

Pier Marco Bertinetto, Clémentine Talaato, Alessandro Lenci  
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# ON THE ACQUISITION OF VERBAL TENSES IN MÒORÉ (GUR): A MORPHOLOGY-BASED APPROACH

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PIER MARCO BERTINETTO  
CLÉMENTINE TALAATO PACMOGDA  
ALESSANDRO LENCI

**ABSTRACT:** Despite extensive literature on tense-aspect acquisition, little attention has been devoted to African languages. This paper intends to broaden the typological coverage. It also aims at testing three basic issues often mentioned in connection with ATAM (Actionality, Temporality, Aspect, Mood) acquisition: (i) the higher percentage of nouns as opposed to verbs in the early phase of L1 learning; (ii) the late acquisition of future-as opposed to present- and past-referring tenses; (iii) the role of Actionality and Aspect, as often proposed in the specialized literature. Mòoré (a Gur language) is a perfect candidate, due to its morphological properties, in particular its being a definitely Mood/Aspect-prominent language. The results of a longitudinal investigation on 4 children between (approximately) 1;6 and 2;6 show that: (i) the number of verbs overcomes that of nouns in the early phase of acquisition; (ii) the acquisition of the future tense is very precocious; (iii) despite high degree of explicitness of the aspectually-marked Mòoré forms, Aspect does not have the leading role in the acquisition process. It is instead proposed that ATAM acquisition is guided by the degree of semantic and morphophonological transparency: in particular, the children analyzed in the study learned the more transparent forms earlier than some of the aspectually explicit, but morphophonologically more complex ones.

**KEYWORDS:** (A)TAM acquisition, tense and aspect, morphology-driven acquisition, Mòoré (Gur).

## 1. INTRODUCTION<sup>1</sup>

### *1.1 Overview*

This paper analyzes the native acquisition of tense-aspect in Mòoré (Gur, Niger-Congo), spoken in Burkina Faso by about half of the 19 million inhabitants

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<sup>1</sup> The authors (in particular the first one) wish to dedicate this paper to Tjaša Miklič.

(2016 estimation). This is, to our knowledge, the first study devoted to the acquisition of ATAM features (Actionality, Temporality, Aspect, Mood) concerning an African language (Demuth 1992 deals with the acquisition of Sesotho grammatical structures in general). This is not, however, the only purpose of this work, which also aims at checking three crucial claims often pointed out as highly expected in this particular domain:

- i. The higher percentage of nouns, as opposed to verbs, in the early phase of L1 learning.
- ii. The late acquisition of future-, as opposed to present- and past-referring tenses.
- iii. The leading role of Aspect and Actionality in the acquisition process.

With respect to point (iii), it is worth observing that Mòoré, as a Mood/Aspect-prominent language, offers itself as an ideal test. Should Aspect prove to be the most efficient triggering factor in the ATAM acquisition of Mòoré, this would be a barely informative confirmation of an allegedly universal tendency. If, by contrast, other factors emerge as equally or even more salient, there would be compelling counterevidence against what can still be considered as the prevailing view.

To pave the way, the next section will offer some preliminary terminological clarifications, in order to allow the readers to attune themselves to the conceptual framework adopted. Next, section 2 will describe the Mòoré verbal system. The subsequent sections will report the results of a longitudinal study, suggesting that a morphology-based account of ATAM acquisition can provide convincingly negative answers to the three above itemized claims.

## *1.2 Setting the stage*

Considering the lack of general agreement in the specialized literature, it is advisable to specify the basic conceptual framework to which this paper will refer. The main components of the semantic domain at stake are: Actionality (also known as ‘lexical Aspect’ or ‘Aktionsart’), Temporality, Aspect, and Mood. Throughout this paper we will thus often use the acronym ATAM to integrate the widely used TAM acronym. Moreover, we will use the capital initial to designate a given category as distinguished from its instantiations (such as Indicative mood within the category Mood). Two points deserve special attention.

First, it is essential to set apart Actionality and Aspect. The former designates lexical-semantic categories in the Vendlerian tradition; the latter des-

ignates the perspective under which the event is viewed, namely (and minimally) as either perfective or imperfective (Comrie 1976). Actionality and Aspect should thus be carefully distinguished, despite their less than perfectly orthogonal separation. Since in both cases a notion of event (in)completion is involved, it is no wonder that mutual entailments arise, with telically fulfilled events necessarily entailing perfectivity. Indeed, the progressive viewpoint (an inherently imperfective value) either suspends the telic inclination of the verb (e.g. *she was reading a book* does not entail completion) or – as is typical of Slavic languages – it dictates the selection of a lexeme compatible with the atelic interpretation. Indeed, Slavic ‘perfective’ verbs (excepting the so-called ‘delimitatives’) cannot be used in progressive contexts. However, the substantial independence of Actionality *vis-à-vis* Aspect is proven by the fact that perfectivity may involve both telic and atelic events (e.g. *Yesterday, while mum had a nap, little Jim built a puzzle* [telic] / *played peacefully* [atelic]).

Second, the word Temporality, rather than ‘tense’, will be used to designate the semantic domain of time-reference. The term ‘tense’ will instead be used to refer to the morphosyntactic entities to be found in the grammars of the individual languages (in the case at stake, Mòoré). To justify this choice, consider for instance the Romance Imperfect: in its most typical uses, this tense conveys the aspectual value [–perfective] and the temporal value [+past]. It is thus confusing to use the same word to indicate both a particular grammatical entity (such as the Imperfect tense) and the semantic domain of Temporality. As a matter of fact, any tense simultaneously conveys aspectual, temporal and modal information, even though one of these domains (or possibly all of them) may turn out to be underdetermined in particular instances. The German Preterite, for instance, conveys the temporal value [+past], but is aspectually underdetermined as it neutralizes the [±perfective] value, although in most instances the language user is able to construe the relevant aspectual interpretation by exploiting salient contextual cues (Bertinetto 2008). Furthermore, all tenses express a range of modal values. For instance, the Romance Imperfect, despite belonging to the Indicative mood (and thus normally expressing ‘realis’ values), may convey ‘irrealis’ nuances in some contexts, e.g. in hypothetical clauses.

An important issue that will emerge in the analysis of the acquisition data reported on below relates to morphological complexity. Slobin (1985) was the first, in the domain of acquisition, to draw the attention to the relation between form and meaning. It makes a big difference, for the learning child, to deal with data governed by a one-to-one *vs.* one-to-many relation. Full semantic explicitness of the morphological formatives supports and speeds up the acquisition process. Another important parameter to consider is the de-

gree of morphophonological transparency. Easy detection of the relevant morphemes is substantial help, as opposed to opacity caused by the application of morphophonological processes (Loporcaro 2011). The topic of morphological complexity (taking into account both morphological explicitness and morphophonological transparency) has been especially addressed within the Natural Linguistics framework (Dressler 1985, 2005, 2011; Dressler & Kilani-Schoch 2017). The complexity scale devised by these theorists can be usefully taken into account in the evaluation of acquisition data. Talamo *et al.* (2016) applied this model to the derivational morphology of Italian.

We now turn to a description of the Mòoré ATAM system, as a necessary precondition to understand the results of the longitudinal study.

## 2. THE MÒORÉ ATAM SYSTEM

The structure of the Mòoré verb is described in Bertinetto & Pacmogda (2013). See also Peterson (1971), Kaboré (1985), Nikiéma (1989), Kinda (2005). The illustration provided here will ignore a number of details irrelevant to the present purpose, namely usages not to be found in Child Speech (CS) or Child Directed Speech (CDS). Mòoré is a partly isolating, partly fusional language: both tendencies will emerge in what follows.

The basic structure of the Mòoré verb is summarized in the following template, where spaces separate lexical elements and the slash indicates that what follows may or may not be separated; besides, brackets indicate elements that are only required in particular cases, and hyphens mark morpheme boundaries which often imply morphophonological processes.

(SUBJECT) (PREDICATIVE(S)) ROOT(-IPFV)(-DUR)/(-DEC)(-EXP)

Of special importance is the contrast single- vs. double-root verbs: the former generate all tenses out of one and the same root, while the latter exhibit two suppletive roots depending on the [ $\pm$ perfective] value.

### 2.1 *Single-root verbs*

The ATAM exponents of single-root verbs are either marked by suffixes (for Aspect) or by independent particles preceding the root (to express temporal and modal values).

The bare root may first and foremost express the aspectually underspecified Infinitive (1a), but is also used for the Injunctive (i.e. Imperative, 1b-1c), the perfective Past (1d) and the Subjunctive (1e). An overt subject is obligatory in the last two cases, as well as with the 2PL Injunctive, where it occupies the

postverbal position; compare (1c) with (1b). The perfective Past (1d) – like all tenses of the Indicative mood – requires, in addition to the overt preverbal subject, a declarative marker (DEC) to specify the illocutionary force (i.e. to highlight factuality); whenever the verb is clause-final, the DEC marker is accompanied by the so-called ‘expletive’ marker (EXP). The Subjunctive lacks the DEC (and EXP) marker, but differs from the Injunctive inasmuch as it features a preverbal subject. In the Mòoré examples to follow, the diacritics ´ and ` respectively mark the high and low tone.

