SOME NEW PERSPECTIVES ON LEXICAL AND FUNCTIONAL CATEGORIES: REVISITING BROWN'S 'FOURTEEN GRAMMATICAL MORPHEMES'

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OVERVIEW

[1] In this brief paper, we unpack Roger Brown's classic list of 'fourteen grammatical morphemes and their order of acquisition'. We review the nature of the classic 'Functional / Lexical' dichotomy in light of the observed delayed onset of AGR(eement) morphology. The paper's main concern is how we should go about accounting for apparent affix-related morphology found in an otherwise child lexical stage of development.

[2] We will not talk in percentages in this paper but rather ask what might be happening in a particular instance. Other data taken from Braine (1976) and Galasso (2003) show a possible reinterpretation of what Brown suggested to be early instances of morphology found in his stage-2 data. (For clarity, we refer to Brown's early mutli-word stage-2 (MLU $\leq$2.5) as our lexical stage-1, following Radford, 1990). Finally, we synthesize our findings within recent advances made in brain imagining studies.

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INTRODUCTION

[3] We begin by accepting as our point of departure the widely held view that the brain partitions language into two fundamentally different processes, roughly correlating to Broca's area (for more abstract rule-based / AGR computational tasks) vs. Wernicke's area (for memory-based tasks). This partition is seen as a natural overlap onto what had been the traditional cut between Functional vs. Lexical Categorization (respectively). [See 'Words & Rules Theory' (Pinker, 1999) - a contemporary interpretation of the classic 'Skinner-Chomsky' debate (Chomsky, 1959)].

[4] The Functional / Lexical dichotomy can be easily captured by what I call the 'Sally Experiment':

Sally wear-*s* strange sock-*s*
Mrs. Sally is a nice girl who like-*s* to dance.

/s/ /s/ /s/

In L2 contexts (ESL), the italic functional /s/ may optionally delete, but not the underlined lexical /s/. The experiment shows the processing distinctions between what is idiomatic and rote-learned (lexical) and what is a rule computation (functional).

[5] This 'functional / lexical cut' has been extensively written about in the child language literature, where theories have been posited claiming that young children initially go through a lexical stage-1, and only later enter into a functional stage-2 [see Brown (1958); Brown, Fraser & Bellugi (1964); and more recently Radford (1990); Wexler (1994); and Galasso (2003)]. Namely, children start with the simple operation of *merge* stems, and only later do they gradually come to the more abstract operation *move* affixes.

[6] A lexical stage-1 is characterized by the absence of functional material such as Determiners (*the/this/that*), Auxiliaries (*do, be, have*) and Modals (*can/could, shall/should,* etc). In addition, all functional inflection such as Tense, Case, Number is also said to be absent.

[7] Problem: If an 'affix-less' lexical stage-1 model is correct, as assumed, we then have to explain how an apparent overlap exists whereby early MLU onsets of affix functional morphology manifest at the otherwise hypothesized lexical stage-1 (as shown in Brown's list below). (What we mean by 'overlap' is that it appears functional affixes come on-line at an otherwise assumed lexical stage of development. Stage-1: MLU 2.5/or below).

[8] Solution: While such an overlap may be transparent enough, as Brown's list shows, it may be that dichotomies are never as strict as we wish them to be - viz., when what appears to be a 'functional' representation actually gets processed via 'lexical' means (and potentially *vice versa*). Again, this is best illustrated by looking at Brown's first items on his list. There is good evidence in the child language literature to suggest that some of these early onsets of what appear to be functional affix-morphology can be called into question, opening-up claims that there needs to be a refinement over how to define seemingly affix-bound inflectional morphology early-on in an otherwise non-inflectional, lexical stage of child development.

[9] In other words, we wish to make a distinction between seemingly (i) **Lexical Inflection** -resulting from mere frequency of input or via semantic marking - and (ii) true rule-based **Functional Inflection**. As we shall show below, when the child named Eve (of the Brown study) says, e.g., 'two chair', 'one blocks' or 'where mommy going?' we cannot equate Eve as having an adult target grammar for ['number' on noun] or ['progressive' on verb]. We can only make a claim for full adult grammar when we have evidence of the appropriate AGR-relation (e.g., '**two** chair-**s**', '**one** block-**Ø**', 'where **is** mummy go**ing**?'). The mere fact that the affix does emerge is not evidence in of itself for an AGR-based functional inflection.

