The structure of negation in young children's grammar

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This paper examines negation patterns in early child language. It suggests that a recent trend of utilizing the negator as a diagnostic to determine the structural position of other sentential elements (e.g. subject, main verb) is based on the unsatisfactory assumption that the structure of child negation is universally identical to adult negation from the beginning of language development. The negation issue is closely tied to a larger question of what functional structure is present in early grammar. A review of the relevant literature demonstrates that treating child negation as an adult-like NegP imposes an illusion of unrealistic sophistication on an otherwise immature grammar, and fails to account for various basic observations about the cross-linguistic development of negation. This paper investigates early longitudinal acquisition data from Turkish and Finnish to argue for an early phrase structure consisting of only lexical categories, and outlines a mechanism employing both biological maturation and universal knowledge of X-bar structure to explain the acquisition of functional structure by young children.

1. Introduction

A phenomenon much studied in recent work on language acquisition is a stage in early acquisition during which young children produce main clauses that contain an infinitive form of the main verb. The occurrence of such infinitive forms has been the impetus for abundant literature on the structure of the functional domain in early child grammars. Within this research, the negator is often utilized as a diagnostic to determine the surface position of other sentential elements such as the subject and finite verb (cf., among others, Clahsen 1990, Clahsen et al. 1993/94, Deprez and Pierce 1993, Grondin and White 1996, Haegeman 1995, Hyams 1992, Jonas 1995, Pierce 1992, Platzack 1992, Poeppel and Wexler 1993, Wexler 1994). The structure of child negation has not been addressed as a separate consideration in the literature, however; rather, analyses of adult negation have been unquestioningly adopted as underlying assumptions for arguments on structural points such as word order configurations.

Within the Government and Binding approach, research into adult grammars has led to the proposal that various inflectional elements head independent functional projections such as Complementizer Phrase (CP), Tense Phrase (TP) and Agreement Phrase (AgrP) (Pollock 1989). This idea underlies the suggestion that negative markers like the English not reside within an
autonomous functional projection, NegP (e.g., Kitagawa 1986, Kayne 1989, Pollock 1989, Zanuttini 1990; also identified as ΣP in Laka 1990). The status of the negator as a unique functional category in various languages has, however, been contested by several researchers, due to the fact that in these languages the negator exhibits no characteristics of a functional head, but behaves like an adverbial adjunct particle (e.g., Cowper 1992 and Ernst 1992 provide alternate analyses of adult English negation; Ernst 1995 of Chinese; Zanuttini 1990 of French). Moreover, where a NegP projection has been proposed, the internal structure of this category itself continues to be a source of dispute (e.g., Pollock 1989, Zanuttini 1989, Belletti 1990, Ouhalla 1990). In most languages negation consists of a single lexical item, and, thus, as a functional element, its most logical position would appear to be as the head of its own projection. Yet, since the negator often blocks movement of other elements to higher positions, it has become necessary to place it in the specifier position of NegP, leaving the head slot empty (or filled with a null abstract head; e.g. Rizzi 1990, Belletti 1990, Zanuttini 1991). Such a stipulation has raised many researchers’ concern, leaving the question of the existence and form of the NegP category open for debate.

Despite these unsolved controversies concerning the structure of negation in adult grammars, the concept of negation located in a NegP position has been, rather unquestioningly, incorporated into current child language research. In this paper I contend that if the position of child negation in an utterance is to be used as a diagnostic for structural relations within a sentence, its own structural status must first be established. I submit that in several cases the prevalent view that automatically treats child negation as identical to adult structure imposes an illusion of unrealistic sophistication on an otherwise immature grammar, and fails to account for a number of basic observations about the cross-linguistic development of negation.

1.1. On the emergence of phrase structure

Two opposing perspectives exist concerning the emergence of syntactic phrase structure. Under one view, researchers assume that children’s grammars include a full CP-tree from the onset of syntactic development (e.g., Hyams 1966, 1992, Pinker 1984, Roeper & Weissenborn 1990, Valian 1990, Pierce 1992, Deprez & Pierce 1993, Poeppel & Waxler 1993). Young children’s sentences are argued to have the same functional structure as adult utterances, including a NegP projection. Rizzi (1993/94) and Haegeman (1995) argue that child grammars at the root infinitive stage contain some functional projections (AgrP, NegP), but clause structure is truncated, so that other adult projections (CP, AgrP, TP) are missing. Crucially, in terms of negation, these works assume that the child’s negation occurs in an adult-like NegP position. Under an alternative approach,

1 Much of the relevant child language literature deals only with the CP, IP and DP nodes, but the most recent work has begun to encompass Pollock’s (1989) Articulated Infi Hypothesis (e.g., Meisel and Müller 1992, Poeppel and Waxler 1993).
a developmental phase of early grammar exists which is marked by the absence of all functional projections, and during which syntactic structure is represented by lexical categories only (e.g., Lebeaux 1988, Plåtzack 1990, Radford 1990, Guilfoyle and Noonan 1992). Within this view, early negation structures are assumed to be formed via adjunction of the negator to a lexical projection.

The debate between the two approaches is far from settled, and both sides have left very basic, pivotal questions unanswered. The assumption that Universal Grammar (UG) provides the child with a full universal CP-tree that is present from the onset of syntactic development has serious implications for research into adult language, in that it contradicts work that argues for cross-linguistic variability in the order and inventories of functional projections. Moreover, if it is accepted that children's early grammar contains functional categories, the fact that early linguistic output shows extremely scant evidence of the presence of inflectional categories must be accounted for. If, on the other hand, it is assumed that children begin phrase structure development with only a universal set of lexical categories and build from that base, it needs to be explained what eventually triggers the acquisition of functional structure.

The dispute between the two approaches often boils down to different interpretations of the same empirical data. Although the presence or absence of functional categories appears straightforwardly testable, in that there is widespread consensus among investigators as to the empirical phenomena related to the presence of each category, the results of such inquiry have been inconclusive. On one hand, data from the relevant period, often before 24 months of age, is markedly sparse. Since the crucial utterance types in spontaneous naturalistic data that show evidence of the early presence of functional projections often can be counted on the fingers of one hand per child, researchers from both sides can use such data to their advantage: those advocating a stage with no functional categories simply brush these few sentences aside as anomalies or rote memorizations, while those promoting the innate CP-tree view present these sentence types to show that functional categories exist very early. On the other hand, children's first multi-word utterances are often difficult to decode, both for their exact meaning, and in terms of complexity to be assigned to the morphological, syntactic and even phonological forms. It is hard to judge whether the earliest instances of inflection should be considered as evidence of productive use of grammatical knowledge, or as unanalyzed lexical units.

Because of these challenges, some authors have expressed a high level of frustration concerning the likelihood of this query ever being resolved (e.g., Plåtzack 1992). It is evident by now that only once a considerably more extensive data base with greater numbers of utterances from a larger number of children has been compiled, can conclusive evaluations on these questions be made. Free access to the CHILDES database is an attempt to alleviate this problem. However, to date naturalistic data collection has not provided sufficient amounts of relevant data, and, hence, I propose that experimental work, for instance, elicitation tasks, should be considered as an alternative way of accumulating the needed material. In particular, more data is required on a number of occurrences which currently are considered rare, and consequently either dismissed as
insignificant or alternatively utilized as damning counter-evidence. Only a larger pool of pertinent facts can determine the outcome of such disagreements.

Furthermore, the inquiry into the existence of functional projections in early grammar has examined only a small group of Indo-European languages (English, French, German, Italian, Mainland Scandinavian). For most of these languages, there is strong disagreement as to the appropriateness of assigning all inflectional elements their own functional projections in adult grammar. This controversy is particularly serious with respect to negation, which in the Indo-European languages is always expressed with an invariant, adverb-like particle that does not exhibit properties attributable to a projecting head. One expected justification for the lack of language acquisition research into other language families is that acquisition data from languages outside the Indo-European language group is generally not easily available.

In this paper, I examine the development of negation in the agglutinative languages Turkish and Finnish, in which the negator indisputably heads an independent projection. The objective of the paper is to examine the structure of negation in the earliest multi-word utterances of children in light of the debate over functional structure. Based on a review of relevant literature, I contend that it should not simply be assumed that a child's analysis of negation is identical to adult structure from the onset of language development. I introduce data from Turkish and Finnish children's negated utterances to show what kinds of evidence would be required for a child to posit multiple functional projections, and how the ordering of their emergence is determined. I argue for a lexical category account of these earliest syntactic structures, because it provides a more descriptively adequate as well as explanatory portrayal of the earliest negated child structures. I also propose a mechanism for the emergence of functional categories. Following suggestions made for adult grammar by Rowe (1994), I submit that Universal Grammar provides children acquiring language with the tools to identify functional heads in the input. Moreover, I present arguments to show that biological maturation, although much criticized as a plausible account for the development of child grammar, should be considered as an explanation for the emergence of the ability to distinguish between lexical and functional heads.