(1) MOOD DISTINCTIONS BASED ON THE BARE ROOT

- a. *sò*  
wash  
‘To wash oneself’ INFINITIVE
- b. *sò!*  
wash  
‘Wash yourself!’ INJUNCTIVE (SG)
- c. *só-y yã!*  
wash-2PL EXP  
‘Wash yourself!’ INJUNCTIVE (PL)
- d. *à só-o-me*  
3SG wash-DEC-EXP  
‘S/he washed’ INDICATIVE (Past perfective)
- e. *wá ká*  
3SG come\_here  
‘S/he would come here’ SUBJUNCTIVE

Although the examples in (1) are all built on the verb root, the Mòoré Mood distinctions are transparently expressed by presence *vs.* absence of the above specified components: subject (pre- or post-verbal), DEC marker, and (when required) EXP marker. The single exception is the contrast Infinitive *vs.* singular Injunctive, which is however easily disambiguated by the syntactic context. Table 1 is a synoptic recapitulation.

|             | preverbal<br>subject | ROOT | postverbal<br>subject | IPVF<br>marker | DEC(+EXP)<br>marker |
|-------------|----------------------|------|-----------------------|----------------|---------------------|
| INFINITIVE  | –                    | +    | –                     | –              | –                   |
| INJUNCTIVE  | –                    | +    | (–)                   | –              | –                   |
| SUBJUNCTIVE | +                    | +    | –                     | –              | –                   |
| INDICATIVE  | +                    | +    | –                     | (+)            | +                   |

TABLE 1: MORPHOSYNTACTIC FACIES OF THE MÒORÉ MOODS.

In single-root verbs, Aspect is in most cases overtly marked by presence vs. absence of the IPFV suffix *-d-* (or allomorphs; see the examples in (2)). Even the Injunctive may appear in the imperfective form to convey a habitual/iterative meaning (2b). Imperfective forms can express the whole range of canonical meanings: durative (2c), progressive (2a, 2d), habitual (2e), generic (2f). Imperfectivity can be further enhanced by means of the durative marker *-ē* (examples 2c-2e), which is, however, missing in the children's early productions. For this reason, we do not provide any detail about its usage (see Bertinetto & Pacmogda 2013).

(2) IMPERFECTIVE MARKING IN SINGLE-ROOT VERBS

- |    |   |                         |
|----|---|-------------------------|
| a. | <i>à sóo-d-à-mé</i><br>3SG wash-IPFV-DEC-EXP<br>'S/he is washing her/himself'                                     | PROGRESSIVE             |
| b. | <i>sòng-d-ý taabá!</i><br>help-IPFV-2PL each other<br>'Help (all the time) each other!'                           | IMPERFECTIVE INJUNCTIVE |
| c. | <i>ḃ rí-t-é</i><br>3PL eat-IPFV-DUR<br>'They keep on eating (e.g., whenever I am around)'                         | DURATIVE IMPERFECTIVE   |
| d. | <i>kèe-d-é n gáe-ē</i><br>go_in-IPFV-DUR link go_to_bed-DUR<br>'He is going to bed'                               | EMPHATIC PROGRESSIVE    |
| e. | <i>à kó-t-é biigã sagba</i><br>s/he give-IPFV-DUR child-DEF porridge<br>'s/he keeps giving porridge to the child' | HABITUAL PROGRESSIVE    |
| f. | <i>wíndg pùk-d-a yáangà</i><br>sun rise-IPFV-DEC east<br>'The sun rises in the east'                              | OMNITEMPORAL GENERIC    |

## 2.2 Double-root verbs

Most stative verbs belong to the class of double-root verbs, as shown in Tables 4-5 and 8-9 below. From other languages of the area, one can gather that the contrast single- vs. double-root used to rest on the actional divide stative vs. dynamic ('verbes d'état / d'action'). Nowadays, however, some double-root verbs have acquired an eventive meaning (hence, they may be used injunctively) and one can find statives among single-root verbs.

The imperfective form of double-root verbs consists of a suppletive root (as in 3a,c), instead of being generated by means of a suffix attached to the one and only root (as in 2). The morphological peculiarity of double-root verbs is also shown by the fact that the IPFV marker *-d-* can be added to both types of root (perfective and imperfective) to convey subtle temporal/modal nuances, rather than a compositionally discernible aspectual meaning (3d).

(3) DOUBLE-ROOT VERBS

- a. *nòng-ý taaba!*  
love.IPFV-2P each\_other  
'Love each other (always)!'
- b. *à bǎng-à-mé*  
3SG know.PFV-DEC-EXP  
'S/he knew'
- c. *à mí-i-mé*  
3SG know.IPFV-DEC-EXP  
'S/he knows'
- d. *yì-t-a náná*  
be.PFV-IPFV-DEC easy  
'It will be easy'

### 2.3 Glossing conventions

This paper adopts the following glossing conventions, as shown in Table 2:

- SINGLE-ROOT VERBS: the root, coinciding with the  $\emptyset$ -marked perfective form, is glossed by means of the relevant semantic translation, while the imperfective suffixes *-d* and *-ẽ* are respectively glossed as IPFV and DUR (see 2c-d above).
- DOUBLE-ROOT VERBS: since the aspectual opposition is expressed by alternative root allomorphs, the grammatical gloss PFV (perfective) vs. IPFV (imperfective) is linked to the semantic translation, as shown in (3). If the imperfective suffixes appear, they are marked as IPFV or DUR although in such cases they bring about a temporal or modal meaning, instead of an aspectual one.

Apart from the root selection mechanism (and ignoring minor details irrelevant in the present context), the temporal-aspectual semantics of both types of verb is exactly the same. For instance, the Indicative mood requires the DEC marker (plus, when needed, the EXP marker).



|              | SINGLE-ROOT         | DOUBLE-ROOT             |
|--------------|---------------------|-------------------------|
| PERFECTIVE   | meaning             | meaning.PFV(-IPFV/DUR)  |
|              | <i>example (1d)</i> | <i>examples (3b,3d)</i> |
| IMPERFECTIVE | meaning-IPFV(-DUR)  | meaning-IPFV(-IPFV/DUR) |
|              | <i>examples (2)</i> | <i>examples (3a,3c)</i> |

TABLE 2: GLOSSING CONVENTIONS FOR SINGLE- vs. DOUBLE-ROOT VERBS.

## 2.4 Predicative markers

The term ‘predicatives’ designates, in Mòoré grammars, independent markers that qualify the verb. They are obligatorily placed between subject and verb, and can either express TAM values or an adverbial meaning. They are never used as predicates, although some of them have a transparent verbal origin (see Bertinetto & Pacmogda 2013 for further details).

The examples in (4) contain Temporality-related markers.<sup>2</sup> In some cases, the linking element *n* may (4a) or must (4b-d, 4f-h) be inserted before the verb root. When the prospective marker *na* is not followed by *n*, it indicates subjective certainty (4e). Some markers can be combined to obtain particular meanings, such as Future-in-the-Past *rà ná* (4h) or temporal distance *rá wá* (4f, retrospective) and *ná wá* (4g, prospective). The examples in (4b, 4f-g) show that the notion of temporal distance can be expressed in more than one way (*p̀̀ndí, síngè, wa*), with the last marker having no predefined temporal orientation, since it can indicate past or future distance.

### (4) TIME-RELATED PREDICATIVES

- a. *à rá(g ò) saoo-d-a ká*  
3SG RETR LINK dance-IPFV-DEC here  
‘S/he was dancing here’ PAST
- b. *à (rá) p̀̀nd/síng n bàng-a yéll-á*  
3SG (RETR) DIST LINK know.PFV-DEC thing-DEF  
‘S/he knew that thing a long time ago’ DISTANT PAST
- c. *à ná n tògs-á là-mé*  
3SG PROSP LINK say-3SG DEC-EXP  
‘S/he will tell her/him’ FUTURE
- d. *À Talaát ná n p̀̀vòs-d-a Sáab wé̀ndòog-é wá*  
CLAS Talaato PROSP LINK pray-IPFV-DEC Saaba church-LOC DEF  
‘Talaato will (always/single-rootly) pray (from now on) in the church of Saaba’ FUTURE

<sup>2</sup> Whenever we cite a monosyllabic ‘predicative’ marker out of context, we do not add any tone diacritic, since the tonal value depends on the context.

- e. *fò ná rí-á*  
2SG PROSP eat-3SG  
'You will eat it (for sure)!' CERTAIN FUTURE
- f. *à rá wá ñ gũsà ká*  
3SG RETR DIST LINK sleep.PFV-DEC here  
'S/he slept here a long time ago' DISTANT PAST
- g. *à ná wá n wà-a ká*  
3SG PROSP LINK DIST come-DEC here  
'S/he will come here (one day maybe)' DISTANT FUTURE
- h. *à yéel-à-mé t' á rà ná n wà-a bé*  
3SG sayDEC-EXP LINK 3SG RETR PROSP LINK come-DEC there  
'S/he said s/he would come there' FUTURE-IN-THE-PAST

Many predicatives may be used with both the perfective and the imperfective form of the verb. This is, for instance, the case of retrospective *ra(g)* (4a-b, 4h). By contrast, no predicative marker is exclusively used in perfective sentences: the only aspectually-sensitive predicatives are those that uniquely combine with the imperfective form to further qualify its meaning, e.g. *ket* (5a-b, uninterrupted/continuous action) and *nan* (5c, present progressive). As in most languages of the area, the Mòoré Present Progressive can also convey proximate (i.e. immediate-future) meaning, as shown by the translation in (5c). This is similar to the English Progressive, except that the latter can also refer to a relatively distant future (as in *Next year I am traveling to Finland*). As (5d) shows, however, 'proximativity' can also be expressed by the mere imperfective form of single-root verbs.

