Split INFL and the Acquisition of Neg and Aux
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Abstract
Because child language is human language, it is important that proposed linguistic theories be able to account equally well for both child and adult speech. This paper examines a model of split-INFL, which was proposed for adult language, from the perspective of acquisition. With a focus on the acquisition of English negatives auxiliaries, I test the ability of this model to account for the earliest observed stages of child speech in these areas. Data from several children learning English is considered and the model is found able to predict and explain the common patterns. The hierarchical structure within INFL accounts for the word order in the first instances of negation, the relative order of appearance between negatives and auxiliaries, and the fact that the earliest auxiliaries were negated. The success in these areas suggests that a further, crosslinguistic look at the role of split-INFL in acquisition would be worthwhile.

1.0 Introduction

From the perspective of acquisition, it is important that any proposed syntactic theory should correctly predict the observed stages that children follow (Weinberg 1990; O'Grady 1997). In order for a model to be acceptable, then, it must not only account for the emergence of adult-like utterances, but also for the errors that children commonly make. The purpose of this paper is to test the model of Split INFL proposed by Ouhalla (1990) according to these criteria. I will focus on the acquisition of negation and auxiliaries, since it is especially in regard to these elements that Ouhalla differs from the other proposals outlined below.

The organization of the paper is as follows. I begin by outlining the theoretical framework I am assuming, with a brief discussion of the specific hypotheses that will be important to my analyses. In Section 3, I focus on Ouhalla's model, and present and analyze the acquisition data by which I will evaluate it. In the course of the analysis, I find that this model can effectively account for the relative order of acquisition of negatives and auxiliaries in English. I conclude with a brief summary of the paper and proposals for further evaluation of Ouhalla's Split INFL in the acquisition of languages other than English.

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2.0 Theoretical Assumptions

2.1 Government-Binding

In this paper I will be working within the theoretical framework of Government-Binding, as developed by Haegeman (1994, based on work by Chomsky 1981, 1986a, 1986b, and others).

2.2 Split INFL Hypothesis

This hypothesis proposes that INFL be decomposed into TP (a maximal projection headed by Tense) and AGRP (a maximal projection headed by Agreement). Theoretical motivations for Split INFL are provided in Haegeman (1994, ch 11.2). Drawing on work by Pollock (1989) and Belletti (1990), she summarizes the data from French and English, which prompted Pollock to elaborate the structure within INFL. The model she presents (a pruned version is supplied in (1) below) follows Belletti in the ordering of Tense (Tns) and Agreement (AGR), and includes Pollock's proposal that negation (Neg) heads its own maximal projection (NegP). Modal auxiliaries, she assumes, are generated under AGR, while the auxiliaries *have* and *be* are generated in VP.

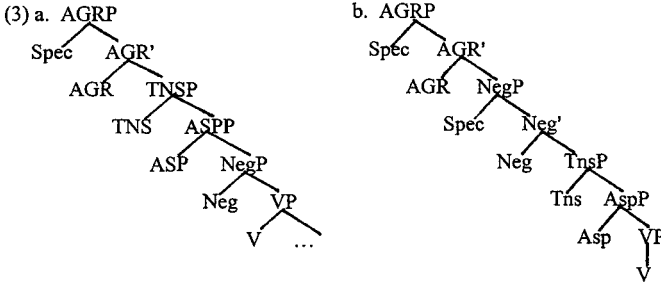(1)   AGRP   (from Haegeman, p.598)
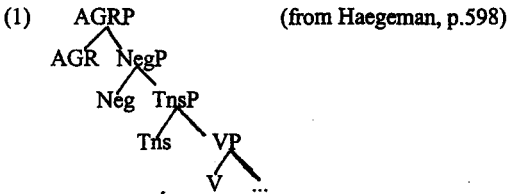
Ouhalla (1990) motivates and defends a model of the Split INFL which differs from Haegeman's in several important ways. First, Ouhalla re-analyzes all auxiliaries (*have, be* and modals) as aspectual elements, projecting AspP, which can be found either above or below NegP in the tree, language-specifically. Second, he proposes the NEG Parameter based on the cross-linguistic behavior of Neg:

(2)   The NEG Parameter (Ouhalla p194)
            a. NEG selects VP
            b. NEG selects TNS(P)

Ouhalla examines the implications of this parameter, and bases on them two possible representations of split INFL. These are given in (3) below, taken from

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Ouhalla, p.208. (3a) represents a Neg Parameter setting of (2a); (3b) represents (2b).

