction made in those tenses too. If children are attuned to the tenses and know that their requirements differ with respect to subject use, we might expect a different pattern for each tense. In both cases, the division by person is instructive, as marking it differently or not informs us about what the children are attuned to, what they learn from, and what strategies they might be using for each tense.

6.7.3 Subject Use Divided Tense, Person and Type

Following the motivation for tabulating person context separately, this measure uses the same denominator of verbs divided by person context, but further divides the numerators by type. In 1st & 2nd contexts, no change will take place. In 3rd person, however, subject were divided to lexical and pronominally. The motivation for this additional measure was two fold: First, to serve as means of comparison with corresponding data in the literature. Second, by looking at the relation between the three subject types, i.e., lexical,

pronominal and *pro*, we might be able to reveal another child strategy. Since *pro* is the covert counterpart of overt pronouns, and given Chomsky's (1981) *Avoid Pronoun* principle, it was suggested that pronominal subject use should increase as a function of decrease in use of *pro*, while lexical subjects would remain constant. This measure sets out to check whether there is such a trade-off in children's use of subjects and how it can be interpreted (Tables 4-A, 4-B, 5-A, 5-B for the present tense; 6-A, 6-B, 7-A for the past tense; 8-A, 8-B, 9-A for the future tense in the Appendix).

6.7.4 Simple and Partial Correlations

As already explained, MLUW was calculated instead of MLU due to the nature of Hebrew as a morphologically rich language. A confirmation for the validity of such a word count could only come from the correlation of MLUW and age with the other variables in question. It will be informative to see whether subject use, either increasing or decreasing, can be explained as a function of MLUW (or age).

Thus simple and partial correlations were computed for each tense-person combination, matching the measures we have tabulated by examining the relations among MLUW, age, and subject use either in general or divided by type across children.

Chapter Seven

Results

7.0 Introduction

This chapter presents and summarizes the results obtained from the measures and tabulations of the grammatical and ungrammatical tensed sentences produced by the Hebrew speaking children in my study.

7.1 Presentation of the Data

The children ranged in MLUW from 1.40 to 3.01 (n=19), and were divided into three groups based on MLUW. Six children ranged between 1.40 - 1.92, seven ranged between 2.04 - 2.24, and the last six ranged between 2.40 - 3.01. This division facilitates comparison with earlier data in the literature.

The results in this section are presented as follows: First, overall subject use in verbal utterances is presented separately by tense. This allows comparison of subject use

across tenses, and as a function of MLUW. Table 7-1 presents the data by frequency, and Table 7-2 presents the proportion of subject use. Second, the data are presented by person, as we have shown [person] to play an important role in the production of each tense, and specifically, in the identification of null subjects. The comparison is between 1st & 2nd persons, on the one hand, and 3rd person on the other hand (Table 7-3).[1] Third, the data are presented by type of subject, focusing on the use of pronouns (Figures 7-1 to 7-3). Finally, correlations among MLUW, age, and subject use (pronominal, lexical, and null) are presented. Data by subject are presented in the Appendix.

7.1.1 Verbal Predicates and Subjects Divided by Tense

Table 7-1 shows the frequency of verb and subject use as divided by tense across the three groups of children. Across groups, on average, all children use the present tense much more than they use the past or future tenses. This may reflect

---

[1] The division by person, as explained in the *Method* chapter, was carried out either by using the morphology on the verb (when available) and subject-type (when a subject was present), or subject-type only, when verbal morphology was non-distinctive. In these cases, where in addition to lack of distinctive morphology the subject was also missing, unambiguous context was used to determine the person reference. When the context was ambiguous, those utterances were excluded accounting for the different utterance count between overall subject use and subject use by person.

a developmental process reflecting the order in which tenses are acquired in Hebrew, or children's preference to focus on presently-occurring events.

In addition, there is a general increase, as MLUW increases, in the mean frequency of both verb use and subject use across tenses. Note also that by Group III, the mean of verb use of past tense and future tense is more or less the same (39 and 38, respectively) though the variance is greater in the past tense.

TABLE 7-1. Average Frequency of Verbal Predicates and Subjects across Tenses

			Present Tense		*Past Tense*		*Future Tense*	
	MLUW	AGE	+Subj	+V	+Subj	+V	+Subj	+V
Group I n=6								
Mean	1.74	2;0	41	54	7	18	9	11
s.d.	.19	3	(25)	(26)	(2)	(11)	(8.16)	(9.5)
Group II n=7								
Mean	2.16	2;3	64	73	17	38	15	20
s.d.	.08	2	(25)	(21)	(6)	(17)	(8)	(10)
Group III n=6								
Mean	2.64	2;4	94	103	21	39	31	38
s.d.	.24	2	(42)	(44)	(10)	(19)	10)	(10)

Table 7-2 shows the mean proportion of subject use across tenses and groups. These data demonstrate two crucial points. One is the increase in the proportion of subjects as MLUW increases, with the exception of the future tense. The other

is that, despite the consistent increase, the proportions of subject use are different across tenses.

TABLE 7-2. Average Proportion of Subject Use across Tenses

	MLUW	AGE	*Present Tense* +Subj	*Past Tense* +Subj	*Future Tense* +Subj
Group I n=6					
Mean	1.74	2;0	.74	.46	.77
s.d.	.19	3	(.19)	(.17)	(.22)
Group II n=7					
Mean	2.16	2;3	.85	.52	.73
s.d.	.08	2	(.18)	(.19)	(.11)
Group III n=6					
Mean	2.64	2;4	.92	.58	.81
s.d.	.24	2	(.07)	(.14)	(.09)
Grand n=19					
Mean	2.17	2;2	.84	.52	.77
s.d.	.40	3	(.16)	(.17)	(.15)

7.1.1.1 Present Tense

The mean percentage of subject use in the present tense increases from 74% (s.d. = 19) in Group I, to 85% (s.d. = 18) in Group II, and finally to 92% (s.d. = 7) in Group III. As the standard deviations show, most of the variability is found in Groups I and II. However, an examination of the children in Group II shows that one child, at MLUW 2.11, is responsible for the 85% use of subjects. If her data are removed, the mean

percentage of Group II raises to 92% (s.d. = 5), matching that of Group III, which shows little variability. Thus, the greatest variability is found in Group I (see Table 1-A in the Appendix). In this Group, 3 children (MLUWs 1.67, 1.86, 1.92) pattern with the mean percentage of subject use of the higher groups, i.e., 92%, 90%, and 92%, respectively; and 3 children show lower use, i.e., 51%, 64%, and 58%. Altogether, there is a high percentage of subject usage in the present tense across all children - 84% (n=19, s.d. = 16) - consistent with the requirement of phonetically realized subjects in the present tense.

7.1.1.2 Past Tense

The results in the past tense demonstrate a similar process of increasing subject use as MLUW increases. However, the proportions of use are much lower compared to Present Tense. In Group I, the mean percentage is 46% (s.d. = 17) increasing to 52% (s.d. = 19) in Group II, and 58% (s.d. = 14) in Group III. These data demonstrate that even as early as Group I the children are treating, and hence have acquired, a different system for the past tense compared with the present tense.

7.1.1.3 Future Tense

The future tense seems to indicate a third process. The mean percentage of subjects is almost as high in Group I as it is in Group III. The mean percentage in Group I is 77% (s.d. = 22), decreasing slightly to 73% (s.d. = 11) in Group II, and increasing once more to 81% (s.d. = 9) in Group III. Despite the high use by Group I (see Table 3-A in the Appendix), the mean percentage across children is lower compared with that of the present tense, i.e. 77% (n=19, s.d. = 15). In addition, most children (n=14) show lower subject use in the future than in the present tense. Two of the three children who produced low subject rates in the present tense produced high subject rates in the future tense. These data are consistent with a non-null subject setting.

7.1.2 Subjects by Tense and Persons

As already explained, the past and present tenses share the requirement of obligatory subjects in 3rd person. They differ with respect to 1st & 2nd persons, where subjects are obligatory in the present tense, but optional in the past tense. The comparison between the tenses in Table 7-2 suggests a difference in the proportional use of subjects as a function of tense. The higher use of subjects in the present compared

to the past tense is already observable in Group I, and is consistent across the children in all three groups - 17 out of the 19 (cf. Tables 1-A and 2-A in the Appendix). The tabulation of the data by person (Table 7-3) was performed to see whether the observed difference was a reflection of knowledge of the differences and similarities in the paradigm.

TABLE 7-3. Proportion of Subject Use and Verb Frequencies Divided by Person in All Tenses[2]

			Present Tense		*Past Tense*		*Future Tense*	
	MLUW	AGE	1&2	3	1&2	3	1&2	3
Group I								
n=6								
Mean	1.74	2;0	.88	.70	.11	.74	.75	.87
s.d.	.19	3	(.16)	(.20)	(.10)	(.22)	(.31)	(.25)
								n=4
Verb Frequencies			19	34	8	9	9	2
s.d.			(16)	(19)	(7)	(5)	(7)	(3)
Group II								
n=7								
Mean	2.16	2;3	.86	.89	.13	.92	.72	.86
s.d.	.08	2	(.22)	(.13)	(.13)	(.10)	(.13)	(.17)
								n=6
Verb Frequencies			32	40	22	16	16	.43
s.d.			(11)	(18)	(16)	(7)	(9)	(3)
Group III								
n=6								
Mean	2.64	2;4	.99	.91	.27	.97	.77	1.00
s.d.	.24	2	(.02)	(.10)	(.19)	(.04)	(.12)	(0)
Verb Frequencies			56	47	23	16	33	5
s.d.			(39)	(29)	(13)	(6)	(10)	(4)

[2] See also footnote 1.

7.1.2.1 Present Tense

Table 7-2 demonstrates that subject use in present tense is high very early on. Table 7-3, which compares subject use by person, shows that the use of subjects in 1st & 2nd persons is higher than the use of subjects in 3rd person in Groups I and III. In Group I, the proportion of 1st & 2nd person (pronominal) subjects is 88% (s.d. = 16) compared to 70% (s.d. = 20) of 3rd person subjects (both lexical and pronominal). All 6 children in this group show more use of subjects in 1st & 2nd person compared to 3rd person. In Group II, this difference disappears: There is 86% (s.d. = 22) use of 1st & 2nd person subjects as opposed to 89% (s.d. = 13) 3rd person subjects. Only 3 of 7 children show more subjects in 1st & 2nd person compared to 3rd person.[3] In Group III, the difference between the persons is again observable, though not as sharply as in Group I, i.e. 99% (s.d. = 2) as opposed to 91% (s.d. = 10). Here, 4 of 6 children show greater use of subjects in 1st & 2nd person compared to 3rd person (see Tables 4-A and 5-A in the Appendix).

In sum, with minor exceptions, there is a consistent increase in subject use across persons with the increase of MLUW, parallelling the consistent increase in Table 7-2. Moreover, there seems to be a difference between persons,

---

[3] Removing the data from child MLUW 2.11 does not change the results, and the difference between the persons remains small and probably not meaningful.

where the proportion of 1st & 2nd person subjects is higher than the proportion of 3rd person subjects. This is mostly observable in Group I, and less in Groups II and III where all proportions of subject use for both types of persons are above 85%. Finally, even in Group I, use of subjects is very high.

7.1.2.2 Past Tense

In the past tense we again find a consistent increase of subject use as MLUW increases. There is also a consistent difference between the person types. Compared with the present tense, however, the pattern is reversed. In 1st & 2nd persons, the proportion of subject use is very low, starting with a mean percentage of 11% (s.d. = 10) in Group I, 13% (s.d. = 13) in Group II, and finally 27% (s.d. = 19) in Group III. In the 3rd person, the mean percentage of subject use looks very much like the mean percentages of the present tense in general, and more specifically that of the 1st & 2nd persons. In Group I 74% (s.d. = 22), In Group II 92% (s.d. = 10), and in Group III 97% (s.d. = 04). Every child in every group showed greater use of subjects in 3rd person compared to 1st & 2nd person (see Tables 6-A and 7-A in the Appendix).

This might suggest that a developmental process and/or learning strategies are taking place both within the tenses - across persons - and across the tenses. I will return to an

extensive comparison and an account of such suggestions in the *Discussion* Chapter.

7.1.2.3 Future Tense

Table 7-2 showed that there is a consistent increase in subject use in present and past tenses, but not in future tense. Table 7-3 reveals that in both person contexts there is little variation as a function of increasing MLUW. Thus, there is a decrease in 3rd person from 87% (s.d. = 25) in Group I, to 86% (s.d. = 17) in Group II, and an increase to 100% (s.d. = 0) in Group III. In 1st & 2nd person, there is again a decrease in proportional use from 75% (s.d. = 31) in Group I, to 72% (s.d. = 13) in Group II, and an increase to 77% (s.d. = 12) in Group III (see Tables 8-A and 9-A).

Because of the extremely small sample of 3rd person future utterances, definite statements comparing persons are impossible. It appears, however, that 3rd person subjects are used more than the 1st & 2nd pronominal subjects. When persons are compared, in Group I the differences are 87% as opposed to 75% respectively, in Group II 86% as opposed to 72%, and in Group III 100% as opposed to 77% in Group III. In Group I, 3 of 4 children (there were no data in 3rd context for 2 children) showed greater use of subjects in 3rd person compared to 1st & 2nd person. In Group II, 5 of 6 children

(there was one child for whom there was no data in 3rd context) showed greater use of subjects in 3rd person compared to 1st & 2nd person. Finally in Group III, all 6 children showed greater use of subjects in 3rd person compared to 1st & 2nd person. These proportional differences between the person types, though similar in pattern to that of the past tense, are not as sharp.

7.1.3 Pronominal, Lexical, and Null Subjects by Tense and Person

As already noted, the subject positions we are looking at can be structurally filled without being phonetically realized by *pro* or by a pronoun in 1st, 2nd, 3rd persons, or by a lexical DP in 3rd person. So far we have looked at the subject position by tense or by tense and person. This section adds a final division and presents the data on subjects separately by type of subject, i.e. lexical, pronominal or *pro* for 3rd person context, and pronominal and *pro* for 1st & 2nd context - with an emphasis on pronouns. Figures 7-1 to 7-3, then, show the means of subject use divided by person and within each person, divided by type.

7.1.3.1 Present Tense

All children use pronouns much more than lexical DPs or null subjects in the present tense. This is the case even when the pronouns are divided by person. In Group I, 49% (s.d. = 22) of 3rd person subjects were pronouns, and 88% (s.d. = 16) of all 1st & 2nd person subjects were pronouns. In Group II, 75% (s.d. = 25) of 3rd person subjects were pronouns, and 86% (s.d. = 22) of all 1st & 2nd person subjects were pronouns. In Group III, 67% (s.d. = 14) of 3rd person subjects were pronouns, and 99% (s.d. = 2) of all 1st & 2nd person subjects were pronouns. Since 3rd person overt subjects can be expressed by either a lexical DP or a pronoun, it is reasonable for pronominal usage to be higher in 1st & 2nd person pronouns where an overt subject can only be pronominal. Thus, pronominal subjects increase albeit raggedly - from Group I to Group III in all persons.

In Groups I and III, 3rd person null subjects are used more than 1st & 2nd person null subjects (i.e., subjects are used more in the latter than in the former), despite the uniform ungrammaticality of null subjects with all person types in present tense. In Group I, the mean of 3rd person null-subjects was 30% (s.d. = 20) as opposed to 12% (s.d. = 16) of 1st & 2nd person null-subjects. In Group II, the mean percentages were 11% (s.d.= 13) and 14% (s.d. = 22)

respectively.[4] In Group III, the mean percentages of null subjects in the two person types are 9% (s.d. = 10) for 3rd person and 1% (s.d. = 2) for 1st & 2nd persons (see Tables 4-A and 5-A in the Appendix).

To sum up, in the present tense, 1st & 2nd person pronouns are used more than 3rd person pronouns and more than 3rd person subjects as a whole.