[10] Hypothesis: After close examination of the first items acquired on the Brown list, we suggest that a better way of describing the classic lexical / functional dichotomy is to redefine the underlying affix processing distinction as either belonging to an AGR(eement)-based computation, or a NON-AGR-based relation.

THE LITERATURE

[11] The literature over quite a span makes available to us such [-AGR] defining formulas:

(i) **Autoclitic**	by 1st generation developmental linguists (Brown, 1958; Skinner, 1957)
(ii) **Lexical Inflection**	by 2nd generation developmental linguists (Radford,1990)
(iii) **Undecomposed**	by neuro-linguists (Clahsen, 1999; Pinker, 1999).

[12] For example, Radford (1990) suggests that 'Lexical' inflections (as opposed to 'Functional' inflections) should be defined as scheme affix morphologies without recourse to the more abstract AGR relation. Functional inflection is triggered only by the appropriate features of the counterpart functional class. For example, 'ing' verbs without the AUX(iliary) 'Be' might be one instance of a lexical inflection whereby the 'ing' may simply mark the semantics [verbal [present action]] (e.g., *Daddy working*).

[13] Extending this, we informally define AGR has a morpho-syntactic mechanism which involves the 'holding' and 'spreading' of a syntactic feature across its relevant phrase (XP), from a lexical-to-functional constituent. Whenever one or more features match between two or more constituents, such as between 'subject-verb agreement', we define that as [+AGR]. AGR may also refer to functional words which enter into an AGR relation on their own basis. By this definition, for example, the possessive prenominal determiner *your* would be [+AGR] since it enters into an AGR relation with a noun. [See §50b].

[14] In fact, recent studies show that the once heralded classical distinction between lexical and functional categories may actually splinter-off along more finely grained computational processes, so that what we find is a two-prong splinter for each category:

Lexical	Functional
(i) AGR-based, (ii) Non-AGR-based	(i) AGR-based, (ii) Non-AGR-based.

While target English may not show an AGR-based lexical category *per se*, due to its morphological typology, e.g., agglutinative languages may show such features - English does however show the functional splinter). It could however be argued that Derivational morphology falls under 'lexicalized AGR', and Inflectional morphology

falls under 'functionalized AGR'[1].

THEORY

[15] Such a functional splinter could manifest as a singular affix form, though showing two different underlying processes: AGR and non-AGR based. In this context, language might be seen as 'degenerative' whereby competing factors may work simultaneously in producing a language result which falls within *a rule-based-to-memory-based* processing spectrum. (I refer to 'degeneracy' as linguistic instances in which seemingly similar surface outputs, i.e., affixes) are the result of differing internal processing). Degeneracy can explain how the functional affix comes to get processed lexically in certain environments. [See fn. 2].

[16] We conclude that what is behind the degeneracy of processing is a rather prosaic distinction having to do with 'Frequency-affective' items on the one hand, and 'Movement-affective' items on the other hand, correlating to our [-AGR] vs. [+AGR] distinction (respectively). This redefined distinction forces a reclassification of what might constitute as functional *per se*, while allowing us to correctly interpret longitudinal case studies of child acquisition (such as the one focused on in this paper) which show a slow, maturational development of 'movement-affective' processes.

[17] This affix splinter would, for example, allow the nominal/plural {s}, the progressive {ing}, as well as past participles {en}, {ed} to split into either AGR-based or Non-AGR-based modes of processing. If this is so, we should find some evidence early-on in child language data demonstrating that what appears to be a functional representational affix is actually a bi-product of 'rote-learned' memory processing.

[18] At the moment, there are still relatively few child case studies of child data recorded early enough to show a maturational development of AGR-related movement analogies. Such an early stage would reveal, among other things, a stage-1 of Non-AGR across the board. The data presented in this paper show such a (non-Inflectional) Non-AGR stage-1.