##### (5) ASPECT-SENSITIVE PREDICATIVES

- a. *à kèt ñ wà-t-a ká*  
3SG CONT LINK come-IPFV-DEC here  
'S/he keeps coming here'
- b. *kèt n ká ta ye*  
CONT LINK NEG arrive NEG  
'It has not yet arrived'
- c. *à nán sòo-d-a-mé*  
3SG PROG wash\_oneself-IPFV-DEC-EXP  
'S/he is washing/will soon wash her/himself'
- d. *b̂ wá-t-à (yíbeoog-á)*  
3PL come-IPFV-DEC morning-DEF  
'They are coming / will soon come (this morning)'

In practice, together with the imperfective suffixes, many predicatives contribute to building the various tenses that make up the Mòoré verb paradigm. As for those that merely convey a kind of adverbial meaning, consider the examples in (6).

(6) ADVERBIAL PREDICATIVES

- a. à léb n lóog-à Wáogdgò  
3SG ITER LINK go-DEC Ouagadougou  
'S/he went once again to Ouagadougou'
- b. ð̂ yá n tige!  
2SG finally LINK be\_satiated  
'You've finally had enough!'
- c. à zóe n gūs-à-mé?  
3SG already LINK sleep.PFV-DEC-EXP  
'Has s/he already fallen asleep?'

The adverbial predicatives are required to integrate the sentence meaning. By contrast, predicatives conveying temporal or modal values may be dispensed with whenever the context is sufficiently explicit, as often occurs in conversation or in narratives. This would be inconceivable in languages (like the Indo-European ones) in which the TAM exponents are always necessarily manifested as affixes.

## 2.5 The tenses of Mòoré

Table 3 is a synopsis of the Mòoré tense system. Needless to say, not all forms were used by the children of our study, but they did appear in the input they heard.

Present-reference is conveyed by the imperfective form unaccompanied by predicative markers. Henceforth, it will be called 'Present' for simplicity. It is important to distinguish the functional interpretation of the Present from its morphological constitution, for this tense has a twofold manifestation: with single-root verbs it consists of the verb root plus the IPFV suffix *-d-*, while with double-root verbs it coincides with the imperfective allomorph of the root. Although the Present yields in most cases an imperfective reading, it can also be used in clearly perfective contexts, such as those expressing future-reference (5d) or performativity (7). The Present is thus the only aspectually ambiguous tense in Mòoré, but this is hardly surprising, since the aspectually underdetermined nature of the ('realis') Present is a widespread feature in the world's languages. As far as Mòoré is concerned, this is thus a case in which the label IPFV may occasionally be understood in purely formal (i.e., morphological), rather than semantic terms.

## (7) PERFORMATIVE USE OF THE PRESENT

- a. *màm sóo-d-à foom ba là bīga là vūsem sōng*  
 1SG wash-IPFV-DEC 2SG father LINK son LINK spirit holy  
*yvvr ỳngá*  
 name POSTP  
 ‘I baptize you in the name of Father, Son and Holy Spirit’ [= standard  
 baptism formula]

Past-reference is first and foremost expressed by the bare perfective form (8a-b), which we call ‘Past’ for simplicity, to be interpreted as ‘perfective past’. The retrospective marker *ra(g)* adds further semantic possibilities: imperfective-in-the-past when combined with the Present (8c-d), or anteriority-in-the-past (i.e. Pluperfect) when combined with the Past (8e).

## (8) PAST TENSES

- a. *̀b sáo-o-mé*  
 3PL dance-DEC-EXP  
 ‘They danced’
- b. *à z̀ndà ká*  
 3SG be.PFV-DEC here  
 ‘S/he has been here’
- c. *̀b rá sàoo-d-a-mé*  
 3PL RETR dance-IPFV-DEC-EXP  
 ‘They were dancing’
- d. *̀m ma rá m̀-ɪ f̀r̀ndé*  
 1SG mother RETR know-IPFV-DEC French  
 ‘My mother knew French’ [i.e. ‘was able to speak French’]
- e. *̀b rá(g n) sáo-o-mé*  
 3PL RETR LINK dance-DEC-EXP  
 ‘They had danced’

Future-reference is expressed by the marker *na (n)* (4c-e,g-h). ‘Proximity’ (i.e. immediate future) is however conveyed, as noted, by the Present Progressive (by means of the phonetically similar predicative *nan*; see 5c) or – often with an epistemic overtone – by the mere Present of single-root verbs (5d), as well as by adjunction of the IPFV marker to the perfective allomorph of double-root verbs. Needless to say, with children of the age considered here, the last solution is never observed. Besides, in their productions it is impossible to distinguish between ‘neuter’ and ‘certain’ Future, since the phonetic difference between the respective predicatives is too subtle. Thus, in the remainder of this paper, by ‘Future’ we mean a verbal form preceded by a *bona fide* futural predicative, whatever its exact phonetic manifestation.

| <i>Tense</i>     | PERFECTIVE                                      |                              |   | IMPERFECTIVE                                |                                      |                                      |
|------------------|---|------------------------------|---|---|--------------------------------------|--------------------------------------|
|                  | SINGLE-ROOT                                     | DOUBLE-ROOT                  | SINGLE-ROOT                                 | SINGLE-ROOT                                 | DOUBLE-ROOT                          | DOUBLE-ROOT                          |
| PRESENT          | -   | -                            | √- <i>d</i> -DEC                            | √- <i>d</i> -DEC                            | √- <i>d</i> -DEC                     | √- <i>d</i> -DEC                     |
| PRES. PROGR.     | -   | -                            | <i>nan</i> √- <i>d</i> -DEC                 | <i>nan</i> √- <i>d</i> -DEC                 | <i>nan</i> √- <i>d</i> -DEC          | <i>nan</i> √- <i>d</i> -DEC          |
| PAST             | √-DEC   | √-PFV-DEC                    | <i>rà(g)</i> √- <i>d</i> -DEC               | <i>rà(g)</i> √- <i>d</i> -DEC               | <i>rà(g)</i> √- <i>d</i> -DEC        | <i>rà(g)</i> √- <i>d</i> -DEC        |
| ANTERIOR PAST    | <i>rà(g n)</i> √-DEC                            | <i>rà(g n)</i> √-PFV-DEC     | -   | -   | -                                    | -                                    |
| IMMEDIATE PAST   | -   | √-PFV- <i>d</i> -DUR-DEC     | <i>(rà/nan)</i> √- <i>d</i> -DUR+DEC        | <i>(rà/nan)</i> √- <i>d</i> -DUR+DEC        | <i>(rà/nan)</i> √- <i>d</i> -DUR+DEC | <i>(rà/nan)</i> √- <i>d</i> -DUR+DEC |
| DISTANT PAST     | <i>wá n</i> √-DEC<br><i>síngè/pĩndì n</i> √-DEC | <i>wá (n)</i> √-PFV-DEC      | <i>síngè n</i> √- <i>d</i> -DEC             | <i>síngè n</i> √- <i>d</i> -DEC             | <i>síngè n</i> √- <i>d</i> -DEC      | <i>síngè n</i> √- <i>d</i> -DEC      |
| FUTURE (NEUTER)  | <i>na n</i> √-DEC                               | <i>na n</i> √-PFV-DEC        | <i>na n</i> √- <i>d</i> -DEC                | <i>na n</i> √- <i>d</i> -DEC                | <i>na n</i> √- <i>d</i> -DEC         | <i>na n</i> √- <i>d</i> -DEC         |
| CERTAIN FUTURE   | <i>na</i> √-DEC                                 | <i>na</i> √-PFV-DEC          | -   | -   | <i>na</i> √- <i>d</i> -DEC           | <i>na</i> √- <i>d</i> -DEC           |
| IMMED. FUTURE    | -   | √-PFV- <i>d</i> -DEC         | √- <i>d</i> -DEC (=Present)                 | √- <i>d</i> -DEC (=Present)                 | -                                    | -                                    |
| DISTANT FUTURE   | <i>na n wa</i> √-DEC                            | <i>na n wa</i> √-PFV-DEC     | <i>na n wa</i> √- <i>d</i> -DEC             | <i>na n wa</i> √- <i>d</i> -DEC             | -                                    | -                                    |
| FUT.-IN-THE-PAST | -   | <i>rà(g)</i> √-DEC <i>na</i> | <i>rà(g)</i> <i>na</i> √- <i>d</i> -DUR-DEC | <i>rà(g)</i> <i>na</i> √- <i>d</i> -DUR-DEC | -                                    | -                                    |
| INFINITIVE       | √   | √-PFV-                       | -   | -   | -                                    | -                                    |
| SUBJUNCTIVE      | √   | √-PFV-                       | -   | -   | -                                    | -                                    |

TABLE 3: STRUCTURE OF THE MÓORÉ TENSES. THE ELEMENT PRECEDING THE ROOT √, POSSIBLY ACCOMPANIED BY THE LINKING ELEMENT *n*, ARE THE SO-CALLED ‘PREDICATIVES’; -*d*- STANDS FOR THE IPFV AFFIX OR ITS ALLOMORPHS. THE DEC MARKER IS FOLLOWED BY THE EXP MARKER IN CLAUSE-FINAL POSITION.

