# The Maturation of Grammatical Principles:

# Evidence from Russian Unaccusatives*

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## Abstract

This paper tests the hypothesis that young children have a maturational difficulty with A-chain formation. In particular, we examine whether children represent unaccusative verbs in an adult-like fashion, employing an A-chain. We report the results of a test of children's performance on the genitive of negation construction in Russian. For adults, the genitive of negation construction is an "unaccusativity diagnostic", being possible only for unaccusative and not for unergative verbs. We show that Russian children know the properties of the genitive of negation construction, but do not use the construction with unaccusative verbs. Given that the input evidence for genitive of negation with unaccusative verbs is quite robust, we interpret the results as support for the hypothesis that children have a maturational difficulty with A-chains.

**Keywords:** language acquisition, chains, genitive, maturation, negation, passive, Russian, specificity, unaccusative

## 0. Introduction

Studies of early language acquisition help us understand the biological roots of language. For example, the growing body of work that reveals extremely *early knowledge* of many properties of language (e.g. Wexler, 1996 and references therein) is particularly interesting in light of debates over the "poverty of the stimulus" and the nature of Universal Grammar. As long as one is unable to discover a stage at which a child lacks knowledge of a particular sort, one can entertain the hypothesis that this knowledge arises, not from linguistic experience, but directly from the child's genetically determined nature.

A more complex set of questions arises, however, when research reveals the opposite situation: the *absenc*e of certain linguistic knowledge in the child at a certain age. We can call this the *problem of late knowledge*. The most fundamental questions raised by such a case are the following: why does the child not know *P* at age *n*, and how does the child who does not know *P* at age *n* come to know *P* at a later age *n+m*? One answer that has been explored is maturation of the human language faculty, which we will call *linguistic maturation* (e.g., Borer and Wexler, 1987, 1992; Wexler 1994; Wexler, in press; Rizzi, 1993/1994; Gleitman, 1981).

Research on late knowledge is as difficult (and as rewarding) as research on early knowledge. We are familiar with the fact that apparent deficiencies in children's use of the adult language often conceals substantial early knowledge, which is revealed to investigators only through careful experimentation and analysis. But the same is true of late knowledge. Apparently *successful* use of the adult language by children may conceal gaps in the child's linguistic abilities that also become apparent only through careful experimentation and analysis.

This paper presents a case of just this type, which bears on one of the earliest and best-known hypotheses concerning the maturation of syntax: Borer and Wexler's (1987, 1992) argument that young

children lack the ability to represent A-chains that link thematic subject and object positions. While their proposal points correctly to a general domain in which children show difficulties, it seems to fly in the face of other observations that suggest that young children are proficient users of constructions which in the adult involve A-chains. That is why much of their discussion was devoted to demonstrations that these observations of proficiency are actually misleading.

In this paper, we provide another demonstration of this sort, one that we feel is especially strong: a demonstration concerning children's use of unaccusative verbs. Unaccusative verbs, in the adult language, typically involve A-chains linking their surface subject to a direct object position. Children, as we discuss below, do use these verbs freely from an early age. Nonetheless, we will show, using new data from Russian (both developmental and adult), that children who use unaccusative verbs must be assigning them a non-adult representation without A-chains. We do this by testing their ability to produce a construction which (we argue) disallows this non-adult representation by its very nature: the so-called "genitive of negation" with unaccusative verbs. It turns out that this construction poses severe and specific difficulties for the children. We thus believe that we have uncovered a new and particularly interesting case of late knowledge. The argument is especially interesting because certain instances of the construction are extremely common in adult speech. Delayed knowledge in the face of rich evidence provides an argument for UG that is the inverse of the more familiar argument from the "poverty of the stimulus". We might even call it the argument from "abundance of the stimulus". This type of inverse argument thus supports the hypothesis that specific details of linguistic knowledge are biologically determined by offering an explanation -- not for the presence of knowledge in the absence of evidence -- but for the absence of knowledge in the presence of abundant evidence. The explanation lies in the hypothesis that the biology which supports the relevant knowledge is not available until a comparatively late stage in child development.

# 1.    Alternatives to Maturation as an Explanation

We begin by examining maturational hypotheses in the context of other developmental proposals. Consider some simple observations:

1. Research that reveals extremely early linguistic knowledge, when combined with evidence from linguistic universals and "poverty of the stimulus" arguments, makes it clear that certain properties of language, including our ability to acquire it, derive from biologically determined (possibly language-specific) properties of the human brain.

2. The human organism changes state as it matures.  Maturation is as much a property of the brain as a property of other organs.

3. Consequently, we can be quite sure that the brain structures that instantiate Universal Grammar are subject to some kind of maturational timetable, if only because they develop from less complex structures during the course of embryogenesis. It is an open question when this process is complete  -- how long before or after birth.

Suppose we discover differences in language use by children that correlate strongly with differences in age--in particular, late knowledge of some sort. Given the common-sense considerations just discussed, it is quite reasonable to ask whether these differences might arise from maturation-dependent differences in the brain structures that subserve language.

Curiously, this question is not often asked.  Indeed, linguistic maturation is sometimes considered an uninformative or even outlandish explanation for age-dependent linguistic differences.  We think this prejudice is misplaced.  The prejudice stems, we suspect, from a failure to consider the developmental counterpart to the biological view of language that has proved so fruitful in non-developmental (theoretical) studies .  In fact, non-maturational explanations for late knowledge are not less outlandish

than linguistic maturation, nor are they *intrinsically* more informative. The various types of explanations simply differ in the empirical footprint that we expect them to leave.

Besides linguistic maturation, there are two possible types of explanations for late learning: *input-driven explanations* that attribute late knowledge to nurture rather than nature, and *non-linguistic maturational explanations* that attribute late knowledge to non-linguistic developmental factors. Each alternative, however, just like linguistic maturation itself, makes a specific set of empirical predictions which have gone largely uninvestigated in the current literature. Thus, the choice of explanation for individual cases of late knowledge should not be a matter of taste, but a matter for empirical investigation. Let us consider these alternatives somewhat more closely.

## 1.1    Input-driven explanations

The diversity of human languages tells us that the nature of the final state in language acquisition is to some degree *input-driven.* Something in the child's linguistic environment must help her decide whether or not she is speaking a verb-second language, a language with N-to-D movement, a language with pro-drop tenses, etc. Consequently, one explanation for the absence of some kind of linguistic knowledge in a child at a particular age could be insufficient exposure to certain relevant linguistic facts by that age. The general character of this sort of explanation has been discussed by Borer and Wexler (1987). They noted that an input-based explanation still must explain why, in many cases, the input data fail to trigger the learning of a construction at one point in time but succeed at a later point. They called this the "Triggering Problem" (see also Lenneberg 1967).

One might attempt to solve the Triggering Problem in an input-driven account of late knowledge by positing a frequency threshold of relevant occurrences that must be crossed before the child pays attention to a fact.[1] In certain cases, this sort of proposal deserves to be taken seriously. For example, age-dependent vocabulary differences might well be attributable to frequency of occurrence in the corpus of utterances accessible to a child.

This sort of proposal is, in principle, empirically testable. Solutions to the Triggering Problem that rest on frequency lead us to expect variability across children correlating with variability in the actual input. This sort of variability, in fact, should function as the characteristic hallmark of frequency-driven late knowledge. While detailed work on this question is largely missing, we have the impression that this sort of variability is not found in a significant range of cases. In fact, the present study will center around a case of late knowledge for which input frequency is almost certainly not at stake. The key observation at this point is the fact that input-driven learning should present a specific empirical profile. Consequently, it is not a priori an explanation for all imaginable instances of late learning.

## 1.2    Maturational explanations: linguistic and non-linguistic

An alternative style of explanation is maturational (that is, not crucially input driven) -- but *non-linguistic*. This type of explanation attributes late knowledge to late maturation of mental capacities other than the human language faculty. In this category, one might explore limitations of memory capacity, overall processing speed, communicative abilities, etc. Psychologists have often favored these kinds of non-linguistic explanations, arguing that we should assume that the cognitive abilities of children are the same as those of adults, but that children have additional restrictions imposed by generally immature brain functions outside the domain of language, e.g., Pinker, 1984.[2] Actual explanations relying on non-linguistic maturation, however, should display a very specific profile: the immature state of a particular domain (e.g. memory) should show effects in child cognition that go beyond language. If we hold theories of non-linguistic maturation to the same standards to which we hold linguistic maturation, it should be possible to describe the immaturity in terms of a developed theory of that domain for adults. To date, we are aware of very few serious explanations of linguistic phenomena that have this character.

In contrast to input-driven late knowledge and late knowledge arising from non-linguistic maturation, *purely linguistic maturation* is expected to manifest itself only through non-adult performance with abstract structures and categories made available by UG. The hypothesis of purely linguistic maturation is simply a "dynamic" version of the familiar argument for UG from the poverty of the stimulus: given the known input, we cannot explain changes in knowledge of specific aspects of

grammar *at particular ages* unless we assume innate structures that also change over time. Our discussion of alternatives can help us see how the case for purely linguistic maturation can be made. The argument for linguistic maturation (as opposed to input-driven late knowledge) will be strong whenever input can be discounted as a cause of late knowledge, i.e., when the Triggering Problem is evident. The argument for linguistic over non-linguistic maturation (in a given case) must be a negative one. It rests on whether one can discern a non-linguistic function for the immature ability or non-linguistic consequences of it in development.[3]

In this paper, we pursue a linguistic maturational account of certain phenomena on the grounds of plausibility and empirical coverage. Until the literature offers serious non-linguistic accounts of developmental facts for which plausible linguistic hypotheses exist, there is no reason to reject this mode of explanation, whatever the virtues or demerits of our particular proposal. Nonetheless, we leave open the possibility that it may someday be shown that the linguistic differences between child and adult that we have uncovered have their roots in more general cognitive differences.

## 2.    Maturation of A-chains

### 2.1    A-chains

The earliest discussion of purely linguistic maturation by Borer and Wexler (1987) concerned children's ability to represent A-chains. This work was inspired by several findings concerning the passive construction in the speech of English-speaking children, including impaired comprehension and sparse production of passive constructions (e.g., Horgan 1975; Maratsos *et al* 1983; Bever 1970)[4]. Borer and Wexler (1987, 1992) proposed that the ability to represent passive constructions in an adult-like manner does not mature until about four years of age. They adopted a familiar analysis of passive constructions, essentially the analysis of Chomsky 1981, which we will also assume in this paper. According to this analysis, the subject of a passive sentence initially occupies the object position characteristic of internal arguments (like themes and patients), and comes to occupy the subject  position

as a consequence of movement.  The subject and object positions are linked by membership in an *A-chain*:

(1)  was opened the door$_i$ --> the door$_i$  was opened t$_i$
                                    [A-chain:  (subject, object)]


The association of the surface subject argument with an underlying object position arises as the consequence of the universal association (linking) of particular semantic roles with particular syntactic positions provided by principles like Baker's (1988) *Uniformity of Theta Assignment Hypothesis* (UTAH) and its predecessors in the syntactic literature.  The nature of linking associations has been investigated from many different perspectives.  We will assume, perhaps incorrectly, that the distinctions among these proposals are not relevant to our discussion.  Consequently, we will stick to a familiar view that associates semantic role labels with syntactic positions.  In the case of (1), universal conventions active in the adult speaker link the role *theme* or *patient*  to direct object position, accounting for the underlying form *was opened the door*. If this analysis of passive is correct, passive clauses have two important properties that distinguish them from their transitive active counterparts.  (Here we follow Chomsky 1981.)

(2) a. **Dethematization:** The external argument is not associated with an NP that ends up in SPEC,IP. Depending on the exact proposal one adopts, it either is suppressed, associated with the passive morpheme (Jaeggli 1986; Baker, Johnson and Roberts 1989), or associated with a *by*-phrase.

   b. **Movement:** The internal argument undergoes movement to the type of position otherwise associated with the external argument.  This fact is generally attributed to case theory.

## 2.2    A-chains in children

In principle, one might attribute children's problems with passive to either property (2a) or (2b). Borer and Wexler explored the possibility that the problem faced by children concerns *movement*, as in (2b).  They suggested that children at the relevant ages are unable to represent a passive clause with an A-

chain linking object and subject.[5] Thus, in (3), *door* cannot get a theta-role because it is a subject and the canonical position of its theta-role (theme) is object. We can think of this inability as a "star" affixed by the child's linguistic competence to a structure that, in the older speaker, is unstarred. We will call this proposal the **A-chain Deficit Hypothesis (*ACDH*)**:

(3)  [*]The door$_i$  was opened t$_i$.