7.1.3.2 Past Tense

In the past tense, as would be expected if children understand the requirements on subject use, some of the patterns observed in the present tense are reversed. Similar to the present tense overall count, in 3rd person context, pronouns are used, as a whole, more than lexical DPs. Nevertheless, lexical DPs are used much more in this tense than in the present tense. Also contrasting with present tense, pronominal use remains more or less constant across groups: in Group I, 50% (s.d. = 23), in Group II, 49% (s.d. = 12), and in Group III, 53% (s.d. = 22). In addition, 3rd person null subjects consistently decrease as MLUW increases. The mean percentages across groups are very similar to the ones found in the present tense for

---

[4] If the data from child MLUW 2.11 are removed, the use of 3rd person null-subjects in Group II decreases to 7% (s.d. = 7) and 6% (s.d. = 4) in 1st & 2nd persons. The pattern, then, becomes consistent across groups though the differences in both cases might not be meaningful.

the same person context. In the past tense, 1st & 2nd person null subjects also decrease, but their mean percentages are very high. In Group I, 89% of subject positions are null (s.d. = 10), in Group II 87% (s.d. = 13), and in Group III 73% (s.d. = 19).[5] (See Tables 6-A and 7-A in the Appendix).

7.1.3.3 Future Tense

There is a consistent increase of pronominal use in 3rd person, together with a consistent decrease of lexical DPs. The initial mean percentage of the latter is higher than any other type of subject.[6] As in the present tense, 1st & 2nd person pronouns are used more than 3rd person pronouns. Similarly, The use of null subjects is low in 1st and 2nd person: 25% (s.d. = 31) in Group I, 28% (s.d. = 13) in Group II, and 23% (s.d. = 12) in Group III. Contrasting with present tense, null subjects in 3rd person context are used even less: 13% (s.d. = 25) in Group I, 14% (s.d. = 17) in Group II, and 0% (s.d. = 0) in Group III (see Tables 8-A and 9-A in the Appendix).

---

[5] Child MLUW 3.01 is an exception in Group III (see Table 14-A in the Appendix): when her data are removed, the group percentage in 1st & 2nd person null subjects raises to 80% (s.d. = 5, n=5).

[6] This could be a pragmatic effect: Future subjects may be more likely to be new subjects, and thus require specification with a full DP (Virginia Valian, p.c.)

It seems that the reason for the high use of subjects in 1st & 2nd persons context is due to a predominance in 1st person use, mainly singular, whereas the 1st person plural is mainly used with a *'let's do...'* interpretation rather than a true future reference. Putting aside the pragmatic use of 1st person plural, the future tense exhibits a high use of subjects as expected from a tense that is progressively becoming non-null-subject in its contemporary usage (see Chapters 2 and 3 for the explanation).

7.1.4 Summary

The most striking finding illustrated by these results is that even the lowest-MLUW children are sensitive to the distribution of subjects in Hebrew and appear to be cognizant of its mixed nature from the beginning. Furthermore, they show no signs of having adopted a single value, i.e., [+subject] or [-subject], at the outset. In the present tense, children start with a high percentage of subject use in both person contexts. This sharply contrasts with the low use of subjects in 1st & 2nd person context in the past tense. As expected, 3rd person subject use in the past tense is very similar to the overall use in the present tense. Another interesting point is that although children use pronouns more than lexical DPs, the latter are also changing across tenses and their use

is not constant with MLUW. The data in the future tense are too infrequent to enable us to make a meaningful statement, though it seems to show a non-null-subject trend. Finally, the consistent increase of subject use across tenses and persons as a function of MLUW increase suggests the effect of factors which are not grammatically-based. I will return to these results extensively in the *Discussion* chapter.

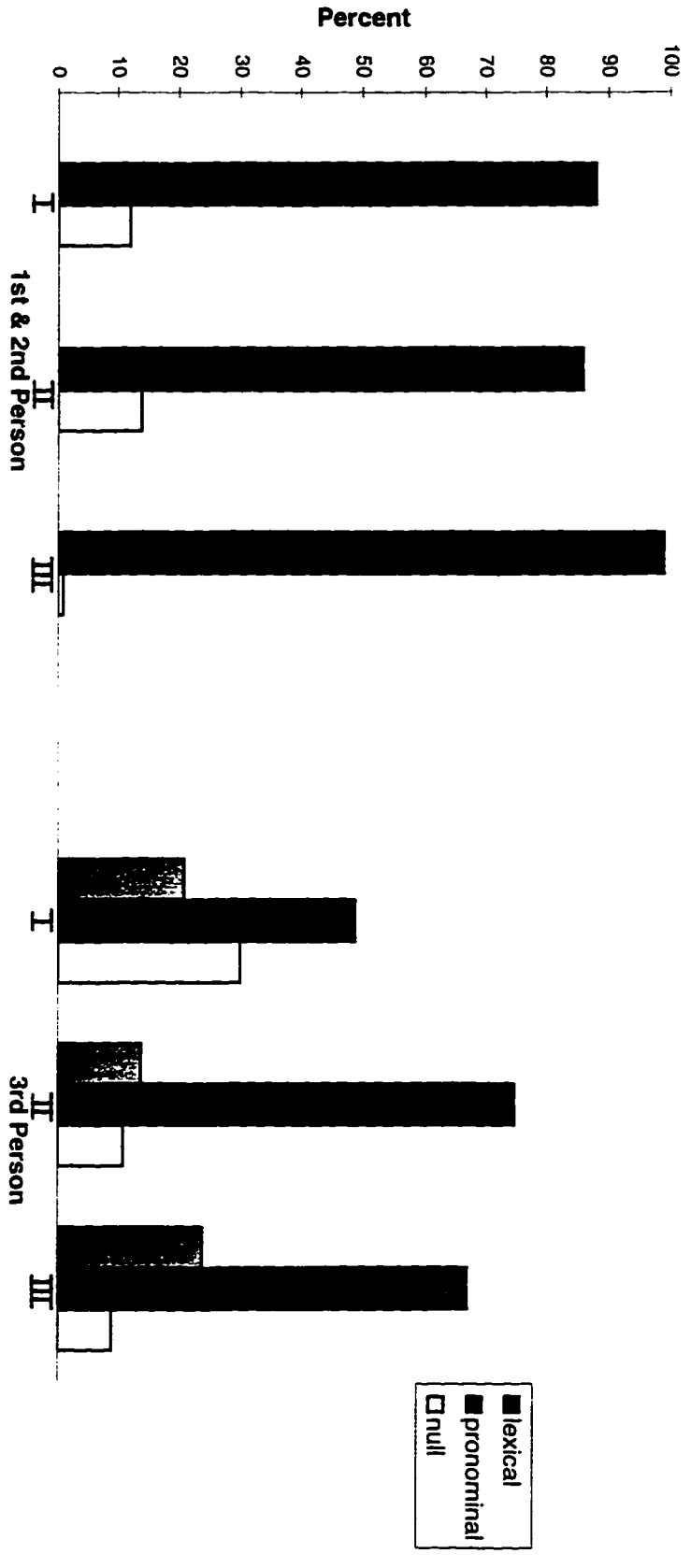
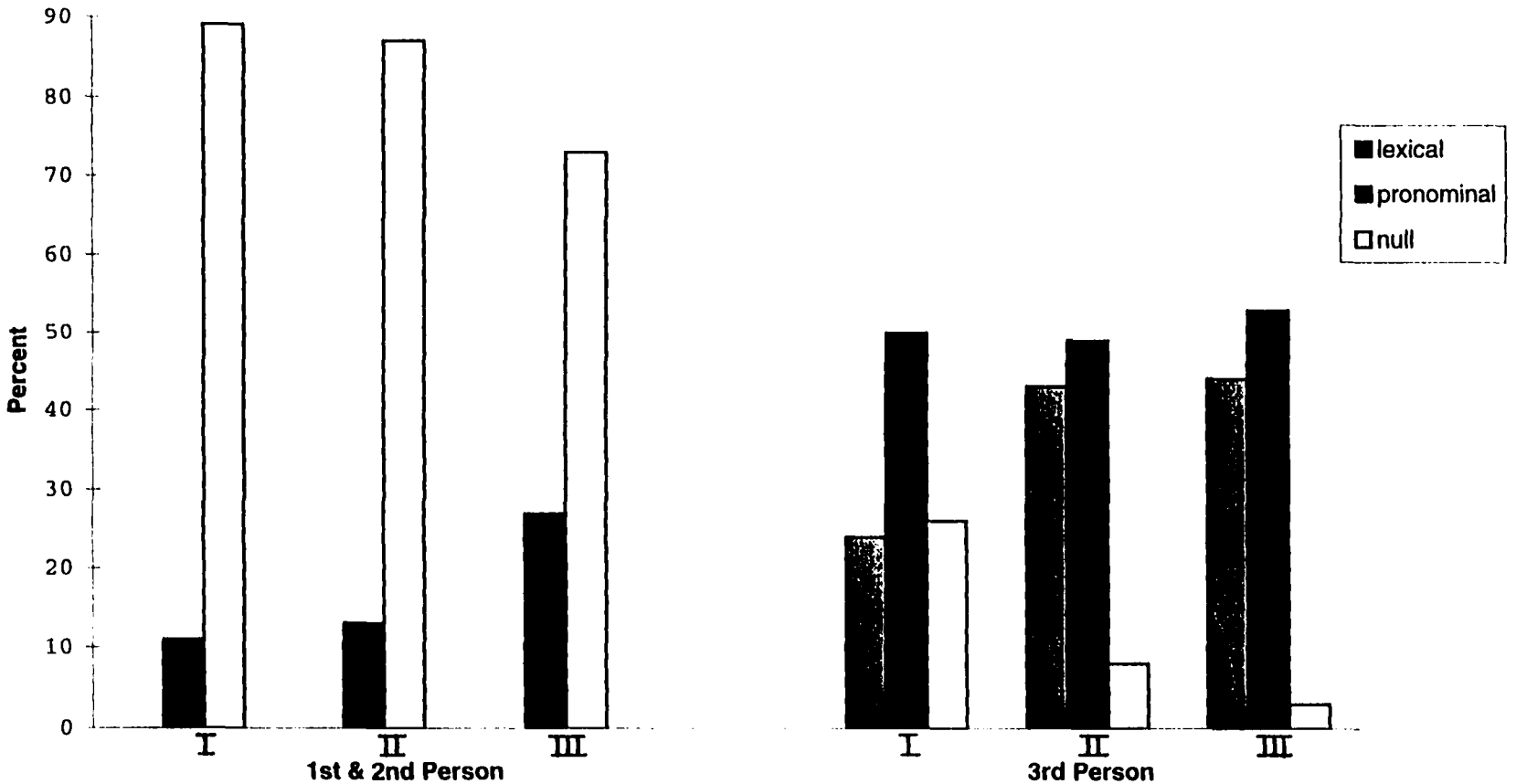


Figure 7-1. Percent of Subjects Divided by Type and Person across Groups in Present Tense

Figure 7-2. Percent of Subjects Divided by Type and Person across Groups in Past Tense



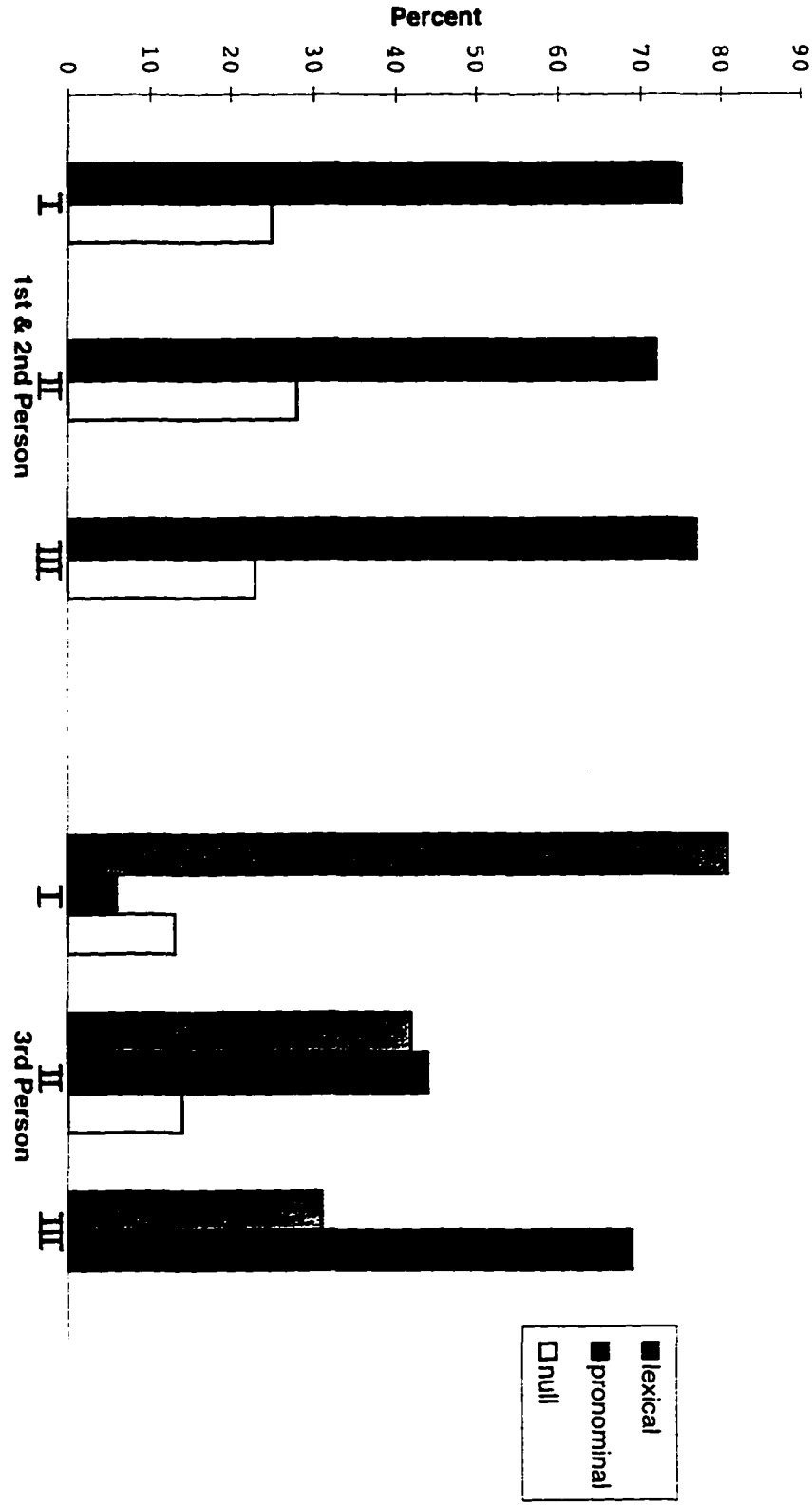


Figure 7-3. Percent of Subjects Divided by Type and Person across Groups in Future Tense

7.2 Correlations of Subject Use and Other Variables across Children

Simple and partial correlations have been computed for each tense and person combination, examining the relations among MLUW, age, subject use and pronominal use across children. MLUW and age were included in all correlations. They were positively correlated, r (d.f.= 17) = .56, p< .02. In the future tense, three children did not produce utterances with 3rd person context, whether overt or covert, therefore, correlations were computed over 16 children. MLUW and age were still positively correlated, r (d.f. = 14) = .48, p< .06.

In the present tense, three different correlations were computed with MLUW and age: (i) general subject use; (ii) lexical pronominal and 3rd person null subjects; and (iii) 1st & 2nd pronominals and null subjects. In present tense, null subjects are ungrammatical due to the lack of [person] specification. The classification by person was done on the basis of context. Therefore, subject use might be treated as one phenomenon, or by analogy to the other tenses, by person. Computing subject use in general and by person captures this possible difference.

