

Minimalism and Bilingualism  
How and Why Bilingualism Could Benefit Children with SLI\*

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**Abstract:**

We begin with the hypothesis that all people are “bilingual” because every language contains ingredients from several grammars, just as English exhibits both an Anglo-Saxon and a Latinate vocabulary system. We argue that the dominant grammar is defined by productivity and recursion in particular. Although current evidence is sparse, in principle, for a child who shows SLI in a bilingual environment, richer modules in one grammar may help trigger more obscure modules in another language. Thus if one language has a rich case system, it may help a child see an impoverished case system in another grammar. Examples from prepositional systems, wh-movement, recursive possessives and others are discussed. In general, a second language can be beneficial to the SLI child in the acquisition of both languages. Minimalism offers a level of abstraction where these cross-language connections can most naturally be stated.

## 1.0 Introduction

One of the ultimate goals of linguistic theory must be to build an abstract model of how multiple grammars interact in the process of acquisition. This paper, written from the perspective of an L1 researcher, aims to point out what we can perceive from a formal linguistic perspective when faced with the unusually challenging linguistic intricacy of actual bilingualism and the reality of SLI.<sup>1</sup>

What follows is a broad theoretical perspective, buttressed by whatever data can be found, which we hope will articulate where more careful and focused work can be done on how bilingualism and SLI interact. While one might say that the ultimate approach to these questions awaits a more highly articulated vision of what acquisition paths for individual languages are like---the real world of disorders must utilize whatever partial and incomplete insights are available.

At the heart of our perspective is the following logic, based on the traditional view of syntax as containing “modules”:<sup>2</sup>

1. Not all grammars exhibit all grammatical modules. e.g. Some grammars have no case-assignment.
2. A module, for perhaps historical reasons, may exhibit a minimal presence E.g. English has very limited case-marking.
3. A bilingual child who experiences two languages may allow a rich module in one grammar to trigger attention to a less articulated version of the same module in another language. E.g. a bilingual German-English child may allow the rich case system of German to provide insight into the weak case system of English.

Thus we argue that what promotes small acquisition steps may be guided by an abstract system of what the child may search for. If, for instance, case appears in a salient form in one grammar, it signals the child to look for it in another. Thus, in a sense, an entire module can be turned on when an analysis succeeds in any language.

This theory depends upon a fundamental theoretical claim: all languages are composed of Multiple Grammars (MG) as we originally argued (Roeper (1999, 2003), (see also Yang (2002), Kroch and Taylor (1996)) and therefore all languages exhibit the notion that what looks like a single grammar has arisen partly from “outside” influences. This is commonly called Transfer, but the term is deceptive. Nothing is transferred, but instead, at an abstract level, we bring all of the potentials of Universal Grammar (UG) to bear upon every language. These claims should be actually quite intuitive, and should, one hopes, have a profound impact on how bilingual children who are a little slow are regarded by both professionals and parents. Our task is therefore not only to discover how to explore these ideas scientifically, but also how to convey to parents a view of their children which does not punish them for their style of growth.<sup>3</sup>

What happens if the child has Specific Language Impairment (SLI) in a bilingual environment? The general observation is that in many instances the child needs greater exposure to a grammatical property in order to acquire a language. The thesis here is that the exposure can cross the language boundary: sensitivity to the case module in one language will trigger sensitivity in another language. Slobin (1973) reported that sensitivity to locative particles in one language closely preceded its recognition in another (and anecdotally one hears of such connections elsewhere).

## 1.1 Minimalist Theory

Modern linguistic theory, like every science, has advanced by introducing increasingly abstract principles with increasingly subtle, even microscopic, data (see Roeper (2009)). As the principles become more abstract they present a view of individual languages as far more intricate and diverse compilations of grammatical structures than hitherto supposed. It became clear that every language fails to have a uniform grammar, as Chomsky (1986:17) noted:

“... [take] a speech community of uniform speakers, each of whom speaks a mixture of Russian and French (say an idealized version of the 19th century Russian aristocracy). The language of such a community would not be “pure” in the relevant sense, because it would not represent a single choice among the options permitted by UG, but rather would include “contradictory” choices for some of the options.” Overall, no child has the seeming advantage of learning a “pure” language.

## 1.2 The Indistinct Theory/Application Translation

Nonetheless the effort to utilize modern grammatical theory in applied areas presents a special challenge (as application of theory in all fields does), because theoretical claims themselves are usually quite unresolved. The challenge is greater under the Minimalist Program because, as Chomsky has emphasized, it is a program and not a theory, which means that many insights expressed in earlier theories have not been replaced. In particular, the notion under Minimalism that one might eliminate all modules in favor of interface statements is far from realization, with the result that within linguistic theory itself a good deal of theoretical work continues to refer to Binding theory, Case modules, the A and A-bar distinction, barrier theory, and so forth which have not yet been reformulated because their “interface” properties are vague or hypothetical. This essay, of necessity, will do the same, but we will point out, via footnotes, as

far as possible, where we diverge from some current proposals in favor of terminology that may be more familiar and useful to those working in acquisition and disorders.<sup>4</sup>

Our goal will be to use perspectives that are closest to empirical levels of description which in turn are important for how we gather and evaluate evidence whose final analysis remains unclear. For instance, while structural case can be seen to be universal under the view that all nouns require case---the important point for acquisition and disorders is that case is a domain where languages diverge and therefore acquisition is a challenge. The core empirical observation is that some languages exhibit no overt case, while others have rich or poor systems of case. There seems to be a deep parametric decision about whether case will or will not appear.<sup>5</sup> Although such a parameter is not perfectly formulated in theory, applied work needs to presume its existence or an “equivalent” nonetheless. Our hypothesis---once again---is that if a phenomenon appears in one grammar of a bilingual, it could trigger it in another. Thus in intuitive terms, a “case module” is active in one grammar and not another. To be concrete, as we show below, a critical diagnostic of a disorder is that children sometimes say an isolated nominative “I”, but this never occurs with typical children who quickly identify “me” as the default in English, and who refrain from nominatives unless a Tensed element is present.<sup>6</sup>