A BRIEF HISTORY ON THE CLASSIC LEXICAL VS. FUNCTIONAL DISTINCTION

[19] Let us take as our historical starting point the classic Brown (1958) and Braine (1976) studies in forming an analysis of the lexical / functional distinction. Moving

[1] BI studies have shown that the derivation affix {er} in the bi-morpheme word 'teacher' may not be decomposed of a [stem+affix] as compared to, say, tense which decomposes 'teach-es' into [stem+{es}]. In brain studies, the word 'teacher' has been found to carry a signature identical to the word 'brother', a single morpheme item. In addition, whereas L2 students of English often delete rule-based inflectional affixes, they never delete derivational affixes, suggesting that item [stem-affix] remains undecomposed and processed as a single idiomatic chunk. To a certain extent, agglutinative language types may follow this procedure. [See Baker, 2001] for language typologies which use such incorporation of grammar.

beyond the basic word-level classification of **Lexical vs. Functional** (lexical making-up the substantive *Noun, Verb, and Adjective*, functional making-up the more formal *Determiner, Auxiliary*), perhaps the most important tangible result coming out of these early studies was Brown's list of **fourteen grammatical morphemes and their order of acquisition**. The (partial) list is broken down into two parts, with the first part composing of early acquired morphemes which are potentially lexicalized (Brown's stage-2, MLU 2.25):

Lexicalized [stem-only]	Functionalized [stem+ affix]
1. present progressive {ing}	6. possessive {'s}
2-3, prepositions *in, on*	9. past regular {ed}
4. plural {s}	10. 3pers/sing/present {s}
5. past irregulars *went, came*	

[20] The question here is whether or not all of Brown's fourteen morphemes (along with their order of acquisition) should be cast together as inherently signaling the onset of AGR-based morphological representation in children's early speech. Most traditional analyses do suggest that these onsets do signal some kind of an agreement mechanism in grammar whereby rules enter into the computation.

[21] We counter this by suggesting that functional affix-morphemes 6, 9, 10 have a potentially distinct processing signature, say, from that of affix-morphemes 1, 4. While all tend to be equally bunched together as constituents of functional grammar, we believe only morphemes 6, 9, 10, as attested in most child corpora, are unambiguous and signal rule-based AGR.

[22] Let us review some of Brown's data found in list one, starting with plural, and see if there might be evidence of lexicalization. We define 'lexicalization' here as a formation when an otherwise decomposed [stem-affix] processing - as in [verb+ing] - allows the affix {ing} to go undecomposed by incorporating the affix into the stem, having the whole construct be realized as a single [stem-only] structure [verbing].

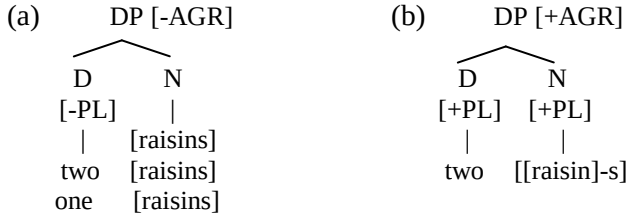
LEXICALIZATION OF AFFIX [STEM-ONLY]

[23] **Plural {s}** The plural {s} - while typically referred to as a functional marker in forming the grammatical rule [Noun+{s}= plural] - may be ambiguous and not necessarily involve AGR-based computation. The plural marker {s} may splinter along the lines of being a semantic / referential marker for number - what Skinner referred to as autoclitic 'mands' and 'tacts' - with little if any recourse to any agreement relation. Such '[-AGR] number' constructs show in the literature - e.g., *two car, two chair, two stick,* and *Microphone is all gone* (Braine, 1976; Brown, 1958) where there is no apparent agreement between the plural determiner (*two*) and the nouns (*car, chair, stick*,). In the latter example, Brown notes that Eve's use of the determiner 'all' is without the AGR number distinction, given that for the adult grammar, 'all' goes after plural count nouns, e.g., *The microphones 'are' all gone*.