In the past tense, the use of null subjects is clearly divided by person. Correlations for this tense were computed including lexical, pronominal, and 3rd person null-subjects in one set; and including 1st & 2nd person pronominals and null

subjects in the other. In addition, as child MLUW 3.01 was a little peculiar in her production of subjects in the latter, a third set of correlations was calculated excluding her (n=18). Finally, the correlations in the future tense were computed as in the past tense - correlating the person variables separately in addition to MLUW and age. As noted, in 3rd person context 16 children were computed over instead of 19. Table 7-4 summarizes the variables which were correlated for each tense, for a total of eight correlational matrices.

Table 7-4. Correlations Performed for Each Tense

Variables	Correlations by tenses *present*	*past*	*future*
MLUW, age, general subject (n=19)	x		
MLUW, age, pronominal - 1st & 2nd (n=19)	x	x	x
MLUW, age, pronominal - 1st & 2nd (n=18 - excluding child MLUW 3.01)		x	
MLUW, age, lex., pronominal, combined subjects - 3rd (n=19)	x	x	
MLUW, age, lex., pronominal combined subjects - 3rd (n=16)			x

7.2.1 Present Tense

MLUW was significantly correlated with overall subject use, r (d.f. = 17) = 0.52, p< 0.03. This correlation was reduced when

age was partialled out, r (d.f. = 16) = 0.43, p< 0.08. Age was not significantly correlated with subject use.

In 1st & 2nd person, however, neither MLUW nor age were correlated with subject use in either simple or partial correlations.

For 3rd person, MLUW and combined 3rd person subjects were positively correlated, r (d.f. = 17) = 0.56, p< 0.02. Age did not correlate with any subject use in simple or partial correlations. When age was partialled out, MLUW continued to be correlated with subjects, r (d.f. = 16) = .47, p< .05. MLUW was not correlated with lexical or pronominal subjects looked at separately.

As would be expected, lexical and pronominal subjects were negatively correlated with each other, r (d.f. = 17) = -0.68, p= 0.001. The negative correlation between lexical and pronominal subjects remained strong when either age or MLUW or both were partialled out.

7.2.2 Past Tense

In 1st & 2nd person, both MLUW and age positively correlated with pronominal use, r (d.f. = 17)= 0.65, p< 0.03, and r (d.f. = 17) = 0.53, p< .02, respectively. When age was partialled out, MLUW continued to be correlated with pronominal subject

use, r = 50, p< 0.04.[7]

For 3rd person, MLUW and combined 3rd person subjects were positively correlated, r (d.f. = 17) = .68, p = 0.01. Age did not correlate with any subject use in simple or partial correlations. When age was partialled out, MLUW continued to correlate with subject use, r (d.f. = 16) = .69, p< .02. MLUW was not correlated with lexical or pronominal subjects looked at separately.

As in the present tense and as would be expected, lexical and pronominal subjects were negatively correlated, r (d.f. = 17) = -.62, p= .05. The correlation between lexical and pronominal subjects remained strong when either age or MLUW or both were partialled out.

7.2.3 Future Tense

Similar to the present tense in 1st & 2nd person, neither MLUW nor age were correlated with subject use in either simple or partial correlations.

For 3rd person, MLUW and combined 3rd person subjects tended to be positively correlated, r (d.f. = 14) = .46, p<

---

[7] It seems, however, that the strong correlation effect with MLUW and age is carried out by one child (MLUW 3.01). When the data from child MLUW 3.01 were removed, the correlation between MLUW and 1st & 2nd pronominal was reduced, r (d.f. = 16) = .48, p< .05, and age was no longer significantly correlated with pronominal use.

0.08. MLUW and pronominal subjects were positively correlated, r (d.f. = 14) = .60, p< .02. Age was not correlated with any subject use in simple or partial correlations. When age was partialled out, MLUW did not correlate with subjects overall, but continued to be positively correlated with pronominal subjects, r (d.f. = 13) = .64, p< .02.

As expected, lexical and pronominal subjects were also negatively correlated in future tense, r (d.f. = 14) = -.91, p< .001. The correlation between lexical and pronominal subjects remained strong when either age or MLUW or both were partialled out.

7.2.4 Summary

In Chapter 3 we have argued for two matrices on which subject use must be analyzed in Hebrew - Tense and 1st & 2nd person versus 3rd person. The correlations we have computed show that in the present tense MLUW predicts the use of subjects in combined 3rd context. In 1st & 2nd contexts, the mean average of subject use across groups shows, as early as Group I, that pronominal use starts high and remains high, so that further development is not observed in this context. This is reflected by the lack of correlation in this context. We need to keep in mind that the division of present tense according to person has no grammatical basis; therefore, it is less surprising

that we find a significant correlation between MLUW and general subject use.

In the past tense, the difference between the persons is grammatically-based. This is reflected in the correlations between MLUW and both person contexts. As opposed to the present tense, productions of subjects in 1st & 2nd start low and remain low. Third person subjects combined showed a very strong correlation with MLUW even when age was partialled out.

Given the small number of utterances it is very difficult to assess the future tense. The standard deviation was very high and no real trend was shown by the correlations.

Chapter Eight

Discussion

8.0 Introduction

This study investigates the relation between inflectional functional categories, such as TP and AgrP, where parameterization is argued to lie, and the variation in subject use across languages. In part I, we have attempted to look at this relation from the adult point of view, focusing on adult Hebrew. In part II, we have argued for the initial structure children must be endowed with in order to best acquire the adult structure and account for the child's use of subjects. To test the assumptions and claims made in parts I and II, I have collected naturalistic data from 19 Hebrew speaking children (Chapters 6 and 7). In this chapter, we discuss the findings from the Hebrew study and the cross-linguistic studies reviewed in Chapter 5, and present the final conclusions of this work.

We have had four goals in the study of child Hebrew. The first was to determine the facts about use of subjects as a

function of tense and agreement. The second was to decide, based on those facts, what Hebrew speaking children know about their mixed system, and when they understand the different conditions underlying it. The third goal was to determine the relation between the underlying parameter and what children need to look for in the linguistic environment in order to acquire its correct setting. The fourth goal was to evaluate competence and performance explanations of children's use of subjects.

In the next sections, I will review the proposals and present the conclusions drawn from the Hebrew data and review the evidence for these conclusions. Further support for the latter will be presented in section 8.2 based on the cross-linguistic evidence presented in Chapter 5.

8.1 Accounting for the Hebrew Data via the Proposals

8.1.1 Restating the Proposals and Making Predictions

The *Minimal Competence* model, I proposed in Chapter 4, argues that the child initial structure consists of categories, both lexical and functional, and formal features that are cross-linguistically specified and for which evidence is not required. In order for these categories to be licensed, their heads must have content (Speas, 1994). Focusing on the functional categories, it was argued that TP is a cross-

linguistic category licensed by the feature [finite] in its head - a feature also attested in all possible languages. Since all categories at the earliest stage are licensed directly by having content in their heads, overt subjects are not required to license them indirectly. AgrP, on the other hand, is not a cross-linguistic category, and therefore it is not projected in the initial structure, so that language-specific evidence is required for setting it.

In Hebrew, by hypothesis, this stage is observed at the one-word stage (see Chapter 4). That in turn suggests that the structure proposed by the *Minimal Competence* model, implying the lack of early subjects, would not be observable in children's productions since at the one-word stage there is no observable difference between using a bare VP or an IP with a covert subject.

The one-word stage in Hebrew can be divided into, at least, two stages. Children's early verbal productions consist of, first, infinitives and imperatives, both forms showing no agreement. Later productions distinguish between finite forms and non-finite forms. Other Tense related properties, such as [±past] seems to be missing at this second stage. This stage corresponds best to the claim made by the *Minimal Competence* model: the child distinguishes between finite and non-finite verbal forms, but does not distinguish the finite forms as past or non-past. A third stage (still within the one-word stage) predicts the appearance of agreement features. However,

since all Hebrew finite verbs also agree, the second finite stage and the third agreement stage coincide in Hebrew. Evidence suggesting that Hebrew children have acquired the agreement features comes from the fact that the children produce finite agreeing forms together with non-finite forms. The correct production of agreeing forms at this stage indicates that children have acquired an agreement system. In terms of the two parameters proposed in Chapter 3, they have set their language as a language that exhibits agreement features. At this point it is not clear whether children also know that their language exhibits only strong agreement features.

At combinatorial stage, when the children in my study were observed, we again find two stages: below MLUW 2.0 and above MLUW 2.0. Above MLUW 2.0, children show full competence of the mixed system of their target language. The observable development can be attributed to performance factors and pragmatic factors. Below MLUW 2.0, children need to set Agr as weak or strong. In addition, they need to find out which type of Agr, if at all, is projected in different structures.[1] In order to achieve the latter, children must observe both Tense and Agr features. In the present tense, the absence of a copula together with the absence of the agreeing person

---

[1] We are focusing on matrix clauses where Agr is always selected in Hebrew; as opposed to embedded clauses which might lack Agr altogether, in other languages as well (Stowell, 1981).

marker, provide at least partial evidence that the [0Finite] specification attested at the early minimal competence stage, i.e., the finite/non-finite stage, is an option in adult Hebrew in matrix clauses.[2] Verbs that lack both Tense specifications and [person] marking are participles which select an Agr projection reflecting these features. Thus, the child has no evidence nor motivation for projecting Agr_sP only AgrPart(iciple). In the past tense, the copula and [person] marking provide evidence for the projection of Agr_sP.

The regular system of affixation seems to work as a designated trigger (Fodor, 1994), triggering the setting of the Agr parameter. The affixes are unambiguous, in that they divide languages between those which have no agreement and those which use agreement, and within the latter between those which exhibit weak agreement and those which exhibit strong agreement features. Thus, it is enough for a child to notice one agreeing form to set the agreement parameter to [+]. In languages with rich agreement morphology such evidence is regularly provided in every utterance - on verbs, nouns, and adjectives.

If a language exhibits agreement, the child will have to decide whether it is strong or weak (the second parameter), and produce subjects accordingly. Alternatively, the

---

[2] In English, we have argued that the copula and other Tense features will inform the child to reset matrix clauses from allowing both [+F] and [OF] to specifying only [+F] (see Chapter 4, section 4.2.3.1).

observation of an agreement system plus the absence of subjects in thematic contexts might inform the child that the agreement features in her/his language are strong. This seems a plausible route, since it is not clear how the child can figure out that agreement is strong unless s/he observes the behavior of subjects, i.e., their absence versus presence in thematic contexts, and maybe their ability to invert. In addition, we have already noted that in order to decide what AgrPs are projected in different structures, the child will have to look also at Tense features, at the absence versus presence of a copula, and so on.

The claim the *Minimal Competence* model makes together with the two Agr parameters is that children need to observe simultaneously Tense, Agreement features (specifically person), and subject use in order to acquire the mixed Hebrew system in full. Any category by itself would not guarantee the acquisition of the system. Thus, at the outset of the combinatorial stage, below MLUW 2.0, we predict children to follow one of the possible routes: They can pay attention to Tense properties and generalize the production of subjects across persons. Alternatively, they can observe the person distinction between 1st and 2nd persons versus 3rd person and generalize the production of subjects over tenses. Each of these strategies reflects a competence deficit, since the children apply only one of the two grammatical conditions underlying the adult system. Finally, children can look at the

interaction between these two matrices and reach the adult correct setting without showing a competence deficit stage.

In the following section I will review the data presented in Chapter 7 in light of the predictions discussed in the previous paragraph. Subject production across tenses and persons reveals that children are attuned to and apply both matrices. Yet in some tense-person contexts (which differ across children), some children seem to show a competence deficit effect, whereas others apply the two matrices correctly as required in adult structures.

8.1.2 Summary of Findings in Hebrew

Since the conditions for subject use in Hebrew differ across tenses and persons, it is not instructive to tabulate overall subject use. Given that the present tense is uniformly non-null-subject and uniformly lacks an overt person marking as does 3rd person past context, we expect children to treat these contexts alike contrasting them with 1st and 2nd person past contexts. With respect to the actual facts, my study shows that Hebrew speaking children, as early as Group I, i.e., below MLUW 2.0, use on average more than 70% subjects in verbal utterances that require subjects. The youngest-MLUW children in Group I produce less than the 70% group average but more than 50%. In contexts that do not require obligatory

subjects, subject use averages 11% below MLUW 2.0 reaching 27% by MLUW 3.0. We conclude, then, that children as low as MLUW 2.0 understand the distribution of obligatory and optional subjects across tenses and persons in Hebrew. Yet, if we look at individual production of subjects in Group I, we observe that the children are not producing subjects uniformly in all non-null-subject contexts; subject productions also vary when the children are compared with one another.

The mean of subject use in the past tense shows that all children have recognized the person difference in this tense. Apart from child MLUW 3.01, subject production in 1st and 2nd person past does not exceed 36% (produced by child MLUW 2.24) across children. Subject production in this context is even lower in Group I, 25% (produced by child MLUW 1.87). On the other hand, in 3rd person past, mean of subject use ranges from 50% to 100% across children. The same range is found in Group I. The person contrast and the low production of subjects in 1st and 2nd person past seem to indicate that children, already below MLUW 2.0, understand that agreement features in this tense are strong and that 3rd person does not mark the feature [person], so that referential *pro* is not identified.

Overall subject use across children in present tense shows a high percent of subjects ranging from 51% (produced by child MLUW 1.40) to 99% (produced by child MLUW 2.24). In Group I, overall subject use ranged from 51% to 92% (produced

by child MLUW 1.67 and child MLUW 1.92, respectively). Since the present tense is uniformly non-null-subject, tabulating subjects by persons seems superfluous. However, if children operate on the person matrix and generalize over tenses, they might carry the person distinction observed in the past tense to the present tense, despite the fact that such distinction is not made in adult Hebrew.

Focusing on the lowest-MLUW group, all children use subjects more in 1st and 2nd person contexts than in 3rd person context in the present tense. In three children (MLUW 1.67; MLUW 1.86, MLUW 1.92), subject use is above 84%. This might indicate that the contrast between 1st and 2nd persons, on the one hand, and 3rd person, on the other hand, is not significant and that they know the underlying grammatical constraints the present tense is subject to. Child MLUW 1.70 also does not show a real contrast between subject use in 1st and 2nd persons (63%) and 3rd person (67%). Though, as the percentages indicate, subject use is lower as compared to the group average - 70% and 88%, respectively. The remaining two children in Group I show an interesting contrast between 1st and 2nd persons and 3rd person: Child MLUW 1.40 produces 100% subjects in 1st and 2nd person context and only 57% in 3rd person context. Child MLUW 1.87 produces 68% and 47% subjects, respectively.

The person contrast in the present tense is surprising, especially as it is found in all children in Group I, showing

a general trend even in those children where it might not be meaningful. What is even more surprising is that the contrast is reversed from that of the past tense. If children were generalized over tenses, and making only a person contrast, we would expect to find the same person contrast in both tenses. The fact that the order is reversed indicates that children are attuned to the tense matrix, and at the same time, they also produce a distinction following the [person] matrix. Thus, they have already recognized the contrast in 1st and 2nd persons in present and past tense contexts. This is the same contrast found between 3rd person past and 1st and 2nd person past. The similarity between 3rd person past and all persons in present tense is expected given that these contexts all lack the [person] feature.

A final comparison is required between 3rd person present tense and 3rd person past tense. We have already observed that, in general, the children in Group I produce 3rd person subject less than 1st and 2nd person subjects in the present tense despite the fact that all forms are uniform across persons in this tense. We have also noted that 3rd person past tense is similar in lacking [person]. Given the surprising contrast in the present tense it is not clear what children would produce in 3rd person past.

Child MLUW 1.92 and child MLUW 1.86 continue to show high productions of subjects, and show no contrast between persons in present tense or 3rd person past tense. The data indicate

that both children understand the grammatical constraints underlying each tense-person context.