### 1.3 “Optionality”

A more important point for applied researchers, who must formulate generalizations about actual data and problems that are (as in all fields like physics and biology) ahead of theoretical understanding, is that some generalizations are still in between theory and observation. For instance, the notion of “optionality” describes inconsistent behavior.<sup>7</sup> We do not always know whether it reflects a theoretical syntactic distinction, a phonological distinction, or a performance based distinction. Such ambiguities cannot be entirely eliminated---nor perhaps

should they be---because, like many terms, their definition is part of the goal.<sup>8</sup> Theories of barriers currently, for instance, depend upon the notion of Phase, but exactly which syntactic nodes define Phases remains unclear, therefore a precise notion of barriers is elusive, yet the term has obvious intuitive content and usefulness.

#### 1.4 Transfer: An observation or an Idea?

Finally the notion of Transfer is at once a true observation and a questionable theoretical claim. The goal of Multiple Grammar theory is to clarify that notion in the direction of saying apparent Transfer is not movement of a rule from one grammar into another, but the actual use in a delimited way of the other grammar. Thus a language never has a fully integrated grammar, but rather it is simpler to actually invoke parts of various grammars. This is precisely what the spirit of minimalism seeks. We need to distinguish the notion of Transfer in L2 representations from the notion of Trigger in the relation between grammars. Our claim that a rich case system in one language can trigger its recognition in another constitutes a different concept from Transfer, although its formal character remains to be articulated.

#### 1.5 Creating a bridge between theory and praxis

In medicine, it is often the most sophisticated work in microbiology that has immediate implications for treatment and the connections are often seen quickly. Likewise in speech pathology, it is when subtle data comes under the magnifying power of a rich theory that it applies most directly to the actual course of acquisition and inevitably to the concerns of those who confront real-life problems. It should be the responsibility of both theoreticians and applied people to create a bridge between theory and application. Much like introducing a microscope into medicine shifted our understanding of where disease was, modern work on quantification should signal a new era in speech pathology.

While speech pathologists have historically dealt with the absence of a variety of inflections<sup>9</sup> as a major noticeable form of disorder, recent work reveals that the stunning failure of children to grasp quantification (in expressions like who bought what)<sup>10</sup> and the sometimes lasting inability to control long-distance wh-questions (what did she say she bought) are indications of language deficits which the test The Diagnostic Evaluation of Language Disorders reveals<sup>11</sup>. Such deficits are easily mistaken for cognitive deficits rather than linguistic ones. Therefore it is all the more critical that their grammatical dimension be well-understood by SLP's, parents, and teachers. It is very different to assume that a child who is confused by a teacher's question "does every child have every food?" does not understand how every works than to assume that they have a low IQ.

In addition, these are all domains where language-particular variation exists. In some languages the sentence some boy likes every girl is ambiguous and in others it is not. In some languages long-distance movement (what did you say John wanted Mary to buy) is possible and in others it is not. Therefore a child must learn about quantification and movement in each language. Such learning could be delayed or impaired as the DELV test clearly reveals. Not surprisingly, these language-particular forms of variation are directly corrected to fundamental topics in linguistic theory, such as: Agree, Logical Form, and Phase theory. Consequently, they are also domains where cross-language influence in acquisition seems possible as we now discuss under the notion that multilingualism is Universal.

## 2.0 Universal Bilingualism

In 1999 (see also Yang 2002) we first suggested the term "Universal Bilingualism" (UB) which states that all languages, therefore all speakers, are bilingual—or multilingual—in a fundamental sense, because pieces of many grammars are present, particularly when linked to

lexical items. For instance, English allows dropped subjects for a few lexical items, usually empty expletives like looks good, seems nice (but not others \*appears nice) while Spanish and Chinese allow contextually evident subjects to be freely deleted, as does English occasionally, for instance in the dialogue: “what happened to John?” “left yesterday”. Typically, pragmatically exceptional root clause phenomena are blocked in subordinate clauses. Thus some language-particular properties are only clearly discernible when one examines recursive structures, such as subordinate clauses. Dropped subjects are completely ruled out in English subordinate clauses, but possible in Spanish<sup>12</sup>:

- 1) a. \*\_\_seems nice that \_\_looks good to go
- b. \_\_seems nice that it looks good to go

To master a language, therefore, the child must be exposed to fairly rare data, recursive examples in particular (see Snyder and Roeper (2004)), and therefore cannot rely on simple “frequency” of dropped subjects as a critical diagnostic. One could have hundreds of dropped matrix subjects, but the critical information could be whether the subject is dropped in recursive environments. With a limitation to matrix clauses and special lexical items<sup>13</sup>, then, the deletion of subjects could at the first stage be the same in both Spanish and English.<sup>14</sup>

A bilingual child with SLI would, presumably, be less baffled by subjectless sentences in English if they were familiar with them in Spanish where the evidence is more robust. Roeper (1972) originally proposed, based on Emonds (1976) notion of “structure-preserving”, that if a child were innately attuned to subordinate clauses, many ambiguities would be eliminated. Recursion is an extension of the idea in modern grammars, as we now discuss. Recursive domains reveal where productivity without exceptions exists.

