

Filler + Infinitive and Pre- and Protomorphology Demarcation in a French Acquisition Corpus

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This paper presents a case study on the acquisition of grammatical morphemes via fillers, i.e., underspecified place holders, with particular focus on early structures made up of a filler followed by an infinitive. The path leading from fillers to French semi-auxiliaries and subject clitics is analyzed within the framework of Natural Morphology and constructivism which assumes that grammatical modules are not innate but are constructed by children. The evolution of fillers in the corpus studied is described as a grammaticization process of form and meaning through successive linguistic dissociations. Emphasis is put on the functional polyvalence of fillers and on their relation to the main phases in the construction of grammar.

KEY WORDS: acquisition; filler; grammaticization; pre- and protomorphology.

1. INTRODUCTION

1.1. Scope of the Study

The relation between fillers and the development of grammatical morphemes has now been widely recognized in the acquisition literature. As a type of strategy to approach acquisition problems, fillers are means of replacing mainly unanalyzable grammatical material of adult speech, such as articles, determiners, clitics, auxiliaries, and other function words (for “lexical” fillers

The first author is grateful to the mother of Sophie, the child of our corpus, for her collaboration. Thank you to Aris Xanthos and Marc Xicoira for their help in coding the data and to the University of Lausanne for financial support.

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see 3.1, for fillers replacing monosyllabic predicates see Kilani-Schoch *et al.*, 1997; Vollmann, 1997).

From the names that have been given to these segments, e.g., monosyllabic place holders (MPH, cf. Bottari *et al.*, 1993/1994), filler syllables (Peters & Menn, 1993), additional elements (Veneziano & Sinclair, 2000), one can infer that they usually do not exceed one syllable and consist most frequently in an unstressed vowel, and more rarely in a consonant (Grégoire, 1937; Peters & Menn, 1993; Peters, 1996) or in a consonant followed by a vowel (Lopez-Ornat, 1997; Peters, 1996; Peters & Menn, 1993; Vollmann, 1997).

Fillers generally occupy slots in prosodic structures and cannot be derived from adult forms through phonological processes. All authors agree on the role and importance of the positional properties of the linguistic structure in explaining the development of fillers (e.g., Bottari *et al.*, 1993/1994, p. 329; “positional approach” of Peters, 1996, p. 1; crosslinguistic extensions have been given by Peters, 1996, pp. 163–166, 184f). However, what remains unanswered and controversial is the kind of grammatical knowledge implied by the use of fillers. Two main positions can be distinguished:

A first position arguing for “phonology first, morphology later” (Peters & Menn, 1993, p. 743) is assumed by Peters & Menn (1993) on the one hand and Veneziano & Sinclair (2000) and Veneziano (1999) on the other. More specifically, for Peters & Menn (1993), fillers correspond to a general formulaic strategy in acquisition, i.e., filler children rely first on prosodic and phonological structure to reproduce and build grammatical morphemes. The development of grammatical morphemes makes use of “phonological toe-holds” (p. 746), i.e., it starts with a phonological representation of morphemes sensitive to prosodic positions in the sentence.

In their hypothesis of surface sonorics properties in early fillers Veneziano & Sinclair (2000) concentrate on the role of segments: They describe how the child’s abstraction and generalization of the most frequent vocalic sounds preceding nouns (p. 26) leads to an incipient grammatically-based organization (p. 37).

A different position is held by Bottari *et al.*, (1993; 1993/1994), who defend a syntactic point of view on fillers and assume that they are morphophonologically underspecified functional heads that mark the syntactic positions of the corresponding real morphemes (p. 328, 343). In other words, these authors claim that the production of fillers demonstrates “an acquired consciousness of some properties of the underlying structural configurations of linguistic strings” (p. 328). In short, (proto)syntax first, morphology later.

In this paper we present a case study on the emergence of several French grammatical morphemes from fillers. It is one of the first fine-grained investigations which, in contrast to previous studies, deals with both prenominal and preverbal fillers. We will provide an in-depth analysis of the processes of grammaticization of fillers in their complexities of both form (phonetics,

distribution) and meaning, and take a new step in linking these processes to the child's phonological, morphological, and syntactic developments (see 2.). Fillers thus represent a keystone in a theoretical model of the pre- and protomorphological phases of language acquisition. To conceive of fillers as protomorphemes (e.g., Peters & Menn, 1993) oversimplifies their changing roles.

Our study is also the first to show the significant contribution of the structure Filler + Infinitive to an understanding of the changing roles played by fillers in the construction of grammar. It reveals the importance of their functional polyvalence as an instance of the much-neglected relevance of functional polyvalence as a factor in language development.

1.2. Theoretical Framework: Natural Morphology and Constructivism

Our theoretical framework consists in the integration of Natural Morphology (NM) and constructivism (see Dressler & Karpf, 1995).

1.2.1. Natural Morphology

Natural Morphology (see Dressler *et al.*, 1987; Kilani-Schoch, 1988; Dressler & Karpf, 1995) is a functionalist theory (Dressler, 1995) meant to account for what is, among morphological options, more natural or preferred. This is achieved on three levels: universal preferences, typological adequacy, and language-specific system adequacy. We will discuss only those aspects relevant to the present paper.

The level of universal preferences (accounted for by the first subtheory of NM) is most important at the beginning of language acquisition. On this level, degrees of naturalness are parameterized.

For example, on the parameter of iconicity, extragrammatical¹ (see 2.1.) reduplications of the type English *zig-zag* are more iconic than grammatical reduplications of the type Latin *te-tig-i* "I touched," perfect of *tang-o* "I'm touching": Iterativity of meaning (i.e., iterated change of direction) is iconically signalled by iterativity of form in *zig-zag*, whereas there is no meaning of iteration in the Latin perfect. Moreover, the iconic technique of reduplication concerns two consonants (*z*, *g*) in *zig-zag*, but only one (*t*) in *te-tig-i*. However, reduplication is still one several grammatical means (e.g., affixation, vowel lengthening) of iconically signalling the marked perfect category in contrast to the unmarked present (cf. 5.3). Many children construct the most iconic type of extragrammatical reduplication, e.g., Sophie (cf. 1.3): 1;8.22 *nia nia* or 1;9.13 *nan nan* for *mniam mniam* "X is eating." Of the other universal preference parameters we mention only two: (1) the preference for

¹ Extragrammatical operations resemble morphological rules but violate some principle of morphological grammar, e.g., blends (e.g., *smog* ← *smoke* & *fog*), backformations (e.g., *to edit* ← *editor*), echo-word formation (e.g., *zig-zag*), and similar reduplications.

biuniqueness, i.e. for expressing one meaning by just one form and by assigning just one meaning to one form (cf. 4.2), and (2) the preference for a word (including an inflected form of a word) to correspond to just one prosodic foot, e.g., French *il aime* “he loves” to one rising bisyllabic (= iambic) foot consisting of one unstressed clitic and one stressed lexical word (cf. 4.3).

In this paper we will not deal with the second subtheory of NM which accounts for typological adequacy. The third subtheory of NM deals with language-specific system adequacy of morphological grammar. Its core are the productive categories, patterns, and rules. System adequacy may filter and thus curb the impact of universal preferences considerably, as is the case with Latin reduplicative perfect formation mentioned previously.

1.2.2. Constructivism

We assume that internal grammatical modules are not innate but are constructed by children according to an active interplay between general predispositions and input stimuli. To assume truly encapsulated grammatical modules (see Grodzinsky 1990) represents a very strong hypothesis. Our approach holds equally for the weaker hypothesis of relatively autonomous components (Karmiloff-Smith, 1992; Maturana & Varela, 1979).

Before children have achieved construction of the nucleus of a morphological module, to which extragrammatical operations of expressive morphology do not belong, at least two important phases of acquisition are distinguished: the premorphological (cf. 1.2.3) and the protomorphological phase (cf. 1.2.4) (see the International Crosslinguistic Project on Pre- and Protomorphology in Early Language Acquisition, as documented in Dressler, 1997; Dziubalska-Kolaczyk, 1997; Gillis 1998).