Child MLUW 1.67, who also showed high production of subject use in the present tense across persons, produced only 50% subjects in 3rd person past. Since she is able to produce subjects more than 90% in the present tense, it cannot be the case that she is operating under performance limitations when producing past tense subjects. Child MLUW 1.70, who showed no person contrast in the present tense, when compared with past tense, used 86% subjects in 3rd person past, as opposed to 63% in 3rd person present tense.

The last two children who exhibited a person contrast in the present tense, also contrast with each other in the production of subjects in 3rd person past. Child MLUW 1.40 is consistent in using 57% subjects in 3rd person present tense and 54% in 3rd person past. Similar to child MLUW 1.67, we cannot resort to performance factors to explain these findings, since in 1st and 2nd person present tense, he uses subjects 100%. In contrast, child MLUW 1.87, who used only 47% subjects in 3rd person present tense, used 100% subjects in the same person context in the past tense.[3]

Two conclusions can be drawn from these findings: First, Group I is not homogenous and at least two children exhibit the adult pattern when they were observed. Second, all

---

[3] This might not reflect a true state of affairs since the child produced only 2 tokens of 3rd person past tense.

children operate on both the tense and person matrices. Yet, not all children understand how the two matrices interact. The fact that in all contexts that require obligatory subjects, all children use subjects more than 47% and never produce them as low as the subject production found in the 1st and 2nd past context, shows that they know that the present tense contexts and the 3rd person past context are not null-subject contexts.

I would like to propose that the fact that some children below MLUW 2.0 use subjects around 50% in contexts that require subjects indicates that they have distinguished them from contexts that do not require subjects. At the same time, however, they are confused by the interaction of the two matrices and the fact that they are not applied uniformly, either across person or across tense. The individual variation seems to reflect different routes children take in acquiring the adult system. Since the locus of the parameter is in the setting of functional heads, till those are set, the child will keep both subject options equally available.

We have claimed that children at the one-word stage produce, and hence know, that Agr is specified in Hebrew. What some children have not acquired yet at the outset of combinatorial speech below MLUW 2.0, is the strength of the agreement features in Hebrew and the role of [person]. Thus, although agreement morphology is clear and unambiguous, the expectation of a uniform behavior along each functional matrix is not fulfilled creating the confusion we have observed in

some children, especially in the youngest-MLUW children. As we have shown, not all children fall in that trap.

Another source of confusion targeting 3rd person contexts is misleading input in the form of expletives and generic sentences. Generic sentences in the present tense always refer to 3rd person plural but require obligatory null subjects. Similarly, expletives, which are licensed in all tenses, are found only in 3rd person contexts.[4]

As we have already noted, the low frequency of subject use in the future tense does not allow us to offer such an elaborate interpretation. Since the future tense emerges later than the present and past, the options that were available to children might be different once the other tenses have been correctly set. We can only observe that there is a general trend in treating the future as a non-null tense, as it is treated in adult Hebrew (see Chapter 3).

To summarize, the data indicate that children as low as MLUW 2.0 understand the distribution of subjects in Hebrew. Even the lowest-MLUW children, who produce subjects in some tense-person contexts around 50%, have recognized which of the contexts in Hebrew is null-subject. The general confusion in 3rd person contexts observed in some children indicate they simultaneously pay attention to tense and person morphology -

---

[4] Although children at this age rarely produce expletive sentences, they are still exposed to them in the linguistic environment. Whether or not they recognize such structures in their input will have to be further looked into.

hence the confusion. If they were observing subjects only, as originally proposed by the *Null Subject Parameter*, they should have treated uniformly the present tense and 3rd person past context. Similarly, if they were solely operating under performance limitations, the limitation should have been observed uniformly in these contexts.

Yet, across children, as they follow the distribution and regularities of subjects in Hebrew, and given that some tense-person contexts are subject to different grammatical constraints, the gradual increase in subject use across tenses and persons is best explained by performance factors (Valian, 1991).

To conclude, these data show, first, that children seem to recognize the inflectional morphology in Hebrew very early on. Already at the one-word stage, they produce finite agreeing forms indicating the presence of agreement features. At the outset of the combinatorial stage, below MLUW 2.0, children are attuned to the inflectional cues, i.e., to Tense and Agr. When the data are clear, as in the absence versus presence of the feature [person] in 1st and 2nd person contexts across tenses, children can benefit from both the morphological affixation and the use of subjects. Thus, they can conclude that agreement is strong and when [person] is specified, referential *pro* is identified.

Moreover, as languages do not seem to be mixed with respect to licensing null subjects (only in identifying them),

recognizing that 1st and 2nd person past context is null-subject will inform the child that null-subjects are licensed across tenses in Hebrew. The entailment of licensing null subjects in all tenses, following Speas' (1994) Economy principle, is that all heads, including Agr, must be licensed in all tenses by having content. Since Agr is not interpretable at LF, the phonetic features that can license this head must be strong. Consequently, what is left for the child to acquire is the role of [person], which can also be inferred from the contrast between 1st and 2nd person contexts in present tense and past tense.

8.2 Summary of Cross-Linguistic Findings

Researchers working on child language seem to agree that children in general produce fewer subjects than the adults speaking their language (Bloom, 1990, 1993; Hyams, 1986, 1992a, 1992b, 1994; Hyams and Wexler, 1993; Roeper and Rohrbacher, 1994; Valian, 1991, Valian *et al.* 1994, Valian and Eisenberg, 1995; and references cited therein). This seems to be true whether or not the target language is null-subject. The disagreement lies in the interpretations proposed to account for such findings. It is problematic to compare the different reports in the literature since some findings are reported qualitatively and not quantitatively. In others the

findings are reported from a very small sample of children. Finally, even when the data are drawn from the same data base, such as CHILDES (McWhinney and Snow, 1985), the files used for the same children differ and there seems to be no motivation for choosing one set of files over the other. Consequently, the studies I focused on in Chapter 5 allow us to compare, within given limitations, cross-linguistic evidence on subject use in child language.

8.2.1 Subject Use in Child English

The findings in Valian's (1991) study are similar to those reported for the Hebrew speaking children in the comparable age and MLU groups. She reported a mean percentage of 69% (s.d. = 12) subject use in Group I. The percentage of subject use increased to 89% (s.d. = 4) in Group II (with slightly more increase in the other two Groups). Within the groups the range of subject use was 55% - 82% in Group I, where one more child had 58% subject use, whereas the remaining children used subjects 74% and 76%. In Group II, the range was 84% to 94%. Valian concludes that 'if we take subject usage from 84% to 94% as evidence that children understand that subjects are obligatory, we can conclude that at least as soon after MLU 2 American children exhibit no competence deficit' (ibid, p.48). As already noted, in terms of subject use, we need to

concentrate on Group I.

Given the internal individual subject use showed in Group I, Valian suggests that this group might consist of two sub-groups. This is even more emphasized when *wh*-questions are excluded and subject use showed by the lowest-MLU child (1.53) decreases to 38%. Valian allows for the possibility then that 'under MLU 2.0 ... some children may exhibit a competence deficit while others do not' (ibid, p.48). Thus, if we concentrate on those two children, the mean of subject use is 57%. The low percentage of subject use reported for child MLU 1.53, either indicates that the child is still producing sentences that lack Agr altogether, as explained in Chapter 4, or that she has set the agreement parameter but has yet to acquire its strength properties.

In Chapter 5, we have reviewed Roeper and Rohrbacher's (1994) study of Adam (Brown, 1973; CHILDES database, McWhinney and Snow, 1985) and his productions of *wh*-questions from age 2;3 to 2;11. The data they reported support both Valian's (1991) and my Hebrew data. Their findings support my proposals even more strongly when Adam's files are divided appropriately. In both studies (Valian, 1991; Roeper and Rohrbacher, 1994), agreement is very infrequent and in some cases absent altogether. Roeper and Rohrbacher argue that finiteness[5] is not productive in the first 10/11 files, making

---

[5] As defined in footnote 13 (ibid, p. 11). See also Chapter 5 in this work.

those files perfect candidates for the *Minimal Competence* stage. Consequently, we would expect the production of null subjects to parallel that of a null-subject language, since at this stage, in the absence of Agr, all other projections (specifically TP)[6] are licensed. Tabulating the data in Adam's first 11 files, we find a 17% (13/78) subject use in *wh*-questions in non-finite contexts, and 80% subjects in finite clauses, though the frequencies for the latter are low (4/5). Overall subject use is 21% (17/83). This is the mean found in Valian (1991) for the Italian children in her study (section 8.2.2) and a little higher than the mean reported for the null-subject context for Group I in my study.

Files 12 through 15 show a mean of 49% (17/35) subject use in non-finite clauses, contrasting with 94% (46/49) subject use in finite clauses. Only by files 16 through 18, do we find a non-null-subject pattern across clauses where subjects are used 97% (57/59) in finite clauses, and 83% (76/91) in non-finite clauses. Thus, Roeper and Rohrbacher (1994) claim that

> ... AgrSP becomes obligatory (and as a consequence, pro becomes impossible) in all clauses precisely because weak agreement has reached the productive stage. It thus turns out that the loss of pro-drop is stretched out over a period of time only because the acquisition of agreement on which it depends is stretched over that same period of time. (ibid, p. 36)

---

[6] This follows the *Minimal Competence* model and not Roeper and Rohrbacher's (1994) account that argues for the absence of both AgrP and TP from children's early structures.

The Hebrew data I have presented show that when agreement is either ambiguous, or unambiguous but clouded by other factors, such as the child's expectations, a certain confusion is created temporizing the acquisition of the system. Since agreement morphology in English is not uniformly overt as in Hebrew, the child does not have a regular affixational system to draw evidence from regarding the properties of Agr in her/his language. The observed acquisition process, then, is gradual, as Roeper and Rohrbacher report.

Thus, it is not surprising that once Adam recognized that English is an agreement language, he still needs to find out whether agreement is strong or weak. This is the stage when the confusion is expected and it is attested in files 12 through 15 in the use of 49% subjects in non-finite *wh*-questions.

What seems to be problematic on all accounts is the simultaneous use of finite and non-finite clauses. A gradual process of acquisition would entail that the use of finite forms increase in matrix clauses, and as the child comes to understand that Agr is weak in English, subject production should increase too. At the same time, the rate of non-finite clauses should decrease and with it fewer null subjects should be produced, across forms. However, Roeper and Rohrbacher report a consistent use of non-finite forms, even higher than the rate for finite forms, as shown in files 16 through 18. Subject use increase in both clause-types. They take this

finding to indicate that the non-finite forms gradually include Agr and TP. However, if the forms include Agr, they must be analyzed as agreeing clauses, i.e., finite, following their definition (ibid, footnote 13). The trade-off they describe is one between finite and non-finite clauses, where the latter shows an increase in subject use, as expected if children understand that Agr is weak. It is not, though, a trade-off between overt and covert subjects as Roeper and Rohrbacher account analyze it.

To conclude, the English data, from child MLUW 1.53 and Adam's early files, support the claims I have made for an early minimal competence stage lacking agreement. If reanalyzed, the data from Adam's later files show a trade-off between finite and non-finite forms as a function of agreement and subject use. This is expected if children are attuned to the morphological cues and possibly to subject use in their language. We need to keep in mind, that given the non-overt morphological system of English, this conclusion is not easily supported or demonstrated.

8.2.2 Subject Use in Child Italian

Valian (1991) has compared the data she has collected from the American children with data from Italian children (see Chapter 5). Focusing on utterances with verbs, Valian reported that

'from Time I to Time II the overall proportion of subject use stays constant at about .30 (average s.d. = .08), less than half the average usage of Group I Americans [and slightly more than half the use reported in the youngest-MLU child]' (ibid, p.46). An internal division shows that at Time I most of the subjects (21%, s.d. = 4) are post-verbal, whereas in Time II the production of pre-verbal subjects has almost doubled, from 9% (s.d. = 6) to 15% (s.d. = 5).

Following Speas (1994), agreement in Italian is strong and heads its own maximal projection. The bare verb inserted under VP raises across the subject and adjoins to the agreement features in the functional head. Since AgrP is licensed and the Economy principle complied with, a subject, whether overt or covert, need not raise from its base-generated position, showing the subject-verb inversion property typical of null-subject languages. Thus, at time I, children understand that Italian is null-subject and that its projections are independently licensed. This is reflected in both the low mean of subject use and the fact that most of these subjects remain in their base generated position, so that [Spec, AgrP] remains empty.

Since Italian finite verbs are always inflected for agreement, children receive regular inflectional input enabling them to figure out the properties and role of Agr in their language, exactly as in Hebrew. The two languages differ in the uniformity of agreement inflection. The former is

uniformly inflected for agreement and the feature [person], whereas the latter exhibits a mixed system which we have shown to temporary delay its acquisition in some children.

8.2.3 Subject Use in Child Portuguese

Valian and Eisenberg (1995) studied the early subject productions of Portuguese speaking children. The results obtained for Group I are 28% (s.d. = 20) subject use in verbal clauses. This mean increased to 38% (s.d. = 17) in Group II, and 57% (s.d. = 22) in Group III. The comparable adult usage was 56% (s.d. = 6) subjects, demonstrating the adult-like production of Group III.

Following Rohrbacher's (1992) generalization, and the description of Brazilian Portuguese (see Chapter 5), the verbal paradigm in BP is referential, and therefore, the agreement features are strong. Thus, we would expect null-subjects to be used in all contexts or at least in the unambiguous 1st person context. Yet, the reports for adult Brazilian speakers, though restricted, suggest that the BP speakers use subjects more in 1st person contexts than in 3rd person contexts. Similar results are found when looking at adult speech to children.

Since the children's data were not divided by person, it is not possible to compare their subject production to their

parents', nor analyze them to see whether subject use differs as a function of person. Yet, a look at the individual variation in Group I reveals and interesting pattern.

As in Group I in the Hebrew study, Group I in the Brazilian study is not homogeneous and could be divided into two sub-groups. In one sub-group, the mean of subject production is 13% (s.d. = 6, n=4) in verbal clauses, while in the second sub-group, the mean is 48% subjects (s.d. = 10, n=3). The use of agreement indicates that the children have outgrown the minimal competence stage, so that the low production of subjects is not due to the absence of Agr but rather to children's treatment of BP as a regular null-subject language. The mean of subject use matches the data reported for Italian and Hebrew past tense. These children will have to learn that BP is not a typical null-subject language and eventually match their subject production to that of the adults. The second group has either already learned the adult pattern or shows the typical confusion we have reported for English and Hebrew 3rd person context.

8.2.4 Subject Use in Child Korean

In a study of early subject productions in Korean, Kim (in press) has looked at the production of null subjects in three children studied longitudinally (see Chapter 5).

Kim suggests that Korean children start producing sentences consisting of predicates only, i.e., with 0 subjects. Following the *Minimal Competence* model, it is not surprising that children's early productions include only predicates and lack subjects altogether. This is reinforced by the fact that Korean lacks agreement so that children never find evidence for AgrP in this language. As adults use subjects between 35% - 45%, the children will eventually match their subject production to the adults', as we have seen in the BP study. Given that the initial structure and the adult structure both lack agreement, the correct Agr parameter is initially set. Thus, the increase in subject use is best explained by performance factors.

8.3 Conclusions

The cross-linguistic evidence presented in this chapter supports the proposals I have made in Parts I and II and leads to four important conclusions.