(3) a. AGRP
```
        AGRP
       /    \
    Spec    AGR'
           /    \
         AGR    TNSP
               /    \
             TNS    ASPP
                   /    \
                 ASP    NegP
                       /    \
                     Neg    VP
                           /  \
                          V   ...
```

b. AGRP
```
        AGRP
       /    \
    Spec    AGR'
           /    \
         AGR    NegP
               /    \
             Spec   Neg'
                   /    \
                 Neg    TnsP
                       /    \
                     Tns    AspP
                           /    \
                         Asp    VP
                                 \
                                  V
```

Ouhalla cites English and Turkish as languages with structure (3a), while French and Berber have (3b). (3a) will be central to the discussion in Section 3 below.

2.3 Structure Building Hypothesis

In this paper I assume, with Guilfoyle and Noonan (1992; hereafter G&N) and Radford (1994), that children begin acquisition with only the grammatical categories (N, V and A), and that functional categories such as Tns and Neg are acquired according to a maturational schedule. This theory of the building of acquired structure, always in conformity with UG Principles, is known as the Structure Building Hypothesis (G&N). The structure I will assume for the earliest stages of acquisition, given in (4), is presented and motivated in G&N (p.251), and has been used to account for such varied acquisition phenomena as lack of case, null subjects, and lack of passives in early speech (G&N p.243).

(4)
```
        VP
       /  \
     NP    V'
          /  \
         V    NP
```
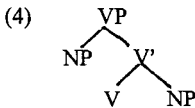
In Section 3 below, I will look at a possible approach to the building of NegP and AspP onto the initial structure in (4).
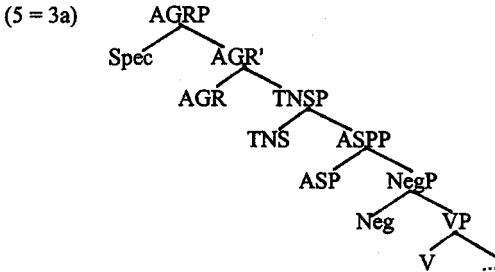
2.4 VP-internal Subject Hypothesis

Following Koopman and Sportiche (1988, 1990, cited in G&N), I assume

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that subjects are base-generated in Spec, VP. In regard to child language, this means that from the beginning of acquisition, children represent subjects in that position. As the maturation schedule gives them access to functional categories, they elaborate the structure in (4) accordingly, in response to the input.

3.0 Data and Discussion

Ouhalla's model of Split INFL and the Neg Parameter were introduced in Section 2.2 above. This discussion will be concerned with setting (2a) of the Neg Parameter, which implies the structure in (3a; repeated here as (5)). Recall that English was cited as a language, which employs this structure.

(5 = 3a)

```
        AGRP
       /    \
    Spec    AGR'
           /    \
         AGR    TNSP
               /    \
             TNS    ASPP
                   /    \
                 ASP    NegP
                       /    \
                     Neg    VP
                           /  \
                          V   ...
```

Given the Structure Building Hypothesis, and the initial structure assumed in (4) above, this model makes certain predictions about the relative order of acquisition of negation, auxiliaries and tense. In the following discussion, I will examine these predictions and, looking at English acquisition data, determine if they are correct.

3.1 Ouhalla's model: predictions for acquisition

The structure in (5) above implies that negation (Neg) would emerge very early in acquisition, and that utterances at this early time would show no Tense (Tns) or Aspect (Asp). Under Ouhalla's model, this means that modals and auxiliary verbs, as Asp elements, should be absent from the first stage of Neg usage. A further prediction, but one which will receive less focus in this paper, is that Tns markings should appear only after NegP and AspP are projected.

In summary, the predictions of the structure in (5) are:

(6)   A. Neg appears early
        B. Neg before Asp
        C. Neg, Asp before Tns

3.2 Acquisition data

In a much-cited study of the acquisition of English in three children, Klima and Bellugi (1966; hereafter K&B) isolated the instances of questions and negatives over the first three of Brown's (1973) Stages of acquisition. They noted the aspects of the grammar that were emerging in each stage, and gave representative examples of negatives and questions. Below, I present the relevant aspects of K&B's discussion, focusing on negation and auxiliaries in Stages I and II, and consider how Ouhalla's model might account for these observations.