[24] Conversely, stage-1 data show seemingly two-word combos where plural {s}

nouns lack AGR relation with Determiner, e.g., *'one' blocks/peas/raisins* (Brown et al., 1983).

[25] While a true AGR-based computation would require the 'number' feature to spread across the phrase, a Non-AGR number feature may register directly onto the stem, e.g., [DP [D *two/one* [N *raisins*]] (Braine, 1976).

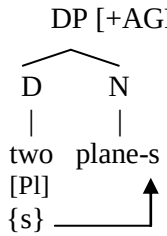


(c) [DP [-AGR {Ø}] [D one/two] [N raisins]]
(d) [DP [+AGR {s}] [D two] [N raisin-s]]

It could be claimed that early determiner system in child English is marked [-AGR].

[26] The plural {s} as shown in the word *raisins* (Braine, 1976) above appears in an overall stage where plural determiners (*more, two*) do not typically agree with the noun - e.g., *More boy, Two plane*. This makes any plural {s} which does surface at this stage potentially ambiguous in nature. The fact that we do get a few examples of the inflectional morpheme {s} showing-up on some nouns such as *raisins/peas/blocks/pockets* suggests that these few nouns might be processed in a **declarative** manner as **idiomatic** stems: viz., they are processed as [stem-only] [*raisins*] and not as [stem-affix] [[*raisin*]-*s*]. It is this same type of declarative processes that enables one to memorize irregular verbs (*went, came*) as [stem-only] constructs, with past tense grammar already incorporated into the verb. Irregulars are also found in the lexicalized portion of Brown's list.

[27] One way to think about all of this is to ask what amount of 'holding' must take place of the 'feature' across the phrase in realizing number. One suggestion might be that all plural markers which directly register on noun stems are not abstract, being rather referential and ostensive in nature. But then how do we identify true AGR-based plurals? Well, we can say that AGR is established when and only when we have evidence that whatever feature involved (in this case the 'number' feature) *holds* and *spreads* across the phrase from Determiner to Noun, e.g.,



In this case, it is the emergence of a number sensitive determiner that tells us that an

AGR relation has been built between D and N, with {s} signaling AGR. In other words, when both emerge simultaneously, we can except as the null hypothesis that AGR has been established This was not the case in the early MLU $\leq$ 2.5 stage.

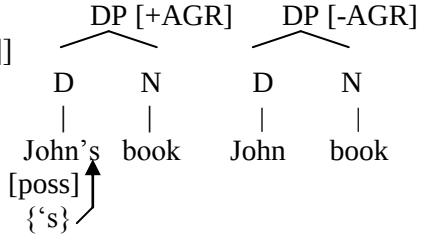
[28] However, what we can claim about this early emergence of the determiner system is that determiners are correctly used in the grammar, i.e., determiners introduce a noun, e.g., '*@Two the book'* is unattested. While the syntactic organization may indeed be correct (although the linear ordering may be only phonologically based), the determiner itself would be viewed as void of any AGR-material.

[29] Regarding the DP, there is a dual way of telling whether or not AGR has been established: Firstly, in examples where there is the determiner (*two*) but not the plural {*s*}, what we can say is that no AGR has been established and the determiner *two* is empty of its AGR properties. In other words, the determiner gets generated as an empty phonological shell. Secondly, if the plural {s} does indeed surface with a non-matching determiner, e.g., *one raisins*, or surfaces at a stage where there is no further evidence of the emergence of functional categories, what we can then suggest is that the {s} has lexicalized and has become part of the stem. The /s/ gets realized much in the same manner as the /s/ in the word *dance* /dæns/ as cited in our Sally Exp. It becomes part of the stem.

[30] An interesting side note here is that foreign language students often report having little difficulty with processing plural {s} on semantically rich nouns, e.g., *book vs. book-s, car vs. car-s,* etc., but complain of difficulty (and often produce {s} deletion) with more abstract nouns, e.g., *motivation-s, impression-s,* etc..