First, across languages children start using subjects less than adults, whether the language is null-subject or not. We accounted for this fact following the *Minimal Competence* model. The model argues for a child structure that initially specifies only those functional categories that are cross-linguistically attested, such as TP and CP. To license these

categories, they must be specified for content. Null subjects, then, are also licensed, yet indirectly. Categories such as Agr, for which language-specific evidence is required for specifying them in the lexicon, emerge later. Since languages differ with respect to specifying Agr, children will have to learn whether the target language is of the agreement type or not. This is the first parameterized option children need to set with respect to Agr. The second parameterized option is finding evidence, in languages that exhibit agreement features, for the strength of Agr. In conjunction with Speas' (1994) Economy principle, strong Agr features license the projection they head so that overt subjects become redundant, hence the emergence of *pro*. Furthermore, the observation of the different ϕ-features will inform children which AgrPs are selected in their language, e.g., Agr_AP reflecting adjectival predicates, AgrPart, reflecting participle predicates and so forth.

These parameterized options predict that children must be attuned to the inflectional morphology in their language. The observation of the distribution of subjects alone cannot guarantee the acquisition of the parameters. On the other hand, it was argued that without observing subjects, it would be difficult, if not impossible, to set the strength property of Arg. We concluded that these predictions were also borne out.

Third, we observed that when agreement is missing

altogether or is unambiguously affixed on all verbal forms, the acquisition process proceeds deductively given the parameterized options, and hence fast. In the absence of such evidence, as in Korean, the initial structure remains unchanged, so increase of subject use as a function of age or MLU is attributable to performance factors.

When Agr features are strong, the child will continue to produce null-subjects. The change between the early structure and the adult structure is in the addition of a functional layer. However, since this layer is independently licensed by the strong features, there is no observable stage that shows competence deficit. Once more, the consistent increase in subject use, even in contexts which do not require obligatory subjects, is best explained by performance deficit factors.

In 3rd person contexts in Hebrew, Agr is strong and unambiguous. However, the mixed system operating simultaneously across tenses and persons might be reflected in a competence deficit stage if children do not understand how the two matrices interact. The data show, that although children distinguish between null-subject contexts (1st and 2nd past) and non-null-subject contexts (the remaining tense-person contexts), the latter is characterized in some children by the use of overt and covert subjects to the same extent.

In languages with weak agreement features, the child's grammar undergoes a development from a grammar or structure in which all projections are licensed (in the minimal competence

stage) to one in which AgrP is projected but not independently licensed. In the initial structure, all projections are licensed so that *pro* is licensed. At the outset of combinatorial speech, children's structures are either still characterized by the minimal competence stage, or already exhibit the knowledge that the language specifies agreement features. The absence of regular overt morphology might inform children that their language is not null-subject and that agreement is weak - hence the observation of higher productions of subjects as compared to the reports from null-subject languages. Those children who have not yet set the strength properties of Agr, will be characterized by entertaining both subject options equally. Exhibiting lower productions of subjects is attributable to performance. As the reports from child English show, children outgrow this intermediate stage around MLU 2.0 (Valian, 1991), and the consistent increase of subject use as a function of MLU is also attributable to performance.

APPENDIX

TABLE 1-A. Frequency and Proportion of Subjects and ±Verbs in Present Tense

	MLUW	AGE	Total Present Tense	-V Pred.	+Subj -V	+V Pred	(prop)	+Subj +V	Prop. +Subj +V
G									
R	1.40	2;2	119	49	44	70	(.59)	36	.51
O	1.67	1;11	68	44	44	24	(.35)	22	.92
U	1.70	1;11	110	74	74	36	(.33)	23	.64
P	1.86	1;11	235	141	141	94	(.40)	85	.90
	1.87	1;10	94	56	56	38	(.40)	22	.58
I	1.92	2;5	132	72	72	60	(.45)	55	.92
n=6									
Mean	1.74	2;0	126	73	72	54	(.42)	41	.74
s.d.	.19	3	58	36	36	26	(.09)	25	.19
G	2.04	2;2	195	107	107	88	(.45)	81	.92
R	2.09	2;3	200	136	136	64	(.32)	60	.94
O	2.11	2;3	95	56	56	39	(.41)	18	.46
U	2.13	2;2	108	33	32	75	(.69)	63	.84
P	2.24	1;10	160	62	62	98	(.61)	88	.90
	2.24	2;4	137	79	79	58	(.42)	52	.90
II	2.24	2;6	117	27	27	90	(.77)	89	.99
n=7									
Mean	2.16	2;3	145	71	71	73	(.52)	64	.85
s.d.	.08	2	42	39	39	21	(.17)	25	.18
G									
R	2.40	2;3	171	104	104	67	(.39)	61	.91
O	2.45	2;2	158	74	74	84	(.53)	80	.95
U	2.51	2;4	177	55	54	122	(.69)	94	.77
P	2.60	2;6	80	32	32	48	(.60)	46	.96
	2.84	2;2	276	111	111	165	(.60)	158	.96
III	3.01	2;7	210	78	78	132	(.63)	126	.95
n=6									
Mean	2.64	2;4	180	77	76	103	(.57)	94	.92
s.d.	.24	2	63	30	30	44	(.10)	42	.07

TABLE 2-A. Frequency and Proportion of Subjects and Verbs in Past Tense

	MLUW	AGE	Total Past Tense	Total +Subj	Prop. +Subj	Total -Subj	Prop. -Subj
G							
R	1.40	2;2	37	7	.19	30	.81
O	1.67	1;11	19	6	.32	13	.68
U	1.70	1;11	9	6	.67	3	.33
P	1.86	1;11	17	9	.53	8	.47
	1.87	1;10	6	3	.50	3	.50
I	1.92	2;5	18	10	.56	8	.44
n=6							
Mean	1.74	2;0	18	7	.46	11	.54
s.d.	.19	3	11	2	.17	10	.17
G	2.04	2;2	48	29	.60	19	.40
R	2.09	2;3	41	18	.44	23	.56
O	2.11	2;3	29	14	.48	15	.52
U	2.13	2;2	15	12	.80	3	.20
P	2.24	1;10	63	13	.21	50	.79
	2.24	2;4	46	19	.41	27	.59
II	2.24	2;6	21	14	.67	7	.33
n=7							
Mean	2.16	2;3	38	17	.52	21	.48
s.d.	.08	2	17	6	.19	16	.19
G							
R	2.40	2;3	26	14	.54	12	.46
O	2.45	2;2	12	8	.67	4	.33
U	2.51	2;4	66	27	.40	39	.60
P	2.60	2;6	36	18	.50	18	.50
	2.84	2;2	48	27	.56	21	.44
III	3.01	2;7	43	34	.79	9	.21
n=6							
Mean	2.64	2;4	39	21	.58	17	.42
s.d.	.24	2	19	10	.14	12	.14

TABLE 3-A. Frequency and Proportion of Subjects and Verbs in Future Tense

	MLUW	AGE	Total Future Tense	Total +Subj	Prop. +Subj	Total -Subj	Prop. -Subj
G							
R	1.40	2;2	27	21	.78	6	.22
O	1.67	1;11	3	2	.67	1	.33
U	1.70	1;11	8	3	.38	5	.62
P	1.86	1;11	4	4	1.00	0	0
	1.87	1;10	6	5	.83	1	.17
I	1.92	2;5	18	17	.94	1	.06
n=6							
Mean	1.74	2;0	11.00	8.67	.77	2.33	.23
s.d.	.19	3	9.50	8.16	.22	2.50	.22
G	2.04	2;2	31	19	.61	12	.39
R	2.09	2;3	6	4	.67	2	.33
O	2.11	2;3	9	7	.78	2	.22
U	2.13	2;2	32	24	.75	8	.25
P	2.24	1;10	21	14	.67	7	.33
	2.24	2;4	16	11	.69	5	.31
II	2.24	2;6	24	23	.96	1	.04
n=7							
Mean	2.16	2;3	20	15	.73	5.29	.27
s.d.	.08	2	10	8	.11	3.99	.11
G							
R	2.40	2;3	21	16	.76	5	.24
O	2.45	2;2	39	27	.69	11	.31
U	2.51	2;4	31	26	.84	5	.16
P	2.60	2;6	39	35	.90	4	.10
	2.84	2;2	46	42	.91	4	.09
III	3.01	2;7	50	38	.76	12	.24
n=6							
Mean	2.64	2;4	38	31	.81	6.83	.19
s.d.	.24	2	10	10	.09	3.66	.09

TABLE 4-A. Frequency and Proportion of ±Subjects in 3rd Person Context in Present Tense

	MLUW	AGE	3rd Context	Lexical Freq	Lexical Prop	Pronominal Freq	Pronominal Prop	Null-Subj Freq	Null-Subj Prop
G									
R	1.40	2;2	60	13	.22	15	.25	32	.53
O	1.67	1;11	21	9	.43	10	.48	2	.10
U	1.70	1;11	30	5	.17	14	.47	11	.37
P	1.86	1;11	56	35	.09	45	.80	6	.11
	1.87	1;10	19	4	.21	5	.26	10	.53
I	1.92	2;5	19	3	.16	13	.68	3	.16
n=6									
Mean	1.74	2;0	34	6.50	.21	17	.49	11	.30
s.d.	.19	3	19	3.78	.12	14	.22	11	.20
G	2.04	2;2	61	4	.07	54	.89	3	.05
R	2.09	2;3	26	2	.08	24	.92	0	0
O	2.11	2;3	14	6	.43	3	.21	5	.36
U	2.13	2;2	53	8	.15	36	.68	9	.17
P	2.24	1;10	58	2	.03	52	.90	4	.07
	2.24	2;4	28	2	.07	22	.79	4	.14
II	2.24	2;6	39	6	.15	33	.85	0	0
n=7									
Mean	2.16	2;3	40	4.29	.14	32	.75	3.57	.11
s.d.	.08	2	18	2.43	.14	18	.25	3.26	.13
G									
R	2.40	2;3	33	6	.18	23	.70	4	.12
O	2.45	2;2	34	12	.35	21	.62	1	.03
U	2.51	2;4	97	10	.10	59	.61	28	.29
P	2.60	2;6	19	5	.47	9	.47	1	.05
	2.84	2;2	32	4	.12	28	.88	0	0
III	3.01	2;7	64	13	.20	47	.73	4	.06
n=6									
Mean	2.64	2;4	47	8.33	.24	31	.67	6	.09
s.d.	.24	2	29	2.83	.14	18	.14	11	.10

TABLE 5-A. Frequency and Proportion of ±Subjects in 1st and 2nd Person Context in Present Tense[1]

	MLUW	AGE	1st-2nd Context	+Subj Freq	+Subj Prop	-Subj Freq	-Subj Prop
G							
R	1.40	2;2	8	8	1.00	0	0
O	1.67	1;11	3	3	1.00	0	0
U	1.70	1;11	6	4	.67	2	.33
P	1.86	1;11	35	35	1.00	0	0
	1.87	1;10	19	13	.68	6	.32
I	1.92	2;5	41	39	.95	2	.05
n=6							
Mean	1.74	2;0	19	17	.88	1.67	.12
s.d.	.19	3	16	16	.16	2.34	.16
G	2.04	2;2	25	23	.92	2	.08
R	2.09	2;3	38	34	.89	4	.11
O	2.11	2;3	24	9	.37	15	.63
U	2.13	2;2	21	19	.90	2	.10
P	2.24	1;10	36	34	.94	2	.06
	2.24	2;4	28	28	1.00	0	0
II	2.24	2;6	51	50	.98	1	.02
n=7							
Mean	2.16	2;3	32	28	.86	3.71	.14
s.d.	.08	2	11	13	.22	5.12	.22
G							
R	2.40	2;3	32	32	1.00	0	0
O	2.45	2;2	49	47	.96	2	.04
U	2.51	2;4	25	25	1.00	0	0
P	2.60	2;6	32	32	1.00	0	0
	2.84	2;2	130	126	.97	4	.03
III	3.01	2;7	67	66	.99	1	.01
n=6							
Mean	2.64	2;4	56	55	.99	1.17	.01
s.d.	.24	2	39	38	.02	1.60	.02

[1] As the Hebrew present tense paradigm is not specified for [person], the division by person was done according to context disambiguation; where total differs from table 1-A, it is due to exclusion of the inconclusive verbs.

TABLE 6-A. Frequency and Proportion of ±Subjects in 3rd Person Context in Past Tense

	MLUW	AGE	3rd Context	Lexical Freq	Lexical Prop	Pronominal Freq	Pronominal Prop	Null-Subj Freq	Null-Subj Prop
G									
R	1.40	2;2	16	4	.25	3	.19	9	.56
O	1.67	1;11	10	2	.20	3	.30	5	.50
U	1.70	1;11	7	1	.14	5	.71	1	.14
P	1.86	1;11	9	1	.11	7	.78	1	.11
	1.87	1;10	2	1	.50	1	.50	0	0
I	1.92	2;5	12	3	.25	6	.50	3	.25
n=6									
Mean	1.74	2;0	9.33	2.00	.24	4.17	.50	3.17	.26
s.d.	.19	3	4.72	1.26	.14	2.23	.23	3.37	.22
G	2.04	2;2	29	14	.48	14	.48	1	.03
R	2.09	2;3	13	7	.54	5	.38	1	.08
O	2.11	2;3	17	4	.24	8	.47	5	.29
U	2.13	2;2	12	7	.58	5	.42	0	0
P	2.24	1;10	11	4	.36	6	.55	1	.09
	2.24	2;4	19	4	.21	14	.74	1	.05
II	2.24	2;6	10	6	.60	4	.40	0	0
n=7									
Mean	2.16	2;3	16	6.57	.43	8.00	.49	1.29	.08
s.d.	.08	2	7	3.55	.16	4.28	.12	1.70	.10
G									
R	2.40	2;3	12	2	.17	9	.75	1	.08
O	2.45	2;2	7	6	.86	1	.14	0	0
U	2.51	2;4	22	10	.46	12	.54	0	0
P	2.60	2;6	14	3	.21	10	.71	1	.07
	2.84	2;2	20	9	.45	11	.55	0	0
III	3.01	2;7	18	9	.50	9	.50	0	0
n=6									
Mean	2.64	2;4	16	6.33	.44	8.67	.53	.33	.03
s.d.	.24	2	6	3.27	.25	3.93	.22	.52	.04

TABLE 7-A. Frequency and Proportion of ±Subjects in 1st and 2nd Person Context in Past Tense

	MLUW	AGE	1st-2nd Context	+Subj Freq	+Subj Prop	-Subj Freq	-Subj Prop
G							
R	1.40	2;2	21	0	0	21	1.00
O	1.67	1;11	9	1	.11	8	.89
U	1.70	1;11	2	0	0	2	1.00
P	1.86	1;11	8	1	.13	7	.87
	1.87	1;10	4	1	.25	3	.75
I	1.92	2;5	6	1	.17	5	.83
n=6							
Mean	1.74	2;0	8.33	.67	.11	7.67	.89
s.d.	.19	3	6.71	.52	.10	6.92	.10
G	2.04	2;2	19	1	.05	18	.95
R	2.09	2;3	28	6	.21	22	.79
O	2.11	2;3	12	2	.17	10	.83
U	2.13	2;2	3	0	0	3	1.00
P	2.24	1;10	52	3	.06	49	.94
	2.24	2;4	27	1	.04	26	.96
II	2.24	2;6	11	4	.36	7	.64
n=7							
Mean	2.16	2;3	22	2.43	.13	19	.87
s.d.	.08	2	16	2.07	.13	15	.13
G							
R	2.40	2;3	14	3	.21	11	.79
O	2.45	2;2	5	1	.20	4	.80
U	2.51	2;4	44	5	.11	39	.89
P	2.60	2;6	22	5	.23	17	.77
	2.84	2;2	28	7	.25	21	.75
III	3.01	2;7	25	16	.64	9	.36
n=6							
Mean	2.64	2;4	23	6.17	.27	17	.73
s.d.	.24	2	13	5.23	.19	12	.19

TABLE 8-A. Frequency and Proportion of ±Subjects in 3rd Person Context in Future Tense