For much of the discussion, the consequences of the ACDH will be indistinguishable from another possible proposal, which localizes the deficit not in the A-chain characteristic of passive constructions, but in the suppression or absence of the external argument (an **External Argument Requirement Hypothesis**, or *EARH*).  The absence of an external argument is, of course, a precondition for the  A-chains found in passive clauses (given the θ-criterion). Note that adopting the alternative hypothesis -- that children at this stage are unable to represent predicates without an external argument in the canonical position -- would lead to the same predictions for structures like those of passive and unaccusative verbs, which contain a (subject, object) A-chain. Children would be expected to be unable to represent such structures, because an A-chain whose head is in the subject position cannot be constructed unless the subject position is non-thematic (i.e., the external argument is not projected in its canonical position). In fact, the two hypotheses amount to two different explanations for the fact that (subject, object) A-chains are absent in early grammars. To distinguish between the predictions of these two hypotheses, one would have to examine children's performance on two types of structures: 1) structures that contain no external argument in the canonical position but contain no A-chain (ACDH predicts these to be non-problematic, and EARH predicts these to be problematic); 2) the structures that contain an external argument in the canonical position and an A-chain other than (subject, object) ( ACDH predicts these to be problematic, and EARH predicts these to be unproblematic). We will adopt  ACDH as our initial hypothesis, returning to the EARH alternative where relevant.  A fuller discussion of these alternatives is taken up in section 7.2.

One might suppose, all things being equal, that *ACDH* predicts a total absence of passive clauses in the speech of children at the relevant ages, as well as total lack of comprehension of such structures.

This runs counter to the apparent facts as reported by Maratsos *et al* (1983), Pinker *et al* (1987), and others.  Children's production and comprehension of passive clauses is spotty and defective compared to the adult norm, but children do use and comprehend constructions that sound like adult passives.  Borer and Wexler responded with the conjecture that  children's "passive" clauses, despite their superficial resemblance to the normal adult passive, do not contain A-chains.  Instead, building on Maratsos et al.'s observation that performance on actional passives is worse than performance on non-actional passives, Borer and Wexler argued that the only passive-like representation available to the child involves *adjectival* (rather than *verbal*) passive.  Adjectival passives are distinguished from verbal passives by stative semantics. Following Wasow 1977 and Williams 1981, they assumed that adjectival passives also involve no A-chain.  In this sense, adjectival passives violate UTAH, displaying an otherwise non-canonical direct linking of theme/patient with the external argument position:

(4)  The door was [$_A$ opened].

Borer and Wexler's proposal presupposes that  UTAH is present in the child's grammar just as it is in the adult's. That is, they allow for the possibility that adjectival passive constructions lack an object trace, but do not allow for the possibility that verbal passives lack an object trace.  The linking principles that distinguish verbal from adjectival passives were assumed to apply equally in the child's grammar and in the adult's grammar (a common assumption in many theories of child language acquisition, e.g., Grimshaw, 1981; Pinker 1984).  The maturational difference between the two grammars rests elsewhere in their theory -- in particular, in the factor we have called *ACDH*.

## 3.    Unaccusative verbs and the ACDH

If Borer and Wexler are correct, a child at the relevant age should never produce or understand an utterance whose analysis *requires* an A-chain.  Only if an utterance with an A-chain has a "syntactic homophone" (which we will abbreviate *s-homophone*) without that A-chain could such an utterance be produced or understood.[6]  Borer and Wexler's argument that adjectival passives are the s-homophones of choice took some of its strength from the fact that even adults (according to some proposals) assign a

structure without an A-chain to adjectival passives. One obvious unanswered question concerns the overall availability of s-homophones without A-chains for constructions that otherwise would contain A-chains. For many such cases, there is little or no support in the literature on adult syntax for homophonous representations that lack A-chains.[7]

Clauses with unaccusative verbs are a particularly important example. For the adult, such clauses, like passives, require an A-chain with a tail in direct object position and a head in subject position (Perlmutter & Postal 1984; Levin & Rappaport-Hovav 1995).

(5) a.   The door$_i$ opened t$_i$.
    b.   The mail$_i$ arrived t$_i$.

In the case of simple unaccusatives we do not know of any arguments that adult grammars offer an alternative representation that lacks an A-chain. If there are no s-homophones for unaccusative clauses in the adult grammar (i.e. clauses that stand in the same relation to (5a-b) as adjectival passives, on Borer and Wexler's assumptions, stand to verbal passives) one might expect that children who lack A-chains would simply not use unaccusative verbs at all. This prediction is patently false. Verbs like *break* and *fall* are used by (English-speaking) children as early as 18-24 months (e.g., Tomasello, 1992). The successful use of unaccusative verbs by children at an age where problems with passive are detected thus poses significant questions for the ACDH hypothesis (as well as for the EARH alternative).

Borer and Wexler (1992) point out that, if the ACDH is correct, a child who uses unaccusative verbs must be assigning to unaccusatives an *unergative* analysis -- an analysis that would produce representations homophonous with the unaccusative analysis. The proposed representations are shown in example (6).

(6)   a.   The door opened.   [no object trace]

      b.   The mail arrived.   [no object trace]

A simple but crucial question arises. Is this hypothesis correct?  Do children provide unergative representations like those in (6a-b) for clauses that in the adult would be unaccusative?  A positive answer would strongly support the family of hypotheses that includes ACDH and EARH.  In particular, it would support the notion that children have a general deficit whose character requires reference to a property that cross-cuts syntactic constructions.  A negative answer would force us to re-examine this approach, calling into question the idea that children's problems with passive form part of a larger, syntactically characterizable picture.

Of course, if it does turn out that children have representations like those in (6), serious syntactic issues remain.  In particular, analyses of this sort probably violate UTAH,  since a non-agent that would be an object in a transitive clause (*Mary opened the door*) here shows up as an underlying external argument.  This issue was discussed in detail by Borer and Wexler (1992) and can be developed in one of two ways.  Either (i) or (ii) below might be true of child grammar at the relevant stage:

  i. UTAH is fully known to the child, but can be violated when the alternative leaves a verb
     unparsed in comprehension or unusable in production[8]; or
  ii. UTAH [or a subcase of it] is missing in the child.

Although we argue for linguistic maturation in a specific instance (A-chains), we have not found any evidence for maturation of UTAH itself. Children can be shown to respect this mapping at fairly early ages (Marantz 1982), an ability which is probably important to the acquisition of the verb lexicon (Grimshaw 1981, Pinker 1984). Therefore we will continue to assume (i).

In any case, the prediction that children represent unaccusatives differently from adults has not been tested. In order to probe children's representation of unaccusatives, we must find a situation where the difference between an unergative and unaccusative representation has clear grammatical consequences, and where no unergative s-homophone is available.  In such a situation, we predict that the unaccusative verb will cause observable problems for the child.

The distinction between *overt* and *covert* movement provides just such a case. The core difference between overt movement and covert movement concerns pronunciation (Pesetsky 1997, in prep). Movement is overt when it has an effect on the phonology -- typically, a situation in which the head of a chain is pronounced, and the tail is unpronounced. Passive constructions in adult English are instances of overt movement in this sense, as is the *wh* movement typical of questions. Covert movement, by contrast, is simply movement that does not have an effect on the phonology -- in particular, a situation in which the tail of the chain is pronounced, and the head of the chain is unpronounced.

The ACDH does not distinguish between overt A-movement and covert A-movement. It predicts that both should be equally difficult for young children. But there is a crucial difference in how children with an A-chain deficit should react to covert and overt A-movement. In the case of overt A-movement, we can envision a traceless s-homophone -- that is, a traceless representation homophonous with a representation that, for the adult, contains a trace. This is because the trace, even when it exists, is not pronounced. With covert A-movement, however, no such s-homophone can be envisioned. A traceless representation cannot be homophonous with a representation that contains a trace when it is precisely the trace that must be pronounced. Consequently, we expect to find that children have much greater difficulty with constructions that involve covert A-movement than they have with constructions that (for the adult) involve overt A-movement.

(7)     a. **Overt A-movement**
          NP V *trace*
          ↗
*pronounce here*

*sounds like*: /NP V/


          b. **Covert A-movement**
          NP V *trace*
                ↗
            *pronounce here*

*sounds like*: /V NP/


English is not the easiest language in which to study these matters, since evidence for unaccusativity in English is subtle, and there are no clear cases of covert A-movement known to us

(though we discuss one possibility below). Russian, on the other hand, provides us with a robust test for unaccusativity with the so-called "genitive of negation" construction. Consequently, when used with the genitive of negation, unaccusatives lack an unergative s-homophone. Furthermore, we will argue, this same construction in certain cases involves covert A-movement. Thus, we will suggest, the Russian genitive of negation construction provides exactly the condition we need to test the hypothesis that children in early stages of language acquisition avoid A-chains.

To do this, we utilize an experimental paradigm that forces children to use the genitive of negation with unaccusative verbs to determine whether A-chains are available to them. The results of the experiment confirm the ACDH hypothesis rather strikingly. Before describing the experiment and its results, we review the genitive of negation construction in section 4 and argue that it is ideally suited to test the ACDH hypothesis. Then in section 5 we describe the experiment and its results. In section 6 we return to passive constructions. Finally, in section 7, we review other recent empirical evidence for and against the ACDH.

## 4.      Russian genitive of negation: Covert A-chains

### 4.1  The genitive of negation

In Russian, certain nominal arguments may appear in the genitive case in a negative sentence. Example (11) illustrates the pattern for transitive verbs: (11a) contains a "normal" accusative direct object, while (11b) contains a genitive direct object. Assignment of genitive case here -- known as the "genitive of negation"-- is traditionally described as optional. This is not completely accurate: the nominals appearing with the genitive of negation have a distinct interpretation. Roughly, a genitive direct object is interpreted as non-specific, indefinite and non-referential, while an accusative direct object is interpreted as specific or definite and referential. The genitive of negation object is in the scope of negation, while the accusative object is outside the scope of negation.

(8)        a. Ja ne  polučil  **pis'ma**
           I   not received letter-AccPl
        'I didn't receive the/some letters'

        b. Ja ne  polučil  **(nikakix)**        **pisem**
           I  not received (no-kind-GenPl) letter-GenPl
        'I didn't receive any letters'

        c. Ja polučil  **pis'ma**     **/ \*pisem**
         I received letter-AccPl / \*letter-GenPl
        'I received the / some letters'

As the examples in (8) show, genitive case marking on the direct object is limited to negative sentences in which the direct object is non-specific and indefinite, with scope narrower than negation. If the object is specific or definite, or if negation is missing, only accusative is possible.[9] In (8c), both a specific and a non-specific interpretation are available for the accusative nominal argument. Thus, it would be more accurate to describe the genitive of negation as greatly preferred (almost obligatory) on a non-specific object within the scope of negation.

Let us now characterize the syntax of the genitive of negation more precisely. In (11) we saw that an unmoved nominal in direct object position may appear with genitive case-marking, if it has an appropriate interpretation. The genitive of negation is not found, however, on nominals base-generated in the subject position and pronounced there, even in negative sentences, regardless of interpretation. Examples (9a-b) show this for subjects of transitive verbs; examples (9c-d) show this for subjects of unergative verbs:

(9)    a. **Nikakie**          **mal'čiki**    ne polučali pis'ma      iz doma
          No-kind-**NomPl**    boy-**NomPl** not received letter-AccPl from home-GenSg
        'No boys/none of the boys received-pl letters from home'

       b. ***Nikakix**          **mal'čikov**    ne polučalo           pis'ma        iz      doma
          No-kind-GenPl boy-**GenPl**  not received-NeutSg letter-AccPl from home-GenSg
          No boys received letters from home'

       c. **Nikakie**          **devočki**    ne tancevali
          No-kind-NomPl girl-NomPl not danced-pl
          'No girls/none of the girls danced.'

       d. ***Nikakix**          **devoček** ne tancevalo
          no-kind-GenPl girl-GenPl not danced-NeuSg
          'No girls danced.'

Crucially, the genitive of negation is also found on nominals that are base-generated in direct object positions, but normally move to an external subject position (Spec of AgrSP or TP). For example, the genitive of negation is found on the theme or patient argument of unaccusative and passive verbs. Examples (13a-b) demonstrate this for the internal argument of a passive verb. Examples (13c-d) demonstrate this for the internal argument of an unaccusative verb:[10]

(10)   a. (Vragom)          ne bylo          vzjato      **ni odnogo**          **goroda**
          (enemy-InstrSg) not was-NeuSg taken-NeuSg neg single-GenSg town-GenSg
          'Not a single town was taken (by the enemy)'

       b. (Vragom)          ne byl          vzjat      **gorod**
          (enemy-InstrSg) not was-MascSg taken-MascSg   town-NomSg
          'The town was not taken (by the enemy)'

       c. Ne rasstajalo          ni    odnoj      **snežinki**
          Not melted-NeuSg  neg single-GenSg snowflake-GenSg
          'Not a single snowflake melted'

       d. Ne rasstajala          **snežinka**
          Not melted-FemSg snowflake-NomSg
          'The snowflake didn't melt'

Tests discussed by Pesetsky (1981, 142), partly based on Babby (1980), make it clear that the boldfaced genitive NPs in (10a) and (13c) are pronounced in their base-generated positions (object position). That is, despite the possibility of scrambling, their unmarked position is postverbal. Also, these genitive NPs do not trigger verbal agreement, so that the predicate surfaces with default agreement (3rd person, singular, neuter). In (10a), the NP *ni odnogo goroda* is masculine, while in (10c), *ni odnoj*

*sne*ž*inki* is feminine.  Nonetheless, the verb shows neuter agreement in both cases, in contrast to examples (b) and (d), where the verb agrees with the NP argument .