## 2.6 The Mòoré hierarchy of ATAM features

The above description of the Mòoré system highlights a Mood/Aspect-prominent situation. Indeed, as shown in Table 3, most Mòoré tenses express their modal and aspectual values in a formally explicit way.

Of special importance is the explicit marking of the [ $\pm$ perfective] divide, with the partial exception of the Present which (as described) can occasionally be used in perfective contexts (specifically, as performative or as future-oriented). However, to cite an obvious parallel, the futurate use of the English Present Progressive does not prevent this tense from being perceived as an imperfective device in most cases. Admittedly (see again Table 3), the IPFV affix *-d-* and the DUR affix *-ē-* are also sometimes used against their basic semantic value, i.e. as mere formal exponents (or as ‘morphemes’, to use Aronoff (1994) term); but in comparison with the formally well-behaved cases, such occurrences are relatively marginal, especially so in early CDS. Thus, apart from these and other definitely marginal details, irrelevant in the present context, Aspect can be regarded as a sufficiently explicit feature for the learning child.

The same can be said about Mood, owing to the DEC marker (possibly accompanied by the EXP marker), which neatly separates the Indicative from Infinitive, Injunctive and Subjunctive. Besides, the Injunctive and the Infinitive have no overt subject, with the exception of the 2PL Injunctive that requires, however, a postverbal subject. Temporality is also fairly explicit, except that the independent temporal markers (the so-called predicatives) which express this category may be dispensed with whenever the context is sufficiently clear. In addition, the Present has an ambiguous behavior even in terms of Temporality, for (as mentioned) it can also indicate proximativity.

The contribution of Actionality is debatable. Considering that the single-*vs.* double-root split is diachronically related to the eventive *vs.* stative contrast, one might assign Actionality a relatively high rank. However, in the course of language evolution the situation has changed (Bertinetto & Pacmogda 2013), because some stative verbs inflect now as single-root verbs and not all double-root verbs are stative, as shown in Tables 4 and 5 (where the first row reports the names of the four children of the longitudinal study reported below). Thus, despite the uneven distribution of the actional classes among single- *vs.* double-root verbs, the assignment of a Mòoré verb to an actional class does not rest on its morphological facies (as opposed, by and large, to the Slavic languages with respect to the [ $\pm$ telic] value; see footnote 30). Hence, the degree of explicitness of Actionality is comparable to the one found in most languages. Zarcone & Lenci (2008) have shown that even well-trained schol-

ars might diverge, when judging the actional nature of verbs found in Italian texts.

| CS       | Abiba |      | Balhaissa |      | Basite |      | Gabin |     |
|----------|-------|------|-----------|------|--------|------|-------|-----|
|          | S-√   | D-√  | S-√       | D-√  | S-√    | D-√  | S-√   | D-√ |
| STATIVE  | 31    | 69   | 66.5      | 33.5 | 46     | 54   | 50    | 50  |
| TELIC    | 97    | 3    | 92.5      | 7.5  | 95     | 5    | 98    | 2   |
| ACTIVITY | 87.5  | 12.5 | 95        | 5    | 87.5   | 12.5 | 86    | 14  |

TABLE 4: CS: PERCENTAGE OVER TYPES OF SINGLE-ROOT (S-√) vs. DOUBLE-ROOT (D-√) VERBS BY ACTIONALITY.

| CDS      | Abiba |      | Balhaissa |      | Basite |      | Gabin |     |
|----------|-------|------|-----------|------|--------|------|-------|-----|
|          | S-√   | D-√  | S-√       | D-√  | S-√    | D-√  | S-√   | D-√ |
| STATIVE  | 58.5  | 41.5 | 52.5      | 47.5 | 52.5   | 47.5 | 51    | 49  |
| TELIC    | 99    | 1    | 96.5      | 3.5  | 96     | 4    | 94    | 6   |
| ACTIVITY | 93    | 7    | 90        | 10   | 92     | 8    | 86    | 14  |

TABLE 5: CDS: PERCENTAGE OVER TYPES OF SINGLE-ROOT (S-√) vs. DOUBLE-ROOT (D-√) VERBS BY ACTIONALITY.

Summing up, in terms of morphological explicitness (i.e. one-to-one mapping of form and meaning), the above described situation suggests the following hierarchy:

MORPHOLOGICAL EXPLICITNESS:  
Mood/Aspect > Temporality > Actionality

However, things significantly differ when MORPHOPHONOLOGICAL TRANSPARENCY (i.e. ease of morphemic parsing) is taken into account. From this point of view, Temporality ranks higher than Aspect, because it is mostly conveyed by independent markers (the predicatives). Admittedly, these are in most cases unstressed monosyllables, hence not particularly salient elements; however, if that were a serious problem, then no predicative would have been learned by the children of our study, contrary to facts (see §5.1 on the acquisition of the Future). By contrast, both the IPFV suffix *-d* and the DUR suffix *ē* involve pervasive morphophonological processes. Mood is also explicitly manifested, especially by presence vs. absence of the DEC marker (see the examples in (1)). Admittedly, the morphophonological processes that affect this morpheme may slow down its full acquisition, but since this is a privative opposition, the learners can easily perceive the contrast between a zero and an overt marker, however the latter is actually produced by toddlers.

Thus, considering the overall morphological structure, the respective ranking of the ATAM components in the hierarchy of acquisition factors is not as one would expect in a Mood/Aspect-prominent language like Mòoré. Some Temporality exponents are definitely more transparent than some frequently used, but morphophonologically opaque, affixal exponents of imperfectivity, as shown in the following hierarchy (where Actionality is ignored as irrelevant):

MORPHOPHONOLOGICAL TRANSPARENCY:  
Temporality > Mood > Aspect

It goes without saying that the two reported hierarchies are strictly language-specific. But the interesting question, here, is about which one prevails: the one based on morphological explicitness, or the one based on morphophonological transparency? The answer will come from the data collected in the longitudinal study described in the next sections.

### 3. STRUCTURE OF THE CORPUS

Pacmogda (2012), exploiting her native knowledge of Mòoré, studied the linguistic behavior of four children named Abiba, Balhaissa (girls), Basite, Gabin (boys), all living in the village of Saaba, near the capital Ouagadougou, at the time of the inquiry (August 2009 - August 2010). This guaranteed a largely monolingual environment. Besides, the very fact of living in a community of that type, with constant occasions of interfamily communication, guarantees that the amount of linguistic input was approximately the same for all of them. When referring to these children as a group, the adjective Mòosé, which designates the Mòoré-speaking people, will be used.

With few exceptions, the data were collected twice a month via spontaneous interactions with the children in the presence of their mothers, following standard practice. The video-recordings were transcribed and labeled on an annotation sheet along the following lines (most labels are self-explanatory, while some will be clarified below):

- child's name (Abiba, Balhaissa, Basite, Gabin)
- number, date, place of the recording, with child's exact age
- speaker's identity (child / mother / investigator)
- speech type (Child Speech (CS) / Child Directed Speech (CDS))<sup>3</sup>

<sup>3</sup> In this project, it was not possible, for practical reasons, to collect samples of Adult Directed Speech.



- acquisitional phase (I, II, III)
- lemma (infinitival form) and meaning (in French)
- token (the actual form produced)
- correct pronunciation
- verb category (single- vs. double-root)
- actionality (stative, activity, telic)
- tense (Present, Past, Future; the Infinitive was labelled “no tense”)
- morphologically marked Aspect (perfective, imperfective; “no aspect” for the Infinitive)
- view (current vs. non-current event, generic, exhortative)
- mood
- person (1SG, 2SG ... 3PL)
- declarative and expletive (with indication of the specific allomorph used)
- negation (with indication of the specific form used)
- error (mood error, tense error, aspect error etc., and combinations thereof)
- spontaneity (spontaneously produced by the child vs. induced by imitation).

The division into phases was inspired by Dressler (1997) three initial phases: (A) Pre-Morphology, when children only use rote-learned forms; (B) Proto-Morphology, when the first morphological contrasts appear and children begin to use a number of words with different inflections; (C) Modularized Morphology, when morphological productivity emerges. In the present corpus, children did not reach beyond the proto-morphological phase, due to the limited time window, since the aim of this project was limited to early ATAM acquisition. The children’s productions were nevertheless divided into three phases, according to the following criteria:

- Phase I corresponds to the pre-morphological phase.
- Phase II begins when the individual child uses at least two different tenses within one and the same recording.
- Phase III begins when the child uses at least two different tenses with one and the same verb within a single recording.

| PHASES            | Abiba  |     |     | Balhaissa |     |     | Basite |     |     | Gabin   |      |      |
|-------------------|--------|-----|-----|-----------|-----|-----|--------|-----|-----|---------|------|------|
|                   | age    | N   | %   | age       | N   | %   | age    | N   | %   | age     | N    | %    |
| I                 | 1;6.00 | 63  | 14  | 1;6.16    | 106 | 14  | 1;4.13 | 13  | 2   | 1;6.16  | 149  | 6    |
|                   | 6      |     |     | 9         |     |     | 2      |     |     | 4       |      |      |
| II                | 1;9.04 | 76  | 17  | 2;2.02    | 155 | 20  | 1;5.20 | 251 | 35  | 1;8.22  | 235  | 9.5  |
|                   | 7      |     |     | 5         |     |     | 11     |     |     | 4       |      |      |
| III               | 2;0.24 | 307 | 69  | 2;2.16    | 506 | 66  | 2;0.11 | 440 | 63  | 1;10.25 | 2089 | 84.5 |
|                   | 8      |     |     | 8         |     |     | 7      |     |     | 14      |      |      |
| <i>Total rec.</i> | 21     | 446 | 100 | 22        | 767 | 100 | 20     | 704 | 100 | 22      | 2473 | 100  |
| <i>final rec.</i> | 2;4.18 |     |     | 2;5.24    |     |     | 2;3.20 |     |     | 2;5.24  |      |      |

TABLE 6: CHILDREN'S PHASES WITH STARTING AGE, NUMBER OF RECORDINGS, AND NUMBER OF TOKENS PRODUCED.