## 2.1 Recursive possessives

Consider the recursive character of possessives in English where the same pronominal structure is non-recursive in German:

- 2) a. Maria's father's friend's bike
- b. Maria's Fahrrad [Maria's bike]
- c. \*Maria's Vater's Fahrrad [Maria's father's bike]

Experimental evidence from L1 and L2 (Limbach and Adone (2010)) and naturalistic data like the following indicate that children do not recognize recursive properties instantly. This dialogue, one of many, shows resistance to recursion (Roeper (2007)):

MOTHER: What's Daddy's Daddy's name?  
 SARAH: uh.  
 MOTHER: What's Daddy's Daddy's name?  
 SARAH: uh.  
 MOTHER: What is it?  
           What'd I tell you?  
           Arthur!  
 SARAH: Arthur! Dat my cousin.  
 MOTHER: Oh no, not your cousin Arthur.  
           Grampy's name is Arthur.  
           Daddy's Daddy's name is Arthur.  
 SARAH: (very deliberately) No, dat my cousin.  
 MOTHER: oh.  
           What's your cousin's Mumma's name?  
           What's Arthur's Mumma's name?

This child clearly resists recognition even when all the semantic and pragmatic relations are clearly known to her. Eventually children do get it: “what’s Toto’s girl’s name” (Childes 6 yr old).

What would the experience of a bilingual German/English child be or a bilingual child with SLI? Suppose the SLI manifested itself as a general lack of affixes and inflection. The hypothesis that follows from our perspective here is that if the child heard recursive possessives in English, then it would help, not hurt, the child’s ability to learn non-recursive possessives and their morphology in German. It would be a good topic for investigation.

## 2.2 Recursion and Dominance

If a child is learning two languages, is one dominant? Language-dominance is a concept whose definition is much-debated. Recursion is fundamental to all grammars. As a fundamental property of grammar, the act of Merge is recursive—the universal basis for forming phrases—and recursion therefore arises as soon as a 3-word utterance occurs. It is therefore not a separate module. However, it also arises in language-particular ways, as in the possessive example.<sup>15</sup> Non-universal, language-particular recursion may help define which language is dominant among Multiple Grammars:

3) Hypothesis: Recursive structures primarily belong to a dominant grammar

It is noticeable that where we find evidence of other grammars in a language, they are generally not recursive. For instance, in English, quotation allows Germanic V2 verb-raising above the subject, but it does not seem to be recursive:

- 4) a. “nothing” said Bill  
 b. \*“nothing” said Bill” said John

German, on the other hand, allows V2 recursively in other contexts where both kennt and hilfe have moved to a V2 position before the subject:

5) Wem kennt er \_\_hilfe ich

[Who knows he \_\_help I]

Recursion always requires structure, while non-recursive sub-categorization can be represented as extended lexical items that are, in effect, idioms. For instance, “men’s room” may be represented as a single word with a special meaning without a real grasp of the possessive affix. By contrast, complex forms like: John’s friend’s hat requires a non-lexical hierarchical representation that could be a challenge for children with SLI. Single subcategorized

complements can be represented as a meaning unit too: John knows what's what is an idiom which we can represent as if it is a word with specific sub-categorization. It is impossible to extract from: \*What does John know is what.

However, recursive sub-categorization, as in:

6) John said that Bill may believe that George Bush denies global-warming requires rule-governed structure. Nonetheless it is linked to specific complement types in grammar and therefore must be triggered, usually, as already mentioned, by fairly rare recursive examples. This leads to a prediction which requires research to substantiate:

7) Language-particular Recursion will be difficult for children with SLI

The history of child-rearing seems to have an intuitive grasp of the importance of reinforcing recursion because many nursery rhymes are built around it (this is the house that Jack built...that...that...). The existing acquisition experimentation on recursion could and should be easily adapted to intervention in the domain of disorders and be emphasized by SLP's.

At a theoretical level, the level of UG itself, we can pose a deeper question: could a child lack properties of UG? Could a child lack "principles", like being color-blind in the visual domain? Gopnik (1990) and others have suggested "feature-blindness", which might apply exclusively to so-called un-interpretable features. We have now introduced the logical possibility that children might not generate some kinds of recursion, for instance for possessives (Chomsky et al (2002), Roeper (2010)) because a universal feature of grammar, the mechanism behind recursion, is unavailable.

First Roeper (1981), Hornstein (2009), Perez and Roeper (2011), Roeper (2011) argue that the child must not only combine elements by Merge, but label the new node. If recursion, or Labelling (NP, VP, AP) at the UG level were absent, the child could not perform Merge

recursively to create more complex structures, then only two-word utterances without Labels would be possible.

It is therefore where both Merge and language-particular nodes and their labels arise that we may expect recursion to be the kind of problem an SLP can address, as in the possessive example above. In Roeper (2011) it is suggested that recursion, accomplished by Generalized Transformations as formulated in TAG grammar, might be the critical mechanism beyond Merge. It could therefore be impaired. This reasoning takes us to the edge of current linguistic theory and both more empirical and theoretical progress is needed before the hypothesis can be stated with precision.

### 3.0 Language Overlap and SLI

Real bilingualism confronts the child with a more overt and explicit challenge of the kind that every child must face under the assumption of Universal Bilingualism (UB). Does real bilingualism, with two different lexicons, make the challenge for the SLI child worse or impossible? The question has no abstract answer. Nonetheless, when we look at detailed interactions, a project still in its infancy, we can argue that bilingualism may assist the SLI child as it may assist the typically developing child.

Logically there are three kinds of overlap one can envision:

- 8) a. Compatible overlap among grammars
  - b. Instructive overlap
  - c. Conflicting overlap

We will discuss these options and argue that all three could occur. They have natural consequences:

- 9) a. Compatible overlap has no impact.

- b. Instructive overlap is beneficial.
- c. Conflicting overlap may lead to a need for more exposure and a longer period of acquisition.

None of these possibilities are obviously profound advantages or in principle hindrances to becoming a bilingual person, nor even to an SLI child who may require more extensive exposure to trigger seemingly incompatible aspects of grammars.

#### 4.0 Multiple Grammar Background

The critical idea for Multiple Grammar theory under UB is that the set of possible grammars is independent of particular languages. So a particular language could use pieces of several grammar types. And where real bilingualism is present, it may be impossible, particularly at the level of comprehension, to block an analysis from another grammar as we have already suggested. An instructive example comes from Perez et al (2008). Speakers of object-drop languages (like Portuguese) cannot block potential object-drop in English in an environment like:

10) Speaker A. I have a fish.