The paper is organized as follows: Section 2 outlines a commonly observed pattern of negation in early child grammar. Section 3 examines the NegP analysis of child negation and presents various problems, both empirical and theoretical, with this view. The following section proposes that the alternative lexical category-hypothesis accounts for the relevant negation data more accurately. This section also discusses biological maturation as a possible explanation for the child's ability to begin to identify functional elements in language. Section 5 provides data from Turkish and Finnish to illustrate how the acquisition of multiple functional projections takes place. Section 6 concludes the paper with a discussion on further implications and research proposals.
2. The patterns of child negation

Research in the 1960s into the development of negation in English-speaking children identified several distinct stages of early negations (Brown and Bellugi 1964, Klima and Bellugi 1966, Bellugi 1967, Menyuk 1969). In the first stage, the child's sentence consists of a negator positioned in front of or after a sentence nucleus that contains a simple proposition. Sentence-medial negators are not observed and, hence, when overt subject NPs are expressed, they are not separated from the verb by the negator. Research into a large number of languages concluded that this was a first step not just in English, but universally (e.g. McNeill 1970, Wode 1977, Aksu-Koç and Slobin 1985, Clancy 1985, Smoczyńska 1985, Bavin 1985). Examples of this structure type in early English, Finnish, French, German and Swedish are shown in (1-5).

(1) **English examples from Klima and Bellugi (1966)**
   a. No the sun shining.
   b. No Fraser drink all tea.
   c. No singing song.
   d. No want stand head.

(2) **Finnish examples from Toivainen (1980)**
   a. Ei sinä paala pyörmää.  'Don't put (the tape) to go around'
   b. Ei-ole Jenni tuossa.     'Jenni isn't there'
   NEG.3SG you to.put to.go.around around
   NEG.3SG-be J. there

(3) **French examples from Pierce (1992)**
   a. Pas la poupée dormir.    'The doll isn't sleeping'
   NEG the doll to.sleep
   b. Pas manger la poupée.    'The doll isn't eating'
   NEG to.eat the doll

(4) **German examples from Park (1981)**
   a. Nein Blume Baum.        'There aren't flowers on the tree (but apples)'
   NEG flower tree
   b. Nein diese Messer Auau. 'This knife won't hurt (her)'
   NEG this knife hurt

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2 This discussion is, of course, only relevant for languages where the adult target grammar includes a sentence-medial negator; the form of the child's negation does not change in a language in which adult negation is sentence-final (e.g. Japanese; McNeill & McNeill 1988).

3 All the English data cited here are available on CHILDES (MacWhinney and Snow 1990).
(5) Swedish examples from Platzack (1990)
   a. Inte mamma hjälpa Embla. 
      NEG Mommy to help Embla
      'Mommy (should) not help Embla (=me)'
   b. Inte mamma tvätta.
      NEG Mommy to wash
      'Mommy (should) not wash'

In the second stage of negation, the negator occurs sentence-medially, and overt subject NPs are found sentence-initially (Klima and Bellugi 1966).

(6) English examples from Klima and Bellugi (1966)
   a. He no bite you.
   c. That no fish school.
   b. I no taste them.
   d. There no squirrels.

(7) Finnish examples from Toivainen (1980)
   a. Kati eli aina muista...
      K. NEG.3SG always remember remember...
   b. Minä e-n tarvitsee.
      I NEG.1SG need
      'I don't need (it)'

(8) French examples from Deprez and Pierce (1993)
   a. Elle a pas la bouche.
      she has NEG the mouth
      'She doesn't have a mouth'
   b. Veux pas lolo.
      want NEG milk
      '(I) don't want milk'

(9) German examples from Park (1981)
   a. Papa ist nich da.
      Papa is NEG there
      'Papa isn't there'
   b. Mama kann nicht.
      Mommy can NEG
      'Mommy cannot (move the train)'

(10) Swedish examples from Lange & Larsson (1973)
    a. Älg säger inte 'mu'.
       elk says NEG moo
       'An elk doesn’t say ‘moo’'
    b. Det är inte apa.
       it is NEG monkey
       'It's not a monkey'

In Klima and Bellugi's (1966) analysis the errors in negative placement at the first stage resulted from the young child's failure to carry out a transformation that moves the negative element from a sentence-peripheral deep-structure position to a sentence-internal one. The basic sentence form was assumed to be
the affirmative, declarative "kernel sentence", to which a variety of elements could attach under the deep structure Comp position (Neg for negation, Q for questions, Imp for imperatives, etc.; cf. e.g. Wode 1977, Bloom 1970). These elements were presumed to trigger relevant transformations (e.g. the negative transformation moved the Neg to the appropriate sentence-internal position). The form of the child's negation, thus, was argued to reveal the deep-structure representation of adult grammar. The distinction between stages one and two was characterized by the child learning the transformation that positions the negative marker adjacent to the verb stem.

It is worth noting that this assumption that child utterances reflect the deep structure representations of adult grammars is a problematic concept, and relates directly to the current issue of children's early phrase structure representations. It cannot be assumed that the child obtains the deep structure forms, including the pre-sentential Comp position of Neg, from UG since we cannot, then, account for the early negation pattern of sentence-final negation in languages such as Japanese (McNeill 1970) and K'iche' Maya (Pye 1985). On the other hand, children cannot be presumed to ascertain the deep structures based on their observation of the input, since they would have to do this by attending to the surface positions of elements. It remains unexplained, then, how children are supposed to come to know what the deep structures of adult utterances are.

3. A NegP analysis of child negation

Many recent analyses of early child negation take a view of the negation structure remarkably similar to that of Klima and Bellugi (1966), although the details of the theoretical framework have changed over the past thirty years. Such accounts of child inflection argue, analogously to Klima and Bellugi, that early negation structures in a language such as English are identical to the D-structure representations of the adult target grammar. A seminal and much-cited analysis in this vein is that of Deprez and Pierce 1993 (based in large part on the work of Pierce 1989, 1992) who assume that the negative marker resides in an independent NegP position within the Infl node. As is true generally for work in this area, the central goal of Deprez and Pierce's paper is not to examine the structure of child negation, but to offer support from acquisition data for the proposal from adult grammar of treating inflection as a syntactic verb movement parameter (Pollock 1989). The status of the structure of negation, then, is not a matter of query, but an assumption underlying the analysis. In many papers authors acknowledge the controversial status of the negation marker as an autonomous functional head, yet in representations adopt the practice of placing the negator in the Specifier of NegP. (11) exemplifies structures proposed for English and French early negations in Deprez and Pierce (1993) (for the sentences in 1.a, 4.a and 8.b).
These representations illustrate the NegP-analysis view of the D-structure nature of the child's negation forms. Assuming the VP-internal subject hypothesis whereby subject NPs are internal to the verb phrase at D-structure (e.g. Kitagawa 1986, Fukui and Speas 1986, Koopman and Sportiche 1986), in the sentences in (11.a) both the subject and the verb are said to have failed to undergo raising as required by the adult grammar. The child has not raised the subject NP the sun/la poupée from its D-structure position to the required adult placement in the Spec(IP) position. The English child has also failed to base-generate the auxiliary verb be, which, hence, cannot undergo head-movement into Infl. In sentences such as (6.b,c), the Tense and Agreement features of Infl must either not have been generated due to gaps in acquisition, or, if generated, have failed to lower to the verb as necessitated by adult English grammar.

French children have been argued to exhibit awareness of finiteness from the earliest stages of syntactic development (e.g. Pierce 1989, 1992, Meisel 1990, Verrips and Weissenborn 1992, Deprez and Pierce 1993, Wexler 1994), and are claimed to be able to raise the verb into the Infl head as required by the adult grammar\(^4\). This raising is shown in (11.b). In (11.a), the French child has failed to generate Infl features and, so, no verb raising takes place. The verb dormir remains in its base-generated VP position in an infinitival form. Subject NPs in early French are most often not raised, and remain in the VP-internal position, as in English. Null subjects are also claimed to reside in the Spec(VP) position, as shown in (11.b).

In Deprez and Pierce's article, the negator is used solely as a marker of the left edge of the VP for the purposes of ascertaining the location of other elements in the sentence. Although one of the aims of their paper is to show early knowledge and use of functional projections above the negator, the arguments

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\(^4\) In the original work inflectional affixes were assumed to attach to the verb via movement of the verb (French, German) or of the affix (English) in syntax, but the issue remains the same even under the more current view of movement for feature checking purposes (Chomsky 1992 and others).
put forth in the paper in no way depend on the assumption that the negative element resides in a NegP position. A negator adjoined to the VP node would produce the same results in terms of word order configuration. However, in a weakened universal CP-tree view in which the negator is allowed to adjoin to VP, it is no longer self-evident that all material to the left of the negator can be argued to have moved to a position within a functional category. If adjoinment of the negator (and other adverbial elements) is available as a mechanism for the child, presumably also subjects and wh-words might be adjoined. The fact that the basic assumption of Deprez and Pierce’s analysis of negation as NegP is being readily adopted in current research (cf. e.g. Guasti 1994, Hyams 1992, Rizzi 1993/94, Haegeman 1995, Verrips & Weissenborn 1992, Weissenborn 1990), and that it is now commonly accepted that in early child language, presumably universally, negation is expressed with the grammatical construction NegP, necessitates a closer look at the child NegP hypothesis.