These criteria are more severe than is often the case, because two different forms of the same tense (e.g. 1SG and 3SG of the Past) counted as one and the same category (Past tense), despite contrasting in terms of the feature 'person'. Table 6 reports, for each child and phase, the starting age and (below) the number of recordings, plus (in separate columns) the number of verb tokens (N) and the respective percentage relative to the child's entire production.

The Actionality values considered were: stative, activity, and telic. The assignment of the individual verbs to the three actional classes was inspired by the same sort of criteria adopted by other scholars (see, e.g., Andersen & Shirai (1996)), exception made for language-specific criteria not applicable to Mòoré,<sup>4</sup> and with the proviso that any decision be taken with respect to the actual context, rather than with respect to a (supposed) prototypical reading of the given verb (Weist *et al.* 2009). Achievements and accomplishments were lumped together under the label [+telic], since this distinction would not reveal anything essential in the case of Mòoré and would only increase the data sparseness in the statistical analyses. Besides, the exact delimitation of accomplishments and achievements can be a delicate matter in most languages, particularly so with toddlers' productions. Furthermore, the literature on L1 acquisition rarely mentions anything relevant in connection with this distinction. Notable exceptions are Aksu-Koç (1998) and, unsurprisingly, Shirai (1998), considering the strong impact that the achievement *vs.* accomplishment divide has in Japanese with respect to the *te ... -iru* construction (Soga 1983).

<sup>4</sup> Such as, e.g., the habitual meaning to be found with the Present of English dynamic verbs.

Finally, the category ‘view’ was introduced to force the annotator to check the temporal and aspectual values of the given situation with respect to the observable properties of the event, disregarding the face value of the specific tense employed. An event was labeled as ‘current’ whenever the speaker was referring to an event actually going on at the observation moment, while ‘non-current’ referred to a (mostly recent) past or a (mostly imminent) future event. As is well-known, decontextualized transcriptions of a conversation might lead to occasional misrepresentations of the actual situational dynamics. Consider, for instance, a Mòosé child saying *ritame* (lit. ‘s/he is eating’): this might refer to an event occurring at that very moment, or else foreseen as imminent or possibly as having recently occurred. Not all of these interpretations are grammatically appropriate in relation to this specific form (indeed, past-reference is excluded), but the annotator should refrain from assigning the semantic gloss on the basis of the standard grammatical value, because that might conceal important pieces of information regarding the child’s attempt to learn the correct usage of the form. Other labels used, when needed, were ‘generic’ or ‘exhortative’. Thus, the values assigned to the ‘view’ category allowed a truthful interpretation of the temporal and aspectual meanings attached to each verb token. In particular: ‘current’ was interpreted as imperfective present; ‘non-current’ as past- or future-referring, as required by the context, and perfective in both cases; ‘generic’ as habitual/generic imperfective; as for ‘exhortative’, it was further checked with respect to the overt aspectual marking of the given token, considering that Mòoré can inflect the Injunctive as either perfective or imperfective (see examples 1b-c and 2b).

The labeling strategy was thus inspired by the effort to take into consideration, as a valuable source of information, any possible misalignment between form and meaning. All ambiguous situations, for which no clear interpretation could be found, were assigned a question mark and excluded from the statistical computations. This, however, involved a negligible number of observations.

## 4. LEXICAL EXPANSION

### 4.1 *Verbs vs. nouns*

The children’s process of lexicon acquisition begins slowly, but dramatically accelerates later on, with speed varying from child to child. What is especially remarkable in the present context, is that Balhaissa and Gabin present more verb- than noun-tokens (see Table 7). If one excludes proper names, this be-

|    |        | Abiba |      | Balhaissa |      | Basite |      | Gabin |      |
|----|--------|-------|------|-----------|------|--------|------|-------|------|
|    |        | CS    | CDS  | CS        | CDS  | CS     | CDS  | CS    | CDS  |
| CN | TOKENS | 244   | 1219 | 532       | 2730 | 398    | 2013 | 1142  | 2483 |
|    | TYPES  | 84    | 239  | 116       | 315  | 81     | 286  | 175   | 319  |
| PN | TOKENS | 311   | 1182 | 167       | 1331 | 388    | 1274 | 793   | 1290 |
|    | TYPES  | 24    | 43   | 20        | 37   | 29     | 84   | 62    | 65   |
| V  | TOKENS | 446   | 4970 | 767       | 9287 | 704    | 7047 | 2473  | 9786 |
|    | TYPES  | 91    | 294  | 121       | 417  | 90     | 316  | 215   | 396  |

TABLE 7: NUMBER OF VERBS *vs.* NOUNS (TOKENS AND TYPES). CN= COMMON NOUNS; PN= PROPER NAMES; V= VERBS.

comes true of all Mòosé children for both types and tokens.<sup>5</sup> This contradicts a traditional assumption, suggesting that toddlers learn more nouns than verbs, owing to the alleged cognitive advantage of referential entities as opposed to events, with the former presenting more temporal stability. The relevant references are provided by Tomasello (2003: 46:49) and especially Stoll *et al.* (2012); the interested reader can consult the latter work for a thorough discussion of the literature. However, these authors highlight that the situation is more complex and depends on the individual learner even in languages like English or Italian, traditionally regarded as conforming to the above generalization. Furthermore, in languages like Mandarin Chinese and Korean there is a clear tendency for verbs to outnumber nouns, and this also occurs in the respective CDS (Stoll *et al.* 2012: 287-89). As an anonymous reviewer pointed out to us, this is also true of various Mayan languages, such as Yucatec Maya, K'iche', Tselal, Tsotsil (Pfeiler 2002 and 2003, Pye *et al.* 2017).

Needless to say, the initial advantage of one lexical category over the other does not imply anything essential with respect to the acquisition process, since children eventually attain language mastery both ways. Thus, the interest of this topic lies no longer in checking whether there is a universal strategy (for we have abundant evidence that this is not the case), but rather in finding out the reasons behind these alternative behaviors.

<sup>5</sup> An anonymous reviewer found this exclusion unmotivated, because proper names refer to entities in much the same way that common nouns do. While this is undoubtedly the case, one should consider the following facts. First, toddlers hear very few and frequently repeated proper names, hence these do not pose the same sort of challenge as learning new words for new referents. Second, at least as far as Mòoré is concerned, proper names have an invariable form and do not take part in any morphological process whatsoever, as detailed in this section. Finally, the practice of separating proper names in the analysis of noun acquisition was also adopted in the study of Yucatec Maya (Pfeiler 2002, 2003 and personal communication).

At first sight, the verb advantage might appear unsurprising for Mòoré, due to the complexity of the noun morphology (excluding proper names). This is a hard challenge for the learning child. The number of noun classes varies depending on the analysis, ranging from 10 Peterson (1971) to 17 Canu (1976), with the additional complication that some singular/plural pairs share the same singular or the same plural suffix of another pair. But whatever the actual number, it is obvious that the Mòosé children encounter a substantial difficulty. Furthermore, in Noun+Adjective sequences the class-identifying suffix of the noun is dropped and (often via morphophonological changes) the noun reduces to the bare root, while the class suffix only appears on the agreeing adjective. For instance (with CLAS standing for ‘class marker’ and x for class number, which depends on the analysis adopted): *noaa-gà* ‘chicken-CLASx’ + *peel-gá* ‘white-CLASx’ → *no-peel-gá* ‘white chicken’. Thus, exception made for the non-inflecting proper names, verbs are comparatively easier to learn than nouns, in spite of the morphophonological complications that affect the IPFV affixes and the DEC (plus EXP) marker. In the same vein, Stoll *et al.* (2012) discuss the somehow opposite case of Chintang (Sino-Tibetan), where the learning children exhibit a higher noun-to-verb ratio as compared with adults: as these authors write, the “Chintang verb morphology is polysynthetic and difficult to learn”.

However, if that were the only reason, one could hardly explain why the Mòoré CDS also shows a higher proportion of verbs (for both types and tokens). Since adults must be credited with mature competence, their behavior can only be understood by assuming that the syntax of Mòoré, similar to the syntax of Chinese or – to cite one among many languages – Jiwari (Western Australia; see Austin 2001), admits frequent ellipsis of arguments as allowed by contextual redundancy, thus reducing the number of nouns. This has also been observed in Mayan languages (Pye *et al.* 2017). Comparison with Chinese is particularly revealing because, owing to its isolating nature, this language exhibits no morphophonological complications of the kind to be observed in Mòoré or Mayan.