Furthermore, the genitive arguments cannot successfully serve as antecedents for reflexive pronouns, nor can they control the subject of nonfinite adjunct adverbials (called "gerunds" in traditional Russian grammar).  These are both subjecthood tests (Neidle 1988, 71-72):[11]

(11)    a. Ni odin          mal'čik$_i$   ne byl       ubit       u sebja$_i$ doma.
            not  single-NomSg boy-NomSg not was-MascSg killed-MascSg  at self at-home
            'Not a single boy was killed in his own house.'

        b. *Ne bylo       ubito       ni odnogo     mal'čika$_i$   u sebja$_i$ doma.
          not was-NeuSg killed-NeuSg not single-GenSg  boy-GenSg at self    at-home

(12)    a. [PRO$_i$ vozvraščajas' domoj], ni odin         mal'čik$_i$   ne byl ubit.
            returning     home   not one-NomSg  boy-NomSg not was killed
             'Not a single boy was killed while returning home.'

        b. *[PRO$_i$ vozvraščajas' domoj] ne bylo      ubito      ni odnogo    mal'čika$_i$
                returning     home   not was-NeuSg killed-NeuSg not one-GenSg boy-gen

Although the genitive NP fails standard tests for subjecthood, there is nonetheless  evidence that the genitive NP moves covertly to subject position, which we present in the next section.  First, however, we want to call attention to a special instance of genitive of negation with unaccusative verbs.  In the examples of (10), the presence of genitive case indicated non-specificity. A small class of 'bleached' verbs (Szabolcsi 1986), including existential *be*, actually *require* genitive case when negated, regardless of the specificity of their argument, as (16) demonstrates:

(13)    a. V gorode ne bylo          vrača
            In town   not was-NeuSg  doctor-GenSg
            'There was no doctor in town/ the doctor was not in town'

        b. *V gorode ne  byl         vrač
            In town  not was-MascSg doctor-NomSg

(14)    Ol'gi Borisovnoj      net.
        Olga Borisovna-Gen   isn't.
        'Olga Borisovna isn't here.'

The verbs in this class are few in number, but extremely common in Russian speech. They will play an important role in the experiment described in section 5.

## 4.2    Covert A-movement of genitive phrases with unaccusatives

In this section we consider the genitive of negation with passives and unaccusatives -- the constructions in (10) -- in greater detail.  We will argue that although the genitive argument is pronounced in the direct object position of passives and unaccusatives, it undergoes covert movement to the subject position (perhaps adjoining to or replacing an expletive occupying that position).  This demonstration provides us with a configuration in which the unaccusative clause lacks an unergative s-homophone. Consequently, it represents a configuration that children lacking A-chains should have difficulty with -- an important test of our hypotheses.

The idea that an NP may undergo A-movement to subject position at LF has its origins in Chomsky's (1986; 1993) proposals concerning English expletive constructions.  Chomsky (1986) suggested that the NP *a boy* in a sentence such as (15), must move to the position of *there* at LF, or else the representation at LF will contain an uninterpretable element  (the expletive).  The moving NP is known as the **associate** of the expletive:

(15)  There is a boy in the house.

One argument for this analysis from Chomsky (1993) is the contrast in (16):

(16)    a.  There is a strange man in the garden.
        b.*There seems to a strange man that it is raining outside.

In each example of (16), *there* must be replaced by an associate, but only (16a) has a noun phrase (*a strange man*) whose Case properties motivate movement to the nominative-marked subject position. That is, only in (16a) does the phrase *a strange man* have "Case needs" (the need to receive case in GB theories, the need to "check" Case in Minimalist proposals).  In (16b), the Case needs of *a strange man*

are taken care of by the preposition *to*.  Consequently, it cannot move to subject position, replacing *there*. The result is a structure with an uninterpretable element -- the expletive *there*.  Other proposals (for example, Chomsky 1995, chapter 4) motivate this type of movement in a different way, but the overall architecture of the explanation remains the same.

In Russian, somewhat different evidence argues for covert movement in the genitive of negation construction with unaccusative and passive verbs. To the best of our knowledge, this evidence has not been previously noted.  The argument concerns a locality condition on negative concord.  As was evident in several preceding examples, Russian is a negative concord language. Negative phrases must be licensed by clausal negation, independent of questions of case marking.  This clausal negation is governed by a locality condition: a negative element is acceptable only if it is m-commanded by clausal negation. We will show that for a genitive argument of an unaccusative verb, the position that must be m-commanded by negation is not the position in which the genitive argument is pronounced, but the position that it would move to if it needed to undergo overt A-movement to a nominative subject position.

The demonstration is straightforward. When clausal negation and the relevant negative phrase are clausemates, the result is acceptable, as  (17a) and (17b) show. (Note that Russian negative phrases can occur in both the object and the subject positions of a negated clause.)

(17)    a. Ja ne ljublju [nikakie          sladosti]      / [nikakix            sladostej]
            I not love    no-kind-AccPl sweet-AccPl /   no-kind-GenPl sweets-GenPl
            'I don't like any kind of sweets.'

        b. Nikakie          mal'čiki      ne  ljubjat sladostej
            no-kind-NomPl boy-NomPl not love     sweets-GenPl
            'No boys like sweets.'

Negation may also license a negative phrase in an embedded infinitival clause that it commands:[12]

(18)   a.  **Object of transitive - negation in higher clause**
        Ja **ne** dolžna [čitat'     nikakix statej               / nikakie stat'i]
        I not must     read-inf  no-kind-GenPl article-GenPl / no-kind-AccPl article-AccPl
        'I don't have to read any kind of articles.'

       b.  **Object of transitive - negation in  lower clause**
        Ja  dolžna  [**ne** čitat'    nikakix statej            / nikakie stat'i]
        I  must    not read-inf  no-kind-GenPl article-GenPl / no-kind-AccPl article-AccPl
        'I must not read any articles.'

Clausal negation does not license negative elements that it does not m-command, as (19) shows:

(19)   a. **Negation m-commands negative element**
        Nikto   **ne**  xočet [PRO čitat'    *Vojnu i Mir*].
        no one not  wants      read-inf *War and Peace*
        'No one wants to read *War and Peace*.'

       b. **Negation does not m-command negative element**
        *Nikto   xočet [PRO **ne**  čitat'    *Vojnu i Mir*].
        no one wants     not   read-inf *War and Peace*
        'No one wants to read *War and Peace*.'

A negative subject that has raised from a lower infinitival clause behaves just like the upstairs subjects in

(19): it may not be licensed by negation in the lower clause.  This shows that when a negative element

heads an A-chain, m-command by negation of the head of chain is necessary:

(20)   a.  **Raised subject - negation in higher clause**
        Nikto$_i$       **ne** dolžen     [$t_i$ čitat'   èti          stat'i]
        Nobody-nom not must-MascSg     read-inf these-AccPl article-AccPl
        'Nobody must read these articles.'

       b.  **Raised subject - negation in lower clause**
        *Nikto$_i$        dolžen   [$t_i$ **ne** čitat'   èti         stat'i]
        Nobody-nom must-masc     not read-inf these-AccPl article-AccPl

      Consider now the licensing conditions for a negative genitive argument of an unaccusative

infinitival verb in a clause embedded under a raising predicate.   Since we have argued that the genitive

argument is pronounced in the direct object position of the embedded unaccusative verb, we might expect

both downstairs and upstairs negation to license such a phrase.  That is, we might expect such phrases to

reproduce the paradigm of (18).  In fact, however, this is not what we find.  Only  upstairs negation can

license such a phrase.  Instead of displaying the paradigm typical of embedded objects (the paradigm in

(18)), the embedded genitive object displays the paradigm typical of raised nominative subjects (the

paradigm in (20)).  This is true despite the fact that the genitive, by other tests discussed above, behaves

like an object:[13]

(21)    a. **Genitive argument of downstairs unaccusative - negation in higher clause**
          **Ne** dolžno        [pojavit'sja nikakix        mal'čikov   v klasse].
          not must-NeuSg appear     no-kind-GenPl boy-GenPl in class
          'There don't have to appear any boys in class.'

        b. **Genitive argument of downstairs unaccusative - negation in lower clause**
           *Dolžno        [**ne** pojavit'sja  nikakix            mal'čikov   v klasse].
            must-NeuSg   not appear      no-kind-GenPl boy-GenPl in class
             'There must not appear any boys in class.'

        We take this fact to show that genitive of negation arguments of unaccusative verbs -- although

they are pronounced in object position -- move covertly to a nominative subject position:[14]

(22)    **After covert A-movement:**
        a. **Genitive argument of downstairs unaccusative - negation in higher clause**
           *nikakix mal'čikov$_i$*   **ne** INFL dolžno [pojavit'sja  $t_i$   v klasse].

        b. **Genitive argument of downstairs unaccusative - negation in lower clause**
            **nikakix mal'čikov* INFL dolžno        [**ne** pojavit'sja  $t_i$  v klasse].

The m-command condition on the licensing of negative phrases by *ne* applies to these genitive phrases in

their final position.   It is violated in (22b), and satisfied in (22a).  That is why these genitive phrases

behave like nominative subjects, not like normal direct objects, with respect to the positioning of the

negation that licenses them.  In this respect, then, the genitive phrases in unaccusative clauses behave

much like the associates of *there* in Chomsky's analysis discussed at the beginning of this section. We

leave open the question of what motivates this movement.  Perhaps the movement is Case-related, with

the genitive phrase checking its Case features against finite T in a manner akin to overt movement of

nominative NPs.  Alternatively, the motivation might be expletive replacement, if these constructions

involve a null expletive in nominative subject position.[15]  Whatever the motivation for covert movement,

we take these data to argue that the genitive phrase with unaccusatives does move.

### 4.3    Predictions of the ACDH grammar

We are now in a position to discuss the specific prediction of this analysis (when coupled with ACDH) regarding children's use of the genitive of negation in Russian.  The genitive of negation forces the object of an unaccusative to raise to subject position via an A-chain, as outlined in the last section.  If children have ACDH grammars, this construction should pose problems for them.  Most of the time, when children represent an unaccusative sentence as unergative (in violation of UTAH), the reanalysis maintains the phonological form of the adult sentence.  The only difference between adult and child representation is the absence in the child of an object trace present in the adult.  However, with the genitive of negation construction, the consequences of representing unaccusatives as unergatives are apparent on the surface, because the trace is what gets pronounced.  Additionally, the genitive of negation is prohibited with unergatives, so that the nominal arguments of unaccusative and unergative verbs bear distinct case marking.  Consequently, if A-chains pose a special difficulty for children at a particular age, they should fail to use the genitive of negation in those contexts that implicate an A-chain.  These are contexts in which adults use the construction freely or obligatorily.

We tested this prediction with Russian speaking children in Moscow (Russia) using a sentence completion paradigm. Situations were created in which the genitive of negation was either required or disallowed. The experimenter created these situations by manipulating toy characters and telling brief stories which were constructed so that one key character or object would naturally be referred to with a specific or non-specific NP.  The verb used with this NP was either transitive, unaccusative, or unergative.  Thus we could manipulate both the type of verb and the semantic/pragmatic context provided by the story.  For example, a transitive verb with a non-specific object would be set up by the experimenter in the following way.  (Examples of stories for all verb and context types are given in Appendix A.)

(23)    **Example: Non-specific direct object of a transitive verb with negation**

**Experimenter**: [using a toy cat and paper with drawings of houses and bicycles on it]
(English translation:)
This is a story about a cat.  The cat decides he wants to paint.  So he paints one house--oh, it's difficult!  And then he paints another house--it's difficult!  He says, "Now, I'm tired.  I can't paint any more,"  and he goes home.

Next, the experimenter, using a puppet, would give a brief synopsis of the story (1-2 sentences), leaving the noun phrase of interest (whether the object or the subject) out of the sentence so that the child could be prompted to complete the sentence with this noun phrase.  The example above would continue as in (24).  The dependent measure is the case of the noun phrase provided by the child.

(24)    **Puppet (Russian):**
Ja       znaju čto slučilos'.    Kot          pokrasil        dva        doma
I        know what happened.  Cat-NomSg painted-MascSg  two-acc house-GenSg

i    ne  pokrasil ni...
and not painted-MascSg not...
'I know what happened. The cat colored two houses and didn't color...'

**Predicted child response:**
odnogo            velosipeda
a single-m-gen bicycle-GenSg
'a single bicycle.'

A logically prior empirical question, of course, is whether children know the semantic and syntactic requirements of the genitive of negation (i.e., that it applies to an object argument in the scope of negation).  This question has not, to our knowledge, been tested before. We address it in the next section before moving on to unaccusatives.  If children can use the genitive of negation with transitives, we can make a more explicit prediction using the ACDH.  The ACDH children (age 4 years and younger, according to Borer and Wexler), when placed in a situation where the production of a genitive of negation construction would entail an A-chain, should avoid this construction entirely..  Instead of genitive with unaccusatives, the children should produce nominative responses. This prediction is made explicit in (25).