Speaker B. I can't eat.

where the English speaker obtains the reading can't eat anything, the Portuguese speaker also allows can't eat fish (we return to this topic with respect to Chinese below).<sup>16</sup> In an experiment where a mother is cooking eggs and a child comes in with a fish he caught and shows it to the mother, Perez et al (2008) asked a subject questions like: "here comes Johnny with a fish. Is Mom cooking?" The English speaker says "yes" and the Portuguese speaker is tempted to say "no" understanding the question to be "Is Mom cooking (it)?" Here the overlap has a negative consequence: the L2 speaker gets an incorrectly specific reading. We will now develop examples where it is positive.

#### 4.0 Multiple Grammars and Vocabulary

What does it mean to say that bilingualism is universal? In English it is immediately evident that more than one vocabulary system is present: Anglo-Saxon (AS) and Latinate. Latinate morphology is marked by, for instance: -tion, -ity, -ious while Anglo-Saxon vocabulary is typically marked by: -ly, -ness, -er, -s. Is one of these grammars dominant? The affixes supply an analytic device. The AS affixes are general and cross the grammar boundary while the Latinate ones do not:

11) grammaticality/ grammaticalness

historicity/ historicalness

photographic/ photographer

By contrast AS forms strongly block Latinate affixes (though a few counter-examples exist):

12) runner/\*runtion

hitter/ \*hitical

and note that the contrast continues even with semantic invariance (donate=give):

13) donor/donation

giver/\*giveation

A speaker must both realize each sub-vocabulary and grasp that one vocabulary is capable of cross-over where the other is not. This capacity resembles what we argue can occur at an abstract modular level. A major ingredient of one grammar can trigger a minor ingredient of another: a case-rich language could cross-over and trigger an obscure case-marker in another language.

#### 4.1 MG and Subcategorization

Multiple grammars are evident at the sub-categorization level as well:

14) a. AS has particles in complex verbs, but Latinate words do not:

AS: look at/ peek at

Latin: \*specify at Bill/ \*observe at Bill

14) b. Double Object is possible in AS, but not in Latinate words:

Latin: \*donate Bill a hat

AS: give Bill a hat

However we find here that the Latinate form, being a PP, applies to AS forms as well:

15) give a hat to Bill

Now we have entered the domain of compatible overlap. In several domains in English we find relics of two different grammar streams.

16) Particles: give the hat away

give away the hat

In Germanic the particle can appear only on the outside. English seems to be in the process of reanalyzing the particle as part of the verb, and therefore it can move higher in the clause together with the verb.

Would bilingualism with English help a child realize where particles are obligatory part of a verb in another language? That is, would the fact that a particle moves together with a verb in English reveal that it is obligatory while a final particle remains ambiguous with an intransitive preposition and therefore it is possibly an optional adjunct?<sup>17</sup> Hyams, Johnson, and Schaeffer (1993) have shown that particles appear first in final position, and Jeschull (to appear) has evidence that they are first analyzed as adjuncts. Thus “up” in “mark it up” is understood as a spatial reference rather than a completive particle (mark it in an upward position). In fact, Armon-Lotem, Danon and Walters (2008) have shown that “Monolingual children with SLI have

more errors in Hebrew in the use of Obligatory prepositions than Bilingual Children with SLI”.

#### 4.3 Bilingualism, SLI and Prepositions

Let us look at the argument above a little more closely. Both German and English have complex verbs that lead to a stranded particle:

17) John picked the ball up

English, but not German, allows the particle to raise with the verb

18) John picked up the ball

while German allows a preverbal particle in infinitives:

19) Er will den Ball aufheben

[he will the ball up-pick]

These syntactic variations, coupled with idiomatic interpretations, articulate domains where a particle is obligatory. Obligatory particles are clearest with idioms like throw up where a special meaning occurs only when the particle is present. Keyser and Roeper (1992) argued that there is a special position, the Abstract Clitic Position, which is required for such constructions.

Snyder (2001) has argued, in effect, that this position is part of a Compound Parameter which children must set, and which Snyder and Roeper (2004) advance further acquisition evidence for.

Now a possible hypothesis arises:

20) Children with SLI who set the Compound Parameter in English will be more likely to recognize Obligatory particles in any second language.

They have an independent domain in which, via complex verbs with single idiomatic readings, the obligatoriness of a particle is manifest and thus distinct from its prepositional use. This hypothesis, of course, requires specific experimentation to establish. It is however a logical

possibility that emerges from acquisition research which would demonstrate where bilingualism can be of value to the SLI child.

#### 4.2 MG and Verb-raising

Bilingualism can invade what is arguably the core operation of grammar in the projection of propositions: verb-raising. English shows signs of using German in some domains like quotation, as mentioned, but also stylistic inversion and the use of copulas:

21) a. “nothing” said Bill

b. In the room ran John

These contrast with non-raising, the norm in English, where do-insertion exists (16a) instead of verb-raising (16b):

22) a. Why does John play baseball

b. \*Why plays John baseball

What is widely ignored is the fact that V2 is present in English with be, one of the most frequent verbs in the language, which moves over the negation as it does in German:

23) a. Why isn't John here

where one might expect from a consistent speaker that we have:

23) b. Why doesn't he be here?

In fact Africa-American English takes this logical step and exhibit forms of exactly that type.