Whatever the actual reason, the Mòoré data collected for this project provide yet another case that disconfirms the supposed universal tendency of toddlers to learn more nouns than verbs in the early phase of acquisition. See also Figure 1 depicting the verb spurt in early lexical acquisition. This provides a conclusively negative answer to claim (i) itemized in §1.1.

## 4.2 The dynamics of verb acquisition in Mòoré

As repeatedly observed, during the pre-morphological Phase I, utterances mostly consist of just one word and verbs tend to appear in only one form. In the productions of the four Mòosé children, one observes a large prevalence of Injunctive and Infinitive (up to 85% of the tokens for Abiba and 72% for Balhaissa). The exception is Gabin – the most precocious child – whose usage of the rote-learned Present of double-root verbs is astonishingly pervasive (81% of the verb tokens). In Phase I, the most used single-root verbs were: *gésè* ‘look at’, *wà né* ‘give (to the speaker)’, *réegè* ‘take’, *bàse* ‘let’, *yěsme* ‘suckle’, *lógè* ‘go’, *sà* ‘finish’, *lù* ‘fall down’, *kō* ‘give’, *tù* ‘follow, come with’; the most used double-root verbs were *gǎandè* ‘stretch’, *yǎendè* ‘see’, *yà* ‘be’, *bè* ‘be here/there’, *rátè* ‘want’. Here are some examples:

### (9) EXAMPLES OF PHASE I PRODUCTIONS

- a. *m̄ baaba ní nee!*<sup>6</sup>  
1SG daddy 2SG see.PFV  
‘my daddy, do you see?’ [ABI 1;6.00]
- b. *dáadè!*<sup>7</sup>  
stretch.PFV  
‘stretch!’ [ABI 1;6.00]
- c. *bà mām*<sup>8</sup>  
let 1SG  
‘let me’ [he wants to take the money from his mother] [BAL 1;08.08]
- d. *à ne*<sup>9</sup>  
come with  
‘Give me’ [he is coming back to his mother] [GAB 2,00.18]

Among the single-root verbs added in Phase II, one can cite: *sàame* ‘break’, *yi* ‘go out’, *pàame* ‘have’, *rágé* ‘pour’, *ri* ‘eat’, *tāo* ‘shoot’, *tuke* ‘carry (on one’s head)’, *kēnge* ‘go somewhere’, *lu* ‘fall down’, *sè* ‘fart’, *kè* ‘go in’, *pábe* ‘hit/strike’, *yàke* ‘take out/remove’, *pùvse* ‘greet’. As for double-root verbs, the following began to be used: *ménmè* ‘disappear’, *yà* ‘be there’, *gǔsì* ‘sleep’, *sógè* ‘possess’, *rátè* ‘want’.

### (10) EXAMPLES OF PHASE II PRODUCTIONS

- a. *lóow-à-m*<sup>10</sup>  
go-DEC-EXP

<sup>6</sup> standing for: *m baaba f ne*.

<sup>7</sup> standing for: *gǎandè*.

<sup>8</sup> standing for: *bas maam*.

<sup>9</sup> standing for: *wà né*.

- 'It went' [she was pushing her toy car which eventually turned upside down] [ABI 2;00.24]
- b. *l̀v-v-mé*<sup>11</sup>  
fall\_down-DEC-EXP  
'It has fallen down' [he has finished throwing away the batteries he used like balls] [BAL 2;01.20]
- c. *s-à-am*<sup>12</sup>  
finish-DEC-EXP  
'It's finished' [he's playing football and the ball goes under the motor-bike] [BAS 1;09.04]
- d. *m̃ baa ké-e!*<sup>13</sup>  
1SG ball enter.PFV-DEC  
'My ball has got in' [GAB 1;08.22]

At Phase 3, the children (above all Gabin and Basite) began to use a relatively large vocabulary, occasionally building rather elaborate sentences.

(11) EXAMPLES OF PHASE III PRODUCTIONS

- a. *̀n máan-à wótó koo-d-à*<sup>14</sup>  
1SG do-DEC so cultivate-IPFV-DEC  
'He did like that and I am cultivating' [ABI 2,04.03]
- b. *à píu-d-à-mé*<sup>15</sup>  
3SG open-IPFV-DEC-EXP  
'She is opening (the eyes)' [she is pulling her doll's eyelid] [BAL 2,03.14]
- c. *lóg-d-à-m*<sup>16</sup>  
go-IPFV-DEC-EXP  
'(It) is going' [he is after a worm he wanted to kill] [BAS 2,02.20]
- d. *̀n wá-t-àm*<sup>17</sup>  
1SG to\_come-IPFV-DEC-EXP  
'I'm coming' [he is coming back to his mother] [GAB 2,00.18]

Table 8 shows the verb acquisition dynamics in the three phases with respect to single- vs. double-root verbs. The former, unsurprisingly, prevail because

<sup>10</sup> standing for: *lógàmé*.

<sup>11</sup> standing for: *l̀vumé*.

<sup>12</sup> standing for: *sàam(e)*.

<sup>13</sup> standing for: *m̃ báallà kéémé*.

<sup>14</sup> standing for: *m̃ máanà wótó n kodà*.

<sup>15</sup> standing for: *à píkdàmé*.

<sup>16</sup> standing for: *à lógdàmé*.

<sup>17</sup> standing for: *m̃ wátàmè*.

in Mòoré their number largely exceeds that of double-root verbs. This is confirmed by comparison with the CDS data in Table 9. The overall token percentage of single-root verbs ranges between 77% and 86,5% for CS, depending on the child, and between 80% and 86% for CDS. Table 8 shows however, alongside the individual differences in the speed of acquisition, that double-root verbs appear from very early on, although the absolute numbers are very low in Phase I, and partly so in Phase II. Strong support to their acquisition is the relatively high frequency of many such lexemes in the adult language.

The mere comparison of the three developmental phases does not reveal the actual lexical expansion dynamics, also owing to the uneven duration of each phase. Besides, any discontinuity in the gradually evolving situation is inevitably leveled out by collapsing the successive recordings into three partitions (the three phases). As remarked by Marchman & Bates (1994) or Bassano *et al.* (2004), among others, many children exhibit at some point a significant lexical ‘spurt’. This has also been detected by Bertinetto *et al.* (2015) with the four children analyzed in their study; in addition, these authors found that the verb spurt slightly preceded the first evidence of productive usage of tense morphology, which evidently needs a sufficient lexical storage in order to manifest itself.

| PHASE      | ACTIONAL. | Abiba |       | Balhaissa |       | Basite |       | Gabin |       |
|------------|-----------|-------|-------|-----------|-------|--------|-------|-------|-------|
|            |           | S-√   | D-√   | S-√       | D-√   | S-√    | D-√   | S-√   | D-√   |
| I          | TOTAL     | 85.5% | 14.5% | 79%       | 21%   | 100%   | 0%    | 66%   | 44%   |
|            | STATIVE   | 0%    | 100%  | 19%       | 81%   | 0%     | 0%    | 4%    | 96%   |
|            | ACTIVITY  | 100%  | 0%    | 100%      | 0%    | 0%     | 0%    | 66.5% | 33.5% |
|            | TELIC     | 98%   | 2%    | 64%       | 36%   | 100%   | 0%    | 99%   | 1%    |
| II         | TOTAL     | 77.5% | 22.5% | 76%       | 24%   | 72.5%  | 27.5% | 79.5% | 20.5% |
|            | STATIVE   | 0%    | 100%  | 7.5%      | 92.5% | 5.5%   | 94.5% | 0%    | 100%  |
|            | ACTIVITY  | 80%   | 20%   | 50%       | 50%   | 100%   | 0%    | 62.5% | 37.5% |
|            | TELIC     | 95%   | 5%    | 83.5%     | 16.5% | 77%    | 23%   | 99.5% | 0.5%  |
| III        | TOTAL     | 75%   | 25%   | 91%       | 9%    | 78.5%  | 21.5% | 80%   | 20%   |
|            | STATIVE   | 10.5% | 89.5% | 7.5%      | 92.5% | 14.5%  | 85.5% | 9%    | 91%   |
|            | ACTIVITY  | 75%   | 25%   | 93.5%     | 6.5%  | 90%    | 10%   | 73.5% | 26.5% |
|            | TELIC     | 97%   | 3%    | 99%       | 1%    | 90.5%  | 9.5%  | 99.5% | 0.5%  |
| ALL PHASES | TOTAL     | 77%   | 23%   | 86%       | 14%   | 77%    | 23%   | 79%   | 21%   |
|            | STATIVE   | 8%    | 92%   | 10%       | 90%   | 12.5%  | 87.5% | 8%    | 92%   |
|            | ACTIVITY  | 76%   | 24%   | 91%       | 9%    | 91.5%  | 8.5%  | 73%   | 27%   |
|            | TELIC     | 96.5% | 3.5%  | 94%       | 6%    | 85.5%  | 14.5% | 99.5% | 0.5%  |