(25)    **Prediction of the ACDH**
Children will give fewer genitive responses to unaccusative verbs in genitive of negation contexts than to transitive verbs in the same contexts.

If this prediction is true, it constitutes a surprise for input-driven theories -- since children have plenty of opportunities to hear the genitive of negation with unaccusative verbs. The "bleached" verbs that obligatorily require genitive are a particularly common class. If children simply imitate what they hear, they should show adult-like performance on our task. The maturation of A-chains theory thus predicts a surprising outcome: that children will ignore the input, relying on their own grammatical resources instead. We will return to this triggering problem again after discussing the experimental results. A further prediction is that as children get older and their grammars mature, they will look less and less like an ACDH child, giving more genitive of negation nouns in appropriate unaccusative contexts. We will also examine this prediction in the next section.[16]

## 5. The genitive of negation experiment

**5.1     Subjects, method, and stimuli**

The participants in this experiment were 38 Russian speaking children ranging in age from 3;0 to 6;6. They were tested in Moscow during September, 1994 by one of the authors (MB), a native speaker of Russian. Before testing began, a brief, informal pretest was conducted with all subjects to make sure that they knew the forms of the non-nominative cases involved (accusative and genitive) and also to make sure they could cooperate with the experimenter and understand the task. Eight children did not pass this pretest based on the latter two criteria, leaving 30 children for the analysis. All the children knew the forms of the cases, a finding consistent with work reported in Babyonyshev (1993), which showed that even very young children have mastered the Russian case system.

Before the experiment began, the children were trained to help the puppet finish its sentences. The experimenter's text was prepared in advance so as to avoid using any of the words which we were trying to elicit from the child. Each child was tested with three transitive verbs with non-specific object contexts, three transitive verbs with specific object contexts, three unergative verbs, three regular unaccusative verbs, and three "bleached" unaccusative verbs. Thus there were 5 different verb types in this experiment, each with 3 trials using different examples of the category. Each subject was tested with all

of the trials whenever possible (see results section below). The actual verbs used as stimuli are listed in Appendix B. Examples of the stories used to create the contexts are shown in Appendix A. It should be noted that a post-verbal subject (as used in the intransitive examples in Appendix A) is quite natural in Russian.

The intransitive stimuli had to be constructed so as to meet two logistical requirements. First, the past tense ending on the verb could not betray the case of the noun. In Russian, the past tense ending of a verb agrees in number and gender (for singular nouns) with its nominative subject. However, as shown in Section 3, when the subject switches to genitive, the verb bears neuter agreement, betraying that the subject, if non-neuter, is not nominative. The neuter agreement could potentially give our subjects a clue that they should not respond with a nominative noun. Thus we could not use masculine nouns with intransitive verbs. However, we were able to use neuter and feminine nouns, since both are pronounced with a homophonous /a/ ending on the verb despite their morphological difference. In addition, sometimes the verb had to be camouflaged, as in example (4) in Appendix A, such that the ending is not given by the experimenter. The second requirement was that we needed to be able to detect the difference in the child's response between genitive and nominative case. Since this distinction is lost in pronunciation of non-final-stressed neuter nouns, all neuter nouns had to be end-stressed. Therefore, due to both of these requirements, we were restricted to feminine and neuter end-stressed subjects for intransitive verbs. (See Appendix B for the nouns we chose.)

The verbs were presented in pre-selected pseudo-random orders, with the constraints that the same verb not be used twice in a row and that the same condition not be used twice in a row. As described above, the design of the experiment is within-subjects or repeated measures. The fifteen stories were broken into two sessions for each child which were presented at different times on the same day. For each verb, a child's response was coded with a 1 if the case of the noun phrase they provided was marked with genitive case and 0 if it was marked with nominative or accusative. Within each verb type, the responses to the 3 verb tokens were averaged to obtain a score ranging from 0 to 1. These average scores were used as the dependent measure in our analyses of the data. In some cases (55 out of the 450 possible), data could not be obtained from some children for some verbs. These omissions occurred for

one of two reasons: either  the child refused to complete the test, or, if the child gave a response, the grammatical case of the crucial noun phrase was ambiguous because of the child's pronunciation.  These omissions did not appear to follow any pattern in terms of which verbs or conditions of the experiment were affected.

About half the time a child responded not with the noun we were trying to elicit but with another noun from the story or *ničego* ('nothing-gen').  If this noun was unambiguously case-marked, we included it in the analysis as a correct or incorrect response (i.e., it was mixed in with the other responses).

Subjects occasionally repeated their response one or more times.  Also, the case of the noun was occasionally not the same in all the responses (i.e., subjects corrected themselves or changed their minds). When this happened, only the first response was used in the analysis reported here.  We also performed an analysis using the average case used (if more than one response was given) as the dependent measure, and an analysis taking any correct (i.e., adult-like) response as the dependent measure, even if an incorrect response was also given.  We do not report the results of these separate analyses, since the results were very similar to those reported here.

## 5.2     Main Results and Discussion

An ANOVA was performed to compare the rate of genitive response among all five verb types for all subjects.  In order to do this analysis and the other statistical analyses discussed below, the missing data had to be imputed so that every cell was filled.  If the child provided two out of three responses, the average was used to fill in the third response.  If a child answered one of the three verbs within a condition, that response was used to estimate the missing responses.[17]  The result of the omnibus ANOVA was highly significant with $F(4,116) = 51.8$ and $p < .0001$, which means that the different verb classes produced significantly different numbers of genitive responses. But this result does not tell us about the specific differences between the conditions that we are interested in.  In order to obtain this information we used a series of contrasts.  The first contrast concerned transitive and unergative verbs,

testing whether the children's responses in these conditions of the experiment are adult-like.  Specifically, we wanted to test whether they gave genitive (coded as 1) for the transitive non-specific condition, and non-genitive (coded as 0) for the transitive specific and unergative conditions.  If their responses conform to this pattern, we may assume that children are familiar with the genitive of negation construction and that they know the semantic and syntactic restrictions on its use.  Results from these 3 conditions (the two transitive contexts and the unergative condition) are shown in Table 1, collapsing across all 30 children and all trials.

**Table 1**
**Responses in the two unaccusative conditions, collapsed over all children and all trials**

| Condition | Genitive responses over total responses | Mean genitive response (s.d.) |
|---|---|---|
| transitive with non-specific object | 63/84 | **.73 (.33)** |
| transitive with specific object | 4/83 | **.04 (.14)** |
| unergative | 0/72 | 0 (0) |

Children used the genitive of negation with non-specific transitive objects, as required by the adult grammar, 73% of the time, while they used genitive case with specific objects only  4% of the time.  In all other transitive specific situations they gave accusative case.  The mean for the unergative condition was 0; the children always responded with nominative case for unergative verbs.   It should be noted that two of the three unergative verb trials used non-specific rather than specific subjects in order to make sure that children didn't use nominative only because the genitive of negation is not allowed with specific subjects.[18]  A contrast test of the transitive non-specific condition mean versus the two other condition means together (transitive specific and unergative) revealed a significant difference ($t(29) = 12$, $p < .001$).

Though testing knowledge of the genitive of negation was not our primary goal, the results are interesting in their own right.  Russian speaking children as young as three years old understand the use of the genitive of negation.  They can use a subtle semantic distinction (wide versus  narrow  scope of negation, or a non-specific versus a specific object) to determine grammatical case reliably.  To the best of our knowledge, this has never been demonstrated before.[19]

We can now assess children's use of covert A-chains (as described in section 4.2) by examining whether children fail to use the genitive of negation with unaccusatives, as the ACDH theory predicts. Table 2 shows the results for the two unaccusative conditions. They are clearly in accordance with the predictions of the ACDH. The mean number of genitive responses for "regular" unaccusatives (those which require the genitive based on context) was 47%, and the mean for "bleached" unaccusatives (those which always require genitive subjects with negation) is 48%. Both of these means are much lower than the mean number of genitives recorded in the transitive non-specific-object condition (73%). To test the statistical significance of this difference, another contrast was performed, this time for the two unaccusative verb conditions versus the transitive non-specific condition. The difference is highly significant ($t(29) = 4.92$, $p < .001$). Thus it appears that children's knowledge diverges from that of adults at this point. Like adults, they know the semantic and syntactic circumstances under which the genitive of negation is licensed. Their performance differs only in the conditions which require the use of an A-chain.

**Table 2**
**Responses in the two unaccusative conditions, collapsed over all children and all trials**

| condition | number of genitive responses out of total responses | average genitive responses (s.d.) |
|---|---|---|
| "regular" unaccusative | 38/81 | .45 (.32) |
| "bleached" unaccusative | 36/75 | .47 (.34). |

As we have already pointed out, bleached unaccusative verbs are not subject to semantic conditions, appearing with the genitive under negation regardless of interpretation. Thus, children who do not have difficulties with A-chains should give 100% genitive responses in the bleached verb conditions no matter how they interpreted them. Instead, the children we tested gave only 47% genitive responses: a striking contrast.

We thus have experimental evidence that children have trouble with unaccusatives. We predicted that this trouble would arise because of the interaction of the special properties of unaccusative verbs with the special properties of the genitive of negation construction, which requires that an underlying genitive

object of an unaccusative verb raise covertly to subject position at LF. The result is evidently troublesome or ungrammatical for children under approximately four years of age. This causes the children to produce a nominative argument when the adult language would favor or even require the genitive. We propose (following Borer and Wexler 1992) that unaccusative verbs in this construction are represented as unergatives by the child -- in violation of UTAH -- in order to avoid the ACDH (or EARH) violation incurred by the genitive of negation.

## 5.3    Effects of Age

The average group results that we have discussed so far clearly show a deficit with unaccusatives when subjects' responses are collapsed. We have already discussed some of the implications of this finding. However, the unaccusative condition means do not look like the unergative condition on average, as the ACDH theory would predict. In fact, the difference between the unaccusative conditions and the unergative one is also quite large ($t$ of contrast $= 9.12$, $p < .001$). The fact that both contrasts turn out to be significant on the aggregated data may be partly explained by the large age range of our subjects (3;0 to 6;6).

Since the ACDH was originally formulated for children under 4, we might expect that the younger children in this group, on average, treat unaccusatives more like unergatives on our genitive of negation test -- while older children treat them as unaccusatives. To test this prediction, the subjects were divided into two groups by age (the 15 youngest versus the 15 oldest), resulting in a younger group mean age of 4.0 and an older group mean age of 5.4. Table 3 shows the average frequency of genitive response for each condition for each age group.[20] Notice that while the means in the transitive and unergative conditions are the same for both groups of children, the means of the two unaccusative conditions are higher for the older group. This indicates that the older the child, the more likely s/he was to use the genitive of negation with an unaccusative.

**Table 3.**
**Average genitive response in each condition for each age group.**

| | transitive non-specific | transitive specific | unergative | regular unaccusative | bleached unaccusative |
|---|---|---|---|---|---|
| **younger (n=15) (mean=4.0)** | .73 (.31) | .04 (.17) | 0 (0) | .40 (.33) | .31 (.32) |
| **older (n=15) (mean=5.4)** | .73 (.36) | .04 (.11) | 0 (0) | .50 (.30) | .62 (.30) |

The difference between the regular unaccusative means for the two age groups is .1 or 10% in the predicted direction, but the difference is not significant ($t(28) = 1.04$, $p < .1$, 1-tailed).  However, the difference between the bleached accusative means for the two age groups is .31 in the predicted direction and highly significant ($t(28) = 3.21$, $p < .001$, 1-tailed). The second result is perhaps more telling. The case marking of the nominal in bleached unaccusatives represents the cleanest test of the ACDH, since it is not affected by semantic factors which children may have difficulty with (see footnote 17). The fact that children's performance in the unaccusative conditions improves with increasing age is consistent with the maturational hypothesis.  However, more insight into the aggregate results may be gained by looking at the response patterns of  individual subjects.

## 5.4    Analysis of individual subjects

Another reason that our aggregate results may have shown significant differences between unaccusatives and unergatives as well as between unaccusatives and transitives is due to individual differences in types of subjects.  For example, there may have been a few subjects who did not control the genitive of negation construction at all.  In order to study these patterns, we considered the responses that each child gave to each of the four kinds of relevant constructions: transitive non-specific, transitive specific, regular unaccusative and bleached unaccusative verbs.  (Unergatives need not be considered, since all children gave 0 genitive responses for these.)  Recall that the second category—transitive verbs with a specific object— demands an accusative case inflection, whereas the other three demand genitive for an adult speaker.

The goal of this analysis is to classify individual children in terms of their response patterns in all conditions. For each cell in Table 4, the response is given as a particular case if at least 2/3 of the responses in that cell were of that case. A few children only responded twice; in those cases, "gen" signifies that both of the responses were correct, otherwise accusative or nominative was used. A few additional children gave only one response in some categories, in which case this response was used to estimate the average. We have indicated by an asterisk those cells which represent only two, rather than three, responses and by two asterisks those cells which are based on only one response.