3.1. Challenges to the innate NegP account

3.1.1. On the universality of the CP-tree. In order to uphold the assumption of an adult-like negative structure of NegP in the earliest syntactic forms, researchers who have adopted this analysis generally assume that a CP-tree structure, including a NegP, is part of UG. This approach faces a challenge in recent theoretical conclusions from investigations into adult language which have brought the universality of the internal structure of functional categories under fire. It has been argued that both the inventory and the internal ordering of maximal projections varies cross-linguistically. It is impossible to provide a full review the relevant literature here, but the following provides a suggestive list: Fukui (1986) and Fukui and Speas (1996) argued that adult Japanese lacks all functional categories. Moorcroft (1993, 1995) and Rowe (1994) reduced the German and English (respectively) functional category counts to one. Iatridou (1990), Speas (1991), Mitchell (1992, 1993, 1994a) and Koskinen (1993), among others, have presented evidence from various languages against AgrP as an independent projection. In section 1 it was already pointed out that various linguists have argued against the existence of NegP (e.g. Cowper 1992, Ernst 1992, 1995, Zanuttini 1999). Investigations into the inflectional morphology of various languages have led to the proposal of such functional categories as Voice, Aspect, Mood, Causative, Benefactive, Locative, Politeness, etc., whose existence universally has never been considered. On the other hand, Laka (1990), Mitchell (1994b) and Koskinen (1993) have argued for cross-linguistic variation in the ordering of the categories TP and NegP. With this mounting evidence that functional category inventories of languages vary in both content and internal order, the assumption that a full CP-tree is a part of UG becomes untenable.

5 Chomsky (1995) presents an analysis without AgrP projections within the Minimalist framework.
3.1.2. How do children acquire the internal structure of NegP? A second problem arising from the underlying assumptions of an analysis of child negation with a NegP projections concerns the assumed internal structure of the NegP projection. As already mentioned, the negators *no(t), pas* and *nicht/nein* in adult grammar are said to occupy not the head, but the specifier position of NegP. However, it seems difficult to accept that, for instance, young English-speaking children who, according to many researchers, have not yet correctly set the parameters for subject raising and verb raising, and whose language displays no other functional material (no tense or agreement marking, modals or *do*-support), nonetheless have correctly inferred that the negative element resides in the specifier position of a defective functional projection that has a null head. This deviant structure of NegP cannot be considered universal, since in languages such as Finnish and Turkish the adult negator is the head of NegP. Hence, the English child’s knowledge of the abnormal internal structure of NegP cannot be presumed part of UG, but rather must have been acquired very early on.

There is very little language-internal evidence available for an English-, French- or German-speaking child to determine that the internal structure of NegP is defective. Linguists’ views on this matter are solely based on cross-linguistic comparisons of word-order configurations. Zanuttini (1989) proposed to account for the distinction between the head-like behaviour of negation in Portuguese, Spanish, Catalan and Standard Italian and the adverb-like properties of negation in the Occitan and Franco-Provençal dialects by stating that the negator in the first group occupies a NegP position, while in the latter it is an adverbial adjunct. Pollock (1989), to analyze Standard French negation involving both *ne* and *pas*, suggested that *ne* should be considered the head of a NegP category, and *pas* its specifier, as in (12). The verb moves through the Neg position on its way higher up to Tense, and *ne*, being a (pro)clitic, attaches to the verb and moves to its surface position before the verb. *Pas* remains in its original position. (12) shows Pollock’s proposal for the internal structure of negation in adult French.

\[
\text{NegP} \\
/ \ \\
\text{Spec} \quad \text{Neg'} \\
/ \\
\text{pas} \quad \text{Neg} \\
/ \\
\text{ne}
\]

Consequently, researchers (e.g. Pollock 1989, Ouhalla 1990) proceeded to determine the internal structure of adult negation in languages such as English, German and Swedish based on the similarity of the behaviour of the negators in these languages in terms of word order configurations to the French *pas*. Since these languages attest only a single negating element in a sentence, it has been argued to occupy the Specifier position. Since X-bar theory requires that each maximal projection must have a head, the head of NegP in these languages is claimed to be realized as an abstract morpheme that has no phonological form.
This approach, then, requires that negation be positioned in a NegP projection. According to Ouhalla (1990), the surface position of the negator appears to determine the position of the negator within the NegP category: preverbal negators are heads of NegP, while postverbal negators occur in the Specifier of NegP. Since, however, for example, English-speaking children at the earliest stage of syntactic development, and stage one of negation, do not reliably utilize verb movement, the surface position of the negator, presumably, cannot have told them that their negator must be of the Specifier type. Furthermore, English children acquire adult-like negation structures without access to cross-linguistic comparisons between word-order and placement of the negator in adult French and English negation patterns. Hence, it is not self-evident, and has not been shown by the proponents of the NegP analysis, that any relevant information is available to a 20-month-old concerning the internal structure of NegP.

It also seems odd that the English children at this early stage would have successfully mastered the rather complex task of ascertaining the role of the NegP projection in the adult target grammar: the sole function of the category in English is said to be to block the movement of main verbs into Inf while allowing auxiliaries to move. According to the proponents of the NegP view, this partial blocking category is being consistently used by English children prior to their using the position of IP for movement of subject NPs and/or verbs. The appropriate use of the functional projections relating to modals and tense and agreement morphology appears to be much simpler: what is required of the child is to move an element into the head or Specifier position of the Inf projection, and possibly to attach an affix onto a head. In conclusion, though on the one hand the two-year-old's grammar is quite undeveloped, in this single aspect, namely negation, a high level of sophistication is attributed to the child's competence.

3.1.3. Two kinds of early negation. An aspect of negation that has not been addressed within the NegP approach, but one that dictates further complexity for the early grammar, is the fact that not all negation is sentential. (13) shows instances of English children's constituent negation (from Pierce 1992).

(13) a. You have no more dogs. (Nina 2.2.0)
   b. No balloons... I find no balloons. (Naomi 1.11.2)
   c. Cramer have no pocket. (Eve 1.9.2)
   d. There no squirrels. (Eve 1.11.0)

In adult grammar, constituent negation is not assumed to involve a NegP projection, but is accomplished by adjunction; hence, in these cases of child negation, the negator no cannot be argued to be located in a NegP position, but, rather, is adjoined to an NP node. To account for child utterances such as these, then, it is necessary to posit two negation structures at the earliest negation stage, sentential negation that is located in a functional projection, and constituent negation that is formed via adjunction. Again observing that this knowledge of how the two `types' of negation function cannot be UG based, for the reasons outlined above, and, hence, must have been acquired, it is not consistent to posit such complex syntactic knowledge of only negation structures in early grammar.
3.1.4. **Conclusions.** The main impetus for adopting an analysis of early phrase structure based on an innate CP tree containing a NegP embedded in it has been to solve the problem of learnability (Lightfoot 1989). If functional categories are not a part of UG, what triggers the acquisition of the functional structures needs to be explained. I consider the problems of the NegP account outlined above sufficiently grave to warrant a search for an alternative analysis. In the following section I argue for the lexical category-hypothesis as a viable option, and propose biological maturation as an explanation of the emergence of functional material near or at the end of the second year of a child's life.

4. **The VP-hypothesis**

An alternate view to assuming a full CP-tree available from UG is to argue that there exists a developmental phase in early grammar during which functional projections are absent (e.g. Kazman 1983, 1990, Lebeaux 1986, Platzack 1990, Radford 1990, Clahsen et al. 1990, Guilfoyle and Noonan 1992). While phrase structures are said to emerge sequentially, the principles governing these structures are assumed to be present from the earliest stages, and unable to be violated at any point during acquisition. Lexical categories are argued to emerge first due to the fact that languages do not vary with respect to the inventory of these substantive elements (nouns, verbs, prepositions, adjectives), while, as discussed in the preceding section, there is cross-linguistic variation both in the inventory and in properties of functional categories. Moreover, Lebeaux (1986) has proposed that children's output at the early stages of language acquisition is a pure representation of theta-theory, which implies that only lexical, not functional, categories are relevant at this stage.

The evidence for the near non-existence of functional elements in the earliest multi-word utterances is robust. Overt functional heads are generally absent from early utterances, in that few or no prepositions, determiners, pronouns, subject clitics, complementizers, copulas, modals, auxiliaries or inflectional endings such as tense and agreement appear in the relevant child data. There is also very little or no evidence for the use of functional specifier positions, in that no inversion takes place in questions, and question words are generally not preposed (Aldridge 1989, Radford 1990). The few instances of elements that appear to be functional have been accounted for with alternative explanations, such as rote memorization, failure to analyze internal structure, or non-adult-like use of adunction structures.

Under this approach, the structure of a negated child utterance (11a), shown with a NegP analysis in (11a), would be as given in (21): the negator no is simply adjoined to the left of the lexical projection VP.
Two types of early negation phenomena can be easily explained by this adjoin-negation-to-VP-hypothesis, but offer a challenge for the CP-hypothesis view of negation. First, as well as placing the negator in a sentence-initial position, children at the first stage of negation development may also position the negator at the end of the sentence nucleus\(^6\). This form of negation is rarer than sentence-initial negation; but data can be found. Sentence-final negation often occurs alongside sentence-initial negation, the child alternating between the two forms. For instance, the German sentences in (24) are from the child Kathrin whose sentence-initial utterances were shown in (4). Some children use sentence-final negation as their sole form, as reported for Polish in Smoczyńska (1985).

(15) **English examples from McNeill (1970)**

a. More...no.  
b. Wear mitten no.  
c. Touch the snow no.  
d. This a radiator no.

(16) **Polish example from Smoczyńska (1985)**

Mommy dig will not  
'Mommy will not dig'

(17) **German examples from Park (1981)**

a. Mama Schuh nein.  
mommy shoe no  
'Mommy doesn’t have a shoe on’

b. Anzieh Schuh nein.  
put.on shoe no  
'The child has no shoes on’

A universal-NegP analysis of early grammar would find it difficult to account for this phenomenon. Presumably the child can be argued to have made a mistake in generating the Spec(NegP) position on the right. Alternatively, a movement analysis would be required. In any case, under the NegP analysis, these types of utterances would have to be considered deviant, and no straightforward account of their occurrence is immediately obvious.