TABLE 8: CS SINGLE- vs. DOUBLE-ROOT VERBS (S-√ vs. D-√) BY CHILD AND PHASE (PERCENT TOKENS).



| PHASE      | ACTIONAL. | Abiba |       | Balhassa |       | Basite |      | Gabin |       |
|------------|-----------|-------|-------|----------|-------|--------|------|-------|-------|
|            |           | S-√   | D-√   | S-√      | D-√   | S-√    | D-√  | S-√   | D-√   |
| I          | TOTAL     | 85%   | 15%   | 88%      | 12%   | 85%    | 15%  | 83%   | 17%   |
|            | STATIVE   | 14%   | 86%   | 11.5%    | 88.5% | 11%    | 89%  | 20%   | 80%   |
|            | ACTIVITY  | 96%   | 4%    | 12%      | 88%   | 89%    | 11%  | 71%   | 29%   |
|            | TELIC     | 94.5% | 5.5%  | 91%      | 9%    | 97%    | 3%   | 98%   | 2%    |
| II         | TOTAL     | 85.5% | 14.5% | 85%      | 15%   | 84%    | 16%  | 80%   | 20%   |
|            | STATIVE   | 14%   | 86%   | 95%      | 5%    | 5%     | 95%  | 6%    | 94%   |
|            | ACTIVITY  | 91%   | 9%    | 97%      | 3%    | 91%    | 9%   | 61%   | 39%   |
|            | TELIC     | 96%   | 4%    | 92%      | 8%    | 95%    | 5%   | 98%   | 2%    |
| III        | TOTAL     | 84%   | 16%   | 83.5%    | 16.5% | 86%    | 14%  | 79%   | 21%   |
|            | STATIVE   | 8.5%  | 91.5% | 95%      | 5%    | 11%    | 89%  | 10.5% | 89.5% |
|            | ACTIVITY  | 94%   | 6%    | 95%      | 5%    | 86%    | 14%  | 63%   | 37%   |
|            | TELIC     | 94%   | 6%    | 96%      | 4%    | 96.5%  | 3.5% | 99%   | 1%    |
| ALL PHASES | TOTAL     | 85%   | 15%   | 86%      | 14%   | 85%    | 15%  | 80%   | 20%   |
|            | STATIVE   | 12%   | 88%   | 11%      | 89%   | 8%     | 92%  | 11.5% | 88.5% |
|            | ACTIVITY  | 93.5% | 6.5%  | 94%      | 6%    | 88%    | 12%  | 64%   | 36%   |
|            | TELIC     | 95%   | 5%    | 95%      | 5%    | 83%    | 17%  | 99%   | 1%    |

TABLE 9: CDS SINGLE- vs. DOUBLE-ROOT VERBS (S-√ vs. D-√) BY CHILD AND PHASE (PERCENT TOKENS).

Figure 1 shows, for each child, the gradual increase of the verb lexicon according to the Verb Expansion Rate (V-Rate) expressed by the formula in (12), where:  $V_{t_i}$  and  $N_{t_i}$  are the number of verb- and noun-types cumulatively produced by the child in the recordings from  $t_1$  to  $t_i$ , while  $V_{t_{i+1}} - V_{t_i}$  and  $N_{t_{i+1}} - N_{t_i}$  indicate the number of new verb- and noun-types produced by the child during recording  $t_{i+1}$ .

$$(1) \quad \frac{V_{t_{i+1}} - V_{t_i}}{N_{t_{i+1}} - N_{t_i}}$$

By highlighting the comparative incremental rate of verbs and nouns, this formula effectively neutralizes the recording size problem, thus avoiding undesirable distortions both within and between the different children’s productions. Since the values in Figure 1 are constantly higher than 1, it follows that, at each time during the observation period, the children were learning more verbs than nouns. This behavior contrasts with the one found with the children studied in Bertinetto *et al.* (2015), where nouns constantly outnumbered verbs. In both cases, however, one can detect a notable verb-spurt at a fairly early stage. But, in order to fully understand its meaning, one has to put it in relation with the acquisition of tense morphology, as detailed in the next section.

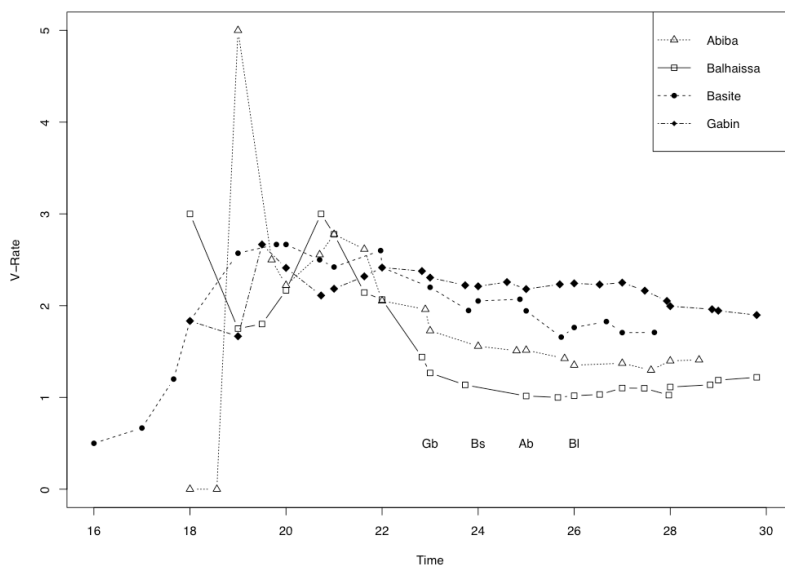


FIGURE 1: VERB-RATE OF THE INDIVIDUAL CHILD, WITH THE TIME PROGRESSION EXPRESSED IN MONTHS FROM BIRTH (ABSCISSA). THE ABBREVIATIONS AB, BL, BS, GB INDICATE THE START OF PHASE III OF, RESPECTIVELY, ABIBA, BALHAISSA, BASITE, GABIN.

## 5. THE ACQUISITION OF THE MÒORÉ TENSES

### 5.1 On the early appearance of the Future

During the earliest stage, children produce a limited number of tenses, and this is also observable in the corresponding CDS. Table 10 presents the static distribution of the main tenses, while Figure 2 shows the dynamic evolution of Past, Future, and (limited to double-root verbs, for reasons to be explained below) Present. Table 10 and Figure 2 thus provide complementary information: the table presents the distribution of verb tokens, while the panels plot the Tense Expansion Rate, computed by means of the adaptation of Equation 1, as applied to verb types. The tense-rate is the ratio between the verb types featuring a given tense and the cumulative verb types produced up to the current recording. The frames also show the position of the verb-spurt (see §4.2). Table 10 shows that one child (Balhaissa), in striking contrast with CDS, used more Past than Present tokens. This can be understood by considering that, with single-root verbs, the Past (root+DEC) is morphophonologically simpler than the Present (root+IPFV+DEC). Similarly, the salience (in terms of tense-

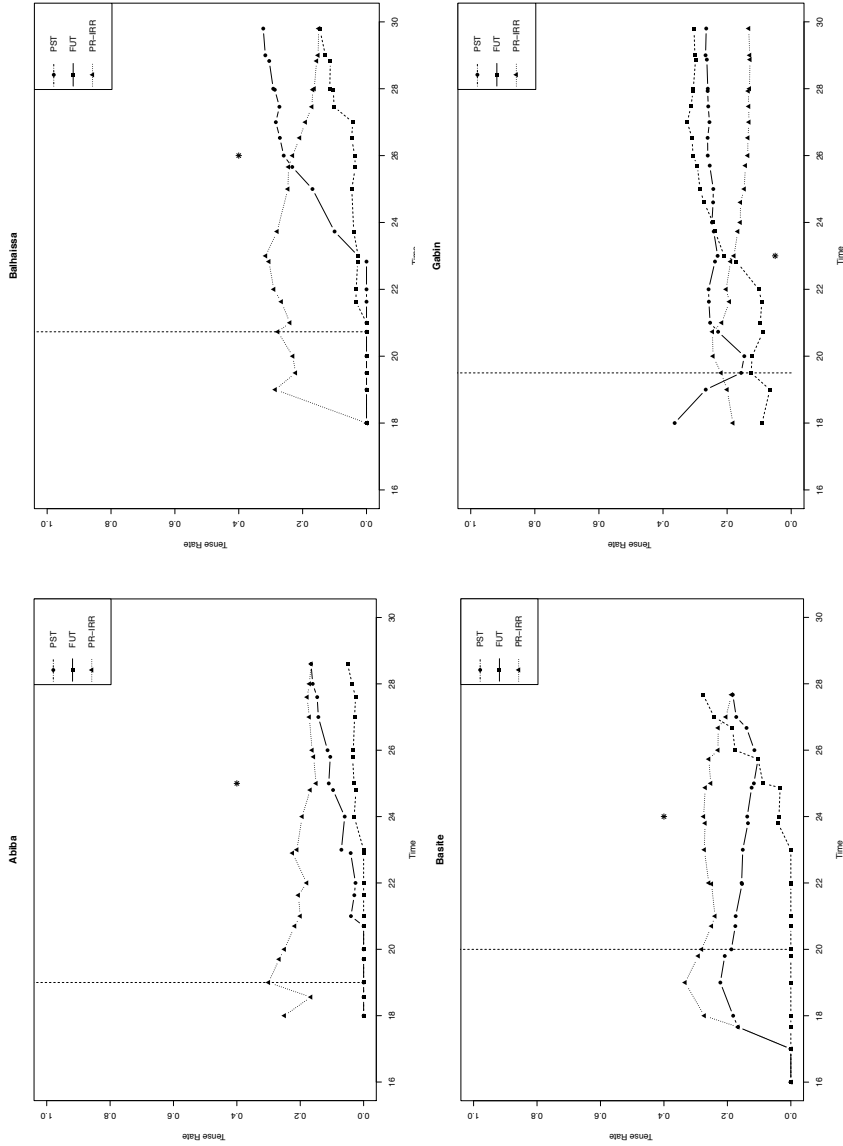


FIGURE 2: TENSE EXPANSION RATE OF THE FOUR CHILDREN W.R.T. PRESENT OF DOUBLE-ROOT VERBS (= PR-IRR), PAST, AND FUTURE. ON THE ABSCISSA: MONTHS FROM BIRTH. VERTICAL LINE: VERB-SPURT (SEE §4.2). ASTERISK: START OF PHASE III.