Children, also, are known to seek Verb-raising consistency and produce:

24) "do it be colored"  
 "You don't be quiet."  
 "Allison didn't be mad"  
 "This didn't be colored"  
 "did there be some"  
 "does it be on every day..."  
 "does the fire be on every day"  
 "do clowns be a boy or a girl"

"do it be colored"  
 "does it be on every day"  
 "did there be some"  
 ( data from deVilliers (pc), Hollebrandse and Roeper (1997)

And we find that children over generalize the V2 verb-class as well, particularly in the domain of equative verbs whose meaning is close to be. These are examples from small CHILDES searches and my own data:

25) Roeper (corpus): “what calls that?  
 ‘what means that’  
 boys39.cha:\*CHI: what means both?  
 sarah111.cha:\*CHI: what means two?  
 sut.cha:\*CHI: here what means tape?  
 tre28.cha:\*CHI: what is it, what means repeat?

Research into Scandinavian languages reveals numerous subtle generalizations about V2 (See Westergaard (2009) and Bentzen (2009)) which re-enforce the idea that any child must not prematurely over generalize V2 to all verbs or as second to all initial constituents.

## 5.0 Interim Summary

An interim overview of what claims are:

### 26) Summary

1. Every language has ingredients from different language types.
2. All children therefore receive information that is “contradictory” (Roeper (1981))
3. Most differences reflect lexical class restrictions
4. The challenge for the child is to acquire productive rules?
5. Recognition of recursive structures, though rare, is an important clue to productive rules.
6. The bilingual child, perhaps especially the bilingual child, can benefit from clues in the “other” language.

## 6.0 Learnability Theory

We now need to introduce core concepts of grammar and learnability. Minimalism

defines two kinds of features: [+ interpretable] and [-interpretable].<sup>18</sup> Intuitively the distinction refers to the difference between semantically transparent features and features whose role is to project structure, via movement chains and binding relations. A simple and natural hypothesis, surely too strong, is that children with SLI look for [+interpretable] features which can be confirmed by contextual or discourse-related information. In its strongest form this would be:

27) SLI Child => all features [+interpretable]

therefore:

28) SLI child may Fix lexical item without [-Interpretable features]

Thus a child might distinguish me from myself in terms of lexical content rather than a Binding feature. There is in fact some evidence that children will allow myself to refer their body suggesting a lexical definition.<sup>19</sup>

To understand where impairments may arise, we need to outline a learning system for the typically-developing child. An efficient means is to use the principle of Maximizing Falsifiability (Williams 1981, pursued in Roeper (2007)). If we assume that the child makes hypotheses as rich as possible, new positive input evidence will quickly falsify it. Consider this mini-example. Imagine a child who tries to discover if he must learn English or German articles. English marks definiteness, while German makes definite, gender, case, and number. Under Maximize Falsifiability, the child makes as rich an assumption as possible:

29) I saw the boy

ich sah den Mann

the/den =>[+sing,+masc,+def,+acc]

The English child, within a few minutes, would hear the input evidence:

30) I saw the girl => delete Gender

Then:

31) I saw the girls => delete Number

32) the girls came => delete Case

and the child would arrive quickly at English. German would be correct from the outset. Adding features would be much harder because the unmarked article would not be contradicted by any aspect of context. And hearing the accusative form ich sah den Mann could represent a completely different meaning. A different learning strategy would be needed for the child, eventually, to see that der/den are both articles in complementary distribution.

### 6.0 Feature Sensitivity in Children with Typical Language Development

There is evidence that, indeed, children with typical language development (TLD) can maximize features, even if they are not phonologically explicit. It is known that children overgeneralize accusative case with main verbs:

33) him push

Notably however this problem does not arise with auxiliaries which assign case: \* "him can push" [\*]= unattested in naturalistic data of normals]. This follows precisely if the child *maximizes* features in English to include case-marking on auxiliaries. In fact, Abdul-Karim (pc) did a small experiment in English and Arabic where she found that 2 1/2 yr old English speaking children who were asked a question like:

34)a. "who has a hat?"

English has a Default "me" which appears frequently among adults in conversation, which is probably the basis for children's acquisition of the Default. That is, it is perfectly acceptable to answer the question: "who got a letter" with "me" although a reconstructed form would be ungrammatical: \*me got a letter. Children answered (34a) with default "me" until they included

an auxiliary which projects nominative on the subject via Agreement. The pattern is:

- 34)b.           => "me" (2yrs)  
                   => "I do" (2 3/4 yrs)  
                   => \*"I" never

**Insert Table 1 about here.**

These typically developing children grasp that a form of Spec-Head agreement is necessary, projected from the auxiliary, which guarantees nominative case. Were the child to say "me can do it" it would be an example of:

- 35) A missed Formal Feature:

Can => does not project Case

I => does not receive Case<sup>20</sup>

The logic of learnability would make it hard for the child who made this mistake to recover from it. This may be exactly what occurs with an SLI child.

### 6.1 SLI Feature Sensitivity

In a case study by Eliane Ramos of a boy (JC) 4.4 yrs, he showed a clear absence of nominatives despite the presence of auxiliaries and many other complex aspects of grammar (in Roeper et al (2001)):

"Me sister name Dawne. Her give me Dad a lobster, a two lobster, Me Mom put in here, cook them, forgot to take them eyes out. and then it give it to Mom He say put it down. And then her say ahh, and then her put on the floor, and we scare her. Her say, ahh it's moving, and then them cook them up, and it swcared Mom, so we gonna put him to trouble. And then he be trouble....you can't eat eyes. Only you can eat skin. And me did eat it."

There is evidence that the child has IP, but does not project a case feature:

- 36)     Me don't know  
           Me can have this  
           her can cook something  
           it don't have a mouth  
           then me no have to go bath  
           it can poke somebody

me don't have a cat on a bed  
 Me said me gotta hurry up  
 Her can cook something  
 No her can put up here  
 Them have a party

In addition there are missing possessives.