	MLUW	AGE	3rd Context	Lexical Freq	Lexical Prop	Pronomianl Freq	Pronomianl Prop	Null-Subj Freq	Null-Subj Prop
G									
R	1.40	2;2	8	2	.25	2	.25	4	.50
O	1.67	1;11	0	-	-	-	-	-	-
U	1.70	1;11	2	2	1.00	0	0	0	0
P	1.86	1;11	1	1	1.00	0	0	0	0
	1.87	1;10	0	-	-	-	-	-	-
I	1.92	2;5	2	2	1.00	0	0	0	0
n=6				n=4					
Mean	1.74	2;0	2.17	1.75	.81	.50	.06	1.00	.13
s.d.	.19	3	3.00	.50	.38	1.00	.13	2.00	.25
G	2.04	2;2	2	0	0	2	1.00	0	0
R	2.09	2;3	1	1	1.00	0	0	0	0
O	2.11	2;3	5	3	.60	1	.20	1	.20
U	2.13	2;2	7	0	0	4	.57	3	.43
P	2.24	1;10	5	1	.20	3	.60	1	.20
	2.24	2;4	0	-	-	-	-	-	-
II	2.24	2;6	4	3	.75	1	.25	0	0
n=7			n=6						
Mean	2.16	2;33	.43	1.33	.42	1.83	.44	.83	.14
s.d.	.08	2	2.51	1.37	.42	1.47	.36	1.17	.17
G									
R	2.40	2;3	6	2	.33	4	.67	0	0
O	2.45	2;2	6	3	.50	3	.50	0	0
U	2.51	2;4	1	0	0	1	1.00	0	0
P	2.60	2;6	4	3	.75	1	.25	0	0
	2.84	2;2	2	0	0	2	1.00	0	0
III	3.01	2;7	12	3	.25	9	.75	0	0
n=6									
Mean	2.64	2;4	5.17	1.83	.305	3.33	.695	0	0
s.d.	.24	2	3.92	1.47	.29	3.01	.29	0	0

TABLE 9-A. Frequency and Proportion of ±Subjects in 1st and 2nd Person Context in Future Tense

	MLUW	AGE	1st-2nd Context	+Subj Freq	+Subj Prop	-Subj Freq	-Subj Prop
G							
R	1.40	2;2	19	17	.89	2	.11
O	1.67	1;11	3	2	.67	1	.33
U	1.70	1;11	6	1	.17	5	.83
P	1.86	1;11	3	3	1.00	0	0
	1.87	1;10	6	5	.83	1	.17
I	1.92	2;5	16	15	.94	1	.06
n=6							
Mean	1.74	2;0	8.83	7.17	.75	1.17	.25
s.d.	.19	3	6.91	7.00	.31	1.75	.31
G	2.04	2;2	29	17	.59	12	.41
R	2.09	2;3	5	3	.60	2	.40
O	2.11	2;3	4	3	.75	1	.25
U	2.13	2;2	25	20	.80	5	.20
P	2.24	1;10	16	10	.63	6	.37
	2.24	2;4	16	11	.69	5	.31
II	2.24	2;6	20	19	.95	1	.05
n=7							
Mean	2.16	2;3	16	12	.72	4.57	.28
s.d.	.08	2	9	7	.13	3.87	.13
G							
R	2.40	2;3	15	10	.67	5	.33
O	2.45	2;2	33	21	.64	12	.36
U	2.51	2;4	30	25	.83	5	.17
P	2.60	2;6	35	31	.89	4	.11
	2.84	2;2	44	40	.91	4	.09
III	3.01	2;7	38	26	.68	12	.32
n=6							
Mean	2.64	2;4	33	26	.77	7.00	.23
s.d.	.24	2	10	10	.12	3.90	.12

TABLE 1-B. Frequency and Proportion of Subjects and ±Verb in Present Tense (Including Acceptable Utterances)

	MLUW	AGE	Total Present Tense	-V Pred.	+Subj -V	+V Pred	(prop)	+Subj +V	Prop. +Subj +V
G									
R	1.40	2;2	124	49	44	75	(.60)	36	.48
O	1.67	1;11	70	44	44	26	(.38)	22	.85
U	1.70	1;11	115	74	74	41	(.36)	23	.56
P	1.86	1;11	238	141	141	97	(.41)	85	.88
	1.87	1;10	97	56	56	41	(.42)	22	.54
I	1.92	2;5	139	72	72	67	(.48)	55	.82
n=6									
Mean	1.74	2;0	131	73	72	58	(.44)	41	.69
s.d.	.19	3	58	36	36	26	(.09)	25	.18
G	2.04	2;2	201	107	107	94	(.47)	81	.86
R	2.09	2;3	211	136	136	75	(.36)	60	.80
O	2.11	2;3	113	56	56	57	(.50)	18	.32
U	2.13	2;2	115	33	32	82	(.71)	63	.77
P	2.24	1;10	178	62	62	116	(.65)	88	.76
	2.24	2;4	143	79	79	64	(.45)	52	.81
II	2.24	2;6	120	27	27	93	(.76)	89	.96
n=7									
Mean	2.16	2;3	154	71	71	83	(.56)	64	.75
s.d.	.08	2	42	39	39	20	(.15)	25	.20
G									
R	2.40	2;3	188	109	104	79	(.42)	61	.77
O	2.45	2;2	161	74	74	87	(.54)	80	.92
U	2.51	2;4	197	57	54	140	(.71)	94	.67
P	2.60	2;6	86	32	32	54	(.63)	46	.85
	2.84	2;2	285	111	111	174	(.61)	158	.91
III	3.01	2;7	228	80	78	148	(.65)	126	.85
n=6									
Mean	2.64	2;4	191	77	76	114	(.59)	94	.83
s.d.	.24	2	67	30	30	47	(.10)	42	.09

TABLE 2-B. Frequency and Proportion of Subjects and Verbs in Past Tense (Including Acceptable Utterances)

	MLUW	AGE	Total Past Tense	Total +Subj	Prop. +Subj	Total -Subj	Prop. -Subj
G							
R	1.40	2;2	39	7	.18	32	.82
O	1.67	1;11	21	6	.29	15	.71
U	1.70	1;11	17	6	.35	11	.65
P	1.86	1;11	18	9	.50	9	.50
	1.87	1;10	12	3	.25	9	.75
I	1.92	2;5	28	10	.36	18	.64
n=6							
Mean	1.74	2;0	23	7	.32	16	.68
s.d.	.19	3	7	2	.11	9	.11
G	2.04	2;2	54	29	.54	25	.46
R	2.09	2;3	43	18	.42	25	.58
O	2.11	2;3	35	14	.40	21	.60
U	2.13	2;2	16	12	.75	4	.25
P	2.24	1;10	64	13	.20	51	.80
	2.24	2;4	54	19	.35	35	.65
II	2.24	2;6	27	14	.52	13	.48
n=7							
Mean	2.16	2;3	42	17	.45	25	.55
s.d.	.08	2	17	6	.17	15	.17
G							
R	2.40	2;3	26	14	.54	12	.46
O	2.45	2;2	12	8	.67	4	.33
U	2.51	2;4	68	27	.40	41	.60
P	2.60	2;6	37	18	.49	19	.51
	2.84	2;2	49	27	.55	22	.45
III	3.01	2;7	47	34	.72	13	.28
n=6							
Mean	2.64	2;4	40	21	.56	19	.44
s.d.	.24	2	20	10	.12	13	.12

TABLE 3-B. Frequency and Proportion of Subjects and Verbs in Future Tense (Including Acceptable Utterances)

	MLUW	AGE	Total Future Tense	Total +Subj	Prop. +Subj	Total -Subj	Prop. -Subj
G							
R	1.40	2;2	27	21	.78	6	.22
O	1.67	1;11	3	2	.67	1	.33
U	1.70	1;11	8	3	.38	5	.62
P	1.86	1;11	4	4	1.00	0	0
	1.87	1;10	6	5	.83	1	.17
I	1.92	2;5	18	17	.94	1	.06
n=6							
Mean	1.74	2;0	11.00	8.67	.77	2.33	.23
s.d.	.19	3	9.50	8.16	.22	2.50	.22
G	2.04	2;2	31	19	.61	12	.39
R	2.09	2;3	6	4	.67	2	.33
O	2.11	2;3	9	7	.78	2	.22
U	2.13	2;2	32	24	.75	8	.25
P	2.24	1;10	21	14	.67	7	.33
	2.24	2;4	16	11	.69	5	.31
II	2.24	2;6	24	23	.96	1	.04
n=7							
Mean	2.16	2;3	20	15	.73	5.29	.27
s.d.	.08	2	10	8	.11	3.99	.11
G							
R	2.40	2;3	21	16	.76	5	.24
O	2.45	2;2	39	27	.69	11	.31
U	2.51	2;4	31	26	.84	5	.16
P	2.60	2;6	39	35	.90	4	.10
	2.84	2;2	46	42	.91	4	.09
III	3.01	2;7	51	38	.75	13	.25
n=6							
Mean	2.64	2;4	38	31	.81	7.00	.19
s.d.	.24	2	11	10	.09	3.95	.09

TABLE 4-B. Frequency and Proportion of ±Subjects in 3rd Person Context in Present Tense (Including Acceptable Utterances)

	MLUW	AGE	3rd Context	Lexical Freq	Lexical Prop	Pronominal Freq	Pronominal Prop	Null-Subj Freq	Null-Subj Prop
G									
R	1.40	2;2	60	13	.22	15	.25	32	.53
O	1.67	1;11	21	9	.43	10	.48	2	.10
U	1.70	1;11	30	5	.17	14	.47	11	.37
P	1.86	1;11	56	35	.09	45	.80	6	.11
	1.87	1;10	19	4	.21	5	.26	10	.53
I	1.92	2;5	19	3	.16	13	.68	3	.16
n=6									
Mean	1.74	2;0	34	6.50	.21	17	.49	11	.30
s.d.	.19	3	19	3.78	.12	14	.22	11	.20
G	2.04	2;2	61	4	.07	54	.89	3	.05
R	2.09	2;3	27	2	.07	24	.89	1	.04
O	2.11	2;3	15	6	.40	3	.20	6	.40
U	2.13	2;2	53	8	.15	36	.68	9	.17
P	2.24	1;10	59	2	.03	52	.88	5	.08
	2.24	2;4	28	2	.07	22	.79	4	.14
II	2.24	2;6	39	6	.15	33	.85	0	0
n=7									
Mean	2.16	2;3	40	4.29	.13	32	.74	4.00	.13
s.d.	.08	2	18	2.43	.13	18	.25	3.06	.13
G									
R	2.40	2;3	33	6	.18	23	.70	4	.12
O	2.45	2;2	34	12	.35	21	.62	1	.03
U	2.51	2;4	97	10	.10	59	.61	28	.29
P	2.60	2;6	19	5	.47	9	.47	1	.05
	2.84	2;2	32	4	.12	28	.88	0	0
III	3.01	2;7	64	13	.20	47	.73	4	.06
n=6									
Mean	2.64	2;4	47	8.33	.24	31	.67	6	.09
s.d.	.24	2	29	2.83	.14	18	.14	11	.10

TABLE 5-B. Frequency and Proportion of ±Subjects in 1st and 2nd Person Context in Present Tense (Including Acceptable Utterances)

	MLUW	AGE	1st-2nd Context	+Subj Freq	+Subj Prop	-Subj Freq	-Subj Prop
G							
R	1.40	2;2	13	8	.62	5	.38
O	1.67	1;11	4	3	.75	1	.25
U	1.70	1;11	10	4	.40	6	.60
P	1.86	1;11	35	35	1.00	0	0
	1.87	1;10	22	13	.59	9	.41
I	1.92	2;5	48	39	.81	9	.19
n=6							
Mean	1.74	2;0	22	17	.70	5	.30
s.d.	.19	3	17	16	.21	4	.21
G	2.04	2;2	27	23	.85	4	.15
R	2.09	2;3	44	34	.77	10	.23
O	2.11	2;3	41	9	.22	32	.78
U	2.13	2;2	28	19	.68	9	.32
P	2.24	1;10	50	34	.68	16	.32
	2.24	2;4	29	28	.97	1	.03
II	2.24	2;6	54	50	.93	4	.07
n=7							
Mean	2.16	2;3	39	28	.73	11	.27
s.d.	.08	2	11	13	.25	11	.25
				n=6	.81		.19
G							
R	2.40	2;3	42	32	.76	10	.24
O	2.45	2;2	52	47	.90	5	.10
U	2.51	2;4	43	25	.58	18	.42
P	2.60	2;6	34	32	.94	2	.06
	2.84	2;2	138	126	.91	12	.09
III	3.01	2;7	75	66	.88	9	.12
n=6							
Mean	2.64	2;4	64	55	.83	9	.17
s.d.	.24	2	39	38	.14	6	.14

TABLE 6-B. Frequency and Proportion of ±Subjects in 3rd Person Context in Past Tense (Including Acceptable Utterances)

	MLUW	AGE	3rd Context	Lexical Freq	Lexical Prop	Pronominal Freq	Pronominal Prop	Null-Subj Freq	Null-Subj Prop
G									
R	1.40	2;2	18	4	.22	3	.17	11	.61
O	1.67	1;11	12	2	.17	3	.25	7	.58
U	1.70	1;11	15	1	.07	5	.33	9	.60
P	1.86	1;11	10	1	.10	7	.70	2	.20
	1.87	1;10	8	1	.13	1	.12	6	.75
I	1.92	2;5	22	3	.14	6	.27	13	.59
n=6									
Mean	1.74	2;0	14.17	2	.14	4.17	.31	8.00	.55
s.d.	.19	3	5.23	1.26	.05	2.23	.21	3.90	.18
G	2.04	2;2	35	14	.40	14	.40	7	.20
R	2.09	2;3	15	7	.47	5	.33	3	.20
O	2.11	2;3	23	4	.17	8	.35	11	.48
U	2.13	2;2	13	7	.54	5	.38	1	.08
P	2.24	1;10	12	4	.33	6	.50	2	.17
	2.24	2;4	27	4	.15	14	.52	9	.33
II	2.24	2;6	16	6	.38	4	.25	6	.37
n=7									
Mean	2.16	2;3	20	6.57	.35	8.00	.39	5.57	.26
s.d.	.08	2	9	3.55	.15	4.28	.09	3.74	.14
R	2.40	2;3	12	2	.17	9	.75	1	.08
O	2.45	2;2	7	6	.86	1	.14	0	0
U	2.51	2;4	24	10	.42	12	.50	2	.08
P	2.60	2;6	15	3	.20	10	.67	2	.13
	2.84	2;2	21	9	.43	11	.52	1	.05
III	3.01	2;7	21	9	.41	9	.41	4	.18
n=6									
Mean	2.64	2;4	17	6.33	.41	8.67	.50	1.67	.09
s.d.	.24	2	7	3.27	.25	3.93	.21	1.37	.06

TABLE 1-C. Frequency and Proportion of Subjects and ±Verb in Present Tense (Including Acceptable Utterances and Elliptical Do/Happen)

	MLUW	AGE	Total Present Tense	-V Pred.	+Subj -V	+V Pred	(prop)	+Subj +V	Prop. +Subj +V
G									
R	1.40	2;2	126	49	44	77	(.61)	36	.47
O	1.67	1;11	90	44	44	46	(.51)	22	.48
U	1.70	1;11	119	74	74	45	(.38)	23	.51
P	1.86	1;11	245	141	141	104	(.42)	85	.82
	1.87	1;10	99	56	56	43	(.43)	22	.51
I	1.92	2;5	140	72	72	68	(.49)	55	.81
n=6									
Mean	1.74	2;0	137	73	72	64	(.47)	41	.60
s.d.	.19	3	56	36	36	24	(.08)	25	.17
G	2.04	2;2	201	107	107	94	(.47)	81	.86
R	2.09	2;3	226	136	136	90	(.40)	60	.67
O	2.11	2;3	115	56	56	59	(.51)	18	.31
U	2.13	2;2	116	33	32	83	(.72)	63	.76
P	2.24	1;10	180	62	62	118	(.66)	88	.75
	2.24	2;4	143	79	79	64	(.45)	52	.81
II	2.24	2;6	127	27	27	100	(.79)	89	.89
n=7									
Mean	2.16	2;3	158	71	71	87	(.57)	64	.72
s.d.	.08	2	44	39	39	20	(.15)	25	.20
G									
R	2.40	2;3	189	109	104	80	(.42)	61	.76
O	2.45	2;2	165	74	74	91	(.55)	80	.88
U	2.51	2;4	213	57	54	156	(.73)	94	.60
P	2.60	2;6	88	32	32	56	(.64)	46	.82
	2.84	2;2	291	111	111	180	(.62)	158	.88
III	3.01	2;7	229	80	78	149	(.65)	126	.85
n=6									
Mean	2.64	2;4	196	77	76	119	(.60)	94	.80
s.d.	.24	2	68	30	30	50	(.11)	42	.11