1.2.3. Premorphology

The premorphological phase is defined as the phase with no system of grammatical morphology dissociated from a general cognitive system. Morphological operations occur (both extragrammatical ones which are predicted to abound, and precursors of later grammatical rules) but no system of grammatical morphology has yet become dissociated, i.e., pre- and at least early protomorphology are part of the lexicon. Also, in premorphology (as well as in protomorphology), segmental and prosodic phonology are not clearly distinguished from morphology because dissociation has not yet been achieved.

When this “protolexicon” becomes not just larger but also more complex and diversified in its properties, generalizations to be drawn about operations within this increasing heterogeneous lexicon start to cluster according to emerging similarities. It becomes more efficient to dissociate clusters into separate subsystems, which induces the child to construct a system of grammar, and finally subsystems of syntax and morphology.

1.2.4. Protomorphology

This initiates the next phase of morphology acquisition, the protomorphological phase, which can be defined as the period where the system of morphological grammar and of its subsystems starts to develop without reaching the status of modules (components) or submodules (subcomponents) (see Dressler 1997; Dressler & Karpf 1995). In this period, the child sets out to construct creatively morphological patterns, albeit more according to analogical pattern formation than to rule-governed creativity. Overgeneralizations are expected to occur, as well as interindividual variation among children.

The lack of morphological grammar in pre- and protomorphology proves to be extremely dysfunctional when the child is in growing need of a rapid expansion of its lexical inventory and when (in many languages) expanding syntax needs morphological marking of syntactic categories. In order to handle the increasing morphological complexity, a system of morphology dissociates.

1.2.5. Modularized Morphology

In contrast to pre- and protomorphology, modularized morphology represents a reduced version of adult morphology. It contains the nucleus of mature morphological grammar, in both meaning and form. Thus, the subsystems of verb and noun inflection are well distinguished, which implies a clear morphological distinction between noun and verb (in those languages which have such a clear distinction), and most of the productive morphological categories of the respective language have been acquired, including their prototypical meanings (e.g., of French or English tense and aspect distinctions, or of the semantic meaning of smallness of diminutives, as opposed to earlier pragmatic meanings, as in English *dogg-ie*). Submodularization into the submodules of inflection, derivational morphology, and compounding has at least been initiated.

1.2.6. Preview

In this paper we emphasize the grammaticization process of fillers in connection with the pre- and protomorphological development. The question as to what extent fillers can be relevant for the demarcation between pre- and protomorphology will also be raised. Productions of fillers are precursors of later rules whose outputs may occur in all three phases of pre-, proto-, and modularized morphology. They are not constitutive of developmental phases—they do not initiate them—but they nevertheless follow the changes that occur in the grammar. To that extent, they may be (secondary) indicators of phases.

The paper is divided into two parts. The first sketches the descriptive background of the study, which is essential to the understanding of the grammaticization processes, particularly the division into pre-, proto-, and morphological phases. These phases are considered from three different perspectives: starting with general morphological and syntactic characteristics (2.1, 2.2, 2.3), we will

next consider main phonological aspects (2.4), and eventually deal with general filler patterns (3). The second and central part of the paper focuses on early structures consisting in a filler followed by an infinitive, and is a detailed analysis of the functional polyvalence of these fillers in the construction of grammar.

1.3. The Corpus

Although several children of the Pre- & Protomorphology Project are filler children (Christofidou & Kappa, 1998; Kilani-Schoch *et al.*, 1997), here we limit ourselves to the French data of Sophie (Kilani-Schoch, 1997, 1998). Further research will be devoted to indepth crosslinguistic comparison and typological generalizations.

Sophie, born in Lausanne, Switzerland, has been recorded at home every 10 days between 1;6.14 (year;month.day) and 3;8.0 (55 recordings, 25 hours) by her mother in situations of play and while looking at picture books. Transcription and coding have been done according to CHILDES and quantitative analyses according to CLAN programs.

2. PRE-, PROTO- AND MODULARIZED MORPHOLOGY IN THE CORPUS

The three phases of pre-, proto-, and modularized morphology correspond to the following time periods of the corpus:

Premorphology:	1;6.14–1;10.4
Protomorphology:	1;11.19–2;1.18
Modularized Morphology	2;4.22–

Transition subphases separate the three main phases.

2.1. Premorphology (1;6.14–1;10.4)

No system of grammatical morphology.
Syntax:
– predominance of one-word utterances; – by the end of the phase increase of 2-word utterances: 21 (10 utterance-types)/270 utterances at 1;9.13 = 8% > 31 (22 utterance-types)/208 utterances at 1;9.22 = 15% of the utterances;
Verbs:
– low number of verbs: 53 types/213 tokens = 8.22% of the word-forms (word-like elements included) ² ,

² On the composition of the early lexicon in French, see Bassano *et al.*, 1998; Veneziano, 1999.

<ul style="list-style-type: none"> – categories: present indicative third singular, infinitive (15/56), imperative (8/26), past participles (5/19), and later on periphrastic futures (6/6); – inflected word-forms: rote-learned (see MacWhinney, 1978), e.g., 1;8.22/1;9.13 past participle /tate/ for <i>cassé/kase/</i>, broken; – at most two different forms per verb (lemmas <i>laver</i>, wash; <i>chercher</i>, hide; <i>chercher</i>, look for; <i>casser</i>, break); – no (mini-)paradigm, i.e. no morphosemantic and morphotactic relation between verb-forms (Kilani-Schoch & Dressler, in press);
Extragrammatical morphology:
<ul style="list-style-type: none"> – onomatopoeic formations (7 types/73 tokens/2080 word-forms), e.g., (1;6 onward) <i>poum</i>, <i>boum</i>, etc., to fall, <i>nia nia</i>, <i>nan nan</i>, <i>miam</i>, etc., to eat (cf. 1.2.1), (1;7 onwards) elephant, <i>papam</i> – after 1;10.4 replacement by verb forms: 2 types/9 tokens of onomatopoeic formations at 1;9.22 > 2/3 at 1;10.4 > 1/2 at 1;10.16 > 0 at 1;10.27, e.g., <i>poum</i> becomes <i>tombé/est tombé/ε tōbe/</i> has fallen;

2.2. Protomorphology (1;11.19–2;1.18)

Start of morphological activity.
Strong relation between syntactic and morphological development.
Syntax:
<ul style="list-style-type: none"> – Two-word-utterance spurt: 9/40 at 1;11.7 > 29/61 at 1;11.19 = almost 50% of the utterances with verb (total number of utterances: 135 at 1;11.7 and 213 at 1;11.19); – development of noun phrase: indefinite sg. masc. <i>un</i> frequent, i.e., one isolated occurrence at 1;11.7 > 9.8% of the prenominal positions (5/51) at 1;11.19 > 14.6% (13/89) at 2;0; – first step toward a full-fledged verb phrase: appearance of subject pronouns (frequent in modularized morphology, at 2;5: 25% of preverbal positions);
Verbs:
<ul style="list-style-type: none"> – Increase in the number of verb-forms: end of 1;11: 10.8% of word-tokens 2;0: 14.8% 2;1: 14.3% – categories: decrease of bare past participles (without auxiliaries), 10.2% of verb forms (4 types/11 tokens/108 verb forms) in transition to protomorphology >2.6% (9 types/12 tokens/461 verb forms) in protomorphology, replaced by compound past forms (auxiliary + past participle): 16 types/39 tokens;

- first mini-paradigms³ up to 3 forms, e.g. at 2;0.22 infinitive *mettre*, put, present indicative 3rd sg *mets*, puts, compound past third sg *a mis*, has put;

2.3. Modularized Morphology (2;4.22-)

Dissociation of the morphological system from syntax and lexicon.
Syntax:
<ul style="list-style-type: none"> – enrichment of syntax: subordinate sentences, frequent and various infinitive complement clauses with correct prepositions, three-argument-clauses, coordination, e.g., at 2;5 <i>ava chercher a petite assiette li a bavette et a cuillère pour manger</i> for <i>je vais chercher la petite assiette et la bavette et la cuillère pour manger</i>, “I will get the little plate and the bib and the spoon to eat.”
Verbs:
<ul style="list-style-type: none"> – average number of verb-forms: 19% of word-tokens (2;5); – sharp and continuing increase of new inflectional categories, e.g., first singular (2;5.3), verb plural (2;4.22 onwards, see Kilani-Schoch 1998), imperfect (2;5.14 onwards), simple future (2;8), etc.; – productivity of inflectional categories, e.g., periphrastic future: 2 at 2;4.12 (end of transition to modularized morphology) > 30/177 verb forms at 2;4.22 > 31/147 verb forms at 2;5.3 (see Table VII); – increase of mini-paradigms of 3 or 4 forms: 12 between 2;4.22 and the end of 2;5 (examples with homophonous forms, e.g., infinitives and past participles in /e/ excluded); total number of all mini-paradigms: 38 types.