Under the VP-hypothesis, a structure of this type arises simply from the

\(^6\) This is the most common form of child negation in languages such as Japanese (McNeill and McNeill 1986), and K'iche' Maya (Pye 1985), due to the fact that adult negation is sentence-final. In such languages, child negation in a sentence-initial position would be of considerable interest for further study.
adjunction of the negator to the right of the sentence nucleus. From constituent
negation evidence a child might observe that negation adjoins relatively freely.
Alternatively, a child may categorize the negator as an adverb, an element freely
adjointed even in adult language. Hence, early alternation in the placement of the
negator not surprising. (18) shows a VP-hypothesis structure for sentence (22.b).

(18)

```
(18) VP
    / \ 
   VP / 
   / \ 
  V' / 
  / \ 
 V NP NEG

wear mitten no
```

The suggestion that young children may first confuse the negator with
adverbs is supported by the negation pattern found in the early speech of a
Finnish child Seppo (Bowerman 1973). Seppo chose the negative polarity item
enää 'any more', rather than the adult negator ei, as his first sentential negator,
and, contrary to the adult grammar, placed this form either at the beginning or the
end of the sentence nucleus to be negated. Under the VP-hypothesis, Seppo
could be argued to have miscategorized the lexical item enää as a negating
element with independent negative force, and to adjoin it on either side of an XP.
Note that Seppo adjoins this negator to a NP (19.a), an AdjP (19.b) and a VP
(19.c, d). (20) is the proposed structure of sentence (19.e) under this analysis.

(19) a. Enää pala.
    anymore fire
    '(There isn't) any more fire (truck)' [note: palaauto = fire truck]

b. Enää pipi.
    anymore sore
    '(It's not) sore any more'

c. Enää piirtää tuossa.
    anymore draws there
    'Don't draw there any more!'
    (intended imperative)

d. Hiiri syö enää.
    mouse eats anymore
    'The mouse is not eating anymore'

(20)

```
(20) VP
    / \ 
   VP / 
   / \ 
 NP V NEG

hiiri syö enää
```
Seppo's early choice of negator corresponds to a finding of Verrips and Weissenborn (1992), who proposed an analysis of early German in which sentence adverbs (e.g., *mal* 'just*, *noch* 'still*, *yet*, *jetzt* 'now*, *auch* 'also') are generated in the same position as the sentential negator *nicht*. This analysis, based on earlier work by Weissenborn, Verrips and Berman (1989), suggests that the German children studied treated the negator as an adverbial element in terms of its position in the sentence.

In languages like German where the negator can be argued to function as an adverbial particle even in adult grammar (Moorcroft 1995) children's early negation errors, then, are only a problem of misclassifying one adverb type for another. To retract from this wrong path the child need simply reconfigure the constraints on the adjunction of the negative adverb in contrast with other adverbs. Section 6 discusses how, on the other hand, a child like Seppo, who is acquiring a language where the negator arguably heads its own functional projection in adult grammar, can retreat from an inaccurate analysis of the negator as an adverbial element.

4.1. Maturation and the emergence of functional structure

If it is assumed, then, that children start language development with only lexical categories, the emergence of functional structure at some point of acquisition must be explained. Two types of suggestions have been put forth to account for how functional projections come to be acquired during language development. Radford (1988, 1990) and Guilfoyle and Noonan (1992) have proposed that functional categories mature at a given age. Clahsen et al. (1990) and Vainikka (1993/94) argue that the mechanism required for acquiring functional projections is present in the child's innate knowledge of X-bar theory. These authors assume that once the child discovers a syntactic head in input, the head projects a maximal projection, as required by X-bar theory. I propose that both mechanisms are necessary for an account of the development of negation in languages such as Turkish and Finnish, whose adult targets involve more than one functional projection.

I argue that the ability to recognize functional material is based on two criteria, subcategorization and selection, presented by Rowe (1994) as the distinguishing characteristics between functional and lexical categories. Rowe proposed that a functional head ascribes stringent subcategorization restrictions on its complement, allowing only a single type, but places no semantic selectional restrictions on its complement. A lexical head, on the other hand, subcategorizes for a wide range of complements, but may impose selectional prerequisites on the choice of the complement. I assume that these are the criteria by which children determine that some lexical items require the creation a category type distinct from the universally given set of lexical ones.

Once this capacity of the child to recognize a functional element in the input has matured, she constructs the relevant projections based on her knowledge of X-bar theory. Clahsen et al. (1990) and Vainikka (1993/94) have
suggested that once the child discovers a syntactic head in the input, this head is required by X-bar theory to project a maximal projection. The problem that this approach has raised is that it is not clear how the child can perceive in the input a syntactic head for which she has no previous representation. I suggest that an account assuming maturation of the criteria by which functional heads are identified provides a solution to this question.

I assume that in some languages, for instance English and German, adult grammar involves only a single functional projection (following Rowe 1994 and Moocroft 1995, consecutively), and, hence, the child’s task in acquiring functional elements is to simply separate morphemes into lexical and functional categories. To acquire an adult grammar with multiple functional projections, the child must further recognize the distinctions between the different types of functional heads, and set their internal order. Section 5 examines the early acquisition of Turkish and Finnish to demonstrate in detail the functioning of the outlined mechanisms.

4.2. Challenges to a maturational account of functional structure development

Arguments have been made against the possibility of a maturational account of functional category acquisition due to the fact that children from various language backgrounds (e.g. French, German and Italian) show early awareness (as young as 20 months) of finiteness distinctions (e.g. Clahsen 1982, Deprez and Pierce 1993, Guasti 1993/94, Meisel 1999, 1990, Parodi 1990, Verrips and Weissenborn 1992, Wexler 1988). In a framework that assumes a CP-tree universally given by UG, evidence for the presence of any functional category in the spontaneous output of a child from any language background at a given age must be taken to mean that all children at that age have access to the same functional categories. Furthermore, if the maturation of all functional categories is taken to occur simultaneously at some age (e.g. 24 months, as originally proposed in Radford (1989)), then evidence for the existence of functional material in some child’s production prior to the set age of emergence would refute maturation as a viable explanation for how functional categories emerge.

(21) shows evidence of a French-speaking 20-month-old child, Daniel, consistently placing finite verbs in a position before the negator pas, with sentence-initial negation occurring only with non-finite verbs. The examples in (22) show the same child using both finite and non-finite forms of the same verbs, suggesting that the choice of verbal form is not an arbitrary one, but is based on the child’s knowledge of structural distinctions determined by finiteness.

(21) \[ \text{NEG + [-finite] V:} \]
\[ \text{a. Pas casser. not to break} \]
\[ \text{b. Pas attraper papillon. not to catch butterfly} \]
\[ \text{[+finite] V + NEG:} \]
\[ \text{c. Marche pas. walks not} \]
\[ \text{d. Me plaît pas monsieur là. to me please not man there} \]
(22)  
\[
\begin{align*}
\text{[finite]:} & \\
\quad & \text{a. Veut dormir bébé.} \\
& \quad \text{wants to sleep baby} \\
\quad & \text{b. Dort bébé.} \\
& \quad \text{sleeps baby} \\
\quad & \text{c. Je vais faire café moi.} \\
& \quad \text{I'm going to make coffee me} \\
\quad & \text{d. Fait la vaisselle.} \\
& \quad \text{does the dishes}
\end{align*}
\]

However, neither simultaneity nor the strict age limit set by Radford (1988) are requisite assumptions for a maturational account of the appearance of functional projections. First, although there is convincing evidence for early awareness of finiteness distinctions in children from various language backgrounds, at best this observation undermines only the attributed age of maturation at 24 months, not maturation of functional categories as such. It is evident that children in language environments with plentiful inflectional input, such as French, Italian or Polish, acquire functional material earlier than children in a more impoverished inflectional environment, for example an English-speaking community. It is also true, however, that environmental factors affect the onset of maturation (this point was also made by Borer and Wexler 1987). The commencement of puberty, an unquestionably biologically determined developmental step, can be speeded or delayed by nutritional determinants. Language input to a developing child can be viewed as a linguistic equivalent of nutrition; since rich nutritional intake is known to accelerate the beginning of puberty, it can be expected that linguistic input rich in some aspect of yet-to-mature material can expedite the advent of that element of language. It is indisputable that French, Italian and Polish toddlers are exposed to considerably greater amounts of input in terms of inflectional morphology than English youngsters are; hence, it is not surprising that the young speakers of the former three languages attest early signs of utilizing such constructions.\(^7\) Rather than discrediting maturation, the well-documented difference between the start of acquisition of rich and poor inflectional material raises interesting questions about the relationship between input and the onset of use.