[31] This same treatment of AGR 'feature spreading' extents to possessive {'s} formations:

(a) [DP [-AGR] [D John] [N book]]
(b) [DP [+AGR {'s}] [D John's] [N book]]



Possessive utterances like 'Mummy car' are fully attested in Brown's stage-1 data.

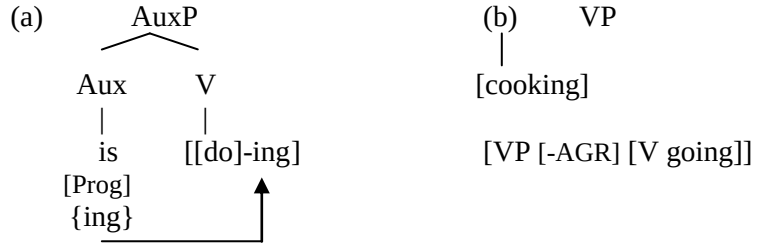
VERBS WITH {ING}

[32] Let us begin by saying that 'ing' verb forms have only one allomorph, are highly regular and constitute a very high frequency in the input—(they model after irregular verbs as well as the special case of the **high frequency** regular verb e.g., [walk] → [walked], where the {ed} affix in such high freq. items don't prime for the stem (as opposed to the low frequency item 'stalk-ed' which does prime the stem ['stalk']

(Alegre, Gordon, & Baker, 2006).

[33] Thus, similar to irregular verbs (*went, bring*), 'ing'-verbs don't signature a priming effect. Early stage-1 onsets of the present progressive {ing} can thus be attributed to frequency effects found in the input and may not be a product of an AGR formation [Be+Verb+{ing}]. Note that a true AGR–based {ing} would be **triggered** as part of the auxiliary rule. Note, the AUX 'Be' typically doesn't emerge until late in MLU 3.5, a classified functional stage of development, e.g., *What daddy doing? Mommy cooking*, etc. (Brown, 1958; Radford, 1990).

[34] This suggests that early MLU [verb+ing] is idiomatic and rote-learned, as made apparent by frequency of 'ing-verbs' found in the input. The same children at this lexical stage seem to incorrectly analyze 'ing-verbs' as roots and therefore often fail to produce the counterparts *Daddy do, Mommy cook*, etc. (In fact, 'ing-verbs' occur much more frequently in the input as compared to bare verb stems).



[AuxP [+AGR {ing}] [Aux is] [VP do-ing]]

Another term for 'feature spreading is 'affix hoping'.

PAST PARTICIPLE {ED} {EN}

[35] Similar to our findings regarding 'ing' verbs, likewise early onsets of the past participles {ed}, and {en} can be attributed to frequency affects found in the input and may not be a product of a rule formation, such as the perfect rule [Have+Verb+{ed}/{en}]. Again, note that a true AGR - based {ed/en} would form as part of the auxiliary rule. The auxiliary 'Have' is typically missing at the earliest lexical stage of these formations, e.g., *Daddy all gone?*

FUNCTIONALIZATION

[36] We believe that it is only with the onset of morphemes 6-10 of the Brown list that we can provide evidence for **procedural**, rule-based functionalization. One way to think about the differences here is to examine the role of frequency within the respective paradigm. For instance, 'ing-verbs' (*walking*) and 'bare stems' (*walk*) enter into the child's morphological paradigm as potentially competing forces since both forms approach equilibrium in sharing a common semantic field, as determined by the input. Children commonly misread the two forms as involving the same semantics as well as the same morpho-syntax. This makes both forms linguistically ambiguous.

In fact, 'ing-verbs' hold a higher frequency count over bare verb stems). The same equilibrium does not seem to hold however for the noun+possessive {'s} [stem+affix] and the bare proper-noun stem [stem-only] - where the frequency and distribution of e.g. [[*John's*] *book*] and [[*John*] *book*] would not share a common semantic field, nor rest in competition with one another. Based on this, the attested possessive {'s} exclusively found at a latter stage of development is indeed the result of a true rule-formation.