2.4. Phonology

Because fillers must be distinguished from purely phonological processes, a short summary of the phonology of Sophie, with special emphasis on vowels, is presented here.

2.4.1. Phonological Aspects of Premorphology

In the premorphology phase the only consonants not yet acquired are the back voiced consonants /ʒ/, /g/ (plus the marginal phoneme /ŋ/, and /r/, which appears only in the final position. Many substitutions, e.g., fronting, fricatives

³ We define the first “true” mini-paradigms as nonisolated sets of minimally 3 accurate and distinct inflectional forms of the same verbal lexeme produced spontaneously in contrasting contexts.

→ occlusives, labialization, voicing, denasalization, $r \rightarrow l$ and gliding, apply to these phonemes and several of them exemplify distant consonant harmony.

The inventory of vowels has been completely acquired within premorphology, i.e., by 1;8.22, when the high vowels (/i/, /y/, /u/) become more frequent and well-differentiated, e.g., 1;8.22 /tatin/ for *coquine* /kɔkin/ “mischievous,” /taty/ for *tortue* /tɔrtɥ/ “turtle,” /tatuʃ/ for *chatouille* /ʃatuʃ/ “tickles.” In the initial position, however, also due to the limited lexicon, there are only /a, e, ɛ, ɔ, ə/, whereas /ã/ and /õ/ occur in this position at the end of premorphology. The main optional substitution processes of vowels are:

denasalization e.g., $\tilde{\epsilon} \rightarrow a$, $\tilde{a} \rightarrow a$, $\tilde{o} \rightarrow o$

1;6.14 /ba/ for *bain* /bɛ̃/ “bath,” 1;7.5 /atɔ/ for *encore* /ãkɔr/ “still,” 1;7.5 /abo/ for *(c')est bon* / ɛbɔ̃/ “(this) is good”;

lowering, e.g., $\text{ɔ}/o$, $\text{ɛ}/e \rightarrow a$, $i \rightarrow \text{ɛ}$

1;8.12 /dar/ for *dort* /dɔr/ “sleeps,” 1;8.22 /papã/ for *serpent* /sɛrpã/ “snake,” 1;9.13 /tɛtɛt/ for *tic-tac* /tiktak/ “tick-tock”;

depalatalization, e.g., $\text{ø} \rightarrow o$, $\text{œ} \rightarrow \text{ɔ}$

1;7.5 /ado/ for *(il y en) a deux* /adø/ “(there are) two,” 1;7.26 /tatɔr/ for *tracteur* /traktœr/ “tractor.”

Many examples are also instances of distant vowel harmony.

Denasalization and lowering are persistent processes that still occur in modularized morphology (e.g., 2;4.22 /patalõ/ for *pantalon* /pãtalõ/ “trousers,” 2;5.3 /daʒa/ for *déjà* /deʒa/ “already”). Notice that there is no general centralization process substituting other vowels with schwa. Hence, the filler schwa (cf. 3.1) cannot have such a phonological motivation.

Deletions concern primarily consonant clusters, which are simplified until the very end of the registrations, e.g., 1;8.12 /ki/ for *tigre* /tigr/ “tiger,” 1;9.2 /ɔpɔpɔ/ for *pantoufle* /pãtufl/ “slipper,” 1;9.13 /adi/ for *Mowgli* /mogli/. Consonant-glide sequences are simplified as well: 1;9.2 /bar/ for *poire* /pwar/ “pear,” 1;9.2 /pe/ for *pied* /pje/ “foot,” 1;9.13 /ɔwar/ for *au revoir* /ɔrvwar/ “good bye.”

Deletions are particularly frequent with /l/ and /r/ in every position in early premorphology, and later on with a preference for the initial position, e.g., 1;6.14 *est* /dy/ for *dur* /dyr/ “is hard,” 1;7.15 /iɛa/ for *il est là* /ilɛla/ “he is here,” 1;8.22 /aba/ for *là-bas* /laba/ “there,” 1;9.13 /edade/ for *regarder* /rɛgarde/ “look at.” Other often truncated consonants are: (initial) /v/ 1;9.22 /jɛ̃/ “come” for *viens* /vjɛ̃/ (also /ənir/ for /vənir/ and variants from 2;0.10 and on), and /s/ e.g., 1;8.12 /ɛpa/ for *sais pas* /sɛpa/ “do not know.”

The deletions of word-initial consonants and of word-initial syllables and the insertion of fillers (cf. 3) contribute to a preference for a word-structure VCV(C), combined with a preference for binary, iambic feet (cf. 3.3, 4.2, 4.3). This explains forms such as 1;7.15 /ətɔ/ for *cochon* /kɔʃɔ̃/ “pig,” /asɔ̃/ for *maison* /mɛzɔ̃/ “house,” and 1;9.22 /ade/ for *gronder* /grɔ̃de/ “scold.” Ternary feet become frequent only later.

Phonological Aspects of Protomorphology (1;11.19–2;1.18)

Before the end of protomorphology, the inventory of consonants has been completed.

Deletions still affect some of the consonants but occur primarily with initial consonants (or syllables of polysyllabic words), and several word tokens become vowel-initial⁴: e.g., 1;11.19 /apɛ̃/ for *lapin* “rabbit,” 2;0.10 /apabɔ̃/ for *Vagabond* /vagabɔ̃/, /ase/ for *ramassé* /ramase/ “picked up,” 2;0.18 /anin/ for *Marine* /marin/, /ənir/ for *venir* /vənir/ “come.”

However, it appears that most of these deletions are accompanied by a vowel change: e.g., 1;11.19 /ətalɔ̃/ for *pantalon* /pātalɔ̃/ “trouser,” 1;11.29 /ase/ for *renverser* /rāvɛrse/ “knock over,” 2;0.10 /atɛje/ for *réveillé* /rɛvɛje/ “awake,” 2;0.18 /anir/ for *venir* /vənir/ “come,” 2;1.8 /əfã/ for *éléphant* /elefã/, 2;1.18 /abɔgã/ for *toboggan* /tɔbɔgã/ “slide.” The status of the vowel is unclear: Either it is a vowel of the word which has been changed according to the phonological substitutions mentioned above or it is a new vowel added after the truncation, in other words, a filler (see 3.1 on this point). Note again that there are no common processes \tilde{a} , a , $\varepsilon \rightarrow \text{ə}$ in Sophie’s corpus and that they appear only in examples of this kind. Deletions of initial consonants (syllables) scarcely occur after 2;2.13, i.e., in the transition to modularized morphology. Interestingly, from this date onward, the frequency of fillers drops as well (see Table I).

3. FILLERS

3.1. Lexical Fillers

We have considered and counted as filler any additional (vocalic) element occurring in the initial position of (or before) a word. CV addi-

⁴The absolute number of these examples is small (<10 per recording session). However, it must be noted that due to the massive occurrence of fillers during this period (see 3.0), the proportion of phonological words with an initial consonant is very low; less than 20% of phonological words at 1;11.19, 16% at 2;0.10 and 25% at 2;1.18. Thus, deletions affect about 15% of the consonant-initial phonological words.

tions are scarce, e.g., 1;8.12 *da dort* /dadɔr/, variant of *a dort*, for (*il*) *dort* /il dɔr/ “he is sleeping.” The additional vowels are mainly /ə/, /a/ and /ɛ/, /e/. The two main sentence slots filled are the prenominal and the preverbal slots, i.e., in most of the cases, the vowel stands for an article or for a subject pronoun. We have also included vowels that could be considered to stand for a syllable of a truncated word or to substitute initial vowels of a word, provided that the fillers cannot be accounted for by phonology. The last category is called by us lexical fillers, e.g., 1;8.22 /əpa/ for *lapin* /lapɛ̃/ “rabbit,” 1;9.13 /apã/ and /əpã/ for *éléphant* /elefã/, 1;10.27 /ətɛr/ for *hamster* /amstɛr/, 2;0.10 /atana/ for *Tatiana* /tatjana/. This category has been eliminated in Bottari *et al.*'s (1993/1994) study, whereas it is central for the analysis of Veneziano & Sinclair (2000). Grégoire (1937, p. 193) had already raised the problem of how to classify them.