In regard to the simultaneous emergence of all functional structures, research has argued that the emergence of functional projections is not synchronous: DP has been shown to appear prior to IP (Guilfoyle and Noonan

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\(^7\) Investigations by Moerk (1960) and Schwartz and Terrell (1989) showed that frequency in input, along with various other factors, plays a role in the order of the acquisition of morphology (in contrast with Brown's (1973) original findings which argued against such a link). These earlier, empirically based results, then, support the suggestion that frequent occurrences of functional material in the input to children will trigger the earlier emergence of functional projections in the output of those children, within limits set by UG. Slobin (1985), in formulating language acquisition in terms of procedures named as 'operating principles', also proposed that acquisition involves the child keeping track of the frequency of occurrence of every unit and pattern that she stores in her memory. Nonetheless, the results of Moerk (1960) were challenged by Pinker (1981), and, at present, the concept of frequency in input is being debated seriously (cf. e.g. Hart (1991), Pine (1992) and Hoff-Ginsberg (1992)). Until it is proven otherwise, I assume that frequency in input has some effect on the speed at which a child acquires a given construction.
1992), and IP before CP (Guilfoyle and Noonan 1992; Vainikka 1993/94). Since both the content and order of functional categories have been shown to vary cross-linguistically, input must play a role in the process of the child establishing the individual properties of any given functional category. To account for the differential roles of maturation and input in determining the emergence vs. specific features of the functional projections, Guilfoyle and Noonan (1992) have proposed that functional categories themselves do not mature, but the propensity to observe functional data in the input does. In this way, observing the previously cited effect of frequency in input on acquisition, both the order and timing of the appearance of functional categories are to a great extent input driven. I adopt Guilfoyle and Noonan's proposal that what matures during the second half of the second year of a child's life is the potential for the child to identify functional heads in the input. As discussed, environmental factors cause variation in the timing of this step.a

5. Acquisition of negation in language with NegP

This section examines in detail the early acquisition of negation and verbal inflections in Turkish and Finnish. As pointed out earlier, language acquisition data from non-Indo-European languages is not readily available, and due to the limitations of existing sources conclusions drawn here are necessarily tentative.

Most of the Turkish data presented comes from a longitudinal study of the acquisition of verbal inflection by a Turkish girl named Mine (Çapan 1986), whose utterances were recorded for approximately one hour every two weeks between the ages of 1.3 and 1.7, and weekly from 1.7 to 2.2. References are also made to cross-sectional evidence from Turkish children cited in Aksu-Koç and Slobin (1985).

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a Vainikka and Young-Scholten (1991) and Young-Scholten and Vainikka (1992) have argued against the biological maturation account of the emergence of functional categories based on research into the second language acquisition of German by adult learners of Italian, Korean, Spanish and Turkish backgrounds. The authors claim that these adult learners, in naturalistic rather than classroom settings, attest the same developmental stages as children in first language acquisition. The fact that adult acquisition follows the same pattern as child acquisition seems to disprove maturation, since maturation is supposed to take place at around two years of age. I note, however, that if it is the ability to identify functional material, rather than the functional categories themselves, that matures, these findings do not rule out maturation. Since the functional category inventories of languages vary, adults learning a second language, just as children acquiring their first, must face the new language with no previous knowledge of the functional elements of that language. Hence, adults also begin with a bare VP-stage, and only posit functional material according to the input from the L2 environment. The only distinction between adult L2 and child L1 acquisition is that adults would not be expected to have a close to 2-year period where no functional elements occur, since in adults the ability to identify functional categories is present from the onset of the L2 acquisition process. If these findings are correct, then adult L2 acquisition in naturalistic settings can provide more effortless access to data of the development of functional material than child first language acquisition, since adults generally provide more material than 2-year-olds, and it is easier to elicit relevant material from adult subjects. More investigation of this type, then, is urgently needed.
The Finnish data is from a 1980 cross-sectional study of 25 children (Toivainen 1980). There are limitations to Toivainen’s data due to the fact that session recordings were only 15 minutes in duration and were often spaced up to six months apart for each child. Although a detailed longitudinal investigation of the emergence of verbal inflection in Finnish, along the lines presented for Turkish from Mine’s language development, is not possible based on this data, some observations can be made about Finnish children’s acquisition of negation.

5.1. A brief overview of adult Turkish verbal inflection

Turkish is an agglutinative language in which verbal affixes mark voice, modality, aspect, tense, person and number agreement as well as negation. There are distinct markings for past (-di, -miş), present (-iyor, -iyor) and future (-Ece). Within the past, a distinction is drawn between statements made on the basis of direct evidence (-di) and indirect evidence such as inference or hearsay (-miş). In the present there is an aspectual distinction between progressive (-iyor) and habitual (-iyor, frequently referred to as ‘aorist’). In addition to these tense and aspect markers, there is a conditional suffix (-sE), a necessitative suffix (-mEi) and a collection of optative-imperative suffixes marked for person and mood (e.g. 1SG -Eyim, 3SG -sîn). Each of these suffixes can be used alone with a verb followed by person-number marking. The ordering of the morphemes is as follows:

(23) V + Negation + Aspect + Tense + Mood + Agreement

The examples given in (24), from child utterances, illustrate the character of Turkish verbal morphology (from Aksu-Koç and Slobin 1986).

(24) a. Getir-me-di-n.
    bring-NEG-PAST-2SG
    ‘You didn’t bring it’

b. Agla-di-lar.
    cry-PAST-3PL
    ‘They cried’

c. Düz kon-ul-ur-sa.
    straight put-PASSIVE-HABITUAL-CONDITIONAL
    ‘If one puts (it) straight’

For the purposes of this paper, I adopt an approach assuming the most direct interpretation of Baker’s (1988) Mirror Principle, according to which morphological derivation must reflect syntactic derivation. This results in the representation given in (25) for the maximal adult Turkish affirmative utterance.

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9 This section is based on Lewis (1967), Taylan (1964) and informant sessions with Hitay Yükseker.
Moreover, I assume that agreement is not represented by an autonomous functional head, but is determined as a Specifier-head relationship holding in the highest node containing a [+V] element (following Trivedi 1990, Speas 1991, Mitchell 1992, 1994 and Koskinen 1993 for various other languages). As well, I assume a minimal and rather concrete view of projection that only as much structure is projected as is warranted by overt elements in the sentence (e.g. Trivedi 1990, Speas 1990, Moortroft 1993, Grimshaw 1993, 1994). Consequently, there are no empty heads, and the number of syntactic projections may vary from sentence to sentence. This view is in direct contrast with the position according to which the universally given full CP tree with all its internal structure is always created. In some languages this leads to the claim that a category exists which is never overtly expressed. I adopt a more economical approach.

Negation in Turkish is expressed by three distinct forms. Verbal predicates are negated by inserting the negative affix \(-mE\) immediately after the verb root, before the modal, tense, aspectual and person suffixes. Negation of nonverbal predicates involves the use of the lexical negatives \(yok\), 'not exist', and \(degil\), 'not be'. \(Degil\) is the negative for nominal (adjective and noun) predicates, while \(yok\) negates existential predicates. (26) gives examples of all three negation types. In this paper, however, I concentrate on the contrast between \(degil\) and \(-mE\), and leave \(yok\) open for future investigation, due to the lack of sufficient relevant data. The neutral word order in Turkish is SOV.

(26) A. Verbal predicates:
   a. Erol is-e başla-di.
   E. work-DATIVE start-PAST
      'Erol started work'

   b. Erol is-e basla-ma-di.
   E. work-DATIVE start-NEG-PAST
      'Erol didn’t start to work'

B. Nominal predicates:
   d. Öğretmen-di-m.
      teacher-PAST-1SG
      'I was a teacher'

   e. Öğretmen degil-di-m.
      teacher NEG.be-PAST-1SG
      'I wasn’t a teacher'
C. Existential predicates:

<table>
<thead>
<tr>
<th>g. Bahçe-de köpek var.</th>
<th>h. Bahçe-de köpek yok.</th>
</tr>
</thead>
<tbody>
<tr>
<td>garden-LOCATIVE dog exist</td>
<td>garden-LOCATIVE dog NEG.exist</td>
</tr>
<tr>
<td>'There is a dog in the garden'</td>
<td>'There isn’t a dog in the garden'</td>
</tr>
</tbody>
</table>

Utilizing Rowe’s (1994) diagnostics for distinguishing between functional and lexical categories, subcategorization and selection, I now examine the Turkish negation structures in A and B. Both negative markers degil and -mE exhibit verbal characteristics in that they carry verbal inflection. According to Rowe’s (1994) tests, however, degil displays lexical properties, whereas -mE acts more like a functional element. In terms of subcategorization, degil is very permissive, taking various types of complements (NP, VP, AspP), whereas -mE only occurs with a bare VP complement. On the other hand, -mE places no restrictions on its complement, occurring with all lexical verbs. Degil is more selective, so that it may co-occur with a progressive aspect complement, but not habitual, necessitative nor optative. These results suggest that degil is a lexical verb with a negative meaning ("NOT.be"), whereas the negative morpheme -mE is a functional element, and, as such, can be argued to head its own maximal projection. The structure of an adult Turkish negated utterance is the following:

(27) MoodP (agreeing category)
    / \ Mood'
    / \ Mood TP (agreeing category)
    / \ T
    / \ T AspP (agreeing category)
    / \ Asp'
    / \ Asp NegP (agreeing category)
    / \ Neg'
    / \ Neg VP
    \ mE

7.1. A brief overview of adult Finnish verbal inflection

The Finnish adult negator also exhibits verbal characteristics in that it carries agreement marking, which in affirmative sentences is marked on the main verb. The Finnish negator differs from the Turkish one in that it cannot bear voice, tense or mood morphology, which are always placed on the main verb.
(28) a. Minä lue-n.
   I read-1SG
   'l(m) read(ing)' I'm not reading/I don't read

b. Minä e-n lue.