[37] Using the same criterion, present and past tense inflectional morphology {s} and {ed} respectively do not enter into a frequency based competition and are thus purely of a rule-based formation[2].

[38] **Verbal {s}** The verbal 3Per/sing/present {s} on the other hand is both morpho-phonetic (the sound /s/) and morpho-syntactic (crossing word boundaries) due to this holding and spreading across the phrase. Hence, the verbal {s} is a quintessential AGR-based affix.

[39] Consider this AGR-based processing showing agreement between two constituents across the phrase, i.e., subject-verb agreement:

(a) *John* *smoke-s*

[-PL] subj [-PL] verb

AuxP

Aux V

[3P, sg, pres] |

{s} smoke-s

The AGR mechanism results in the affix {s} being spread over the phrase. Broca's area is activated in such spreading. It is believed that this extra processing load of AGR 'holding' and 'spreading' triggers Broca's activation (Grodzinsky, 2007).

Consider a longer AGR spread:

(b) John—who doesn't care much about his health—smoke-s.

[-PL] subj [-PL] verb

INTERMEDIATE SUMMARY: INFLECTION

[40] The computational system responsible for inflection in morphology utilizes dual **declarative** and **procedural** routings, the former dealing with memory–based word

[2] See the Alegre, Gordon, & Baker (2006) study showing possible {ed} as declaratively processed, based on frequency. For instance, they claim that a frequency paradigm can be created whereby two otherwise phonetically similar verbs *walked* and *stalked* get processed differently as dependent upon frequency differences, with the former *walked* holding a much higher frequency count and thus potentially formed idiomatically as a [stem-only] lexical item - viz., [*walked*] as compared to [[*stalk*] *ed*].

formations having to do with [stem-only] undecomposed constructs, and the latter with agreement-based [stem-affix] decomposed constructs. It has been suggested that the level of frequency a construct holds (a 'frequency effect') helps to determine the processing route involved. Based on this newly defined frequency effect, it may no longer be entirely accurate to rely solely on the long-held view that distinctions should be drawn between classic lexical vs. functional categories, as was indicative of earlier approaches which sought the categorize child speech into a lexical stage-1 and a functional stage-2. A computational line of reasoning requires a finer-grained analysis. By looking at early child speech, as well as recent brain imagining studies, we conclude that this dual computational process separates in young children's developmental morphology whereby a maturational lag exists between the two stages.

[41] We conclude with three basic points:

1. That children pass through an initial Non-AGR stage-1 of speech development whereby they omit all AGR related functional / affix material. Such a stage may or may not contain affix forms, however. If affix forms do surface at this stage, we claim that they are instances of non-AGR idiomatic constructions.

2. That what had been traditionally a 'clean-cut' between lexical and functional categories now may collapse quite differently when refashioned in BI terms. This new BI perspective pulls distinctions away from the classic linguistic categorization of lexical vs. functional *per se*, and turns to examining the role of Declarative vs. Procedural brain routing in morphological word formation, as evidenced in recent BI studies. To a certain extent, this leads to a tension between traditional morpho-syntactic theory, on the one hand, and recent discoveries made in Neuro-Linguistics, on the other hand - throwing the classic lexical/functional 'cut' into potential dispute. Evidence of the sort comes from BI studies which show that lexical items can at times be 'functionalized', as in **over-regularization** of [stem+affix], e.g., *[[*bring*]-*ed*], *[[*draw*]-*ed*] (Brown & Bellugi, 1964; Grozinsky, Marcus, et al., 2007), and functional items can at times be 'lexicalized', **idiomaticity** of [stem+affix] into [stem-only], e.g., *[*raisins*] (Braine), *[*walked*] (Alegre and Gordon, Pinker, 2001; Ullman, 1979). This 'cross-over' effect parallels distinctions between Declarative vs. Procedural processing, triggering activity in according areas of the brain respectively. In fact, it is precisely this kind of tension that has promoted the now widely accepted view that inflectional morphology is quite different from derivational morphology, notwithstanding the fact that both are singularly defined as a morphological process.