In contrast to examples with lexical fillers, examples such as 1;11.7 /ɛsiv/ for *lessive* /ləsiv/ “washing,” 2;0.10 /ənir/ for *venir* /vənir/ “come” can be interpreted phonologically (cf. 2.4). The same holds for 2;0.18 /ave/ for *enlever* /ãlve/ “take out” with denasalization and cluster simplification (cf. 1;10.16 /ãve/). For the variant /əve/, however, there is no safe phonological interpretation; therefore, initial schwa may be a filler.

The absence of a probable phonological interpretation is also the decisive argument for the assumption of lexical fillers in the following examples: 1;9.2 /enɛt/ for *lunettes* /lynɛt/ “glasses,” 1;11.7 /atyl/ for *minuscule* /minyskyl/ “tiny,” 1;11.7 /əjɛ̃/ for *viens* /vjɛ̃/ “come.” In these examples, we can hardly assume a phonological vowel change (there are no good parallel changes $y \rightarrow \varepsilon$, $y \rightarrow a$ in the corpus). Or, in 1;11.9 /ətalɔ̃/ for *pantalon* /pãtalɔ̃/ “trousers,” the assumption of a phonological deletion of initial /p/ would not be substantiated by other data; on the contrary, /p/ is a preferred consonant (see, e.g., the earlier form 1;9.13 and 1;9.22 /palɔ̃/), also in substitutions. A phonological explanation of both /əve/ and /ətalɔ̃/ and similar examples would presuppose the assumption of a phonological substitution (\tilde{a} , a , $\varepsilon \rightarrow \text{ə}$), which could not be identified elsewhere in the phonology of Sophie. A final argument can be drawn from the later development (cf. 3.2) of a simultaneous reduction of fillers and of word-initial deletions which produce vowel-initial-words.

In general, lexical fillers fit into the sequential phonological pattern served by the use of fillers (cf. 3.3).

The amount of lexical fillers is about 120 of a total of 1590 fillers between 1;6.14 and 2;5.14, i.e., lexical fillers represent not more than 7.5% of all filler tokens.

3.2. General Characterization

In general, fillers occur already in the first recordings of Sophie, and increase drastically between 1;10.4 and 1;11.29, where they peak (140 F/389 words, see Table I). From 2;2.13 onward, fillers drop (69 of 718 words) and grammaticize. Before their very last period (from 2;4.22 and on), where they continuously decrease (from 37 occurrences to 10 occurrence at 2;5.27), fillers show a temporarily new increase between 2;4.1 and 2;4.12 (see Tables I, II, III).

Table I. Number of Fillers Per Number of Identifiable Word-Forms

Age	Fillers/identifiable word forms	%
1;6.14	12/68	17.6
1;6.24	9/44	20.4
1;7.5	34/164	20.7
1;7.15	26/111	23.4
1;7.26	14/100	14
1;8.12	18/33	13.5
1;8.22	49/307	16
1;9.2	47/202	23.3
1;9.13	62/313	19.8
1;9.22	70/279	25.1
1;10.4	68/211	32.2
1;10.16	65/220	29.5
1;10.27	83/259	32
1;11.7	65/220	29.5
1;11.19	98/327	30
1;11.29	140/389	36
2;0.10	102/334	30.5
2;0.22	79/362	21.8
2;1.8	104/471	22
2;1.18	144/640	22.5
2;2	63/389	16.2
2;2.13	69/718	9.6
2;2.27	33/495	6.7
2;3.9	30/535	5.6
2;3.22	44/670	6.6
2;4.1	50/675	7.4
2;4.12	62/625	9.9
2;4.22	37/636	5.8
2;5.3	21/566	3.7
2;5.14	15/988	1.5
2;5.27	10/959	1

Table II. Proportion of Prenominal Fillers, Bare Nouns and Articles*

Age	Prenominal fillers	%	Bare nouns	%	Articles	%
1;11.19	23/37	62.1	10/37	27	4/37	10.8
1;11.29	53/88	60.2	17/88	19.3	18/88	20.5
2;0.10	41/55	74.5	5/55	9	9/55	16.4
2;0.22	23/49	46.9	8/49	16.3	18/49	36.7
2;1.8	57/97	58.9	20/97	20.6	20/97	20.6
2;1.19	67/125	53.6	24/125	19.2	34/125	27.2
2;2.0	29/71	40.8	20/71	28.2	22/71	31
2;2.13	27/113	23.9	39/113	34.5	47/113	41.6
2;2.27	12/56	21.4	19/56	33.9	25/56	44.6
2;3.9	20/120	16.7	45/120	37.5	55/120	45.8
2;3.22	5/106	4.7	34/106	32	67/106	63.2
2;4.1	25/115	21.7	25/115	21.7	65/115	56.5
2;4.12	12/101	11.9	14/101	13.9	75/101	74.2
2;4.22	12/152	7.9	27/152	17.8	113/152	74.3
2;5.3	7/68	10.3	10/68	14.7	51/68	75
2;5.14	5/105	4.8	29/105	27.6	71/105	67.6
2;5.27	4/100	4	17/100	17	79/100	79

* Phonetic approximations of articles are counted as articles from 2;0.22 onward.

Table III. Proportion of Preverbal Fillers, Bare Verbs, and Subject Pronouns*

Age	Preverbal fillers	%	Bare verbs	%	Subject pronouns	%
1;11.19	25/33	75.7	8/33	21.2	0	0
1;11.29	58/65	89.2	4/65	6.2	3/65	4.6
2;0.10	38/45	84.4	5/45	11.1	2/45	4.4
2;0.22	42/51	82.4	8/51	15.7	1/51	2%
2;1.8	26/57	45.6	31/57	54.4	0	0
2;1.19	32/67	47.8	35/67	52.2	0	0
2;2.0	26/52	50	26/52	50	0	0
2;2.13	34/113	30	76/113	67.3	5/113	4.4
2;2.27	11/97	11.3	79/97	81.4	7/97	7.2
2;3.9	11/99	11.1	77/99	77.8	11/99	11.1
2;3.22	22/115	19.1	76/115	66	17/115	14.8
2;4.1	24/166	14.5	130/166	78.3	13/166	7.8
2;4.12	18/110	16.4	81/110	73.4	13/110	11.8
2;4.22	25/130	19.2	99/130	76.2	15/130	11.5
2;5.3	14/106	13.2	77/106	72.6	15/106	14.2
2;5.14	10/122	8.2	78/122	63.9	34/122	7.9
2;5.27	6/107	5.6	51/107	47.7	29/107	27.1

* Phonetic approximations of subject pronouns are counted as subject pronouns from 2;0.22 onward.

3.3. Fillers and the Pre-, Proto-, and Modularized Morphology Phases

In relation to the phases of pre-, proto-, and modularized morphology, fillers can be characterized in the following way: In premorphology, fillers have a prosodic function, first without any morphology-determined differentiation. They appear in unstressed positions before a stressed item. The production of Sophie can be characterized by a basic pattern of unstressed $F + 1/2$ syllable(s), e.g., /ədo/ for (*il y en a*) *deux* /dø/ “(there are) two,” /ədodo/ for (*il fait*) *dodo* “(he) sleeps,” the pattern *unstressed V + stressed V* being the prototypical iambic prosodic pattern of adult French. As we will see below, this pattern will reappear long after premorphology.

Fillers are predominantly realized as schwa during premorphology; however, there is much variation and they are also often realized as /a/, and less often as /ɛ/ or /e/. Monosyllables prevail (average of 60%) and reach 90% of word forms in early premorphology (at 1;6.24) (see also Sourdou, 1977; Veneziano & Sinclair, 2000). Later, fillers do not occur preferentially with monosyllables, hence their function cannot be reduced to a rhythmic compensation for defective monosyllabic feet.