**Table 4**
**Genitive of negation classification by case in each verb category for subjects who provided at least 2 out of 3 verbs in each**

| subject (sex) | age | transitive non-specific | transitive specific | unaccusative | bleached unaccusative | response classification |
|---|---|---|---|---|---|---|
| 01(F) | 3;8 | gen | acc* | nom | nom** | a |
| 02 (M) | 3;9 | gen* | acc* | nom* | nom* | a |
| 03 (F) | 4;0 | gen | acc | nom | nom | a |
| 04 (F) | 4;1 | gen | acc | nom | nom | a |
| 05 (F) | 4;3 | gen | acc | nom | nom | a |
| 06 (M) | 4;10 | gen | acc | nom | nom | a |
| 07 (F) | 5;9 | gen | acc | nom | nom* | a |
| 08 (F) | 4;1 | gen | acc | gen | nom* | b |
| 09 (M) | 4;4 | gen | acc* | gen | nom | b |
| 10 (M) | 5;2 | gen | acc | gen | nom | b |
| 11 (F) | 4;3 | gen | acc | nom | gen | c |
| 12 (M) | 4;9 | gen | acc | nom | gen | c |
| 13 (F) | 5;0 | gen | acc | nom | gen | c |
| 14 (F) | 5;0 | gen | acc | nom | gen | c |
| 15(M) | 5;5 | gen | acc | nom | gen | c |
| 16 (F) | 5;11 | gen | acc | nom | gen | c |
| 17 (F) | 6;3 | gen | acc* | nom* | gen | c |
| 18 (F) | 6;6 | gen | acc | nom | gen | c |
| 19 (M) | 4;6 | gen* | acc | gen | gen** | d |
| 20 (M) | 4;7 | gen | acc | gen | gen | d |
| 21 (F) | 4;7 | gen | acc | gen | gen | d |
| 22 (F) | 4;8 | gen | acc | gen | gen | d |
| 23 (F) | 3;0 | acc* | acc | nom** | nom** | e |
| 24 (F) | 3;6 | acc | acc | nom | nom* | e |
| 25 (M) | 3;8 | acc* | acc* | nom* | nom* | e |
| 26 (F) | 4;2 | acc* | acc* | nom** | nom* | e |
| 27 (F) | 5;0 | acc | acc | nom | nom | e |
| 28 (F) | 6;2 | acc | acc | nom | nom | e |
| 29 (F) | 4;2 | gen | gen | gen | nom | f |
| 30 (M) | 4;8 | acc* | acc* | gen** | nom* | g |

*Table 4:* "gen", "acc", and "nom" indicate that genitive, accusative, or nominative case was provided on at least 67% of the trials in a given category. A "*" indicates one out of three data points is missing. The comment "**" indicates that two out three data points were missing, so the summary is based on just one observation.

The table of individual responses provides powerful evidence for the ACDH. Although a large range of subject types are possible in principle, only those predicted by the ACDH were attested. The ACDH predicts that if subjects can use the genitive of negation in general (i.e., with transitives and unergatives), they will not be able to use it with unaccusatives unless they are able to represent A-chains. But the ACDH makes an even stronger prediction: the contrapositive. If children can use the genitive of negation properly with unaccusatives, they should also be able to use it with the other verb types. Thus, only the following three types of subjects are predicted:

1. Those that cannot use the genitive of negation at all (types e, f, and g, or the last 8 subjects in the table). These subjects do not show adult-like performance on transitives, demonstrating that they have not mastered some aspect of the genitive of negation construction. We cannot conclude anything about the representation of unaccusatives in their grammar.

2. Those that are adult-like in that they use the genitive of negation properly with all verb types (type d in the table). These subjects have matured beyond the ACDH grammar.

3. Those that have an ACDH grammar (types a, b, and c in the table). These subjects know how to use the genitive of negation, as shown by their performance in the transitive and unergative conditions. They just failed to use it consistently with one or both unaccusative conditions. The majority of our subjects, 18 of them, fell into this third category.

These are, in fact, the only subject types attested.

The 11 subjects who used nominative with unaccusatives in some but not all trials (categories b and c) require some special discussion. There are several possible explanations for these subjects. A reasonable explanation for the category c subjects (those who used the genitive of negation only with bleached unaccusatives), is that the ACDH property of their grammar is not strong enough to shut out overwhelming positive evidence. Bleached unaccusatives are used with the genitive of negation very frequently (see section 5.5), especially the bleached verb *be*, which was included in our experiment.

Consequently, some children may learn to use the genitive of negation with bleached unaccusatives by rote, while the regular unaccusatives provide a glimpse into the true state of their grammar. If this explanation is on target, then we are left with only category b subjects as marginally unpredicted. One possibility is that these children have either ACDH or adult grammars, but, due to random noise and performance factors, fail to treat unaccusatives consistently. Another possibility is that these children are in flux. Their grammars may be developing away from the ACDH state; their responses might reflect this transition. Still another possibility is that these subjects still have ACDH grammars but operate under a system of competing or ranked constraints in which ACDH and UTAH are pitted against one another.[21] In some children, a constraint like "obey UTAH" may sometimes outrank ACDH, perhaps depending on the verb or on the child's maturational state.

## 5.5    Triggering, maturation, and unaccusative verbs

In section 1 we suggested that the hallmark of maturation-controlled (vs. input-driven) development is the existence of a Triggering Problem. The Triggering Problem arises in a situation in which children lack a component of grammatical knowledge despite having been exposed to relevant input or triggers. If acquisition of this knowledge comes late despite the early and frequent presence of relevant data, we might suspect that maturation is preventing the child from acquiring this knowledge.

Bleached unaccusative verbs provide an especially clear example of the Triggering Problem. Recall that (for adults) these verbs require genitive case under negation, no matter what the context. The occurrence of a nominative object with one of these verbs with negation is always ungrammatical in adult Russian. The children we tested gave nominative case on average about half the time, despite the fact that they could never have heard such forms (except, perhaps, from other children). More striking, though, and more relevant to the Triggering Problem, is the fact that these constructions are extraordinarily common. The use of genitive with the negated existential verb (*net*) is particularly common. It is used to convey that someone or something is not present, does not exist, or is not in someone's possession. It is the verb one uses when an item in a store is out of stock, when a person is not home to take a phone call, as well as whenever an English speaker would say "There isn't any ..."  or "We don't have any..." .

While we have not uncovered any hard statistics on usage, there can be no doubt that the construction as used by adults is heard by Russian children many times each day.

Since the most likely "trigger" for the genitive of negation with unaccusatives—the construction itself—is probably heard by children very often, the fact that the trigger has little effect suggests that something is holding them back. We are forced to conclude that the late use of the genitive of negation with unaccusatives is due not to factors in the input but to factors internal to the child. Children appear to produce unaccusatives in many situations (see section 1). We have proposed that they do so by representing them as unergatives to avoid an A-chain. In our experiment, we were able to tap into children's representation of unaccusatives by placing children in a situation where they were forced to use an A-chain with an unaccusative if they had a true unaccusative representation. When pressed in this way, the children we tested failed to use an A-chain about half the time.

As always, one might ask whether our experimental findings correspond with what is known about natural speech production by children. In this connection, it is interesting to note that our experimental results were anticipated by the anecdotal observations of Gvozdëv (1961: 345-346), author of a classic volume documenting how his son acquired Russian.[22] The volume also contains numerous keenly observant remarks about the acquisition of Russian by children in general. He noted (translation ours):

> "[I]n negative sentences with *net*, the nominative is at the very beginning used in place of the genitive case: *net pinók* [not-is stump-NomSg] 2;9, 17 *u nás nét dén'gi* [at us not-is money-NomSg] 2;8,16; *u bábuški máni nét svin'ja* [at grandma Manja not-is pig-nom] 2;9,17; *niktó nétu* [nobody-NomSg not-is] 2;9,25. This structure for negative expressions (*net* + nominative case) is made possible by the corresponding affirmative expressions like: *vot penëk* [here (is) stump-NomSg]; *u nas est' den'gi* [lit. 'at us is money-NomPl', i.e. 'We have money']." (p. 146)

Gvozdëv provides many additional examples, a few of which are shown below. He characterizes them as "expressions [which] are characteristically found in many children":

(26)    **Examples from Gvozdëv (1961)**
    a. **Adik P:** *1,5* : *"Net'u anja"*
                    not-is moon-NomSg
                  'There's no moon.'
                      (or perhaps: 'The moon is not there.')
   (Adult form: *Net       luny*
              not-is moon-gen)

    b. **Dima L: 3 years**: *"Uši net'''*
                    Ear-NomPl not-is
                    'There are no ears.'.
   (Adult form: *Ušej       net.*
              ear-GenPl not-is)

    c. **Leva St. 2,1,30**: *"z'én'a! n'et kaóva"*
                    Zenja! not-is cow-NomSg
                  'Zenja! There is no cow.'
                    (or perhaps: 'The cow is not there.')
   (Adult form: *Net korovy*
              not-is cow-gen)

Gvozdëv goes on to note that the nominative is also used in sentences whose main predicate is a weak quantifier, where the adult language uses the genitive.  For example, where the adult language would say *Vody mnogo* (lit. 'water-gen much', i.e. 'There is a lot of water'), children at these ages frequently use the nominative.  We suspect that these are also unaccusative sentences (Crockett 1976; Pesetsky 1982; Babyonyshev 1996 ), and that the phenomena are related.

Gvozdëv's observations suggest that children's verbal productions contain the same deviations from adult norms found in our elicited production experiment.  These phenomena therefore reflect a genuine fact about early stages in the acquisition of Russian

## 6.    More evidence from passives

Let us review the logic of our investigation.  The ACDH predicts that children do not maintain adult-like representations of passive  or unaccusative clauses containing an object trace and an A-chain. Since children do use passive and unaccusative verbs, either the ACDH is incorrect, or else they are representing these constructions without the object trace.  This might be possible if the relevant constructions have appropriate traceless s-homophones.  As we have now seen, they do: passives can be

doubled by traceless, unergative s-homophones, and unaccusatives can also be represented as unergatives. s-homophones of this sort should be unavailable wherever the overt form of a construction (its pronunciation) makes clear that the surface subject must be related to an object trace.

One instance of this situation is the Russian genitive of negation construction with unaccusatives, where the object trace is pronounced in its base-generated position and the morphological form of the subject of unaccusatives is different from that of the subject of unergatives. Our experimental results confirmed the hypothesis that this use of the genitive of negation is unavailable to the child. An obvious next step would be a similar experiment involving the genitive of negation with passive verbs. We have not undertaken that investigation.

As we noted earlier, there are a number of ways in which an adult structure that contains an A-chain might preclude the existence of an unergative s-homophone. The Russian genitive of negation with unaccusatives involved structures in which movement is covert -- that is, structures in which pronunciation targets the trace of A-movement in object position. But demonstrations of this sort do not have to involve covert A-movement. Structures with *overt* A-movement can provide a similar demonstration, so long as some property of the structure unambiguously signals (to both child and adult) that the surface subject is linked to an object trace.

Recent work by Fox and Grodzinsky on the English passive (1998; also Fox et al 1995) provides, in our view, an instructive example of just this type. Interestingly, they take their results as a *disconfirmation* of the ACDH -- in particular, as a disconfirmation of Borer and Wexler's (1986) claim that the acquisition of English passive supports the ACDH. We will argue that their data are not only consistent with the ACDH, but actually provide an argument for the ACDH, when taken together with results like those presented here .

The children in Fox and Grodzinsky's study were asked to make truth-value judgments of passive sentences uttered by a puppet describing a story (a methodology developed by Crain and McKee 1985). The point of interest was the difference between passives with an overt *by*-phrase ("non-truncated

passives") and passives without an overt *by*-phrase ("truncated passives").  Children gave judgments on the five types of sentences listed below.

>  (27) **non-truncated actional *be*-passives**
>  The rock star is being chased by the Koala bear.
>
>  (28) **non-truncated actional *get*-passives**[23]
>  The boy is getting touched by the magician.
>
>  (29) **non-truncated non-actional *be*-passives**
>  The boy is seen by the horse.
>
>  (30) **truncated non-actional *be*-passives**
>  The bear is seen.
>
>  (31) **active voice controls**
>  a. The mouse is touching the little girl.
>  b. The pizza baker sees the buffalo.

They tested 13 subjects who ranged in age from 3;6 to 5;5 with a mean of 4.68 years.  The majority of their subjects (their "Group 2") showed perfect comprehension on 4 out of the 5 sentence types.[24]  The one exception was (29):  the non-truncated non-actional *be*-passives.  For these passives, responses were only 40.6% correct -- that is, at chance.  For Fox and Grodzinsky, the most illuminating result is the contrast between non-truncated and truncated non-actional passives.  They argue on the basis of this observation that the  locus of children's deficit lies not in the presence or absence of an A-chain, but in the presence or absence of a *by*-phrase that realizes the external argument role.  On this view, children's problems with passive sentences are limited to the relationship between passive morphology and the *by*-phrase.