TABLE 2-C. Frequency and Proportion of Subjects and Verb in Past Tense (Including Acceptable Utterances and Elliptical Do/Happen)

	MLUW	AGE	Total Past Tense	Total +Subj	Prop. +Subj	Total -Subj	Prop. -Subj
G							
R	1.40	2;2	39	7	.18	32	.82
O	1.67	1;11	24	6	.25	18	.75
U	1.70	1;11	17	6	.35	11	.65
P	1.86	1;11	19	9	.47	10	.53
	1.87	1;10	12	3	.25	9	.75
I	1.92	2;5	28	10	.36	18	.64
n=6							
Mean	1.74	2;0	23	7	.31	16	.69
s.d.	.19	3	10	2	.10	9	.10
G	2.04	2;2	54	29	.54	25	.46
R	2.09	2;3	43	18	.42	25	.58
O	2.11	2;3	39	14	.36	25	.64
U	2.13	2;2	16	12	.75	4	.25
P	2.24	1;10	64	13	.20	51	.80
	2.24	2;6	27	14	.52	13	.48
II	2.24	2;4	55	19	.35	36	.65
n=7							
Mean	2.16	2;3	43	17	.45	26	.55
s.d.	.08	2	17	6	.18	15	.18
G							
R	2.40	2;3	27	14	.52	13	.48
O	2.45	2;2	12	8	.67	4	.33
U	2.51	2;4	69	27	.39	42	.61
P	2.60	2;6	37	18	.49	19	.51
	2.84	2;2	49	27	.55	22	.45
III	3.01	2;7	47	34	.72	13	.28
n=6							
Mean	2.64	2;4	40	21	.56	19	.44
s.d.	.24	2	20	10	.12	13	.12

TABLE 1-D. Frequency and Proportion of ±Verbs and Subjects Divided by Type in Embedded Clauses in Present Tense (including Acceptable [-Subject] Utterances)

	MLUW	AGE	Total Present Tense	Lexical +V	Lexical -V	Pronominal +V	Pronominal -V	Null-Subj +V	Null-Subj -V
G									
R	1.40	2;2	0	0	0	0	0	0	0
O	1.67	1;11	0	0	0	0	0	0	0
U	1.70	1;11	0	0	0	0	0	0	0
P	1.86	1;11	0	0	0	0	0	0	0
	1.87	1;10	8a	1	0	4	2	1(ac)	0
I	1.92	2;5	2	0	0	1	1	0	0
n=6									
Mean	1.74	2;0	1.67	1.67	0	2.50	1.50	.50	0
s.d.	.19	3	3.20	.41	0	2.12	.71	.71	0
G	2.04	2;2	2	0	0	1	1	0	0
R	2.09	2;3	38	1	0	26	8	2*	1
O	2.11	2;3	2	0	0	0	1	1(ac)	0
U	2.13	2;2	5	0	0	3	2	0	0
P	2.24	1;10	0	0	0	0	0	0	0
	2.24	2;6	6	2	0	3	1	0	0
II	2.24	2;4	1	0	0	1	0	0	0
n=7									
Mean	2.16	2;3	7.71	.43	0	4.86	1.86	.43	.14
s.d.	.08	2	13.52	.79	0	9.41	2.79	.79	.38
G									
R	2.40	2;3	9	1	0	4	1	3(ac)	0
O	2.45	2;2	1	0	0	0	1	0	0
U	2.51	2;4	1	0	0	0	1	0	0
P	2.60	2;6	4	0	1	0	1	2(ac)	0
	2.84	2;2	9	1	0	7	1	0	0
III	3.01	2;7	49	4	1	23	12	9(ac)	0
n=6									
Mean	2.64	2;4	12.17	1.00	.33	5.67	2.83	2.33	0
s.d.	.24	2	8.40	1.55	.52	8.96	4.49	3.50	0

[a] Most of her embedded clauses are imperatives such as,
(i) ani roca she tavi li et ze
I want that bring to-me acc this.

TABLE 2-D. Frequency and Proportion of ±Verbs and Subjects Divided by Type in Embedded Clauses in Past Tense (including Acceptable [-Subject] Utterances)

	MLUW	AGE	Total Past Tense	Lexical	Pronominal 1st/ 2nd	Pronominal 3rd	Null-Subj 1st/ 2nd	Null-Subj 3rd
G								
R	1.40	2;2	0	0	0	0	0	0
O	1.67	1;11	0	0	0	0	0	0
U	1.70	1;11	0	0	0	0	0	0
P	1.86	1;11	0	0	0	0	0	0
	1.87	1;10	1	1	0	0	0	0
I	1.92	2;5	0	0	0	0	0	0
n=6								
Mean	1.74	2;0	1.67	1.67	0	0	0	0
s.d.	.19	3	.41	.41	0	0	0	0
G	2.04	2;2	1	1	0	0	0	0
R	2.09	2;3	4	0	0	1	2	1(ac)
O	2.11	2;3	0	0	0	0	0	0
U	2.13	2;2	1	0	0	1	0	0
P	2.24	1;10	0	0	0	0	0	0
	2.24	2;4	1	0	0	1	0	0
II	2.24	2;6	1	0	1	0	0	0
n=7								
Mean	2.16	2;3	1.14	.14	.14	.43	.29	.14
s.d.	.08	2	1.35	.38	.38	.53	.76	.38
G								
R	2.40	2;3	2	0	0	0	0	2
O	2.45	2;2	0	0	0	0	0	0
U	2.51	2;4	7	1	0	2	4	0
P	2.60	2;6	4	0	1	2	0	1
	2.84	2;2	1	0	0	1	0	0
III	3.01	2;7	10	2	2	2	4	0
n=6								
Mean	2.64	2;4	4.00	.50	.50	1.17	1.33	.50
s.d.	.24	2	3.85	.84	.84	.98	2.07	.84

BIBLIOGRAPHY

Abney, S.P. (1987). *The English Noun Phrase in Its Sentential Aspect*. Doctoral Dissertation, MIT.

Adams, M. (1987). From Old French to the Theory of Pro-Drop. *Natural Language and Linguistic Theory*, **5**, 1-32.

Baker, M. (1985). The Mirror Principle and Morphosyntactic Explanation. *Linguistic Inquiry*, **16**, 373-415.

Belleti, A. (1990). *Generalized Verb Movement*. Forris Publications, Dordrecht.

Benedicto, E. (1994). Agr, ϕ-Features, V-Movement: Identifying Pro. In E. Benedicto and J.Runner (eds.), *Functional Projections*. Umass Occasional Papers, **17**, Umass, Amherst.

Benedicto, E., and Runner, J. (eds.) (1994). *Functional Projections*. Umass Occasional Papers, **17**, Umass, Amherst.

Benveniste, E. (1966). Problemes de Linguistique Generale. Gallimard, Paris.

Berman, R. (1978). *Modern Hebrew Structure*. Universities Publishing, Tel Aviv.

_____ (1981). Regularity vs Anomaly: The Acquisition of Hebrew Inflectional Morphology. *Journal of Child Language*, **8**, 265-282.

_____ (1981). Language Development and Language Knowledge: Evidence from the Acquisition of Hebrew Morphophonology. *Journal of Child Language*, **8**, 609-626.

_____ (1982). Verb Pattern Alternation: The Interface of Morphology, Syntax, and Semantics in Hebrew Child Language. *Journal of Child Language*, **9**, 169-191.

_____ (1983). Establishing a Schema: Children's Construals of Verb-Tense Marking. *Language Sciences*, **5:1**, 61-78.

_____ (1986). The Acquisition of Hebrew. In I.D. Slobin (ed). *The Cross-Linguistic Study of Language Acquisition Vol 1: The data*. Lawrence Erlbaum Associates, Hillsdale, NJ.

Bertolo, S. (1995). Maturation and Learnability in Parametric Systems. *Language Acquisition*, **4.4**, 277-318.

Berwick, R.C. (1985).*The Acquisition of Syntactic Knowledge*. MIT Press, Cambridge, MA.

Bloom, P. (1991). Subjectless Sentences In Child Language. *Linguistic Inquiry*, **21.4**, 491-504.

_____ (1993). Grammatical Continuity in Language Development: The Case of Subjectless Sentences. *Linguistic Inquiry*, **24**, 721-734.

Bohannon, J., McWhinney, B., and Snow, C. (1990). No Negative Evidence Revisited: Beyond Learnability or Who Has to Prove What To Whom. *Developmental Psychology*, **26:2**, 221-226.

Borer, H. (1984). *Parametric Syntax*. Dordrecht, Forris.

_____ (1989). Anaphoric Agr. In O. Jaeggli and K. Safir (eds.). *The Null Subject Parameter*. Kluwer, MA, 69-110.

_____ (1992). *The Ups and Downs of Hebrew Verb Movement*. ms. (Umass, Amherst).

Borer, H., and Wexler, K. (1987). The Maturation of Syntax. In T. Roeper and E. Williams (eds.), *Parameter Setting*. Reidel Publishing Company, Boston, MA, 123-172.

Boser, K., Lust, B., Santelmann, L., and Whitman, J. (1994). The Syntax of CP and V-2 in Early Child German (ECG): The Strong Continuity Hypothesis. *NELS*, **22**, 51-65.

Bowers, J. (1993). The Syntax of Predication. *Linguistic Inquiry*, **24.4**, 591-656.

Bresnan, J. (1970). On Complementizers: Toward a Syntactic Theory of Complement Types. *Foundations of Language*, **6.3**.

Brown, R. (1973). *A First Language: The Early Stages*. Harvard University Press, Cambridge, MA.

Brown, R., and Hanlon, C. (1970). Derivational Complexity and Order of Acquisition in Child Speech. In J.R. Hayes (ed.), *Cognition and Development of Language*. John Wiley and Sons, Inc., New York, 11-53.

Cairns, H., and McDaniel, D. (1988). The Notion of "Innateness" in Language Acquisition: Some Empirical Consequences. ms. Queens College, NY.

Chomsky, N. (1965). *Aspects of the Theory of Syntax*. MIT Press, Cambridge, MA.

_____ (1981). *Lectures on Government and Binding*. Forris Publications, Dordrecht - Holland.

_____ (1986a). *Barriers*. MIT Press, Cambridge, MA.

_____ (1986b). *Knowledge of Language: Its Nature, Origin and Use*. Praeger Publishers, New York.

_____ (1989). Some Notes on Economy of Derivation and Representation. In I. Laka and A. Mahajan (eds.) *Functional Heads and Clause Structure*. MIT Working Papers in Linguistics, vol 10.

_____ (1992). *A Minimalist Program For Linguistic Theory*. MIT Occasional Papers in Linguistics, Number 1.

_____ (1995). *The Minimalist Program*. MIT Press, Cambridge, MA.

Chomsky, N., and Lasnik, H. (1977). Filters and Control. *Linguistic Inquiry*, **8.3**.

Clahsen, H. (1986). Verb Inflections in German Child Language: Acquisition of Agreement Markings and the Functions They Encode. *Linguistics*, **24**, 79-121.

_____ (1990). Constraints on Parameter Setting: A Grammatical Analysis of Some Acquisition in German Child Language. *Language Acquisition*, **1.4**, 361-391.

Clahsen, H., and Penke, M. (1992). The Acquisition of Agreement Morphology and its Syntactic Consequences: New Evidence on German Child Language from the Simone-Corpus. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 181-223.

Dechaine, R.-M. (1993). *Predicates Across Categories*. Ph.D. Dissertation Umass. Distributed by GLSA, Umass, Amherst, MA.

Demetras, M.J., Post, K., and Snow, C. (1986). Feedback to First Language Learners: The role of Repetitions and Clarification question. *Journal of Child Language*, **13**, 275-292.

Déprez, V., and Pierce, A. (1993). Negation and Functional Projections in Early Grammar. *Linguistic Inquiry*, **24.1**, 25-67.

De Villiers, J. (1992). On the Acquisition of Functional Categories: A General Commentary. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 423-443.

Doron, E. (1983). *Verbless Predicates In Hebrew*. Ph.D. Dissertation, University of Texas, Austin.

Elisha, I. (1994). Inflection, Predication, and Case Assignment in Modern Hebrew. Paper presented at the 10th Annual Conference of the Israeli Association of Theoretical Linguistics.

Emonds, J. (1978). The Verbal Complex V'-V in French. *Linguistic Inquiry*, **9**, 151-175.

Ervin-Tripp, M. (1973). Imitation and Structural Change in Children's Language (1964). *Language Acquisition and Communicative Choice: Essays by Susan M. Ervin Tripp*. Stanford University Press, Stanford, CA.

Fehri, A.F. (1989). Generalized IP Structure, Case and VS Order. In I. Laka and A. Mahajan (eds.) *Functional Heads and Clause Structure*. MIT Working Papers in Linguistics, vol **10**, 75-111.

Fodor, J.D. (1995). Unambiguous Triggers. CUNY ms.

Fukui, N. (1988). Deriving the Differences between English and Japanese: A Case Study in Parametric Syntax. *English Linguistics*, **5**, 249-270.

_____ (1993). Parameters and Optionality. *Linguistic Inquiry*, **24.3**, 399-420.

_____ (1995). Principles-and-Parameters Approach: A Comparative Syntax of English and Japanese. In M. Shibatani and T. Bynon (eds.), *Approaches to Language Typology*, 327-372.

Fukui, N., and Speas, M. (1986). Specifiers and Projections. *MIT Working Papers in Linguistics*, **8**, 128-172.

Furrow, D., and Nelson, K. (1986). A Further Look at the Motherese Hypothesis: A Reply to Gleitman, Newport, and Gleitman. *Journal of Child Language*, **13**, 163-176.

Gerken, L. (1991). The Metrical Basis for Children's Subjectless Sentences. *Journal of Memory and Language*, **30**, 431-451.

Gleitman, L., Newport, E., and Gleitman, H. (1984). The Current Status of Motherese Hypothesis. *Journal of Child Language*, **11**, 43-79.

Goodluck, H. (1991). *Language Acquisition: A linguistic Introduction*. Blackwell Pubs., Cambridge, MA.

Gordon, P. (1990). Learnability and Feedback. *Developmental Psychology*, **26:2**, 217-220.

Grimshaw, J., and Pinker, S. (1989). Positive and Negative Evidence in Language Acquisition. *Behavioral and Brain Sciences*, **12.2**, 341-342.

Guilfoyle, E. (1984). The Acquisition of Tense and the Emergence of Lexical subjects in child grammar of English. *McGill Working Papers in Linguistics*, **2.1**, McGill University, Montreal, Quebec.

Guilfoyle, E., and Noonan, M. (1988). Functional Categories and Language Acquisition. Paper presented at the 13th annual Boston University Conference on Language Development.

Haegeman, L. (1990). Non-overt Subjects in Diary Contexts. In Mascaro and Nespor (eds.), *Grammar in Progress*. 167-179.