Fillers do not necessarily replace a morpheme of the adult language, e.g., 1;11.7 /ɛtala/ for *c(e)lui-là* /sqila/ “that one,” but may be added to fit the basic phonological pattern (cf. the lexical fillers, 3.1.).

At the end of premorphology and in protomorphology, fillers become more grammatical, i.e., in addition to their phonological functions, they acquire a syntactic function. Sophie adds frequently a filler before a proper name (20 tokens in protomorphology), which can be analyzed as a correspondence

Table IV. Pre-, Proto-, and Modularized Morphology Phases and Filler Phases

Premorphology 1;6.14–1;10.4	1;10.4	increase of fillers to 32.2% (from 17.6% at 1;9.22)
Protomorphology 1;11.19–2;1.18	1;11.29	peak of fillers 36%
	2;2.13	drop of fillers to less than 10%
	2;4.1–2;4.12	new increase of fillers to 10%
Modularized morphology 2;4.22–	2;4.22	decrease of fillers to 6%
	2;5.14	drop to 1.5%

of the deictic *c'est*⁵ or of a cleft sentence (4 tokens) *c'est*. . . . *qui* (first non-ambiguous occurrence at 2;4.1), e.g., at 1;11.19:

- | | | |
|--------------------------|-----|---|
| (1) /asafi əgade/ | for | <i>F Sophie F(?)regarder</i>
/sɔfi əgade/ =
<i>c'est Sophie qui regarde</i>
/sɛ sɔfi ki rəgard/
“Sophie watches,” |
| (2) <i>a Maman</i> /dõt/ | for | <i>F Maman chante</i> /ʃāt/ =
<i>c'est Maman qui chante</i>
/sɛ mamã ki ʃāt/
“Mum sings,” |

and at 2;1.18:

- | | | |
|--|-----|--|
| (3) <i>a Maman a donne</i>
/a mamã a dɔn/ | for | <i>c'est Maman qui donne</i>
/sɛ mamã ki dɔn/
“Mum gives.” |
|--|-----|--|

Moreover, at 1;11.29 *a* alternates with *y a* “there is” as a predicate of existence (5 tokens). Finally, first examples of fillers filling slots with prepositional function occur, e.g.,

- | | | |
|---|-----|---|
| (4) /atejõ ə sɔfi/ | for | <i>F(le) camion F(de) Sophie</i>
/lɛ kamjõ də sɔfi/
“Sophie’s truck,” |
| (5) <i>a peur a Maman</i>
/a pœr a mamã/ | for | <i>F(il) a eu peur F(de) Maman</i>
/il a y pœr də mamã/
“he was afraid of Mum.” |

In the transition period to modularized morphology, fillers become more and more grammaticized, i.e., many of them are nonambiguous phonetic approximations of grammatical morphemes, e.g., 34% (14 of 41 filler-like) of grammaticized prenominal fillers at 2;2.13, compared with less than 10% (6 of 63 filler-like) at 2;1.8.

In modularized morphology the few remaining fillers are in competition with their morphological replacements, e.g., grammaticized object fillers: 2;7.5. *faut a parquer*, *a* for *la* (for *la voiture* “the car”) “we must park it,” 2;7.18 *peux /e/ chercher toi? /e/* for *les (les pantoufles* “the slippers”) “can you look for them?” (see Table IV).

Notice that fillers illustrate clearly the non-linearity of language development; for example, their drastic decrease from 2;2.13 onward (i.e., during the transition to modularized morphology) is not directly related to the

⁵ This adult form occurs regularly from 2;4.1 onwards, i.e. in the transition to modularized morphology.

development of articles or of clitics. Bare nouns increase temporarily in Sophie up to 2;3.9 (45 of 120, 37.5%). On the other hand, the increase of clitics in (modularized) morphology does not simultaneously compensate for the disappearance of fillers, because many bare verbs persist well into modularized morphology.

The evolution of prenominal and preverbal fillers differs significantly in their final phases: There is an inverse relationship between prenominal fillers and articles that replace them, but not between preverbal fillers and preverbal clitics.

The main reason appears to lie in the different relationship between the child's fillers and their adult targets in each of these positions. First, a prenominal filler corresponds to a very small set of articles, mainly the definite article, whereas preverbal fillers correspond to a much larger set of preverbal clitics.

Second, the target form of an article is predictable by the gender and the phonological onset of the immediately following noun; only the number (singular or plural) is predicted by the larger context. Among preverbal clitics, all the object clitics are predicted only by the larger context, and three or (with most verbs) even four of the six subject clitics (the whole singular and third plural) cannot be predicted by the form of the immediately following verb (with the exception of "be, have, go"). Several clitic options appear before an infinitive (e.g., semi-auxiliary *va*, prepositions *à, de*)

Third, there is just one clitic position before the noun (i.e., the article), but possibly several before the verb (subject, negation, object).

Fourth, all articles are prenominal, whereas subject and object clitics may occur also after the verb (although rarely in colloquial French).

Thus, there is much less ambiguity before the noun than before the verb, and therefore a much clearer competition between prenominal fillers and target articles than between preverbal fillers and specific preverbal clitic targets.

In addition to the ambiguity of preverbal position, the child has to deal with person deixis, which involves a complex system of person shifting. In other words, there is a cumulation of factors responsible for the delay of filler replacement by subject clitics. This explains why bare verbs occur even after the end of fillers.

Vowel quality changes of fillers match exactly the demarcation between pre-, proto-, and modularized morphology. Fillers become predominantly /a/ (in contrast to earlier /ə/), from 1;11.19 onward, i.e., at the beginning of protomorphology onwards, whereas with modularized morphology, from 2;4.22 onward, /ɛ/ and /e/ tokens surpass /a/ tokens and schwa disappears.

4. FILLER + INFINITIVE

In this section, we look in detail at one particular structure with fillers that occurs in Sophie's language, i.e., the structure F(iller) + Inf(initive), e.g.,

- | | | |
|-------------------------|-----|-------------------------|
| (6) 1;9.13 /açaçə/ | for | <i>chercher</i> /ʃɛʁʃe/ |
| (in imperative meaning) | | “look for” |
| (7) 1;9.22 /əwar/ | for | <i>(je veux) voir</i> |
| | | /ʒə vø vwar/ |
| | | “(I want to) see.” |

F + Inf is especially interesting because it does not fit an adult pattern: It is a child's structure which more than any other reveals grammatical activity. As we will see below, no simple interpretation in terms of reduction of an adult grammatical structure, e.g., subject + modal/semi-auxiliary + Inf is sufficient.

This structure is also striking because it seems to have, so to speak, its “own story” with different phases, and at the same time raises important problems of interpretation. F + Inf emerges at 1;9.13 and disappears between 2;4.22 (5 occurrences) and 2;5.27 (no occurrence) (see Table V). In other words, the evolution towards the adult language takes eight months.

Our focus is on the description of this process and on its relation with the demarcation between pre-, proto-, and modularized morphology.

A systematic analysis of the functions of fillers presupposes a methodology on how to decide a child's intended utterance. Within a psycholinguistic and linguistic paradigm of longitudinal studies of spontaneous productions, similar to what is practiced in neurolinguistic studies of spontaneous productions (cf. Dressler, 1984; Dressler & Stark, 1988, pp. xi–xii), this methodology ultimately derives from time-honored methods of philological analysis. First, it consists in the analysis of all contextual clues (i.e., lexical, prosodic, grammatical, textual, situational indicators) within the child's utterances; second, in the analysis of the adjacent turns of the care-taker and her interpretations of the child's utterance; third, in the systematic search for parallels and contrasts in the child's corpus, both in the synchronic sub-corpus of the same session and in the “diachrony” of the child's evolution; fourth, in relating the child's structures (as identified by parallels and contrasts) to adult targets within their respective systems; and fifth, in extending this to comparable child corpora.