   I NEG-1SG read

c. Minä lu-i-n.
   I read-PAST-1SG
   'I read (past)' I didn't read

d. Minä e-n luke-nut.
   I NEG-1SG read-PAST

e. Minä luk-isi-n.
   I read-COND-1SG
   'I would read' I wouldn't read

f. Minä e-n luk-isí.

I adopt for use in this paper the structure in (29) from Koskinen (1993).

(29) NegP (agreeing category)
    /
   \  
   Neg'  
    /
   \  
   Neg  T/MP\textsuperscript{10} (agreeing category)
       /
      \  
      T/M'  
        /
        \  
        T/M  VP

5.3. The acquisition data

5.3.1. Mine. Çapan (1988) reports that in her earliest multi-word utterances Mine
used generic, uninflected verb forms, whose meanings the researcher classified
according to the non-linguistic context that they appeared in. The interpretation
was imperative when the child appeared to ask for something, present when
referring to the present time, and past when uttered after the completion of an
action.

(30) a. oku
    '(I)m reading' (present)
    [Mine pretends to be reading a book.]  

b. düt
    '(I) fell' (past)
    [Mine has fallen down.]

c. otuy
    'Sit (down)!' (imperative)
    [Mine wants the addressee to sit down.]

\textsuperscript{10} T/MP stands for Tense/Mood Phrase. Tense and mood occur in complementary distribution
in Finnish finite clauses.
The first verbal inflections to be observed in Mine’s language were tense morphemes. At 1.5 the simple past marker -/d/ began to occur (31), although not in all required contexts, as shown in (32). A month later, the progressive morpheme -/yor/ appeared (33). The exact meaning that Mine assigned the early progressive markings is difficult to establish, but I note that, in addition to the present progressive reference to actions going on at the time of the conversation (33.a), Mine used the progressive inflection to express habitual action in (33.b), and general present tense in (33.c). This marker appears to encompass various shades of meaning that all, nonetheless, relate to the present tense. It is worth reporting that during the data collection period, Mine was never observed using the habitual (aorist) marker -/i/. The future marker emerged at 1.8 (34).

(31) Past tense marking
   a. Dü-tü.
      fall-PAST
      (Adult: düs-tü)
      (it) fell down’
   b. Baba dit-ti.
      father go-PAST
      (Adult: Baba gët-ti)
      ‘Father went’

(32) Failure to mark past tense appropriately
   a. Mine oyna.
      M. play
      (Adult: Mine oyna-dî)
      ‘Mine played (yesterday)’
   b. Mama kaka.
      food bad
      (Adult: Mama kaka ol-du)
      ‘The food got/went bad’

(33) Progressive aspect marking
   a. Baba döt-ü.
      father take-PROG
      (Adult: Baba gëtür-ûyor)
      ‘Father is taking (me to the park)’
   b. Isi-yo kedi-ye.
      bite-PROG cat-PL
      (Adult: Isi-iyor kedi-ler)
      ‘The cats are biting’ (intended: ‘Cats bite’)

(34) Future tense marking
   a. Anne-ye dit-ce-m.
      mother-DATIVE go-FUT-1SG
      (Adult: Anne-ye gid-eçeg-im)
      ‘I will go to mother’
   b. Oney ev-e dit-cek.
      Onur home-DATIVE go-FUT
      (Adult: Onur ev-e gid-eçek)
      ‘Onur will go home’

Based on the assumptions outlined earlier in the paper, I propose that Mine’s ability to identify functional heads in the input matured at some time before 1.5, and that, from the input at that time, Mine quickly identified the category head

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11 I adopt Çapan’s interpretation of Mine’s utterances.
Tense. Mine formed a three-way distinction among the tense morphemes, past, present and future. Since neither the resumptive past marker -mıs nor the habitual marker -l occurred productively in the reported data, Mine appears not to have made finer distinctions among the tense morphemes. I assume that Mine's cognitive capabilities at this early point did not allow her to recognize the semantic distinctions required to posit two or more relatively subtly differentiated functional categories (Mood, Tense and Aspect). Thus, she was unable to categorize these further functional elements, since they did not fit any of her lexical categories, nor would the semantic distinctions required allow all these inflectional elements to co-exist in the functional slot that she had already created.

At the time of the emergence of the tense marking, agreement morphology also begins to appear. At 1.7, Mine uses her own name as subject in utterances referring to her own actions.

(35)  Mina bóle yab-di;  (Adult: Mine bóyle yap-ti)
      Mine this do-PAST
      'Mine did like this'

At 1.8, pronoun subjects surface, but, according to Çapan, always together with agreement marking.

(36)  Men oy-ca-m.     (Adult: Ben oyni-yacag-im)
      I play-FUT-1SG
      'I will play'

I assume that nominative Case is the structural Case associated with the Spec(TP) position (a slight modification of Vainikka's (1993, 1993, 1993/94) analysis which places nominative Case in the Spec(IP) position). Subject-verb agreement, moreover, is a reflection of the specifier-head relationship between an NP in the Spec(TP) position and a verb that has raised to the Infl head position. Since Mine's first posited functional category can be identified as TP, based on the semantic content of the head, the simultaneity of the emergence of tense and agreement marking and nominative subject Case marking is explained. In English children's acquisition, the emergence of overt tense and agreement morphology has also been tied to the rise of consistent nominative Case marking (Vainikka 1993/94).

In Mine's language development, then, early utterances consisted of pure lexical categories, with multi-word utterances being analyzable as a VP with adjoined material. Once Mine's functional category recognition matured, she identified the lexical elements related to tense markings as candidates to fill the head position of a functional projection. At the same time, nominative Case marking became available to her, with the Specifier of TP position being available for movement, and she acquired both nominative subject pronouns and the agreement morphemes that co-occur with the pronouns. Until this point, Mine had not yet begun to use the negative suffix -mE. (37) shows the maximal syntactic structure of Mine's utterances prior to 1.10.
In characterizing Mine’s use of negative structures, Çapan writes that "before the emergence of the negative marker [-mE] at 1.10 of age, the idea of negation is expressed abundantly in her [Mine’s] speech with ğ-lh sound accompanied by gestures and mimics, with the word hayir and with lexical negatives yok and degil that are used to negate nonverbal predicates." Aksu-Koç and Slobin (1985) characterize children’s early negation structures in a similar manner: young Turkish speakers appear to pick a single form as a universal negative marker (a phonological variant of -mE, mi mi; the sound accompanying negation in Turkish, ğ-lh, or either the nominal or the existential negator degil or yok), and apply it to all types of predication. Hitay Yükseler (p.c.) reports on the speech of a Turkish-English bilingual boy, who until and at the age of 2.3 has consistently formed all negation structures by placing the negative element yok at the end of the utterance. (38) gives examples of early Turkish child negation from Aksu-Koç & Slobin (1985).

(38) a. Anne otur, kalk degil. (Adult: kalk-ma)
mother sit get.up NEG.be ‘Mother sit, don’t get up’

do-FUT-1SG NEG ‘I won’t do (it)’

do-FUT-1SG NEG ‘I won’t do (it)’

c. Ay, koy-du-m yok. (Adult: koy-ma-dım)
ch put-PAST-1SG NEG.exist ‘I can’t put it’

At 1.10, Mine begins using the verbal predicate negator -mE appropriately.

(39) a. Anne de-me. (Adult: gel-me-di)
mother come-NEG ‘Mother (did) not come’

b. Uyu-ma-ca-m. (Adult: uyu-ma-yacag-im)
sleep-NEG-FUT-1SG ‘I will not sleep’

c. Deniz-de yuðu-m-myu. (Adult: Denizde yuuz-m-üyor)
sea-DATIVE swim-NEG-FUT ‘(The fish is) not swimming in the sea’

I suggest that once Mine had developed the proper use of the TP category, she began to observe that the negative marker -mE in Turkish exhibits verbal characteristics in that it occurs with verbal inflection, both tense and agreement. The lexical negative degil, which similarly has verbal properties, but allows wider subcategorization, was easily categorized as a verb with negative semantics.
included. The verbal suffix -mE did not fit the verb category: it subcategorizes for only a single complement type, VP, in that it never occurs on its own without a main verb. As well, its complement is free of selectional restrictions. I assume that the diagnostics of subcategorization and selectional restrictions showed Mine that the negative suffix -mE behaves to a degree like a verb, but not sufficiently so, requiring her to posit a new maximal projection, NegP.

The question of whether Mine might have attempted to acquire the verbal negator -mE at an earlier point, before the tense and agreement morphemes, needs to be addressed. I conclude that she would not have been able to do so, due to the fact reported in Aksu-Koc and Slobin (1985), that other children who formed negation with a form of -mE (e.g., mi mi) at an early stage miscategorized the element as a particle-like sentence adjunct. It is worth noting that in Mine's data, the negative verbal suffix never occurs with elements of more than one functional category at this stage, and that it is acquired after all tense and agreement morphology have emerged. In other words, the negative suffix emerges once there is the possibility of amassing evidence that the lexical item -mE behaves in a non-lexical way. In the data from Aksu-Koc and Slobin (1985), in examples (41.b,c) I note that even when children have acquired TP, as evidenced by their use of both tense and agreement morphology, they still employ an adjoined, uninfl ected negator type. I hypothesize, then, that children's initial analysis of any given morpheme is to categorize it as a lexical head, and that only robust evidence to the contrary will convince a child to posit a new functional projection.