37) Missing Possessive:

to take them eyes out  
 them Mom don't let them  
 He lost he family

Missing Number:

38) a two lobster

At the same time we find CP-level phenomena, suggesting that other modules controlling wh-chains, binding, and scope are present,:

39) When me go outside to play, me go like that  
 that because them Mom don't let them  
 that why them put a lot of sand  
 Why him don't have eyes  
 when him crack tiny pieces up, and then put (unintelligible)  
 why her need this  
 what's I talking about  
 I don't know where her can cook

And wh-movement and Operator-movement is present:

40) lobster to eat for lunch  
 I don't know what he saying  
 What's I talking about

Roeper et al (2001) argue that a notion of Abstract Agreement that covers case, possessive, and number must exist such that these diverse elements can be subject to impairment separate from other modules.<sup>21</sup> It is noticeable, suggesting MG, that the child has some grasp of case assignment because "I" does show up.<sup>22</sup>

JC appears to be stuck in his capacity to fully realize the agreement system which is, in

English, limited in many respects. He appears to be missing AGR at several levels:

41) Nominative

Possessive

Plural

Could there be an abstract ability involving Agreement that is missing? Children with SLI in German show similar deficits, but they may also respond eventually to the richer inflectional environment.

Therefore we are led to the following possibility. The child who has allowed the auxiliaries to be used without projecting case [“me can have this” or “her can cook something”] would find it difficult to retroactively re-acquire auxiliaries together with case projections. If such a child were, however, in a bilingual German environment, a new explicit clue would arise, the tense marker [e.g. –st]:

42) Du kannst (you can+st)

where the –st [or –e, or –t also arise] indicates that nominative should apply. In other words, the child would have a second chance to set a Formal Feature. In order to make this suggestion work we have to assert that there is a:

43) Cross-linguistic Trigger =>

German Aux [+T] => English Aux [+T]

Here we can see, by hypothesis, UB in action: Abstract Agreement is automatically applied to relevant lexical items across an apparent language boundary. Once again, the argument is that no Transfer has occurred if one assumes that every language involves several grammar types.

## 6.2 Exhaustivity Evidence and SLI

Could a similar kind of triggering occur at an abstract semantic level? Suggestive

evidence comes from comparing English and German wh-exhaustivity. Schulz et al (2007, 2010) asked the question: when do children grasp that wh- words entail exhaustivity in contexts like the following:

**Insert figure 1 about here.**

Adults reliably pick out three people, but children initially choose one, called a singleton reading. The subjects were 115 German and English children in 4 age groups from 4;0 - 7;11yrs.

A curious difference showed up:

44) 4-yr olds produced Singleton readings in these proportions,

English: 79%

German: 52%

As children got older the exhaustivity radically increased, but a sharp difference remains until the age of 6 yrs.

45) German: Exhaustive    English Exhaustive

5yrs <u>80%</u>	5: <u>27%</u>
6yrs 85%	6: 75%,
7yrs 84%	7: 74%

Why should there be a difference? The first question to ask is: Are there any language differences? In fact, German unlike standard English, allows a prosodically unified added marker: wer-alles (who all). The same form is found in dialects of English and in the morphology of Asian languages. They argued that this second feature alles independently marked many wh-questions and the children considered the all to be in effect in agreement with the wh-word, triggering its exhaustive feature at an earlier point. It is a case of instructive overlap among grammars.

These facts show an interesting kind of triggering relation whose character requires more

careful understanding of how the acquisition of features functions in the larger syntax. One could imagine the opposite: because all marks exhaustivity, then *wh-* does not need to. Therefore if a language has both, it is more difficult to acquire the hidden exhaustivity feature on *wh-* because the semantic need is already satisfied by all(es). However, given the required presence of exhaustivity when alles is present, it seems that the child, having experienced a required exhaustivity, then experiences situations whose pragmatics naturally allows for exhaustive readings and the child then imposes that property on wh-. In other words, the realization of exhaustivity on wh- must follow from a broad acquisition principle which invites the child to see Agreement, or perhaps better called Concord between *alles* and *wh-*:

46) Seek Concord wherever possible.

This in turn makes the frequently observed phenomenon of “overgeneralization” a reflection of a principle and not a kind of performance mistake. The child says “feetses” because it ought to be possible to mark plural twice when its presence is seen at two morphological levels. This suggestion requires further refinement before the microscopic, but crucial, basis for such acquisition steps is understood.

The facilitative effect can be seen, quite sharply in this experiment:

47) 20 children with TLD (Mean Age = 5;4 years) were compared

*wer* (who) cases => 97% correct exhaustive.

*wer alles* (who-all) => 100% correct exhaustive

4 children make errors with *wer* (who)

48) 20 SLI 5-year-old children

*wer* (who) 75% correct exhaustive

*wer-alles* (who-all) 91% correct exhaustive

They clearly made use of alles in imposing exhaustivity, which leads us to expect that at a younger age the difference would be even sharper.

This leads to a prediction about German/English bilingual children: they should be less likely to exhibit extended use of singleton readings than who are mono-lingual English speakers because they have an extra clue, which if they seek Agreement, will help them. Thus we have argued that the SLI child may both fail to realize Agreement in all appropriate domains and may use it where it gives extra information.

There are broader applied implications here. The presence of variable readings for wh-questions should be a part of nursery school “curriculum” and something carefully clarified in second language instruction. If we can introduce questions like “who is sitting where” into the natural life of children in the same way that nursery rhymes with built-in recursion are a natural part of family life, then we can inoculate against this form of language impairment, and it may arise far less often.

#### 7.0 A Typology of MG (“Transfer”) Effects

Positive arguments for the benefits of bilingualism for the SLI child are not the end of the story. While a great deal of policy discussion seeks to formulate alternatives in a spare and simple fashion, the reality may be far more complex, and as in medicine, the applied world benefits when analysis is subtle and detailed. We need to look more broadly at the question of where “Transfer” effects arise. In our system we describe these phenomena as domains where Multiple Grammars apply with possibly diverse effects.

In a careful and instructive naturalistic study of the bilingualism of their children, Yip and Matthews (2007) have shown one domain where there appear to be negative transfer effects of bilingualism: object-drop (which we discussed above).