Table V. Number of F + Inf and of Bare Infinitives per Number of Verb Forms

Age	F + Inf types/tokens	Verb forms	%	Bare Inf types/tokens	%
1;9.13	3/4	35	11.4	3/6	17.1
1;9.22	4/9	39	23.1	2/5	12.8
1;10.4	3/5	26	19.2	3/4	15.4
1;10.16	5/5	37	13.5	2/2	5.4
1;10.27	5/5	31	16.1	3/11	35.5
1;11.7	5/9	31	29	4/6	19.4
1;11.19	6/11	56	19.6	3/3	5.4
1;11.29	5/8	57	14	3/1	1.8
2;0.10	6/10	45	22.2	3/3	6.7
2;0.22	6/9	68	13.2	5/7	10.3
2;1.8	3/5	85	5.9	7/16	18.9
2;1.18	10/17	114	14.9	3/23	20.2
2;2.0	7/18	78	23.1	6/31	39.7
2;2.13	10/18	135	13.3	14/47	34.8
2;2.27	3/3	97	3.1	9/46	47.4
2;3.9	9/12	88	13.6	15/20	22.7
2;3.22	6/14	132	10.6	15/42	31.8
2;4.1	6/11	167	6.6	20/62	37.2
2;4.12	17/24	142	17	19/42	29.6
2;4.22	4/5	177	2.8	10/34	19.2
2;5.3	3/4	147	2.7	7/16	10.9
2;5.14	2/2	149	1.3	11/19	12.8
2;5.27	0	90	0	7/9	10

4.1. Development

4.1.1. Period I (1;9.13–1;11.19)

During the first month, F + Inf has first three meanings: regulatory (see Halliday, 1975) or imperative, modal, (e.g., volitional), and descriptive.

Examples of regulatory and volitional meaning are (6) and (7), above and the two following (8) and (9), respectively:

- (8) 1;9.22 /anene/Maman for *donner Maman*
/dɔne mamã/
“give, Mum”
- (9) 1;9.13 /atetir/ for *(je veux) sortir*
/ʒə vø sɔrtir/
“(I want) to go out.”

Examples of descriptive meaning:

- (10) 1;9.13 /açaçe/ for *(je) cherche* /ʒə ʃerʃ/
“(I) am looking for”

- (11) 1;11.19 *a dire* for *(il) dit /il di/*
 “(he) is saying.”

At 1;10,16 a future meaning starts, which is another instance of a modal meaning:

- (12) /anir/ (with lexical filler) for *(il va) venir /il va vənir/*
 “(he will) come.”

Note that the periphrastic future has occurred before only in a formulaic structure (1;9.22 onwards): /əbabar/ for *(on) va voir /ō va vwar/* “we will see” and, as said in 2.3, becomes productive at 2;4.22 only (see Table VII).

The distinction between future and past meaning in F + Inf with verbs of first conjugation is sometimes very difficult. Indeed, some examples seem to argue in favor of ambiguity; for example, in the following dialogue the structure, F + stem /e/ is ambiguous:

- (13) 1;11.7 mother: tu vas tomber!
 “you will fall”
 Sophie: /ɛpabe/ for ?*vais tomber/ve tōbe/*
 “(will) fall”
 m: tu vas tomber, attention
 S falls down
 S: /ɛpabe/ for ?*suis tombée/sqi tōbe/*
 “fell”
 m: tu es tombée, oui
 “you fell, yes.”

The vowel of the filler shows no obvious difference from one occurrence to the next, whereas the meaning changes.

4.1.2. Period II (1;11.29–2;1.8)

At about 1;11.29, there is a dissociation in meaning between F + Inf forms and F + finite forms. F + Inf forms have the future, volitional and regulatory meaning (e.g., (14)–(15) below), whereas F + finite forms (e.g., (16)–(17) below) have a descriptive meaning:

- (14) 1;11.29 /atetir/ for *(il veut) sortir*
/il vø sɔrtir/
 “(he wants to) go out”
 (15) 2;0.10 /ə/ lire Maman for *lis Maman*
 “read Mummy”

- (16) 2;0.10
 /ə/ *balance*/ə/ *bateau* for (il) *balance* (le) *bateau*
 /ə balās ə bato/ /il balās lə bato/
 “(the) boat is swinging”
- (17) /ə/ *dort* /ɛ/ *bébé* for (il) *dort* (le) *bébé*
 /ə dɔr ɛ bebe/ /il dɔr lə bebe/
 “(the) baby is sleeping.”

The dissociation in meaning disappears, whereas the structure F + Inf is expanding. This is the third period.

4.1.3. Period III (2;1.18/2.2.0–2;4.1.)

From 2;1.18 onward, examples of descriptive F + Inf are more numerous (see Table VI) e.g., 2;1.18:

- (18) /ə fɛr bɔgã/ for (il) *fait du toboggan*
 /il fɛ dy tɔbɔgã/
 “(he) is sliding”
- (19) *a mettre là* for (je) *mets là*
 /a mɛtr la/ /ʒə mɛ la/
 “(I) put here.”

The other examples have a future or volitional meaning and very sporadically a regulatory meaning:

- (20) 2;1.18 /a patir/ *maman* for (elle) *part* (la) *maman*
 /ɛl par la mamã/
 “(the) mother is leaving”
- (21) 2;2.0 *Maman* /atafe/ for *Maman souffler* /sufle/
 = imperative *souffle*
 /suf/ /
 “Mum, blow.”

Table VI. Number of Descriptive F + Inf

Age	Descriptive F + Inf	Total F + Inf
2;1.18	4	17
2;2.0	9	18
2;2.13	5	18
2;2.27	1	3
2;3.9	4	12
2;3.22	6	14
2;4.1	11	11

Table VII. Development of Periphrastic Future

Age	Tokens	Total of Inf	Total of Verb Forms
2;3.9	3	50	88
2;3.22	5	66	132
2;4.12	2	85	142
2;4.22	30	74	177
2;5.3	31	66	147
2;5.14	27	83	149
2;5.27	12	33	90

that the grammaticization of F + Inf cannot be directly related to the target structure (cf. 4.2).

As to the modal *veux/t* “want” and *peux/t* “can,” they have occurred earlier but with lower frequency (see Table VIII).

At 2;4.12, one single example of F + Inf can be analyzed as a volitional *veux* + Inf reduction:

(24) 2;4.12 *a faire caca* for *(je vais/veux) faire caca*
 “(I will do/I have to do) a poo.”

This form cooccurs with *veux* and also *va*:
 (a few utterances later)

(25) *a veux faire caca* for *je veux faire caca*
 “(I) have to do a poo.”

Table VIII. Development of Modal *Peux/t* “Can” and *Veux/t* “Want” + Inf

Age	Tokens	Total of Inf	Total of Verb Forms
1;10.27	1	16	31
2;1.18	1	40	114
2;2.13	4	81	135
2;2.27	7	71	97
2;3.9	8	50	88
2;3.22	9	66	132
2;4.1	5	98	167
2;4.12	5	85	142
2;4.22	9	74	177
2;5.3	16	66	147
2;5.14	22	83	149
2;5.27	12	33	90

(26) *a va faire caca* for *(je) vais faire caca*
 “(I) will do a poo.”

Note that in regional French of Lausanne, *XveutInf* is also used with the future meaning “*XvaINF*,” also in the mother’s input to the child.

A new deontic modal meaning seems to appear in three examples, e.g.:

(27) *a pas prendre* for *(elle doit) pas prendre*
 “(she should) not take (it).”

4.2. Fillers as Precursors: Functional Ambiguity

As it appears often in functional analysis (cf. Dressler, 1995), one operation may fulfill two different functions. This also happens with Sophie’s fillers. In fact, we suggest that the same filler can fulfill two different functions at the same time (cf. example (24) and (27) above), i.e., the two contiguous positions left of the infinitive are simultaneously filled by a unique filler.

Fillers are mainly two types of precursors (see the examples discussed above): (1) precursors of subject clitics in pronominal preverbal position and (2) precursors of modal/semi-auxiliary verbs in verbal position. In several examples, each of the two analyses may be entertained at the same time, but with different degrees of probability.

In (23) above, /a/ clearly replaces *va*. The preceding parallel clause makes an interpretation “Maman elle console” highly improbable.

Also, in (22) the interpretation of /a/ as the semi-auxiliary *va* is more probable than an interpretation as *il* or *il va* because of the adverb *après* and because of the development of *pleurer* in the corpus: from 2;2.27 onward, the third present singular is either accompanied by the clitic *il* or is bare; in other words, there is no filler substituting a subject clitic with *pleure* after 2;2.0 (where the sequence with the opaque *le*: *a le le pleure* occurs). Moreover, at 2;5.27 a structure similar to (22) appears for the first time with the full semi-auxiliary but without the obligatory (in case of postverbal subject) coreferential subject clitic:

(28) *va pleurer celui-là* for *(il) va pleurer celui-là*
 “(he) will cry that one.”