3. It is hypothesized that brain maturation in children affects language processing whereby the latter onset of (pre-frontal-left-anterior) 'functional / affix' procedural activity lags slightly behind the early onset of declarative 'lexical / idiom' (temporal lobe) activity.

DATA. THE LACK OF FUNCTIONAL AGREEMENT AT STAGE-1 OF CHILD LANGUAGE ACQUISITION: A NON-AGR STAGE

[42] Two-and three-year-old children generally go through a stage during which they sporadically omit possessive *'s*, so alternating between saying, e.g., *Daddy's car* and *Daddy car*. At roughly the same age, children also go through a stage referred to by

Wexler (1994) as the **optional infinitives** stage, during which they sporadically omit the third person singular present tense *+s* inflection on verbs, so alternating between, e.g., *Daddy wants one* and *Daddy want one*. The question addressed here is whether children's sporadic omission of possessive *'s* is related to their sporadic omission of third person singular present tense *s* - and if so, how. Furthermore, by extension, we suggest the proposed relation is implicated in the maturational progression between **under-specification** in the child's grammar, leading to optional AGR projection (at stage-2), and the **un-specification** leading to exclusive omission of AGR (at stage-1).

[43] OCCURRENCE IN OBLIGATORY CONTEXTS

AGE	3sgPres *s*	Poss *'s*
2;3-3;1	0/69	0/118
3;2-3;6	72/168	14/60

[44] (a) That *Mommy* car (2;6). No *Daddy* plane (2;8).Where *Daddy* car? (3;0).
(b) *Daddy's* turn (3;2). It's the *man's* paper (3;4). It's *big boy Nicolas's*.

[45] (a) Baby *have* bottle (2;8). No Daddy *have* Babar (2;9). The car *go*. (2;11).

(b) Yes, this *works*. This car *works*. It *hurts.* The leg *hurts*. (3;4).

[46] The data suggest a parallel between the acquisition of third person singular *+s* and possessive *'s*, and raise the obvious question of why there should be such a parallel. Both possessive *'s* and third person singular *s* are reflexes of the same functional AGR relation - the former being of a nominal AGR, the latter being of a verbal AGR. (The notation 'IP' refers to Inflectional Phrase).

[47] (a) [$_{IP}$ Mommy-'*s* [+agr {'s}] driv-*ing*] (= Mommy is driving)
(b) [$_{IP}$ Mommy [+agr {s}] drive-*s*] (= Mommy drives)

[48] In much the same way, we might suggest that possessive structures like *Mommy's car* contain an IP [+AGR] projection, whereas non-inflectional *s*-less possessives like *Mommy car* contain an IP [-AGR] projection which is non-specified with respect to agreement:

[49] (a) [$_{IP}$ Mommy-'s [+agr {'s}] car] (= Mommy's car (possessive))
(b) [$_{IP}$ Mommy [-agr {ø}] car]

Consider English as having the following Case system:

[50] An overt (pro)nominal is:

(a) nominative if in an AGR relation with a verb
(b) possessive if in an AGR relation with a noun
(c) objective otherwise (by default) (e.g., *'me'* subjects).

[51] If we assume that two and three-year old children go through a stage during which AGR is optionally underspecified with respect to the features they encode, we can provide a straightforward account of why two-and three-year olds alternate between forms like *I'm playing* and *Me playing*. The two types of clause would have the respective (partial) structures (44a/b) below:

[52] (a) [$_{IP}$ I'm [+agr {'m}] playing]

(b) [$_{IP}$ Me [-agr ø] playing]

[53] Since IP is fully specified for AGR in (44a), the overt auxiliary *'m* is used, and the subject is nominative by (42a). But since IP is underspecified with respect to AGR in (44b), it remains null and has a default objective subject by (42c). If possessive nominals contain an IP that may either be fully specified or underspecified for AGR, we would expect to find a similar alternation between nominal structures like (46a) below with genitive possessors and those like (46b) with objective possessors:

[54] (a) [$_{IP}$ My [+agr ø] dolly]

(b) [$_{IP}$ Me [$_{I}$ -agr ø] dolly]

[55] In (54a), IP is fully specified for AGR with its possessor-specifier and so the possessor has (genitive) possessive case by (50b); but in (54b), IP is underspecified for agreement, and so its possessor-specifier has objective case by (50c). In both structures, IP is null because *'s* is used only where the specifier is proper noun, third person).