### 7.1 Object-Drop in Chinese/English Bilinguals

Even linguistic experts, fully conscious of object-drop constraints, are nonetheless unable to control the application of object drop. At a conference recently, where object clinics were under discussion, a linguist said: “we designed an experiment, but we have not carried out.” An English speaker immediately notices the error: it should be “carried it out”. Although the meaning is totally clear without the pronoun, the English grammar requires it while Romance does not (nor does it have particles). Thus, these errors are found among adults and very commonly among children. Yip and Matthews report:

49) 45% Null objects in Verb-particle cases for their children in naturalistic contexts, such as:

“I know you bought”  
 “I want take off” (Alicia 2.05)

This is quite plainly a case of compatible Multiple Grammars. Therefore it occurs easily.

We could explore this question with a simple experiment where the absence of object-drop in English delivers only one meaning (a variant of the Perez et al (2008) experiment above):

50) Introduction:

“John went outside and got himself and his toys dirty. He came inside and washed up.”

What did he wash up?

If the child answers “toys”, then object-drop is present. If he answers “himself” then the correct English intransitive meaning has emerged. As in the learnability discussion above, adding (not subtracting) a restriction (just himself, not the toys) is difficult to teach with sharp examples.

### 7.2 Wh-constructions: differential transfer

French allows both *in situ* wh- and moved wh-with possibly different presuppositions:

51) a. il va ou (he goes where)

b. ou va-t-il (where goes he)

Chinese has in situ wh-expressions like (50a) and English has fronted wh- expressions. If the bilingual child put them together, they should generate French. Yip and Matthews show that in-situ wh- is generated in a bilingual English-Chinese child, even in non-echo questions, and fronted wh- is not generated.

52) “Daddy are you having what” Alicia 3.09

Now an extremely intriguing theoretical question arises: why is there no Transfer of wh-fronting? There would be a good reason to expect it if at LF transfer must occur in any case.

We have no answer at present, but one can look to the suggestions of Rizzi (1997) on a highly differentiated Left-periphery. It carries a CP-landing site in English where the wh-feature has been checked off. If Chinese does not expand the CP-domain in the overt syntax, then the prerequisite for a projection of English onto Chinese has not been met. Why would this happen? In brief, some grammars appear to collapse Subject, Topic, and Question positions while others differentiate them. Acquisition evidence (Spinner and Grinstead (2006) Roeper and deVilliers (2011)) suggests precisely that the process of splitting these categories apart can be a challenge for children, and therefore it is not a natural point where one grammar could invade another.

The strongest hypothesis about this phenomenon is: children will not project an entire node from one grammar to another (See Green and Roeper (2007) on stable nodes and unstable features). Thus MG “transfer” may have constraints of its own: introduction of a new discourse-sensitive node from one grammar (English) into a grammar, whose discourse functions are handled differently, may be ruled out. These questions cry out for detailed experimental research linked to detailed theoretical hypotheses.

8.0 Summary

We have surveyed several MG effects where exposure to one grammar can have an impact on a second grammar:

1. We provided three examples where the MG effect was positive: case, prepositions, and exhaustivity.
2. We provided an example where it is negative: Object-drop in Asian languages.
3. We showed there may be no Transfer: wh-fronting in Chinese/English bilingualism.

This cursory overview of possible cross-linguistic effects that are relevant to SLI may be just the first of many that are eventually discovered as the properties of linguistic theory are applied to rather microscopic domains where SLI is exhibited.

### 8.1 Conclusions

We have defended a thesis: bilingualism can be beneficial to the SLI child. Utilizing both concepts from the minimalist program and useful ideas from earlier theories, we have argued that

- A) all people utilize Multiple Grammars, and
- B) a more explicit grammar in one language can provide triggering data for a child's acquisition of structures in another language.

We argued that there is no broad-based effect of bilingualism. Instead one must look at the detailed relation between languages to determine if the impact of one language upon another involves compatible overlap, instructive overlap, or interfering (negative) overlap.

We have looked at SLI and bilingualism from every angle that theory offered. The strength of the data—as in most health domains—is quite diverse, leaving room as always, for the judgment of the SLP.

One of our goals is to wean ourselves away from a disproportionate emphasis upon inflectional errors as the hallmark of disorders. While a child's problems often come in clusters,

we have suggested that, just like articulation and syntax are different, modules within syntax might be selectively impaired. Such differences will play an important role when we seek to make real neurological connections.

Our examples focused upon case modules, recursion, particles, and quantification. Evidence is often slim, but suggestive nonetheless and we hope, comprises a real incentive for further research. We touched upon a variety of traditional concepts in the empirical discussions around bilingual research: Transfer, Dominance, and Optionality.

We utilized primarily the Minimalist Program together with older theories where they are more explicit. Our approach, we believe, begins to decompose these concepts into their theoretical and empirical dimensions, inviting more refined research.

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<sup>1</sup> See Paradis (2010) for an overview of bilingualism and SLI that reaches the conclusion that there is no evidence that children with SLI should be discouraged from being bilingual. Two features of the overview should be noted: it focuses exclusively on morphology and documented disorders in syntax and semantics are not considered, and 2) bilingualism is treated as a unified abstraction. In what follows we will argue that careful structural analysis shows that exactly which languages are involved in bilingualism can certainly be important. See Leonard et al (2008) for another good example and Rice and Wexler (1996).

<sup>2</sup> This view will eventually be replaced by a richer theory of Interfaces following Chomsky (2005).

<sup>3</sup> The Prism of Grammar (MIT Press (2007) was written by me with largely this goal in mind. In addition the book Raising a Bilingual Child by Barbara Pearson provides many insights into the process.