Stage I (MLU=1.75)

At this earliest stage we find, as expected, Neg already appearing. Some examples are given in (7) below, with their sources.

(7)   No sit there; No play that.   (K&B, p.192)
          No mom sharpen it.   (G&N, p.266)
          No mommy doing.   (Deprez&Pierce, 1993:36)

G&N, and Radford (1996) propose that at this point, the Neg element *no* is in specifier (spec) position of a VP-adjunct, as in (8), taken from G&N p.267.

(8)
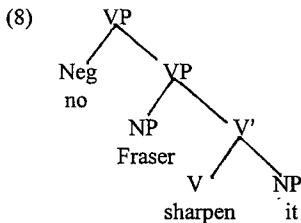
Deprez & Pierce (1993:36), arguing against a structure-building account, instead place Neg within NegP, which is situated between IP and VP as in (9; using the token from G&N). Spec, IP and Head, IP are empty.

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(9)

```
            IP
          /    \
       Spec    Infl'
              /    \
           Infl    NegP
                  /    \
              SpecNeg   VP
                no     /  \
                     Spec  V'
                    Fraser /  \
                          V    NP
                      sharpen  it
```
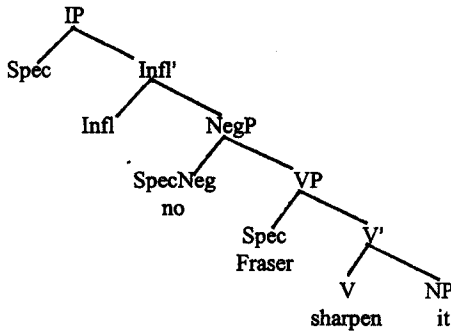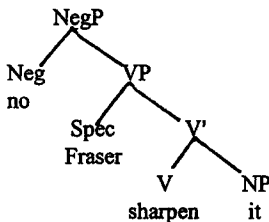
Since I am assuming here both a structure-building approach and Split-INFL, I can combine aspects of (8) and (9). Without committing to a full IP at this early stage (thus remaining within a Maturational account), and without drawing on an adjunction strategy, the presence of Neg can be accounted for by (10) below.

(10)

```
          NegP
         /    \
       Neg     VP
       no     /  \
           Spec   V'
          Fraser /  \
                V    NP
            sharpen  it
```

The newly projected NegP accounts for the presence of negation, while the absence of tense and aspect are due to the lack of TnsP and AspP, respectively. Note that (10) conforms to Prediction (6A) and to the relevant setting of the Neg Parameter, since NegP immediately dominates VP.

However, a possible difficulty we face already is the presence of apparently inflected forms such as "doing" (see (7) above). Further examples of this sort are provided in (11) from K&B (p.192).

(11) a. No singing song.
     2. No the sun shining.

Brown (1973:274) notes that the *-ing* suffix, which is used in the formation of English progressive aspect, is present from very early on in child language; K&B

include examples (including 11a, b) in Stage I. It would seem, then, that aspectual inflection is being used alongside the earliest Neg forms -- contrary to Prediction 6B.

However, it is not necessarily the case that the forms in (11) indicate a projected AspP. The English progressive is not composed of the *-ing* marker alone; it also involves the auxiliary *be*. Since all auxiliaries are missing entirely at this stage (K&B p.192), we can conclude that the presence of the *-ing* suffix in (6) does not necessarily indicate that it is generated under AspP; it could be lexically represented with the verb. Its early appearance could be due to its frequency and saliency in the input.

Since the presence of *-ing* does not directly imply AspP, and since child utterances at this point include negation but not tense or aspect, we can conclude that at Stage I, the predictions based on structure (5) above are borne out.

Stage II (MLU=2.25)

This stage sees the emergence of two auxiliary forms: the modals *can't* and *don't*, which are restricted to negative sentences (K&B p.194). K&B analyze these first modals as "lexical representations of V^{neg} since there are no occurrences of *I can do it; Can I have it? He shouldn't have it; They aren't going*, etc." (p.195). I propose instead that they are analyzed as aspectual elements, which are not yet fully distinct from Neg.

Samples of the first aspectuals are provided in (12). Data is from K&B, p.193-4.