_____ (1991). *Introduction to Government and Binding Theory*. Blackwell, Oxford UK and Cambridge USA.

Hazout, I. (1990). *Verbal Nouns: Theta-Theoretic Studies in Hebrew and Arabic*. Doctoral Dissertation, Umass, Amherst.

Hirsh-Pasek, K., Treiman, R., and Schneiderman, M. (1984). Brown & Hanlon Revisited: Mother's Sensitivity to Ungrammatical Forms. *Journal of Child Language*, **11**, 81-88.

Hoekstra, T., and Schwartz, B.D. (eds.) (1994). *Language Acquisition Studies in Generative Grammar*. John Benjamins Publishing Company, Amsterdam/Philadelphia.

Hornstein, N., and Lightfoot, D. (1981). Introduction. In N. Hornstein and D. Lightfoot (eds.), *Explanation in Linguistics: The Logical Problem of Language Acquisition*, London, Longman, 9-31.

Hornstein, N., and Lightfoot, D.(eds.) (1981). *Explanation in Linguistics.* London, Longman.

Huang, C.T.J. (1984). On the Distribution and Reference of Empty Pronouns. *Linguistics Inquiry*, **15**, 531-575.

_____ (1989). Pro-Drop in Chinese: A generalized Control Theory. In O. Jaeggli and K. Safir (eds.). *The Null Subject Parameter.* Kluwer, MA.

Hyams, N. (1983). *The Acquisition of Parameterized Grammars.* Ph.D. Dissertation, City University of New York.

_____ (1986). *Language Acquisition and the Theory of Parameters.* Dordrecht, Reidel.

_____ (1987). The Theory of Parameter and Syntactic Development. In T. Roeper and E. Williams (eds.) (1987). *Parameter Setting.* Reidel Publishing Company, Boston, MA.

_____ (1992a). The Genesis of Clausal Structure. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 371-400.

_____ (1992b). A Reanalysis of Null Subjects in Child Language. In Weissenborn et al. (eds.), *Theoretical Issues in Language Acquisition: Continuity and Change in Development.* Lawrence Erlbaum Associates Pubs., Hillsdale, NJ, 249-267.

_____ (1994). VP, Null Arguments, and COMP Projections. In T. Hoekstra and B.D. Schwartz (eds.) (1994). *Language Acquisition Studies in Generative Grammar.* John Benjamins Publishing Company, Amsterdam/Philadelphia.

Hyams, N., and Wexler, K. (1993). On the Grammatical Basis of Null Subjects in Child Language. *Linguistic Inquiry*, **24:3**, 421-459.

Iatridou, S. (1990). About Agr(P). *Linguistic Inquiry*, **21.4**, 551-577.

Jaeggli, O., and Hyams, N. (1988). Morphological Uniformity and the Setting of the Null Subject Parameter. *Processing of NELS*, 1987, J. Belvins and J. Carter, Umass, Amherst, 238-253.

Jaeggli, O., and Safir, K. (1989) (eds.). *The Null Subject Parameter.* Kluwer, MA.

Jespersen, O. (1922). *Language: Its Nature, Development, and Origin*. George Allen and Unwin Brothers LTD., London.

Kayne, R. (1987). Facets of Romance Past Participle. ms MIT.

_____ (1989). Notes on English Agreement. *CIEFL Bulletin*, **1**, 41-67.

_____ (1996). Microparametric Syntax: Some Introductory Remarks. The CUNY Linguistics Colloquium Series.

Kim, J.J. (1993). Discussion - Null Subjects: Comments on Valian (1990). *Cognition*, **46**, 183-193.

Kim, Y.-J. (to appear). The Acquisition of Korean. In I.D. Slobin (ed). *The Cross-Linguistic Study of Language Acquisition*. Lawrence Erlbaum Associates, Hillsdale, NJ.

Klima, E.S., and Bellugi, U. (1966). Syntactic Regularities in the Speech of Children. In J. Lyons and R.J. Wales (eds.), *Psycholinguistic Papers*. Edinburgh: Edinburgh University Press.

Koopman, H., and Sportiche, D. (1991). The Position of Subjects. *Lingua*, **85**, 211-258.

Lasnik, H. (1981). Restricting the Theory of Transformations: A Case Study. In D. Lightfoot and N. Hornstein (eds.), *Explanation in Linguistics*. London, Longman.

_____ (1989). On Certain Substitutes for Negative Data. In R.J. Matthews and W. Demopoulus (eds.), *Learnability and Linguistic Theory*, 89-105.

Lee, L. (1974). *Developmental Sentence Analysis: A Grammatical Assessment Procedure for Speech and Language Clinicians*. Northwestern University Press, Evanston.

Levy, Y., and Vainikka, A. (in preparation). The Myth of Empty Subjects: A cross-linguistic perspective with special emphasis on the acquisition of the 'mixed' system of Hebrew.

Lewicki, P., Hill, T., and Czyzewska, M. (1992). Nonconscious Acquisition of Information. *American Psychologist*, **47**, 796-801.

Lightfoot, D., and Hornstein, N. (eds.) (1994). *Verb Movement*. Cambridge University Press.

Lust, B., Hermon, G., and Kornfilt, J. (eds.). *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives. Vol 1: Heads, Projections and Learnability. Vol 2: Binding, Dependencies, and Learnability*. Erlbaum, Hillsdale, NJ.

Mahajan, A.K. (1989). Agreement and Agreement Phrases. In I. Laka and A. Mahajan (eds.) *Functional Heads and Clause Structure*. MIT Working Papers in Linguistics, vol **10**, 217-252.

Marcus, G.F. (1992). Negative Evidence in Language Acquisition. *Cognition*, **46**, 53-85.

McCloskey, J., and Hale, K. (1984). On the Syntax of Person-Number Inflection in Modern Irish. *Natural Language and Linguistic Theory*, **1**, 487-533.

McWhinney B., and Snow, C. (1985). The Child Language Data Exchange System. *Journal of Child Language*. **12**, 271-296.

Meisel, J.M. (1992). Introduction: Functional Categories and Verb Placement in Language Development. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 1-21.

_____(ed.) (1992). *The Acquisition of Verb Placement: Functional Categories and V2 Phenomena in Language Acquisition*. Kluwer Academic Pubs., Boston, MA.

Meisel, J.M., and Müller, N. (1992). Finiteness and Verb Placement in Early Child Grammars: Evidence from Simultaneous Acquisition of French and German Bilinguals. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 109-138.

Milshtein, U. (ed.) (1985). *Rachel: Songs, Letters, Notes, Bibliography*. Zmora, Bitan Publishers, Israel.

Penner, Z. (1992). The Ban on Parameter Resetting, Default Mechanisms, and the Acquisition of V2 in Bernese Swiss German. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 245-282.

Pinker, S. (1984). *Language Learnability and Language Development*. Harvard U. Press, Cambridge, MA.

Platzack, C. (1987). The Scandinavian Languages and the Null-Subject Parameter. *Natural Language and Linguistic Theory*, **5**, 377-401.

_____ (1990). A Grammar without Functional Categories: A Syntactic Study of Early Swedish Child Language. *Working Papers in Scandinavian Syntax*, **45**.

_____ (1992). Functional Categories and Early Swedish. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 63-82.

Platzack, C., and Holmberg, A. (1989). The Role of AGR and Finiteness. *Working Papers in Scandinavian Syntax*. **43**, 51-76.

Poepple, D., and Wexler, K. (1993). The Full Competence Hypothesis of Clause Structure in Early German. *Language*, **1**, 1-33.

Pollock, J.-Y. (1989). Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry*, **20.3**, 365-424.

Quine, W.V.O. (1960). *Word and Object*. MIT Press, Cambridge, MA.

Radford, A. (1990). *Syntactic Theory and the Acquisition of English Syntax*. Basil Blackwell, Oxford.

_____ (1994). Tense and Agreement Variability in Child Grammars of English. In B. Lust, G. Hermon, and J. Kornfilt (eds.). *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives. Vol 1: Heads, Projections and Learnability*. Erlbaum, Hillsdale, NJ.

Rapoport, T. (1987). *Copular, Nominal, and Small Clauses: A Study of Israeli Hebrew*. MIT Dissertation. Distributed by MITWPL.

Raposo, E. (1987). Case Theory and Infl-to-Comp: The Inflected Infinitive in European Portuguese. *Linguistic Inquiry*, **18.1**, 85-109.

_____ (1989). Prepositional Infinitival Constructions in European Portuguese. In O. Jaeggli and K. Safir (eds.). *The Null Subject Parameter*. Kluwer, MA, 277-306.

Ritter, E. (1995). On the Syntactic Category of Pronouns and Agreement. *Natural Language and Linguistic Theory*, **13.3**, 405-443.

Rizzi, L. (1982). *Issues in Italian Syntax*. Forris, Dordrecht.

_____ (1986). Null Objects in Italian and the Theory of *pro*. *Linguistic Inquiry*, **17.3**, 501-557.

_____ (1990). *Relativized Minimality*. Linguistic Inquiry Monograph **16**. MIT Press, Cambridge MA.

_____ (1991). Residual Verb Second and the *WH*-Criterion. *Technical Reports in Formal and Computational Linguistics 3*, Geneva University.

_____ (1994a). Early Null Subjects and Root Null Subjects. In T. Hoekstra and B.D. Schwartz (eds.) (1994). *Language Acquisition Studies in Generative Grammar*. John Benjamins Publishing Company, Amsterdam/Philadelphia.

_____ (1994b). Early Null Subjects and Root Null Subjects. In B. Lust, G. Hermon, and J. Kornfilt (eds.). *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives. Vol 2: Binding, Dependencies, and Learnability*. Erlbaum, Hillsdale, NJ.

Roeper, T., E. Williams, E. (eds.) (1987). *Parameter Setting*. Reidel Publishing Company, Boston, MA.

Rohrbacher, B. (1992). English AUX^NEG, Mainland Scandinavian NEG^AUX and the Theory of V-to-I Raising. *Proceedings of the 22nd Western Conference on Linguistics (WECOL '92)*.

_____ (1994). The Germanic VO Languages and the Full Paradigm: A Theory of V to I Raising. Ph.D. Dissertation Umass. Distributed by GLSA, Umass, Amherst, MA.

Rom, A., and Dgani, D. (1985). Acquiring Case-Marked Pronouns in Hebrew: The Interaction of Linguistic Factors. *Journal of Child Language*, **12**, 61-77.

Roeper, T., and Rohrbacher, B. (1994). Null Subjects in Early Child English and the Theory of Economy of Projection. UPENN, ms.

Rosen, M. (1966). *A Textbook of Israeli Hebrew*. Second Edition. The University of Chicago Press.

Rothstein, S. (1983). *The Syntactic Forms of Predications*. Doctoral dissertation, MIT , Cambridge, MA. Distributed by Indiana University Linguistics Club, Bloomington.

_____ (1991). Hebrew Nominal Sentences, Infl, and the Structure of Predication. To appear in E. Doron and U. Shlonsky (eds.).

_____ (1995). Pleonastics and the Interpretation of Pronouns. *Linguistic Inquiry*, **26:3**, 499-529.

Sano, T. (1995). *A Study of Universal Grammar with Special Reference to Child Grammar.* Doctoral Dissertation, UCLA.

Sano, T., and Hyams, N. (1994). Agreement, Finiteness and the Development of Null Arguments. In *The Proceedings of the North Eastern Linguistics Society,* **24**.

Shibatani, M., and Bynon, T. (eds.) (1995). *Approaches to Language Typology,* Clarendon Press, Oxford.

Shlonsky, U. (1987). *Null and Displaced Subjects.* Ph.D. Dissertation, MIT, Cambridge, MA.

_____ (1989). *The Hierarchical Representation of Subject Verb Agreement.* Draft of a chapter in a book under preparation.

_____ (to appear). *Clause Structure and Word Order in Hebrew and Arabic: An Essay in Comparative Semitic Syntax.* Oxford University Press.

Speas, M. (1994). Null Arguments in a Theory of Economy of Projection. In E. Benedicto and J. Runner (eds.), *Functional Projections.* Umass Occasional Papers, **17**. Umass, Amherst.

Sportiche, D. (1988). A Theory of Floating Quantifiers and its Corollaries for Constituent Structure. *Linguistic Inquiry,* **19**, 425-449.

Stowell, T. (1981). *Origins of Phrase Structure.* Doctoral Dissertation, MIT.

_____ (1989). Subjects, Specifiers and X-bar theory. In Baltin and Kroch (eds.) *Alternative Conceptions of Phrase Structure.* U. of Chicago.

Vainikka, A., and Levy, Y. (1995). Empty Subjects in Finnish and Hebrew. University of Pennsylvania, *IRCS Report 95-31,* 1-23.

Valian, V. (1989). Children's Production of Subjects: Competence, Performance, and the Null-Subject Parameter. *Papers and Reports on Child Language Development,* **28**, 156-163.

_____ (1990a). Null-Subjects: A Problem for Parameter-Setting Models of Language Acquisition. *Cognition,* **35**, 105-122.

_____ (1990b). Logical and Psychological Constraints on the Acquisition of Syntax. In L. Frazier and J. de Villiers (eds.), *Language Processing and Language Acquisition*. Kluwer Academic Pubs., Boston, MA, 119-145.

_____ (1991). Syntactic Subjects in the Early Speech of American and Italian Children. *Cognition*, **40**, 21-81.

_____ (1992). Categories of First Syntax: Be, Be+ing, and Nothingness. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 401-422.

_____ (1993). Discussion - Parser Failure and Grammar Change. *Cognition*, **46**, 195-202.

_____ (in press). *Parental Replies: Linguistic Status and Didactic Role*. MIT Press. Bradford, Cambridge, MA.

Valian, V., and Eisenberg, Z. (1995). *The Development of Syntactic Subjects in Portuguese-Speaking Children*. ms Hunter College, NY.

Valian, V., Heoffner, J., and Aubry, S. (1994). Young Children's Imitations of Sentence Subjects: Evidence of Processing Limitations. ms. Hunter College, New York.

Verrips, M., and Weissenborn, J. (1992). Routes to Verb Placement in Early German and French: The Independence of Finiteness and Agreement. In J.M. Meisel (ed.), *The Acquisition of Verb Placement*, 283-332.

Wang, Q., Lillo-Martin, D., Best, C.T., and Levitt, A. (1992). Null Subject vs. Null Object: Some Evidence from the Acquisition of Chinese and English. *Language Acquisition*, **2**, 221-254.

Weissenborn, J. (1992). Null Subjects in Early Grammars: Implications for Parameter-setting Theories. In Weissenborn et al. (eds.), *Theoretical Issues in Language Acquisition: Continuity and Change in Development*. Lawrence Erlbaum Associates Pubs., Hillsdale, NJ, 269-299.

Weissenborn, J., Goodluck, H., and Roeper, T. (1992). Introduction: Old and New problems in the Study of Language Acquisition. In J. Weissenborn, H. Goodluck, and T. Roeper (eds.)(1992). *Theoretical Issues in Language Acquisition: Continuity and Change in Development*. Lawrence Erlbaum Associates Pubs., Hillsdale, NJ, 1-23.

Weissenborn, J., Goodluck, H., and Roeper, T. (eds.) (1992). *Theoretical Issues in Language Acquisition: Continuity and Change in Development*. Lawrence Erlbaum Associates Pubs., Hillsdale, NJ.

Wexler, K. (1994). Optional Infinitives, Head Movement, and Economy of Derivations. In D. Lightfoot and N. Hornstein (eds.), *Verb Movement*, 305-350.

Whitman, J. (1994). In Defence of a Strong Continuity Account of the Acquisition of Verb-Second. In B. Lust, G. Hermon, and J. Kornfilt (eds.). *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives. Vol 1: Heads, Projections and Learnability.* Erlbaum, Hillsdale, NJ, 273-287.

Williams, E. (1983). Against Small Clauses. *Linguistic Inquiry*, **14.2**, 287-308.