This view, of course, requires some special explanation for the children's perfect performance on non-truncated *actional*  passives.  Fox and Grodzinsky's explanation is reasonable.  They adopt the idea of Rappaport (1983), Jaeggli (1986) and Grimshaw (1990) that the *by*-phrase in English has two distinct, but easily confusable syntactic functions.   In a variety of environments, a *by*-phrase can denote the creator, or agent ("Affector") responsible for an event or object, as in the NP *a book by Mary* (Fiengo 1974).   This "Affector" use of the *by*-phrase arises from one of the meanings of the preposition *by*, and does not depend on the presence or absence of any particular morphology elsewhere in the sentence.  Fox

and Grodzinsky surmise that  the *by*-phrases on which the majority of their subjects performed perfectly are Affector *by*-phrases of this sort.[25]

But the *by*-phrase can also play a strictly grammatical role, as a realization of the external argument of a passive verb (Lasnik 1988).  Fox and Grodzinsky use the term "θ-transmission" to describe the process by which the *by*-phrase comes to bear an external argument role, and hypothesize that it is θ-transmission which poses problems for the "Group 2" children in their study.  When these children are presented with non-truncated passives of non-actional verbs, they can only interpret the *by*-phrase as a bearer of the external argument role if they posit θ-transmission -- the grammatical property that presents difficulties for them.  By contrast, when these children are presented with non-truncated passives of *actional* verbs, they may interpret the object of *by* as an Affector, No role is played by θ-transmission in the parsing or comprehension of sentences with an Affector *by*-phrase.[26]

Because children's performance correlated with the presence of a *by*-phrase that realizes the external argument role, Fox and Grodzinsky concluded that the presence or absence of an A-chain was irrelevant to the matter.  This conclusion was, in our opinion, too hasty. Though Fox and Grodzinsky's experimental results are consistent with the idea that the locus of the deficit is θ-transmission, the results might instead be interpreted as evidence that the locus of the deficit actually lies in some *consequence* of θ-transmission -- some property that is entailed by θ-transmission.  We think that the presence of an A-chain is just such an entailment, and thus conclude that Fox and Grodzinsky's experimental results not only fail to argue against the ACDH, but can be explained by the ACDH.

To do this, we adopt Fox and Grodzinsky's analysis of *by*-phrases in its entirety.   We agree that a *by*-phrase with an actional passive does not have to realize the external argument role, and we agree that a *by*-phrase with a non-actional passive does have to realize the external argument role.  We believe, however, that these factors have immediate consequences for the availability of traceless s-homophones for passive clauses.

The demonstration is simple. Suppose a child must seek a "s-homophone" that lacks an A-chain for a structure that an adult would analyze with an A-chain. We may assume, with Borer and Wexler, that this s-homophone is in fact an adjectival passive (or a construction that shares many properties with the adjectival passive) -- i.e. a structure in which the θ-role normally assigned to object position is instead assigned to subject.[27] An adjectival s-homophone of this sort will be available only if the subject of the structure is free to be interpreted as the external argument. Suppose the structure contains a *by*-phrase. Now consider two cases:

*Case 1*: The *by*-phrase can be interpreted as a free-floating Affector. The subject of the sentence can be understood as the external argument. This is the analysis of non-truncated actional passives, on which Fox and Grodzinsky's children performed well.

*Case 2*: The *by*-phrase must be interpreted as a realization of the external argument. The subject cannot also be understood as the external argument, and must therefore head an A-chain whose tail occupies some other θ-position. This is the analysis of non-truncated non-actional passives on which Fox and Grodzinsky's children performed at chance.

We thus predict precisely Fox and Grodzinsky's results. Among the sentence types studied, only non-truncated non-actional passives run afoul of the ACDH. These are the only structures with which Fox and Grodzinsky's children had problems. If we consider Fox and Grodzinsky's results in isolation, we are free to maintain either ACDH or their hypothesis that θ-transmission is the source of their children's difficulties. Only the ACDH, however, accounts simultaneously for our results with unaccusatives and Fox and Grodzinsky's results with passive sentences.

Across languages, passive structures that include an oblique phrase that can only be understood as the external argument should constitute configurations without an unergative s-homophone, if the ACDH is correct. In essence, this situation, along with the situation tested with the Russian genitive of negation, provide the two types of arguments that can support the ACDH. In the genitive of negation with unaccusatives, we know that the construction involves an object trace because the trace is pronounced. In certain types of passive, we know that the construction involves an object trace because a phrase other

than the nominative subject provides the underlying external argument.  It is our hope that other cases of both types will be uncovered by future research.

One further example of the latter type is provided by Sugisaki (1997)'s study of adversity ("indirect") vs. simple ("direct") passives in Japanese. As the examples in (30) show, the adversity passive construction makes use of normal passive morphology, and may be formed from intransitive or transitive verbs.  Furthermore, the adversity passive retains the ability to assign accusative case to its direct object. In addition, the subject of the sentence is interpreted as being adversely affected by the event described by the verb.  The adversity passive contrasts with the simple passive, whose syntax and semantics approximates that of its English counterpart:

(30)    a. **simple   passive**
          Kuruma-ga seito-ni           ker-are-ta
          car-Nom    student-Dat  kick-pass-past
           'The car was kicked by the student..'

        b. **adversity   passive**
           Sensei-ga     seito-ni       kuruma-o ker-are-ta
           teacher-Nom student-Dat car-acc       kick-pass-past
           'The teacher had his car kicked by the students.'

Arguments by Miyagawa (1989), Kubo (1990) and others support the idea that the simple passive involves an A-chain linking subject and object position, but the adversity passive does not. Suppose the Japanese *by*-phrase makes impossible the existence of an unergative s-homophone for the simple passive. As Sugisaki (1997) notes, the ACDH makes a clear prediction in that case: the adversity passives should be understood earlier than the direct passives, even though adversity passives are semantically and pragmatically more complex. Sugisaki (1997) confirmed this prediction. In an experiment with 17 children, he found that the majority either knew both constructions, knew neither construction, or failed with the direct passive but not the adversity passive. Only 1 child of the 17 tested failed on the adversity passive but not on the direct passive. Sugisaki interprets these data to mean that Japanese children learn the adversity passive, which does not require an A-chain, earlier than the regular passive, which does.[28]

If we are correct in our reasoning, our research and the work cited here underline an important methodological point: the fact that children use a form homophonous with the adult passive form does not entail that the form has the syntax and semantics of the adult passive. To draw the conclusion that the syntactic representation of a construction is the same in the child and the adult grammars, we need to conduct further tests.

## 7. Does auxiliary selection provide further tests of ACDH?

Our study is among the first to examine maturational factors in the development of unaccusativity, using a distributional test with children that has been developed in establishing the unaccusative hypothesis for adult grammars. In this section, we briefly discuss the implications of two recent studies of related topics that may help us test and refine our proposals. Both concern the phenomenon of auxiliary selection.

Auxiliary selection in compound past or perfect tenses has often been argued to be an indicator of unaccusativity in some Romance and Germanic languages. For example, in Italian, *essere* 'be' appears with the passato passimo of unaccusative verbs and *avere* 'have' with transitive and unergative verbs. As Borer and Wexler (1992) pointed out, a child who represents unaccusative verbs as unergatives might show non-adult auxiliary selection patterns -- in particular, substitution of *have* for adult *be* (Mills, 1985, for German).

Of course, correct auxiliary selection might also be compatible with our assumptions about young children. As Pesetsky (1981) noted (also Borer and Wexler 1992), children might learn auxiliary selection on a case-by-case basis (as they learn noun classes, for example) -- instead of computing them as a consequence of verb type (syntactic or semantic). Sensitivity to cooccurences of this sort might guide the child ultimately towards a correct semantic analysis of verbs  -- along the lines proposed by Gleitman's (1990) "syntactic bootstrapping" hypothesis.  Because of this, we might conclude that auxiliary selection does not furnish a good indicator of the status of A-chains in young children. However, it is possible to avoid the possibility of memorization by testing auxiliary selection with novel

(nonce) or infrequent verbs.  If such verbs are analyzed as unaccusatives by adults, data  from children would be highly relevant to the hypothesis of this paper.  In this section we discuss two studies of this sort.  As far as we can tell, the results do not contradict the conclusions reached in our work -- and may in fact support particular versions of our proposals.

## 7.1 Randall, Van Hout, & Weissenborn (1994)

Randall, van Hout & Weissenborn [29] (1994) tested auxiliary selection in Dutch and German in the simple past with novel or nonce verbs.  As we remarked, this tactic nicely precludes the possibility that experience with the verb might influence the child's auxiliary selection.  Children aged 4-5 and 7-8 learned the novel verbs by viewing a scene performed by puppets on a video and hearing a short present-tense description of the scene that crucially requires the new verb. They were then prompted to describe what they had seen on the video in the past tense and were given a cue sentence in which all words except the auxiliary were provided. They were prompted in such a way that they would respond with an auxiliary.  The paradigm was also used with an adult group.

Interestingly, the youngest group of children tested by Randall, van Hout, & Weissenborn et al did not consistently produce the "correct" auxiliary -- thus displaying a pattern that we believe may support our claims about the early representation of sentences with unaccusative verbs.  We make this claim somewhat cautiously, given the complexity of Randall et al's experiment.  The experiment involved several different conditions and nonce verbs with different combinations of properties hypothesized to be relevant to auxiliary selection in adult Dutch or German.  For several conditions, there was no *a priori* prediction from linguistics as to which auxiliary should be selected.  We will confine our discussion to those conditions in which there were clear predictions and the adults behaved as predicted and will ask how the children performed in those cases -- bearing in mind that this step might ultimately turn out to have prejudiced the discussion.

One relevant example is a condition in which there was  a lexically atelic novel German verb with an agent as subject.  Randall et al's theory predicts (in accordance with most of the literature) that such a

verb will select the auxiliary *have*. Indeed, the adults in the experiment supplied *have* 93% of the time (7% *be*) in this condition.  The children ages 4-5, by contrast,  supplied *have*  81% of the time (19% *be*) in this same condition.  Thus, although the children as a group showed the adult distinction, they did not perform at the adult rate.  If the difference does not turn out to be mere noise, it is surprising from our perspective, since, as noted, we expect *have* to be selected by young children more often than *be*, when errors are made.

We may contrast this condition, though, with one in which a German novel verb required the auxiliary *be* in the adult grammar, signifying unaccusativity.  Randall et al's experiment included one condition in which the use of *be* was predicted and the prediction was borne out by the adults, who used *be* 100% of the time.  This condition involved novel verbs with an endpoint indicated by a prepositional phrase and no agent.  On this type of verb, 4-5 year-old German children produced *be* 73% of the time and *have* 27% of the time. The overall pattern of auxiliary selection by these children is once again in an adult-like direction, but (as before) the level of performance is significantly sub-adult. This time, the deviation is expected -- in particular, if children in the 4-5 year age range include some subjects for whom A-chains have matured and some for whom they have not.

The ACDH proposal may find support in the difference between the adult-child discrepancies across these two conditions. In the second condition, the one in which an error involves substitution of *have* for *be*, the discrepancy from adult performance is quite large: 27% .  In the first condition, by contrast, where errors involved substitution of *be* for *have*, the decrement between adults and children was only 12%.  In other words, there was a tendency in these two clear cases for children to produce *have* instead of *be* more often than *be* instead of *have*.   If, in fact ,the production of *have* instead of *be* for unaccusative verbs sometimes reflects the impossibility of A-chains for some children, this asymmetry is what we would expect[30]  The fact that the size of this effect is not very large could be evidence against our hypothesis, or it could be due to the mixing of pre- and post-ACDH children. Of course, it may be that other factors are responsible for these differences. If so, we conclude that Randall et al's data do not contradict our hypothesis -- but merely fail to bear on it.

## 7.2 Snyder, Hyams, and Crisma (1994)

Snyder, Hyams and Crisma (1994) avoided the possibility of verb-by-verb memorization in a different manner from Randall et al.  Instead of examining typical intransitive verbs whose auxiliary selection could be memorized on a case by case basis, they looked at verbs with a reflexive clitic pronoun. When a reflexive clitic is used, the *be* auxiliary is always required.  The very same verb may take the *be* auxiliary when used with a reflexive clitic but *have* with a non-reflexive clitic:

(32)    a. Le chien s'**est** mordu.
         the dog itself is bit.
         'The dog bit itself.'

        b. *Le chien s'**a** mordu.
          the dog itself has bit

(33) a.  *Le chien m'**est** mordu.
         the dog me is bit

        b. Le chien m'**a** mordu
         the dog me has bit
         'The dog bit me.'

 The effects of this rule are probably not memorized on a verb-by-verb basis, since the relevant factor is not the form of a particular verb, but the relationship between the subject and the clitic.