For the analysis of the filler in (22) as an approximation of the semi-auxiliary, consider also at 2;3.22 the following sequence:

(29) *mais ou(vr)ir /ariv/* for *mais (j’ai envie) d’ouvrir un livre*
 “but (I would like to) open a book”

- (30) *envie d'ouvrir* /ariv/ for (j'ai) *envie d'ouvrir un livre*
 “(I) would like to open a book”
- (31) *a l'ouvrir* /ariv/ for (j'ai envie de) *l'ouvrir un (le) livre*
 “(I would like) to open it, a (the) book.”

In (31) one can induce the interpretation of /a/ as the semi-auxiliary from the previous sentences (29, 30) with ellipsis of the subject.

On the other hand, the occurrence of fillers with full modals from 2;4.1 and onward, allows only the clitic analysis, e.g., still at 2;6.24:

- (32) *a veux monkrer* for (je) *veux montrer*
 “I will show.”

But several examples of F + Inf in the corpus are ambiguous, i.e., they can receive both interpretations in the same context. This is especially the case when Sophie talks about her actions, e.g., at 2;3.21:

- (33) *a faire un petit tour*
 where F + Inf may correspond to
(je) fais or *(je) vais faire* or *je*
(vais) faire or *je vais faire*
 “(I) go/(will) go for a ride,”

at 2;4.3:

- (34) *a donner une bavette* for *je donne/vais donner/je*
(vais) donner/je vais donner
 “(I) give/(will) give a bib.”

Thus, (33) and (34) are four-way ambiguous. For each of the three analyses, (1) F = subject clitic + present, (2) F = semi-aux + Inf with ellipsis of subject clitic, (3) F = subject clitic with ellipsis of semi-auxiliary, and (4) F = subject clitic and semi-auxiliary at the same time, and there are clear parallels in the corpus.

Similar examples of ambiguity occur between *va/veux* (cf. 4.1.4) and between compound past and periphrastic future (cf. 4.1.1).

Trying to solve such ambiguities and to look for bi-unique relations between form and function (both in types and tokens), in view of Slobin's (1985, p. 1227f) unifunctionality operating principles, according to which two closely related but distinguishable notions should be distinctly marked, seems to follow the wrong track. Such examples occur far too frequently to be interpreted as instances of fortuitous ambiguity. Rather, they represent

polyvalence (plurifunctionality) of fillers. In the case of fortuitous ambiguity, one might expect that Sophie sometimes corrects an ambiguous structure in order to make it less ambiguous. However, the only example of correction of our ambiguous constructions which appear in the corpus does not occur immediately after the ambiguous construction, but only after the mother's intermediate turn (2;4.1):

- (35) S: /asarase/ *a piscine* for (*je vais*) *chercher la piscine*
 “(I will) look for the swimming-pool”
 m: *la piscine c’est dans les cochons alors*
 “the swimming-pool is in (the book of) the pigs”
 S: *moi chercher* for *moi (je vais) chercher*
 “me look for” “I (will) look for.”

And example (23) even goes in the opposite direction because a correct construction is replaced by an ambiguous one.

Sequences of two fillers are not prohibited by phonotactic constraints. In other contexts, examples actually do occur (type-token ratio of sequences of fillers: 17 types/38 tokens):

- (36) 2;1.18 /e a/ *maman là* for (*c’est la*) *maman là* /sɛ la
mamã la/
 “(it is) the mother there,”
 (37) 2;4.1 /i a/ *fait* for (*il a*) *fait* /il a fɛ/ “(he has)
 done.”

The nonexistence of filler sequences before infinitive is a further argument for our analysis of F + Inf: If the ambiguity of the filler in this position were fortuitous, then the occurrence of filler sequences would be expected.

Slobin's above-mentioned operating principles correspond to what is called bi-uniqueness or one-meaning/one-form principle in other frameworks. As such, it occurs also in Natural Morphology as a preference for one meaning to be expressed by just one form and for this form to have no other meaning. This preference is followed in the expression of the English superlative by *-(e)st* (*most, best, least, worst, strongest, smallest*, etc.): This meaning has no other morphological expression and the morphological element *-(e)st* has no other meaning.

Clearly, in perception, bi-uniqueness (compared with ambiguity) facilitates identification, but economy of production puts severe limits to the

efficiency of bi-uniqueness (cf. Dressler, 1996, pp. 306–308). As a result, bi-uniqueness is difficult to obtain outside scientific, technical, or legal terminology. Thus, the young child's limited inventory makes a bi-uniqueness strategy in production ridiculously inefficient, whereas the child may identify less ambiguous adult targets more easily than more ambiguous ones.

This conflict between production and perception is easily solved in the case of fillers. Fillers are ambiguous, but they do not appear in the input; thus, there is no difficulty for perception (unless one claims that, very early, they appear in the intake, insofar as the child may not be able to differentiate adult unstressed clitics. In production, however, the functional polyvalence of fillers is very handy for the inventory-poor young child, and we claim that, in general, and contrary to Slobin's above-mentioned operating principles, a preference for polyvalent (including homophonous) forms in early child productions.

This argumentation fits nicely in with our explanation above (cf. 3.3) why, in the child's development, pronominal fillers are almost directly replaced by articles, in contrast to a much more complex developmental relation between preverbal fillers and clitics: The relation between the child's pronominal fillers and adult articles as targets approaches bi-uniqueness to a considerable extent, whereas there is a multiple ambiguous relation between the child's preverbal fillers and corresponding adult targets. Thus, when the child's grammatical inventory increases, the usefulness of fillers decreases, and the replacement of fillers by target-like clitics is much more straightforward in pronominal than in preverbal position.

The above discussion leads us to conclude that the least variable, and thus most relevant, property of fillers seems to be their position (cf. Peters, 1996) rather than their function.

As we have seen above (1.1), it has already been established that fillers represent a prosodic and phonological strategy: In the early period, the child retains some rhythmic and phonological structure—this means for Sophie *unstressed vowel + 1/2 syllable(s)*, the last one being stressed. The first unstressed vowel, i.e., the filler, is just an indication for something missing and does not specify how much and what is missing. In other words, whether there are one or two slots to be filled in this position is not yet relevant for the child. Only the main prosodic contrast between unstressed and stressed position is retained. This seems to differ from Peters & Menn's (1993) and Peters' (1996) child Seth, who developed in a later stage (but as early as 22 months) a sequence of two fillers for subject and modal position in modal constructions (Peters, 1996, p. 5). Sophie does not go through such a process of sequential splitting of fillers. As we have seen above (4.1.4), grammaticization of fillers before infinitives means only that the filler has a

more restricted correspondence to the adult targets (i.e., only to semi-auxiliary *va* or modal *veux/t*). But later, before the emergence of the adult form, the filler does not split into two more grammaticized ones as in Seth (Peters, 1996; Peters & Menn, 1993). Either it is dropped (cf. all examples of subjectless periphrastic forms) or it is replaced by the adult form or, if there are two subsequent slots where a filler might be placed, it goes into the left position, whereas the right slot is filled with the adult form (e.g., (25), (26), (32) above). This might represent a candidate for a language-specific difference in the development of fillers, possibly due to the monosyllabic structure of French modals and of the periphrastic future semi-auxiliary compared with disyllabic English catenatives. More data from French and English filler children are needed.

4.3. Primitive Selection of a Preferred Pattern

As to the chronological development of Sophie's fillers, we suggest that she applies a general strategy of using as far and as long as possible the same basic phonemes, i.e., she elaborates and modifies slowly and carefully on some basic patterns (cf. Vihman, 1981).