<sup>4</sup> Thanks to a reviewer for emphasizing the need for such clarification. The reviewer suggests that the parameter belongs to the “morphological component”. If our analysis of recursive possessives is correct (see Roeper (2011)), then it must be in the syntactic and hence “computational” component, because it involves the presence of a Spec below the POSS category, which converts into a Maximal Projection, which in turn allows a recursive DP to appear under SPEC.

<sup>5</sup> In acquisition terms, the child then progresses by inserting the SPEC in this position, thereby shifting the POSS from what might be a “morphological component” to the syntax. Many languages vary in how much information is carried by morphology and how much by syntax. Clarifying the contrast is critical to a successful theory of how acquisition occurs and children are able to choose quite among different domains in the projection of grammar. It is probably this very shift—between modules as it were—which will be a critical part of the explanation for the difficulty of recursive possessives for L2 learners.

<sup>6</sup> A reviewer suggests that the case problems exhibited by children “belongs to the morphological rather than the computational component”. However it is not clear what the morphological component is. . If it is morphology, then most morphologists, including this author, capture generalizations with syntactic principles (see van Hout, Kamiya, Roeper (to appear NLLT). If it is phonological, then arguments exist to show that children consider it more than phonology. Where children, for instance, cannot pronounce the difference between “me” and “my”, they continue to understand them as different. Nonetheless, it is indeed unclear what the best theoretical apparatus is, but it is little help to call it phonological or morphological.

<sup>7</sup> Thanks to Luiz Amaral for articulating this point.

<sup>8</sup> Chomsky and Halle (1968) observed about some of their reduction rules that they did not know if it should be formulated as a fast speech phenomenon or be represented in a vowel reduction rule. Their effort to formulate the rule helps determine whether it really is a rule.

<sup>9</sup> See Paradis (2010)

<sup>10</sup> See Schulz et al (2010), Seymour, Roeper, and deVilliers (2005)

<sup>11</sup> Seymour, Roeper, and deVilliers (2005), See also Abdul-Karim (2000), deVilliers et al (2009), Friedman et al (2009), Marinis and van der Lely (2005) among others.

<sup>12</sup> See Roeper and Weissenborn (1990) for this idea and discussion in Lightfoot (1989).

<sup>13</sup> A reviewer correctly notes that the English cases do not involve reference to context as a rule, though as we note above, it does occur.

<sup>14</sup> Another property, V2 in matrix clauses is recognizable in concert with the notion that Germanic languages set the Head parameter to OV, which is directly visible in subordinate clauses (with indirect clues in matrix clauses as well). The intricacies of Residual V2 make the matter much more complex, but we will not explore them here.

<sup>15</sup> One approach to Minimalism is to suggest that there is only recursive Merge, and externalization, called “Spell out” in some contexts accounts for the rest. “Spell-out” is a promissory note which cannot easily escape reference to a structure with recursive rules of the sort we are proposing, thus the realization of Externalization via Spell-out should not be expected to change the character of this argument. Chomsky (pc) has suggested that recursive possessives “belong to another dimension” altogether which again does not reduce their importance or proposals about the rules generating their structure. See Kremers (2000) for a recursive linearization approach to possessives in a number of languages which is in the same spirit as our account. See also Hirawa (2005) and van Hout, Kamiya, and Roeper (to appear NLLT) among many others that assume this parallelism.

<sup>16</sup> See Amaral and Roeper (in preparation) for discussion

<sup>17</sup> A reviewer raises the important question of how narrowly a trigger operates. Could a possessive trigger both the pronominal and the prepositional form of possession? It is a good question. A conservative learner (Snyder (2007)) would seek a narrow interpretation for each—under a Strict interface theory (see Roeper (2011b))—and therefore

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the trigger would remain as narrow as possible. In fact, Borschev, Paducheva, Partee, Testelefs, and Yanovich. ( 2008 ) and others point out that the semantics of pronominal genitives can be very narrow and different from post-nominal genitives. The role of some triggers needs to be broader, however, or acquisition would not be sufficient. The question goes beyond what we can address here.

<sup>18</sup> See Tsimpli and Mastropavlou (2007). and other works by Tsimpli on this topic.

<sup>19</sup> See McDaniel (1990) along these lines. What SLI children do remains unknown and calls for very careful experimentation.

<sup>20</sup> Toya Wyatt, an experienced SLP, commented anecdotally that if she hears children say “I” without an auxiliary, it is her first clue to disorders.

<sup>21</sup> Clahsen (1988) has argued that Agreement is impaired.

<sup>22</sup> The question of why the child sometimes seems to have very occasional nominatives is indeed unclear, as with so-called performance deficits found throughout adult language as well. Our approach is to argue that children have a kind of Multiple Grammar where the child falls back on the default grammar because the Agreement system is difficult to carry out. We expect that this “difficulty” will be represented in grammatical terms **of** Agreement, but it is not clear what makes agreement eventually obligatory, and defaults impossible except in dialogue. The same questions arise in L1 and L2 research without a clear linguistic answer.

A further question of whether the child might simply have a “retrieval” problem for nominatives, often suggested in disorders, provides no explanation for why agreement failure should show up in so many different places (plural, genitive, etc), which is the reason we suggest that there is a common “abstract” rule of agreement which is impaired.



Figure 1

Table 1. *The default me and I Aux distributed by age groups.* Group 3 is missing data because of the unavailability of subjects at the time of the study. (Abdul-karim (pc))

Response	1 1.6-2	2 2-2.6	3 2.6-3	4 3-3.6	5 3.6-4	6 4-4.6	7 4.6-5	8 5-5.0+	9 Lang. Dis	10 Adults
<b>me</b>		32/33 97%		12/75 16%	25/40 62.5%	16/20 80%	23/26 88.5%	34/43 79%	19/34 55.9%	9/31 29%
<b>I Aux</b>	1/1 100%	1/33 3%		63/75 84%	15/40 37.5%	4/20 20%	3/26 11.5%	9/43 20.9%	15/34 44.1%	22/31 71%