OTHER AGREEMENT DATA

[56] Frequency of occurrence of first person singular possessors

AGE	OBJECTIVE ME	POSSESSIVE MY/MINE
2;6-2;8	53/55	2/55
2;9	11/25	14/25
2;10	4/14	10/14
2;11	5/24	19/24
3;0	4/54	50/54
3;1-3;6	6/231	225/231

Examples of first person/sing possessive structures produced by the child are given below:

[57] (a) That *me* car. Have *me* shoe. Where *me* car? I want *me* car. (2;6-2;8).
(b) I want *me* duck. That *me* chair. Where *me* Q-car? No *me*, daddy (= It isn't mine, Daddy). *Me* pasta. *Mine* pasta. *My* pasta. In *my* key.
(c) It is *my* TV. Where is *my* book? Where is *my* baseball? Don't touch *my bike*

[58] Frequency of *I/me* subjects in copular sentences

AGE	NOMINATIVE I	OBJECTIVE ME
2;6-2;8	10/14	4/14
2;9	15/19	4/19
2;10-3;0	51/55	4/55
3;1-3;6	105/111	4/111

[59] (a) $[_{IP}$ I'm $[_{I}$ +agr {'m}] sick]
(b) $[_{IP}$ Me $[_{I}$ -agr {ø}] wet]

[60] **Frequency of second person possessors**

AGE	YOU	YOUR
3;2-3;4	14/16	2/16
3;5	7/34	27/34
3;6	2/29	27/29

[61] (a) No *you* train. (=It's not your train). No it's *you* train, no (idem).
(b)That's *your* car. Close *your* eyes. No it's *you* house. Where's *your* friend? (3;4)

[62] (a) $[_{IP}$ your [+agr {ø}] car]
(b) $[_{IP}$ you [-agr ø] car]

Third person singular subjects produced at 3;6 are illustrated below:

[63] (a) Him is alright. Him is my friend.
Him is a big woof-woof. Him is hiding. What's him doing?
Where's him going? Where's him?
(c) He's happy. He's bad. He is a bad boy. He's in there.
(d) He happy. He a elephant.

THE EMERGING VIEW AS SEEN VIA ADVANCES IN BRAIN IMAGING TECHNOLOGY

[64] Any linguistic theory which embraces a brain-basis of language must not only attempt to reconcile but also begin to incorporate those recent insights made in BI studies which other go against the grain of more traditional norms of theory. It's only natural that a tension has emerged between the two approaches. Recent language based BI studies using fMRI and ERP have forced us into considering new ways of thinking about old issues. The once heralded Lexical / Functional cut may perhaps be better understood within this new framework of brain computation. I see much that can be gained by this new perspective on lexical vs. functional processing. Other BI implications, as I see it, involve how linguists understand and classify language typology in general. Implications to child language development are enormous.

CONCLUSION

[65] This paper represents an early attempt to discern what we are beginning to learn from brain imaging studies and to apply the findings to current linguistic theory. These new applications challenge linguists into new ways of thinking about old paradigms. While the data presented herein support traditional claims that children begin their speech development without AGR, attempts are made to highlight what might be behind such a delay. Questions as to whether or not a 'Non-AGR' stage-1 is due to brain maturation as specific to a delay of neuro-connectivity in Broca's area are still open. But it seems to me the biological null hypothesis calls for some form of maturation behind the delay. Nonetheless, in theoretical terms, the data suggest there to be an interesting symmetry between the development of subject+verb structures on the one hand and possessor+noun structures on the other. Both considered AGR-based formations. Likewise, Case as determined by AGR also shows delay. The overall data show a stage characterized by the use of objective possessors/subjects and the omission of possessive *'s* and third person singular *s*.

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