(12)   I can't see you.   I don't like him.
           We can't talk.   I don't know his name.

The model in (5) above can explain why *negative* aspectual elements should appear first: NegP is projected before AspP. However, it does not in itself explain why the first auxiliaries should be modals, and why they should only ever occur with the contracted Neg.

To the first question -- why modal auxiliaries appear first -- we can refer again to the issue of saliency. Auxiliary *have* and *be* are often contracted; modals, on the other hand, are very rarely contracted and thus are more salient.

The second question -- why *negative* modals -- is more difficult to answer. If we assume, with K&B, that *can't* and *don't* are purely negative forms, how do we account for the fact that the children seem to associate the aspectual meanings with them? Consider the examples in (13, from K&B), where adult-like comprehension (13a) and production (13b) of the negated Asp are demonstrated:

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(13) a. <u>Adam</u> (MLU=2.25)

     Mother: I don't know that song, Adam.   *Child*: Why not?

  b. I can't see you.

K&B also note that "*don't* and *can't* are restricted to occurrences before instances of non-progressive main verbs" (p.195). The fact that these forms are assigned a specific distribution suggests that there is some sort of aspectual representation at this point (distinct from the Negs *no* and *not*) which they are making use of. For example, there are no examples of utterances like (14), where *don't* has the same the same distribution as *not*:

(14) *He don't little, he big.   (vs. *He not little, he big.* K&B p.194)

On the other hand, the fact that the modals never occur without Neg, suggests that AspP is not yet projected.

We can reconcile this seeming contradiction, if we assume that Asp has in fact been acquired, but it is not projecting its own maximal projection. This situation could occur for one of two reasons: Asp could be adjoined to NegP; or, it could be forming a complex head with Neg.

Consider the adjunction proposal first. If we assume that Asp at this stage is in spec position of an adjoined NegP, the resulting structure is (15)[1].

(15)   NegP   "I don't like him"

The aspectual element's position inside NegP makes it easier to account for its

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[1] It is beyond the scope of this paper to motivate or discuss the position of the pre-Neg subject in the sentences in (12) above; for proposals, see Deprez and Pierce (1993) and G&N. For convenience, in my discussion, I will leave the subject in its VP-internal position, with brackets to indicate my neutrality about its S-Structure position.

obligatory negative form. Haegeman (1994:387) uses a "balcony" metaphor to describe the adjunction structure: a balcony is both inside and outside the building it is attached to. Similarly, *do* in (15) could be considered both inside and outside the NegP. Because it is "inside" the NegP, the modal must always be negative in form; because it is "outside," it can retain the semantic function of an aspectual.

A problem with this approach, however, is the nature of Asp at this point. If Asp is not yet projecting AspP, an adjunction structure is strongly disfavored for the following reasons: I am assuming that UG principles apply at all stages of acquisition (see Section 2.3 above); however, "principles of UG determine that only a phrase (not a head) can be adjoined to another phrase" (Radford, 1994, citing Chomsky 1986:88).

Also, spec position is a phrasal, not head, position (cf. Cowper p.140). A second problem involves the affixal nature of Neg on the modals. The adjunction structure allows for the possibility of non-contracted Asp-Neg forms such as *do not* and *can not*, which are not attested. Consider instead the second possibility: Asp is located in head, NegP, and forms a complex head with Neg, as in (16)[2].

(16)   NegP   "I don't like him"

```
(16)              NegP                    "I don't like him"
              /        \
           Neg          VP
          /   \        /  \
       Asp   Neg    Spec   V'
       do    -n't    (I)   /  \
                          V    NP
                         like  him
```
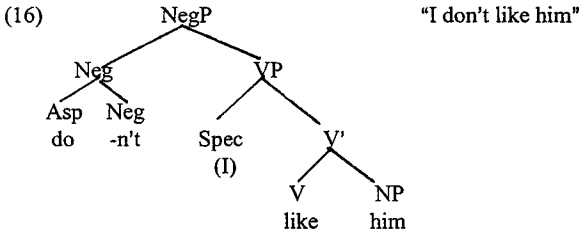
In this structure, there is no difficulty with Asp being a head: it must be, in order to from a complex with Neg. Also, the obligatory suffixal nature of Neg in (12) above, is more readily explained: items in a complex head are often expressed together (consider the example in note 5, where [*be*+3sg pres] is pronounced "is"). Further support for (16) comes if we assume, with Ouhalla (p.212 note 16), that