This rule is relevant to the ACDH if the choice of *be* in reflexive clitic constructions arises from some property that reflexive and unaccusative clauses have in common.  If, for example, reflexive clitic constructions in the adult involve an A-chain linking subject with object, then the ACDH straightforwardly predicts that children should be unable to represent  such clauses in an adult-like manner.  If the choice of *be* as an auxiliary is a consequence of such an A-chain, then French-speaking (and Italian-speaking ) children younger than 4 should use *have* instead of *be* in reflexive clitic constructions.  One family of analyses for reflexive clitic constructions has exactly this property (Marantz, 1984; Bouchard, 1983, pp. 67-69;  also Pesetsky 1995, who relies on unpublished work by Kayne).  These analyses posit that the reflexive clitic is an underlying *subject* clitic -- not an object clitic as its position might suggest.  If, for example, we accept the VP-internal subject hypothesis discussed

earlier in this paper, we might view the reflexive clitic as generated in SPEC,VP and moved to clitic position by the normal rule for non-nominative cliticization. The NP that surfaces in subject position, marked with nominative case, is (on this analysis) an underlying object, which occupies the nominative subject position as a consequence of A-movement:

(34)     le chien$_j$ s$_i$' est    [  $t_i$ mordu $t_j$ ]

The mechanics of the analysis can be developed in various ways. We might posit, for example, a close affinity between the properties of the reflexive clitic and the properties attributed to the passive morpheme by Baker, Johnson and Roberts (1989). On this view, *se*, though a deep subject, receives the accusative (or dative) case that would otherwise be assigned to the internal object. This motivates the raising of the internal object to a nominative position. This sort of similarity between reflexivization and passive was a motivation for Marantz' (1984) version of this analysis. Pesetsky (1995) offers other arguments for this approach. If this analysis is correct, the selection of *be* as auxiliary must be a consequence of the object-to-subject A-chain or of some precursor. If children younger than 4 lack A-chains (in accordance with the ACDH), they should either lack reflexive clitic constructions, or represent them in some way that does not involve the A-chains that trigger selection of *be*.

Snyder et al carried out a corpus study of early French and Italian, using transcripts of children's speech from the CHILDES database (MacWhinney and Snow 1985), to determine (1) whether reflexive clitic constructions are used in tenses that require an auxiliary verb, and (2) if so, whether or not *be* is consistently used as the auxiliary by young children. Their findings were that  French and Italian children as young as 2;3 use reflexive clitics in compound tenses, and consistently select *be*, just as adults do. If reflexive clitics are correctly analyzed as in (34), these results are not consistent with our proposals.   For example, the speech of a French child, Philippe, between the ages of 2;1 to 3;3 (Suppes, Smith, & Leveille 1973), showed the following distribution of auxiliaries:

**Table 5**
**Use of auxiliary verbs by Philippe (data from Snyder et al)**

|  | BE | HAVE |
|---|---|---|
| Reflexive | 27 | 2 |
| Nonreflexive | 0 | 104 |

Corpora from three Italian children displayed a similar pattern. Out of 50 occurrences of reflexive verbs in the compound past tense, only 2 showed *have*; the rest showed *be*. No unergatives were used with *be*.

There are two ways to resolve the contradiction between Snyder et al's results and ours. Either their unaccusative analysis of reflexive clitic constructions is wrong, or else the ACDH (and our interpretation of the Russian results) is wrong. At this point, either is a logical possibility.

First, the syntactic analysis assumed by Snyder et al might be incorrect. The analysis rests on certain suppositions concerning the analysis of Case and clitic pronouns whose consequences are unclear. We do not know under what circumstances external argument clitics can display the syntax of object clitics, which must be assumed here. Why, for example, can non-reflexive subject clitics not bear accusative case and occur in the object clitic position (immediately to the left of the finite verb)? Another question concerns the analysis of dative constructions. When a dative argument and a nominative argument are bound in a reflexive relation, the auxiliary *be* is chosen in French and Italian, just as when reflexivity involves an accusative argument:

(35)   a. Pierre lui       **a** donné un livre.
          Pierre him-DAT   has given a book.

       b. Pierre s'        **est**  donné un livre.
           Pierre himself-DAT  is   given a book

It is straightforward to assume that the reflexive clitic in (35b) is also the external argument, just as in (34):

(36)    Pierre$_j$ s$_i$' est   [$t_i$ donné $t_j$ un livre]

The problem here is that the parallel between reflexive clitic and passive morpheme breaks down, since passivization of the dative argument is impossible, as shown in (37), while non-reflexive cliticization of a dative object, as in (35), is unexceptional.[31]  This might reflect an irreducible difference in the case possibilities of the passive morpheme and reflexive clitic  -- or it might indicate a deeper problem with the syntactic proposal.  We note the problem simply as a way of showing that the syntax on which Snyder et al's argument rests is not unproblematic.

(37)     *Pierre$_j$ a été donné $t_i$ un livre.

Suppose, however, that the syntax assumed by Snyder et al is correct.  If so, the problem must lie in the ACDH as formulated here.  The ACDH, however, like most proposals, belongs to a family of proposals.  As it happens, a variant of the ACDH mentioned earlier is compatible with Snyder et al's results: the External Argument Requirement Hypothesis (EARH).

One difference between reflexive clitic constructions and unaccusative clauses lies in the presence of an external argument.  The dispute over reflexive clitics does not concern this issue.  Rather, it concerns the questions of whether the clitic or the nominative NP is that external argument.  The reflexive construction does not lack an external argument under any theory.  In section 2.2, we noted that the consequences of the ACDH are largely indistinguishable from another proposal, which posits that young children's problem lies not in the A-chain characteristic of passive and unaccusative constructions, but in the suppression or absence of the external argument that constitutes a precursor to this A-chain.  If the representational problems of children involve not the formulation of an A-chain, but the absence of an external argument, as the EARH claims, then the Russian results as well as the results from French and Italian reflexives are in accord with the A-chain analysis of reflexive verbs.

If the crucial difference between young children and their older counterparts concerns external arguments, most of our discussion remains untouched.  The availability of unergative  and adjectival s-homophones for unaccusative (and passive) constructions is still crucial as an explanation for why children produce and understand a range of passive and unaccusative constructions.  The relevance of

covert A-movement remains unchanged.  Constructions with covert A-movement are, as before, constructions for which no unergative s-homophone exists.

Consequently, if Snyder et al are correct about the syntax of reflexive clitic constructions, their results do not contradict the broad points of our study.[32]  Instead, they help us choose among versions of the same proposal.  In the acquisition of two different constructions that lack external arguments and display A-chains (passives and unaccusatives), children apparently show difficulty. In the case of unaccusatives as tested by the genitive of negation in Russian, children continue to have trouble despite the frequent presence of a trigger (the negative existential construction), making a striking argument  for purely linguistic maturation, the phenomenon we set out to investigate.

## 8.   Conclusion

An important methodological point emerges from our discussion. It has often been assumed in studies of first language acquisition that if a child uses a particular form, this form *must* have the adult analysis. However, we believe this assumption is too strong. In adult syntax, one  always investigates the analysis of a construction; the analysis isn't "written on its sleeve." In our opinion, the same is true of child syntax. The major example from our paper is the unaccusative construction (although exactly the same point holds for verbal passives). We know that children *use* unaccusative verbs at a young age. It is wrong, however, to conclude from this observation that children analyze these verbs exactly as adults do. Instead, one must perform linguistic tests to determine what their analysis is. When this is done, it may turn out that the adult and child analyses of a construction are quite different.

In this paper we have used the kinds of distributional tests that are used in non-developmental studies to establish that young Russian-speaking children use unergative s-homophones for structures that in the adult would be unaccusative.  We have argued that this result is expected under the hypothesis that young children have difficulties with A-chains.  Furthermore, we have argued that this delay is due to maturational factors,  because the evidence that would teach the child the correct form is abundant in the input. We thus provide a demonstration that there are properties of grammar which mature.

**Appendix A**
Example story for each type of verb

Example 1
Non-specific direct object of a transitive verb with negation.
**Experimenter**: [using a toy cat and paper with drawings of houses and bicycles on it]  This is a story about a cat.  The cat decides that he wants to paint.  So he paints one house--oh, difficult!  And then he paints another house--difficult!  He says, "Now, I'm tired.  I can't paint any more," and he goes home.

**Puppet** (Russian):  Ja znaju čto slučilos'.           Kot pokrasil dva doma   i    ne
    (Gloss):    I know what happened-neut.  Cat  painted  two houses and not

                pokrasil ni...
                painted  neg...

**Adult and Child**: Odnogo        velosipeda
                single-m-gen bicycle-GenSg


Example 2
Specific direct object of transitive with negation,
**Experimenter**: [using two characters and a pencil]  This is a story about a little boy and his father, and this pencil that's lying on the floor.  The little boy wants to roll away the pencil, but he can't.  It's too heavy.  So the little boy starts to cry.  Then his father comes over, and he's stronger, so he pushes the pencil.  It's easy for him.

**Puppet** (Russian): Ja znaju čto slučilos'.    Bol'šoj mal'čik otkatil        karandaš,
 (Gloss):             I know what happened. Big     boy     rolled away pencil-acc,

        a   malen'kij mal'čik slabyj;    on ne  smog. On ne  otkatil . . .
        but little     boy    [is] weak; he  neg could. He not rolled away . . .

**Adult and Child**: Karandaš
     (Gloss): pencil-AccSg


Example 3
Non-specific subject of unaccusative verb.
**Experimenter**: This is a story about a duck, a frog, and two houses [drawn on paper].  The duck says, "My house is better."  Then the frog says, "No, you're wrong, my house is better."  The duck says, "No, my house is better."  And the frog says, "No, *my* house is better."  So they start fighting.

**Puppet:**  (Russian): Ja znaju počemu ljaguške bol'še nravilsja etot dom.  V etom
         (Gloss):    I  know why     frog      more  liked     this house. In this

            dome bylo      okno,        a   v tom dome ne  bylo . . .
            house was-neut window-neut, and in that house not was-neut . . .
**Adult**: Okna
   (Gloss): window-GenSg
**Child**: Okno
   (Gloss): window-NomSg

<u>Example 4</u>
Non-specific subject of unergative verb.
**Experimenter:** A boy (or a girl) is walking through a forest. He is very scared of
 monsters, which he heard live there. Suddenly, he hears someone singing
 from behind a tree, and becomes really terrified, because now he is
 sure that it's the monsters singing. He creeps up to the tree and
 looks around it. He sees that there are three little gnomes singing
 there, and stops being afraid."

**Puppet:** Mal'čik perestal bojatsja, potomu čto uvidel čto za derevom ne pe...
Gloss: boy-nom stopped-m-sg fear because saw-m-sg that behind tree not s...

**Adult and Child**: ...li čudovičša
(Gloss): ...ang-pl monster-NomPl

## Appendix B
Actual verbs and subjects or objects used in the experiment

| transitive, non-specific object | transitive, specific object | "bleached" unaccusative | unaccusative |
|---|---|---|---|
| uvidet' čudoviše<br>see monster | uvidet' babu-jagu<br>see witch | byt' okno<br>be window | dostat'sja pis'mo<br>get letter |
| pokrasit' velosiped<br>paint bicycle | otkatit' karadaš<br>roll pencil | okazat'sja pis'mo<br>turn out to be letter? | pojavit'sja čudoviš'e<br>appear monster |
| podnjat' karandaš<br>lift pencil | podnjat' karandaš<br>lift pencil | byvat' čudoviš'e<br>be (habitual) monster | rastajat' snežinka<br>melt snowflake |

| unergative |
|---|
| tancevat' pis'mo<br>dance letter |
| pet' čudovičša<br>sing monsters |
| pogovorit' kot<br>speak cat |

# NOTES

[1]One might also ask whether late knowledge might be due to manipulation of the data available to the child by caregivers.  However, research has shown that parents do not systematically withhold input data, at least with respect to basic constructions (Wexler and Culicover 1980; Newport, Gleitman, and Gleitman 1977)

[2]Obviously, we should seek explanations for age-linked linguistic differences that have independent support.  For example, we would  applaud an account in which *independently known facts* about the maturation and function of working memory predicted a linguistic difference between child and adult without recourse to any ad hoc proposals.  Such an account would not, however, be more plausible *a priori* than one based on independently known facts about the maturation and function of grammar. Faced with two strongly supported competing proposals of this sort, we would have to look for empirical and conceptual differences between them.

[3]In this connection, there is no extra burden of proof on the proponent of linguistic maturation. A maturational explanation  is not, for example, insufficiently explanatory or informative.   It is an empirical claim about the course of language acquisition.  If one accepts that some parts of the human brain are dedicated to language, it is *more* interesting, not less, to learn how changes in linguistic ability might correlate with changes in the brain.  Furthermore, if claims about such a correlation are true, they are by their very nature explanatory -- in the same way that hypotheses about UG explain properties common to the grammars of adult speakers.

[4]Though see section 6 of this paper for discussion of conflicting views on the status of children's use of the passive.

[5]More exactly, Borer and Wexler proposed that children cannot associate a $\theta$-role with an overt argument that does not occupy the canonical position in which that $\theta$-role is normally assigned.

[6]A structure $\alpha$ is a *syntactic homophone* of $\beta$ if $\alpha$ and $\beta$ are phrases with distinct structure, but common pronunciation.