(40) TP (nominative Case marking agreement category)
    / \ 
   T' / \ 
  / \ T NegP 
 / \ Neg' 
 / \ Neg VP

The data in Capan's article is insufficient to attempt an investigation into the order of emergence of the other functional categories in Turkish. Furthermore, the focus of this paper is on the acquisition of negation structures in contrast with other verbal inflection. I argue, then, that in languages with adult negation expressed within a NegP projection some other functional category must necessarily precede the emergence of NegP; however, no prediction is made here about the relative order of emergence of Tense, Aspect and Mood categories.

5.1. Niina. Further evidence for the ordering of acquisition of tense and negation found in Mine's development can be found in the acquisition of a Finnish girl Niina. Niina's negation emerges at age 1.3, when she uses the first person
singular agreement form *en* is isolation as a response to adult questions. Since the agreement form is also used inappropriately (41.c-d), and since Niina does not exhibit any other first person singular verb forms during the session, resorting to the third singular even in references to herself (42), I assume that at this stage Niina uses the lexical item *en* as a general negative marker, and has not further analyzed either its internal morphological structure or the meanings of its morphological parts.

(41) a. M: Älä ota tuttia suuhun. 
   
   don't take pacifier mouth.in
   
   'Don't put the pacifier in your mouth'
   
   Niina: E-n. NEG-1SG 'I won't'
   
   b. Mother: Nyt putoa-t. 
   
   now fall-2SG 'Now you'll fall'
   
   Niina: E-n. NEG-1SG 'I won't'
   
   c. Mother: Mikä siinä on? 
   
   what there is 'What's there?'
   
   Niina: E-n. NEG-1SG 'I won't'
   
   d. Mother: Ei kun tyttö. 
   
   NEG.3SG but girl
   
   'No, (it's) a girl'
   
   Niina: E-n e-n. NEG-1SG NEG-1SG 'I won't, I won't'

(42) a. Tämän halua-a ottaa. 
   
   this.ACC want-s take.to
   
   'This one (I) want to take'
   
   (Adult: halua-n)

   b. Tänne putoa-a tänne putoa-a. 
   
   here fall-s here fall-s
   
   'Here (I) falls, here (I) falls'
   
   (Adult: putoa-n)

At 1.9, Niina uses *ei ole, 'NEG.3SG be', as the pre-sentential form of the negator, again both accurately (43.e-f) and inaccurately (43.a-c).

(43) a. Adult: Mitä? 
   
   what
   
   Niina: Ei ole. NEG be 'It/there isn't'
   
   b. Adult: Nukuttaako sinua? 
   
   sleep.cause you.PART
   
   'Are you sleepy?'
   
   Niina: Ei ole. (Adult: ei nukuta) NEG be 'I'm not'

   c. Adult: Tule-e pipi. 
   
   come-s sore
   
   '(it)I'll get sore'
   
   Niina: Ei ole. (Adult: ei tule) NEG be 'It isn't'

   d. Adult: Koira. 
   
   dog
   
   Niina: Ei ole koiraa siellä. 
   
   NEG be dog there
   
   '(There's) no dog there'
e. Ei ole luu.  
NEG be bone  
'It's not a bone'

f. Ei ole perhonen.  
NEG be butterfly  
'It's not a butterfly'

During this session, Niina also shows instances of first person singular agreement marking with both affirmative and negative verb forms (44.a-d), and instances of past tense marking (44.e). Moreover, the first recorded use of a pronominal subject is shown in (44.a).

(44) a. Anna minä leiki-n tallä.  
let I play-1SG this.with  
'Let me play with this'

b. Te-i-n kauppa.  
make-PAST-1SG sales  
'l made sales'

c. Adult: Ole-t-kö sinä nukkunut tassä tyynyllä?  
be-2SG-0 you sleep.PAST this pillow  
'Have you slept on this pillow?'

Niina: Ole-n.  
be-1SG  
'I have'

d. Adult: Sinä e-t anna minulle karkkaa.  
you NEG-3SG give me candy  
'You won't give me candy'

Niina: E-n.  
NEG-1SG  
'I won't'

e. Äiti tul-l.  
mother come-PAST 'Mommy came'

On the basis of even this limited data sample, it is obvious that Niina at 1.9 is in the process of defining the characteristics of the TP category. Noting her accurate, although limited, use of both agreement morphology and pronominal subjects, she appears to be beginning to associate the category with both Case assignment and agreement. Negation, however, shows signs of not having been analyzed as a functional head at this point. The inaccurate use of ei 'ole in (43.a-c) supports the hypothesis that negation with ei 'ole be considered an unanalyzed adjoined chunk. In (44.c) Niina correctly changes the agreement marking of the negator from second to first person singular in responding to the adult's question, suggesting appropriate use of the negator. Since Niina does not, however, use main verbs other than olla, 'be', in conjunction with the negative, and she never produces a negated past utterance, she appears not to have established the relationship between the head of NegP and its verbal complement, and the status of the negator as an autonomous head in her grammar is doubtful.

By the files at 2.3 and 2.5 Niina shows clear knowledge of the use of the tense, agreement and negation paradigms. The findings from Niina suggest that in Finnish, as in Turkish, the TP category is acquired prior to the NegP category. Due to the insufficiency of the data, the conclusion is, nevertheless, indefinite.

I assume the initial recognition that the negative behaves in a verb-like manner to be an integral part of the child's decision to recategorize a negator that has originally been identified as an adverbial particle. The learnability problems identified in section 4 is hence solved: it is possible for the Finnish child to retreat
from an original wrong analysis of the negator as an adverb. Once the child acquires agreement morphology and identifies the agreement markings on the negator, she can no longer continue to classify the negative marker as an adverb, since adverbs are not marked for agreement. The most obvious choice for reclassification into the verb category is ruled out by the subcategorization and selection criteria, and the child comes to posit a new functional projection, NegP.

If this is a true characterization of the trigger experience, then utterances in which the child uses the invariant, default third person singular form of the negator with a verb inflected for tense and/or agreement suggest that the child continues to negate utilizing an adjunction structure, but adjoins the incorrectly analyzed negative particle to a TP, not a VP, node. Several such examples can be found in Toivainen (1990).

(45) a. Ei pentu hoida tuo-ta tuolla. (Adult: Ei pentu hoida...)
    NEG puppy care-for-3SG that-PAR there
    'The puppy doesn’t take care of that one there'

b. Ei mene-a pilloon.
   NEG go-3SG hiding
   (Adult: Ei mene...)
   '(It) won’t go hiding'

c. Ei ukku-u.
   NEG sleep-3SG
   (Adult: Ei nuku)
   '(It) isn’t sleeping'

d. Ei pääse-e-pi.
   NEG get-3SG-EMPH
   (Adult: Ei-pää pääse)
   '(It) can’t get (there)'

e. Ei käy-tilin.
   NEG go-PAST.1PL
   (Adult: Em-me käy-neet)
   'We didn’t'

f. Kettu ei se anto-i.
   fox NEG it give-PAST
   (Adult: Kettu ei anta-nut)
   'The fox didn’t give (it away)'

These Finnish data support the claim based on Turkish that children acquire the TP category prior to being able to identify that the negator is a functional head, due to the marked status of the functional negative construction.

I propose that, in addition to the criteria for differentiating functional from lexical heads, UG provides children with a mechanism to determine the markedness of positing a given conceptual notion with an autonomous functional projection. As discussed above, functional heads such as Voice, Causative, Benefactive, Locative and Politeness have been suggested for single languages, but, in existing research, do not appear to occur widely in languages around the world. I would expect the acquisition of such unique categories to be delayed in contrast with the more universally unmarked projections such as Tense. Since the acquisition of NegP, and I assume also of BenP, PolP, CausP, etc., is triggered by the presence of other functional inflection attached to these morphemes, I also predict that no language should exist in which one of these marked categories is
the only existing functional projection. I assume that the expression of negation as a functional head is a more marked choice than negation by either a negating verb or an invariant particle adjunct, and, hence, I presume that the child needs unambiguously, very strong evidence before concluding that a marked alternative is the only possible one.

Moreover, in opposition to the analyses by Pollock (1969) and Ouvalia (1990), I believe that no languages exist in which the negator occupies the Specifier position, and the head position is empty (or an abstract element). Since the only argument for this view is the necessity to account for two negators in Standard French, and since this structure appears unlearnable with access to evidence from only one language, I assume the analysis to be unreasonable from acquisition point of view. Hence, I assume that the child's sole task in terms of acquiring negation is to establish whether the negator behaves in a head-like manner and should project its own functional category, or not, in which case negation is via adjunction.

5.3.3. Maila. The data from a third child, Maila, provide an interesting contrast to Niiina's negation patterns. At 1.11 Maila's negation resembles that of Niiina's at 1.9, in that _si ole, 'NEG.3SG be', appears to form a single negating unit. In a number of the examples in (46), _si ole is elided to the form common also in colloquial adult speech, _si-o(o). In Toivainen's transcription, the negations in (46a-c) are marked as single phonological units. Maila also uses the default agreement third person singular form _si with various verbs, and answers yes-no questions with the first person agreeing negator _-n (48f). Although most of Maila's negated utterances exhibit no agreement morphology, she uses past tense and agreement (1SG, 1PL, 2SG) morphology in affirmative utterances productively and appropriately in this recording (47), and produces subject pronouns (46g, 47a). Maila also uses the copula _ola productively in questions and statements (47d, f-h). These data suggest that Maila utilizes both the TP and NegP categories in her grammar.