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[2] This structure compares to that resulting from V-to-I movement, given in (i):

```
(i)            ...I'            "is"
              /    \
             I      ...
            / \
           V   I
          be  [3sg, pres]
```
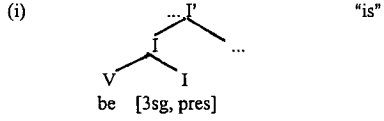
forms like "hasn't" and "wasn't" in adult English are complexes formed by the movement of the Neg element *n t* to Aux (Asp). That is, in the target language, Neg and Asp end up combining as proposed here.

I conclude, then, that the early negative modal forms *can t* and *don t* are represented more effectively by the complex-head analysis (16) than by the adjunction analysis (15) because the former involves no departure from UG principles and better explains the contracted Neg.

Note, in passing, that at this stage there is still no evidence of Tns:

(17)   He no bite you. Book say no. Mom pinch finger?

Thus, Prediction 6C is also successfully borne out: both Neg and Asp elements appear before tense.

4. 0 Conclusion

The purpose of this paper has been to examine the predictions of Ouhalla's model of Split INFL against acquisition data. In the discussion in Section 3, I found that this model was able to deal successfully with the first two stages of Neg and Asp acquisition. Potentially problematic data was dealt with by drawing on well-established factors of both developing and adult grammars: the early appearance of the progressive *-ing* was attributed to saliency factors; the negative status of the first auxiliaries was analyzed as the result of an Asp-Neg complex in head, NegP.

This paper has examined only a small part of a much larger issue: the role of Split INFL in the acquisition process. In Section 2.2 I presented Ouhalla's two proposed models of Split INFL: in Section 3 I examined only one of them. Further analysis of Ouhalla's model, then, should involve at least one example of the other structure, (3b). For example, French acquisition data could be considered (recall that French is proposed to use (3b)). Also, the discussion here was limited to Stages I and II; in order to fully evaluate any model of Split INFL, the analysis should be extended. In particular, the relative order of acquisition between Tns and Agr should be examined in later stages of acquisition.

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References

Belletti, A. 1990. *Generalized verb movement*. Turin: Rosenberg and Sellier.

Brown, R. 1973. *A first language: The early stages*. Cambridge: Harvard University Press.

Chomsky, N. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, N. 1986a. *Barriers*. Cambridge: MIT Press.

Chomsky, N. 1986b. *Knowledge of language: Its nature, origin, and use*. New York: Praeger.

Cowper, E. 1992. *A concise introduction to syntactic theory*. Chicago: University of Chicago Press.

Deprez, V. and A. Pierce. 1993. Negation and functional projections in early grammar. *Linguistic Inquiry* 24:25-67.

Guilfoyle, E. and M. Noonan. 1992. Functional categories and language acquisition. *Canadian Journal of Linguistics* 37:241-73.

Haegeman, L. 1994. *Introduction to government and binding theory*, 2nd ed. Oxford: Blackwell.

Klima, E. and U. Bellugi. 1966. Syntactic regularities in the speech of children. In *Psycholinguistic Papers*, ed. J. Lyons and R.J. Wales, 183-208. Edinburgh: Edinburgh University Press.

Koopman, H. and D. Sportiche. 1988. Subjects. Ms.

Koopman, H. and D. Sportiche. 1990. The position of subjects. Ms.

O'Grady, W. 1997. *Syntactic development*. Chicago, IL: University of Chicago Press.

Ouhalla, J. 1990. Sentential negation, relativised minimality and the aspectual status of auxiliaries. *The Linguistic Review* 7:183-231.

Pollock, J.-Y. 1989. Verb movement, Universal Grammar and the structure of IP. *Linguistic Inquiry* 20:365-424.

Radford, A. 1994. The syntax of questions in child English. *Journal of Child Language* 21:211-236.

Radford, A. 1996. Towards a structure-building model of acquisition. In *Generative Perspectives on Language Acquisition*, ed. H. Clahsen, 43-89. Philadelphia, PA: John Benjamins Publishing Co.

Weinberg, A. 1990. Markedness vs Maturation: the case of subject-auxiliary inversion. *Language Acquisition* 1:165-194.

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