[7]Of course, questions remain about other constructions that arguably involve A-chains, such as simple active clauses and biclausal configurations with Raising. Since these A-chains differ from the passive in the sense that they do not link grammatical positions typically associated with two different theta roles, it is not clear at this time whether children actually do require a s-homophone for these constructions. The correct formulation of the A-chain Deficit might take cognizance of the thematic status of the positions in an A-chain (as argued by Borer and Wexler 1992). However, it is also interesting to explore whether there are s-homophones that children might exploit.

For example, if the widely assumed (though not uncontroversial; Bobaljik 1995) VP-Internal Subject Hypothesis is correct for the adult (Kitagawa 1986; Kuroda 1988; Koopman and Sportiche 1991), one might wonder if structures with a VP-internal trace might have a s-homophone with PRO:

i. Mary$_i$ INFL [$_{VP}$ $t_i$ speaks French].
ii. Mary$_i$ INFL [$_{VP}$ PRO$_i$ speaks French].

This hypothesis would explain why fronting the matrix VP in (ii) does not yield the ungrammaticality expected of an unbound trace in the embedded clause (and would explain the absence of reconstruction effects with VP-fronting noted by Barss 1986)):

iii. I said Mary$_i$ INFL [$_{XP}$ PRO$_i$ ... speaks French] —
                                          and [$_{XP}$ PRO$_i$ ... speak French] she$_i$ does $t_{XP}$.

If children's clauses contain VP-internal PRO rather than trace, Borer and Wexler's hypothesis could be maintained along with the VP-internal subject hypothesis, given the obvious fact that children at all but the youngest ages produce and understand simple clauses. Children's speech would be limited to the PRO s-homophone.

A similar analysis might be accorded to constructions that for the adult may be raising, e.g. the complement of predicates like *seem*. Here, Lasnik and Saito (1992) already suggested the optional

availability an alternative analysis involving PRO, rather than trace, to explain once again the possibility of VP-fronting (*...and seem to know French she did*) and its incompatibility with expletive subjects (\*...*and seem to be a riot there was*).

v.  Mary$_i$ seemed [PRO$_i$ to know French].

Children who lack A-chains might therefore be predicted to allow constructions like *Mary seemed to know French* but only with analysis (v), and disallow constructions like *There seemed to be a problem with the spacecraft*.   As noted, the relevant developmental investigations have not been undertaken yet.

[8]Presumably, the violation is "minimal".  Suppose, for example, that UTAH includes a principle linking Themes to direct object position and a default principle linking other arguments to the external argument position.  When  the first principle must be violated in order to avoid an A-chain with an unaccusative verb, the second principle comes into play, yielding an unergative structure.

[9]We omit from discussion objects that are required by a "quirky case" verb to bear  dative or instrumental case.  An oblique object of such a verb may not be replaced by the genitive in negative sentences, and is ambiguous with respect to specificity and scope.  (There are also verbs that take a "quirky" genitive object in positive as well as sentences.  We do not think it is possible to test for the genitive of negation with such verbs.) In Russian, unlike Icelandic, verbs with oblique objects do not have passive or unaccusative counterparts.

[10]The presence of some modifiers, such as *nikakix* 'no kind' or *ni odnogo* 'not a single', make the genitive of negation more natural, but since these modifiers can also appear with non-genitive arguments (14a,c), they are not responsible for the genitive case.

[11]It is hard to construct a watertight argument against an alternative: that what are represented in the text as phenomena singling out subjects are actually phenomena singling out nominative NPs.  This alternative

would provide a different reason for the stars in (11) and (12). Unfortunately, Russian lacks quirky

genitive subjects with which one might want to contrast the genitive of negation. On the other hand, the

genitive of negation itself furnishes a useful argument in our favor. While the genitive of negation as the

subject of a small clause is somewhat marginal (Ravič 1971), it has no special problem functioning as the

antecedent of a reflexive:

Ja lično     ne sčital      ni odnoj            devočki   v klasse sliškom dovol'noj soboj.
I personally  not considered  not a single-GenSg girl-GenSg in class  too      satisfied  self-Instr
'I personally didn't consider a single girl in the class too satisfied with herself.'

[12]But not in an embedded finite clause, a fact irrelevant to our discussion:

*Ja **ne** dumaju, čto Vanja    ljubit [nikakie            sladosti]      / [nikakix sladostej]
 I  not think     that Vanja loves  no-kind-AccPl  sweet-AccPl /     no-kind-GenPl sweets-GenPl
 'I don't think that Vanja likes any kind of sweets.'

[13]While the facts cited above are well-known from the literature on the genitive of negation, the

observation in (21) is, as far as we can tell, novel.

[14]Strictly speaking, though the covert movement discovered here has properties compatible with A-

movement (e.g. its finite INFL-seeking property), we have not shown that it *must* be viewed as A-

movement, rather than movement of some previously undiscovered sort. We adhere to the simplest

assumption in the text, and feel that the results of our acquisition experiment validate this assumption.

[15]Some open questions and problems remain. First, although the genitive in these constructions behaves

like a raised subject with respect to negative concord, it behaves like an embedded object in subjecthood

tests that check its ability to antecede reflexives and PRO. In this latter respect, the genitive is like the

associate of English *there*:

(i) There seemed (*to himself) to have arrived a linguist from China.

The fact has a natural explanation if covert movement applies later in the derivation than Binding Theory, as in the Government Binding theories of Chomsky (1981) and related work. For example, if Binding Theory is an S-structure phenomenon, negative concord an LF effect, and covert movement part of the mapping from S-structure to LF, the facts fall properly into place. If Binding Theory is also an LF phenomenon, as suggested in Minimalist work (e.g., Chomsky 1993), or if covert movement does not follow overt movement in the derivation (Pesetsky 1997), then these facts are problematic.

Chomsky (1995, chapter 4) suggests an interesting approach to this problem. He proposes that the movement from associate to expletive in examples like (i) does not affect the entire associate NP, but involves merely a subfeature of that NP (so-called "feature movement"). Feature movement is sufficient to communicate agreement features from the associate to the TP (IP) domain, but insufficient to provide new antecedents for reflexives. One might adapt this proposal to the Russian case (see Babyonyshev 1996 for a version of such a proposal), in which case we would want to explore the ways in which feature movement can form a natural class with overt A-movement, in light of our ACDH. The locality condition on negative concord would involve whatever feature of the genitive phrase is held to raise.

One dissimilarity between Russian and English raises a worrisome question in this context. The licensing of a negative polarity item as the associate of English *there* is not sensitive to LF raising of the associate:

(ii) There seemed [not to be any solution to the problem].

This provides one of the central arguments in favor of feature movement in English *there* sentences. There would have to be some crucial difference between negative polarity licensing in English and negative concord in Russian that allows feature movement to affect the latter but not the former. The justification for describing the Russian phenomenon as "negative concord", rather than as negative polarity includes the fact that the "negative words" of Russian have negative meaning out of context, unlike English *any*:

(iii)    a. Who came? *Anyone.
        b. Kto prišël? Nikto. [cf. Nikto *(ne) prišël?]
          Who came? No one.    [noone   neg came]

[16]Note that EARH, introduced in section 2, makes identical predictions under the syntactic analysis of genitive of negation we have developed in section 4.2. Moreover, it would make the same predictions (nominative case occurring on the subjects of unaccusative verbs for younger children, and the disappearance of this pattern for the older children) under a slightly different analysis of the genitive of negation construction: one within which the genitive nominals did not raise to the subject position at LF, but remained in their base-generated position throughout the derivation (see Babyonyshev, 1996 for arguments for such an analysis). Of course, if genitive of negation does not involve LF movement, the English pattern of the negative polarity item distribution should be taken as the basic one, and an alternative explanation of the Russian pattern discussed in section 4.2 should be sought. On the other hand, the inability of genitive "subjects" to antecede reflexives and control gerunds (see examples (16) and (17)), which is typically unproblematic for nominals that move to the subject position at LF, would gain a natural explanation.

[17] This process changed the means and standard deviations only slightly from the original data. Table 1 and Table 2 show the imputed data, while the original values were: .75 (mean) and .44 (sd) for the transitive non-specific verbs; .05 and .20 for transitive specific; 0 and 0 for unergative; .47 and .50 for regular unaccusatives; and .48 and .50 for bleached unaccusatives.

[18] One of the non-specific subjects was an unidentified member of a set of objects introduced within the story. The second non-specific subject was an object that had not been introduced in the story.

[19]Moreover it is easy to understand why children gave only 73% genitive responses (as opposed to 100%) in the transitive non-specific condition. It is known that children often use specific forms in non-specific contexts—for instance, definite determiners and nominals in indefinite environments (Karmiloff-

Smith 1979). The opposite error occurs less often. It is usually assumed that children make the pragmatic error of treating new information as old information known to the listener (Avrutin and Wexler 1992). Notice that children's mechanisms of case assignment are correct; it is only the interpretation they assign to nominals that is faulty.

[20]As with the previous statistical analyses, the means are slightly altered due to the imputation of missing data, described in footnote 15.

[21]For example, one might embed this view within Optimality Theory (Prince and Smolensky, 1993), with ACDH and UTAH as competing constraints. We have assumed UTAH is violable so that children can avoid A-chains by using an unergative analysis of unaccusatives (this corresponds to the grammar in which the ACDH is ranked higher than UTAH). However, if UTAH is inviolable, children will be forced to use A-chains to represent unaccusatives, violating ACDH (this corresponds to the grammar in which UTAH is ranked higher than the ACDH). This outcome would be realized in this experiment in the form of adult-like performance. If the constraints are equally ranked the child should violate one or the other randomly, producing genitive of negation (with unaccusatives) some of the time.

[22]We are grateful to Sergey Avrutin for bringing Gvozdëv's observations to our attention.

[23]*Get* passives are not important to our discussion, but were studied by Fox and Grodzinsky because they are produced by young children and are not adjectival.

[24]Group 1 comprised 2 children who performed as adults. Group 2, the group discussed here, contained 8 children. Group 3 contained 3 children who performed badly on both long and short non-actional passives. Fox and Grodzinsky speculate that the performance of Group 3 may be due to flawed experimental design, since the non-actional verbs involved perception, which is hard to demonstrate unambiguously in a puppet task.

[25]The logic of this explanation was partly anticipated in unpublished work by Borer and Wexler (1989). In this work, Borer and Wexler offered an account of the occurrence of *by*-phrases in some early productions of passive by positing, like Fox and Grodzinsky, two sources for *by*-phrases in passive. The specific association of one type of *by*-phrase with the θ-role "Agent" was not made in that work, however.

[26]Fox and Grodzinsky's explanation for their findings presumably falls under the rubric of "purely linguistic maturation" just like ours, since the deficit posited in their paper selectively affects θ-transmission (though they do speculate on a possible explanation for this effect in terms of "parsing load"). Although they do not discuss the issue, the most plausible explanation for this delay, even if their proposal is correct, involves maturation, for all the reasons discussed earlier in this paper. Thus, the question under discussion concerns the correctness of ACDH as an instance of maturation, not the existence of maturation itself.

[27]Crucially, we must not adopt Borer and Wexler's claim that only actional verbs yield adjectival passives. On the other hand, their observation that children's earliest passives, like adult adjectival passives, are stative, may still point to the correctness of the adjectival analysis.

[28]Sugisaki's results may help us interpret the results of Demuth (1989), often described as a serious problem for the ACDH. Demuth reported that children acquiring Sesotho (a Bantu language) produce passives much more frequently and much earlier than children acquiring English. Could these early passives be adversity passives? This suggestion acquires some plausibility in light of Suzman's (1990) careful study of children acquiring passives in Zulu, another Bantu language:

> "The negativity seen in some adult input was characteristic of child speech. In children's utterances..., someone was the worse off for having had something happen to him. Someone or something was 'broken', 'stolen', 'tied up' and 'hit'. This was also found in Sotho where Demuth's (1989) children used verbs with negative expression, 'get pinched', 'choked', 'lashed' (hit), 'twisted', 'pushed', 'thrown away', 'punctured', 'tied up'. It suggested that the semantics of the passive for the child learning Zulu are not neutral but are implicitly or perhaps even prototypically negative..." (p. 146)

Obviously, we cannot draw firm conclusions without a careful study of the syntax of adversity readings in Sesotho. These observations do, however, suggest a program of research.

[29]We are grateful to Janet Randall, who discussed the data from this experiment as well as its interpretation with us in a series of lengthy and useful meetings.

[30]We should note that this asymmetry does not appear to hold for the Dutch 4-5 year-old children. Although the Dutch children performed poorly on *be* verbs as did the German children, the Dutch children performed at least as poorly on *have* as they did on *be*. For some types of *have* verbs for which adults gave 97% to 100% selection of *have*, the 4-5 year old Dutch children gave about 60% *have*, not much more than chance.

[31]Exactly the same pattern obtains in Italian.

[32]It is also worth noting that children's errors in the Snyder et al study were unidirectional -- always involving incorrect use of *have* instead of *be*, rather than the other way around. The number of errors was extremely small, so we should not overemphasize the significance of this fact. Nonetheless, the asymmetry (overextension of the unergative pattern) is reassuring.

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