The F + Inf structure originates in early speech: The first infinitive sentence used by Sophie, already before the recordings, is the frozen structure *à boire*, "(give me) to drink." It seems that this structure is selected very early in the input by the child as a preferred structure both for pragmatic reasons (frequency and importance of situations where the child wants the feeding bottle) and for phonological reasons: This structure fits the basic phonological pattern *unstressed vowel + 1/2 with final stress syllable(s)* (see also López-Ornat, 1997, p. 6). This basic phonological pattern starts with her first productions and persists up to modularized morphology, see the frequent prothesis (pp. 38–39):

	1;11.7/2;0.0		
(38)	/əpavy/	for	<i>t'as vu</i> /ta vy/ "you have seen"
	2;3.21		
(39)	/apyvwa/	for	<i>tu vois</i> /ty vwa/ "you see"
(40)	/apəmi/	for	<i>tu as mis</i> /ta mi/ "you have put."

The vowel quality of fillers is further evidence for the hypothesis of the selection of a preferred primitive phonological structure. Although in the

premorphological phase filler vowels are, in order of frequency, /ə/, /a/, /ɛ/, /e/ (cf. 3.1.), /a/ is the most frequent filler before infinitives, which seems to be due to the model of *à boire*. In the protomorphological phase, the primitive pattern *a + 1/2 syllable(s) with final stress* is extended with the consequence that /a/ becomes the most frequent filler.

5. CONCLUSION

Within Sophie's construction of morphology, the evolution of fillers is a process of successive slow and partial modifications of the system which exists at each point of development, both in form and meaning (Kilani-Schoch *et al.*, 1997).

We have described one preferred structure from its early pragmatic and phonological motivation through its semantic specialization and grammaticization up to its disappearance in favor of an adult form (periphrastic future and modal constructions, i.e., mainly *vouloir* + infinitive, but later also *pouvoir* + infinitive, *devoir/falloir* + infinitive).

5.1. Summary

We have distinguished four periods in the development of the structure F + Inf:

Period I: 1;9.13–1;11.19

Period II: 1;11.29–2;1.8

Period III: 2;1.18–2;4.1

Period IV: 2;4.12–2;5.27

Period I has been characterized by the prevalence of a pragmatic over a semantic meaning, e.g., the regulatory meaning. In other words, this meaning is a pragmatic feature of various speech acts (orders, requests, deontic assertions) and is bound to the context of situation. A more pragmatic meaning is typical for premorphology, to which the major part of period I belongs. We may compare the development of diminutives from a purely pragmatic with an additional semantic meaning of diminutives (Ceccherini *et al.*, 1997; Dressler, 1994; Gillis, 1997; Stephany, 1997).

The dissociation in meaning between F + Inf forms (future, volitional and regulatory meaning) and F + finite forms (descriptive meaning) in period II (at about 1;11.29) represents system-building innovations typical for protomorphology. Indeed, period II is fully included in protomorphology: It starts in its first subphase (1;11.19–2;0.10) and ends in the second one (2;0.22–2;1.18). Notice, however, that this dissociation in meaning is still

Table IX. F + Inf and Pre-, Proto-, and Modularized Morphology Phases

F + Inf	
Premorphology 1;6.14–1;10.4	Period I: pragmatic motivation 1;9.13–1;11.19.
Protomorphology 1;11.19–2;1.18	Period II: dissociation in meaning 1;11.29–2;1.18 Period III 2;1.18–2;4.1.
Transition to modularized morphology 2;2.0–2;4.12	Period IV: grammaticization 2;4.12–2;5.27 disappearance
Modularized morphology 2;4.22–	

speech-act-determined, and that there is no division of modal, aspectual, and tense meaning. Hence, there are not yet real morphosemantic oppositions.

In period III, F + Inf extends its descriptive meaning. Period III belongs mainly to the transition from protomorphology to modularized morphology.

Period IV starts with the last rise of F + Inf. This structure is fully grammaticized as an immediate precursor of the periphrastic future during the transition from protomorphology to modularized morphology. With the beginning of modularized morphology, F + Inf begins to disappear, i.e., to be completely replaced. In this way, the development of fillers fits the overall development of Sophie's early morphology (see Table IX).⁶

5.2. Comparison with Previous Studies

If we compare the results of our analysis with previous literature on fillers (cf. 1.1), Bottari *et al.*'s (1993, 1993/1994) syntactic explanation cannot apply to either lexical fillers or fillers replacing main verbs, because they neither qualify for the status of the functional head nor of Spec(ifier)

⁶ Because adult French has neither productive diminutive formation nor (non-Latinate) noun-noun-compound formation nor derivational possessive formation, there are no prime candidates for early-acquired word formation, and therefore the development of fillers in French cannot be compared with that of word-formation rules (in contrast to Italian, Greek, and German, cf. Kilani-Schoch *et al.*, 1997).

or Comp(lement). Moreover, as Veneziano & Sinclair (2000) have noted, Bottari *et al.* first proposed to account for fillers which occur in “illicit” positions of the adult language in terms of “a hypergeneralization constructed on the basis of linguistic experience” (1993, p. 214), but in their second paper, they gave up studying such cases.

In contrast, our results fit the basic thesis “phonology first, morphology later” of Peters & Menn (1993), López-Ornat (1997), and Veneziano & Sinclair (2000), but the range of our longitudinal study is more representative than theirs: The premorphological phase is little discussed in Peters & Menn (1993), whereas the late (and maybe most productive) phases of fillers lack in López-Ornat (1997) and Veneziano & Sinclair (2000). For example, there are hardly any instances of F + Inf in Veneziano & Sinclair’s (2000) study of the acquisition of French.

In addition, our study has related the development of fillers, much more than previous studies, to the development of the other parts of grammar.

Compared with Peters & Menn (1993) and Veneziano & Sinclair (2000), we have identified regression phases from an already reduced use of fillers to a temporary new increase (see 3.2).

5.3. Grammaticization of Fillers and Constructivist Natural Morphology

The development of Sophie’s fillers gives new evidence for a constructivist approach to language acquisition (see also Veneziano & Sinclair, 2000; López-Ornat, 1997). Sophie constructs parts of grammar from a previous phonological basis: In these constructions she does not simply imitate adult targets but follows a creative acquisition path of her own. The relatively slow development of fillers regards not only forms but also leads to more specific and more grammatical meaning distinctions.

Sophie’s development of fillers is a story of grammaticization of form and meaning (cf. Stephany, 1992). It starts out as an extragrammatical formal device. The use of the reduced vowel and of rather unmarked, frequent vowels points to segmental phonology, its position to prosodic phonology, but the fact that fillers (with the exception of the very low percentage of lexical fillers) are precursors of grammatical morphemes points to morphology as well. This fits well to the previously supported assumption of a pre-modular stage where morphology and segmental and prosodic phonology have not yet dissociated into separate modules or submodules. From the point of view of the observing linguist, this (and the facts seen in 4.2) may be analyzed as functional ambiguity, but for the little child it is rather welcome functional polyvalence, as a way for applying the minimax principle (of expending the least effort for the maximal effect) to constructivist, autopoietic pattern selection.

When, in the protomorphological phase, creative morphology as precursor of later morphological grammar is added to pattern selection, an option is that extragrammatical devices in the realm of morphology (cf. Dressler & Karpf, 1995) are marginalized, if they cannot be integrated into emerging morphological grammar. Another option is that the device, as with our fillers, allows the strategy of successive grammaticization, in order to be saved, at least temporarily, by the child. Segmental-phonological variation is reduced, and prosodic-phonological position seems to be replaced by morphological position (see 3.3); in other words, the filler becomes the first morpheme of the phonological word (whether it corresponds to one or two adult morphemes or to none, see 4.2, 4.3). Thus, the addition of a filler starts to signal iconically a grammatical function. The new morphotactic status of the filler position is followed by morphosemanticization, i.e., we find a transition from a pragmatic to a grammatical (morphosemantic) meaning. Then, in the beginning phase of modularized morphology, fillers have to be completely fitted to target morphology, i.e., to the child's uptake (see Harris, 1992) of adult morphological grammar. Because this implies a clear correspondence to adult morphemes, fillers no longer offer surplus value, i.e., in terms of functional polyvalence, also because functional polyvalence itself is given up in favor of the preference for (bi-)uniqueness, as posited already for earlier periods by Slobin (1985, p. 1227f) and Clark (1993). On the contrary, this preference induces the child to give up fillers alongside adult equivalents.

This story fits our model, which integrates psycholinguistic acquisitional constructivism with the grammatical theory of Natural Morphology, very well.

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