(46) a. Täällä-ei-o kissa.  
here-NEG-be cat
'(There) is no cat here (in a picture)'

b. Sinull-ei-o...  
you.LOC-NEG-be
'You don't have...'

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12 In a thorough typological study of sentence negation in 240 languages from 40 different language families Dahl (1979) found morphological negation (manifested in 108 languages) to be more common than syntactic negation (uninflected negative particles occurred in 90 languages, some form of negating auxiliary verbs in others). I note, however, that Dahl's criteria are not compatible with the account of negation utilized in this paper. According to Dahl, Turkish exhibits morphological negation, while Finnish is an example of syntactic negation with a negative auxiliary. In my analysis, both languages involve a NegP head. His findings, thus, cannot be used to identify the extent or markedness value of either adjunct or functional head negation. A comparable wide-reaching cross-linguistic investigation in terms of negation treated as a potential functional element would be of great interest as a future research project.
c. Ei-o kaikki kortit tässä.
NEG-be all cards here
'(There) isn't all the cards here'

d. Ei ole kerran men-i.
NEG be once go-PAST
'(There) isn't once (it) went'

e. Ei näy.
NEG be.visible
'(it) isn't visible'

f. E-n.
NEG-1SG
'I won't'

g. Ei sinä paala pyömnä.
NEG you to.put to.go.around

(AAdult: et sinä pane)
'You won't put it to go around
(the tape deck')

h. Ei [te] saa-nu kone leikkimään.
NEG ? get-PAST machine to.play '
? didn't get the machine to play'

(47) a. Minä poistele-n.
I take.away-1SG
'I'm taking (it) away'

b. Katso-taan.
look-1PL
'Ve're looking'

c. Paa-k-k o nää poissakii?
put-2SG-Q you away.too
'Are you putting it away?'

d. Missä oo-k kää-ny?
where be-2SG go-PAST
'Where have you gone (=been)?'

e. Me-i tuonne.
go-PAST there
'(it) went there'

f. Täällä on... piilossa on noin.
here be.3SG hiding be.3SG like.that
'Here (it) is... (it)'s hiding like that'

g. On-k-k be.3SG-Q 'Is it?'

h. Se on Jaanan.
it be.3SG J.GEN 'It's Jaana's'

At the same time, Maila leaves out agreement markings when the past
 tense morpheme appears. There are several examples of failed agreement
 marking in the recording. In (48,a,b,) Maila uses the default third person singular
 form, while in (48,c,d,) the agreement marking is entirely missing.

give-3SG
'Gives' (for: 'I'm giving')

b. Tuon ava-a.
that open-3SG
'That one opens' (for: 'I'll open that one')

c. Narras-i.
filb-PAST
'Fibbed(3SG)' (for: 'I fibbed')

d. Minä korja-sen.
I fix it
'I fix it' (for: 'I fixed it')
In all the data in (46-48), Maila’s output is limited to one inflectional morpheme per verbal element. This restriction extends to the output of pronouns, at least in the subject position, as in (48.d), ostensibly as a consequence of having produced a subject pronoun mina, ‘I’, Maila fails to provide either the past tense marker or the agreement marker, as would be required by the context. In (47.a), both the subject pronoun and the first person agreement are present. In contrast, (47.d) suggests that Maila can produce complex verb forms where each of the two verbal elements carries one inflection (agreement on the auxiliary verb, tense on the main verb). I propose that Maila’s constraint is a production problem, unrelated to the actual form of her grammar, since the examples in (47) reveal evidence of Maila productively utilizing various TP structures. Moreover, this is not a universal stage in the acquisition of Finnish, since Niina at 1.9 produced both subject pronoun-agreement (44.a) and tense-agreement combinations (44.b). I suggest that Maila’s processing system is unable to cope with more than one overt expression of functional material per lexical head.\(^{13}\)

Taking into account this performance limitation, I argue that Maila at this stage has analyzed the negator e as a functional head. Her performance limitation counts the projection of an autonomous NegP as such a processing burden that further production of agreement morphology is disallowed. Maila’s use of the appropriate past tense marking on the main verb in conjunction with the negator in (46.h), however, implies that the negator has been assigned head-like qualities, and that the presence of two verbal heads allows two functional projections, as in the analysis of (47.d) above. In the case of adult standard Estonian, the occurrence of exceptional past tense marking in conjunction with the negator is considered sufficient evidence to posit a NegP structure for the language (Koskinen 1993). Hence, Maila’s use of such past tense marking in Finnish should be accepted as evidence of productive use of the category.

The sections on Finnish child data compared the output of two children whose level of language development appeared to be comparable (some use of agreement and tense morphology, but several agreement marking errors, particularly in conjunction with the negator). However, the grammars of the children were argued to differ in terms of their analysis of the structure of negation. It was also suggested that the child Maila’s problems with agreement marking stem not from her structural representations, but from a performance limitation of being able to produce only one manifestation of functional categories per lexical head.

\(^{13}\) Bloom (1990) is a comparable processing account of the null-subject phenomenon in child language.
8. Conclusion and implications for further research

This paper has investigated issues relating to the structure of negation in early grammar. The main aim of the paper has been to argue against analyses of child language that automatically adopt an adult-like NegP structure of child negation with little or no consideration for the ramifications of this assumption for the whole of the child’s grammar. I have critiqued the NegP view of early negation for the unrealistic level of sophistication that it seems to require of the child’s grammar in terms of assuming that the child utilizes two different structures for sentential and constituent negation, the former being with a defective NegP category, all of which stands in stark contrast with the overall immaturity of the child’s syntactic structures. In addition, the question of how the child comes to utilize a NegP structure was raised. The view of a CP tree as given by UG was argued to be untenable, based on evidence from abundant recent literature on adult grammars, which has shown that both the inventories and the internal ordering of functional categories vary from language to language. Hence, research must address the issue of how children acquire the NegP structure. Furthermore, the NegP analysis of young children’s negation was criticized for failing to address the question of how children come to acquire the internal structure of the proposed NegP projection, since languages vary with regard to the negator occupying either the head or the Specifier position. Finally, acquisition data from early negation phenomena in various languages was used to argue for an adjunction structure of first negations (the alternation of sentence-initial vs. sentence-final negation in, e.g., English, German, Finnish; the close relationship between negator and adverb placement in, e.g., Finnish and German).

In this paper I have provided an alternative analysis of the earliest child negation structures. I suggested, as also discussed previously by, among others, Zanuttini (1989) and Ouhalla (1990), that world languages attest two types of negation: adverbial and head-like. Following Zanuttini, I proposed that adverbial negation is adjoined to a phrasal category, while head-like negation resides in the head of a NegP category. In terms of acquisition, I argued that all children begin by assuming that negation is adverbial, and the first instances of sentential negation, as well as constituent negation, are by adjunction of a negative element to a lexical phrasal category. In languages such as English, where I assume the adult target grammar to express negation by a similar adjunction structure, the child’s negation does not change. In a language such as Turkish or Finnish, in which the negator heads an independent functional projection NegP, I argued for a mechanism of acquisition which includes both the biological maturation of diagnostics provided by UG for the child to differentiate lexical from functional heads (subcategorization and selection), and the development of functional categories based on the categorization of lexical items according to these criteria and the requirement of projection by X-bar theory.

To present a detailed illustration of how these mechanisms function, I provided a longitudinal analysis of the acquisition of tense and negation structures by one Turkish child and two Finnish children in their second year. I argued that both the Turkish child Mine and the Finnish child Niina show evidence of the
primacy of the TP category over the NegP category. I claimed that this preference is based on the more marked status of negation as a functional head in comparison with tense. I suggested that less universally functional elements, such as negation, causality, politeness, and so forth, should be consistently acquired later than tense and agreement.

As became evident in the sections analyzing Turkish and Finnish child data, the main problem facing research into the structure of the earliest grammars of young children is the lack of comprehensive and extensive data bases for child language acquisition of most languages. Several impediments contribute to this state of affairs. Even existing data are often not at an appropriate age, since the simplicity of the child’s language at an age prior to her second birthday has not been of wide interest in the past. Moreover, as already discussed, a single child during the course of early language development may provide only a handful of relevant utterances in naturalistic output, leading to severe difficulty in interpreting results. Since only the study of large numbers of children would provide evidence sufficient for conclusive statistical analysis of sentence types, this type of research continues to be impeded and frustrated by the paucity of relevant evidence.

Large-scale data collection projects of early utterances in numerous languages not being a feasible alternative, a potential solution to the problem of shortage of data would be to conduct elicitation experiments on a smaller number of children between 15 and 25 months of age. Experimental work with such young subjects may present some difficulty. I believe, however, that appropriate tasks can be devised. Much attention is presently being focused on the question of how children come to obtain knowledge of functional structure, and so this type of data collection needs to be initiated as soon as possible, with children from various language backgrounds.

Due to the small number of children investigated, the findings based on child Turkish and Finnish presented here are tentative, and a need for further research is strongly indicated. This paper has outlined a model of the mechanism by which children come to acquire the functional categories in any given language. The details of the constraints that still must be set on the positing of functional projections by children, however, depend to a great degree on the research being conducted on adult grammars, and cannot be fully determined at the moment. For instance, in addition to child data collection to corroborate the claimed pre-eminence of the acquisition of tense over functional head negation, more extensive research into adult grammars to determine whether adjunctive negation truly is more prevalent and unmarked than negation by a functional head is called for. This paper, then, has put forth proposals for both experimental and theoretical research programs that are needed to resolve central questions in the study of child and adult grammar.

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