|           | Abiba          |                 | Balhaissa      |                 | Basite         |                 | Gabin          |                 |
|-----------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
|           | CS             | CDS             | CS             | CDS             | CS             | CDS             | CS             | CDS             |
| PRESENT   | 102<br>22.86 % | 757<br>15.23 %  | 131<br>17.07 % | 1528<br>16.43 % | 168<br>23.86 % | 968<br>13.73 %  | 535<br>22.15 % | 2254<br>23.03 % |
| PAST      | 50<br>11.21 %  | 238<br>4.78 %   | 230<br>29.98 % | 592<br>6.29 %   | 72<br>10.22 %  | 345<br>4.89 %   | 383<br>15.48 % | 1162<br>11.87 % |
| FUTURE    | 14<br>3.13 %   | 246<br>4.94 %   | 69<br>8.99 %   | 573<br>6.36 %   | 114<br>16.19 % | 396<br>5.61 %   | 457<br>18.47 % | 927<br>9.47 %   |
| INJUNCT.  | 209<br>46.86 % | 1798<br>36.17 % | 253<br>32.98 % | 2799<br>30.10 % | 318<br>45.17 % | 2196<br>31.16 % | 558<br>22.56 % | 1804<br>18.43 % |
| INFINIT.  | 45<br>10.08 %  | 1110<br>23.33 % | 61<br>7.95 %   | 2196<br>23.62 % | 26<br>3.69 %   | 1732<br>24.57 % | 307<br>12.41 % | 1683<br>17.19 % |
| SUBJUNCT. | 24<br>5.38 %   | 816<br>16.41 %  | 23<br>2.99 %   | 1601<br>17.22 % | 8<br>1.13 %    | 1408<br>19.98 % | 223<br>9.01 %  | 1911<br>19.52 % |
| TOTAL     | 446            | 4970            | 767            | 9297            | 704            | 7047            | 2473           | 9786            |

TABLE 10: DISTRIBUTION OF THE TENSES (TOKENS AND PERCENTAGE) USED BY CHILDREN AND ADULTS).

| PHASES |     | Abiba |      | Balhaissa |      | Basite |      | Gabin |      |
|--------|-----|-------|------|-----------|------|--------|------|-------|------|
|        |     | PRES. | FUT. | PRES.     | FUT. | PRES.  | FUT. | PRES. | FUT. |
| I      | CS  | 9     | 0    | 26        | 3    | 0      | 0    | 66    | 7    |
|        | CDS | 248   | 67   | 617       | 236  | 53     | 10   | 346   | 81   |
| II     | CS  | 16    | 3    | 36        | 4    | 70     | 10   | 45    | 14   |
|        | CDS | 212   | 69   | 326       | 145  | 444    | 132  | 464   | 172  |
| III    | CS  | 241   | 11   | 69        | 62   | 98     | 104  | 424   | 436  |
|        | CDS | 241   | 93   | 571       | 189  | 380    | 211  | 1429  | 669  |

TABLE 11: PRESENT AND FUTURE ACQUISITION BY PHASE FOR CS AND CDS (TOKENS).

rate) of the double-root Present in Figure 2 can be explained by the equally simple structure of such verbs (root.IPFV+DEC).<sup>18</sup>

The Future tense exhibits comparatively low figures, but the proportion increases as time goes by, to the extent that Basite and Gabin produce more Futures than Presents in Phase III (Table 11). This is quite remarkable if compared with their caretakers' usage (see CDS in the same table), where the Present always outnumbers the Future. Thus, in this particular case the children's behavior did not mirror their input, in contrast, for example, with

<sup>18</sup> An anonymous reviewer proposed to compare CS and CDS in Figure 2 to analyze the relative development time. Although we find this suggestion intriguing, we believe that the data in Tables 10 and 11 suffice to indicate a substantial divergence in the proportions of the various tenses, as used by children and adults.

the verb/noun ratio described in §4.1. Besides, with most Mòosé children one can detect a slight Future-spurt more or less coinciding with the beginning of Phase III (see the asterisks in the panels of Figure 2), i.e. at the very beginning of the productive usage of tense morphology. This sharply diverges from the situation of Italian and Austrian German, where the Future tense is never used by the children in the same observation period (Bertinetto *et al.* 2015). The divergence can however be explained by considering that the Mòoré Future, as opposed to the Present of single-root verbs, does not involve any morphophonological process, for it merely involves the predicative marker *na* (*n*) preceding the verb root.

(12) USE OF THE FUTURE IN CHILD MÒORÉ

- a. *áa pāb-a-m à kí*<sup>19</sup>  
 PROSP hit.PFV-DEC-EXP 3SG die  
 ‘I will hit him and he will die’ [she is speaking to her toy] [ABI 2;04.03]
- b. *náa sò-o mé*<sup>20</sup>  
 PROSP wash.PFV-DEC-EXP  
 ‘I will wash it’ [she wants to wash her doll] [BAS 2,02.20]
- c. *náa ẓinna ká*<sup>21</sup>  
 PROSP sit\_down.PFV-DEC here  
 ‘I will sit down here’ [he goes into his mother house] [BAS 2;01.10]
- d. *náa zòm-amé*<sup>22</sup>  
 PROSP ride.PFV-DEC-EXP  
 ‘I will ride it’ [he takes a calendar and wants to use it like a motorbike]  
 [GAB1;10.25]

A fact worth noting is the occasional usage (especially by Balhaissa) of the bare root with future-time reference – a strategy not allowed by the Mòoré grammar – which indicates that the children developed the cognitive domain of futurity in part independently of their ability to use the correct morphosyntactic devices. Similarly, Bertinetto *et al.* (2015) observed that, despite absence of the Future tense in the same observation period, Italian and German children did have a cognitive understanding of futurity, since, in addition to the relatively early appearance of future-referring adverbs, they used the Present with future-reference. The difference, with respect to Balhaissa’s inaccurate usage

<sup>19</sup> standing for: *̀̀ ná n pab-a làmé tà kí.*

<sup>20</sup> standing for: *̀̀ ná n sò-o-mé.*

<sup>21</sup> standing for: *̀̀ ná n ẓinda ká.*

<sup>22</sup> standing for: *̀̀ ná n zòmbamé.*

of the bare root, is that this is a perfectly legitimate strategy in both Italian and German. Indeed, it is often found in the corresponding CDS.

The data reported here provide a conclusive answer to claim (ii) listed in §1.1. It is not the case that toddlers necessarily learn future-reference later than present- and past-reference, as claimed in the early literature (e.g., Herriot 1969). For sure, they can have a very early comprehension of the notion of futurity, as indeed shown in many longitudinal studies by the appearance of future-referring adverbs (see, among others Weist *et al.* 2014). Besides, the Mòoré data fit well with the situation described by Swift (2004) for Inuktitut, although the reasons for the early appearance of the Future differ. Inuktitut has a future/non-future temporal system, which presents the children with a sharp morphological contrast to start with. In the case of Mòoré, the reason is to be found in the degree of morphophonological transparency, to which we turn in the next section.

Needless to say, the Future can often be used by toddlers to convey intentional meanings, thus producing a mixture of temporal and modal values (Gee 1992). Indeed, the modal inclination of the Future tense as such has often been underlined. For sure, Mood plays a prominent role in toddlers' communication, in order to express needs, desires, intentions. Since, however, it is unlikely that L1 Italian- and German-learning children have a different propensity to express such modal meanings as compared with their Mòoré-learning peers, the mere presence of the Mood component does not explain the contrasting results obtained. To repeat: the Future tense does not feature in the early productions of Italian and German children, whereas it can be observed from very early on in the Mòoré corpus.

## 5.2 *Morphophonological transparency and the time-course of tense acquisition*

Table 12 shows the time of first appearance of each tense, collapsing single- and double-root verbs in order to single out the temporal-reference factor, irrespective of this morphological idiosyncrasy. The corresponding developmental phase is indicated between square brackets (see Table 6 for the individual child's periodization). When the given tense did not reappear within the next two months, the age of first appearance is indicated between parentheses, followed by a second, more trustworthy age specification. These data should be understood with due caution: when a tense emerges during Phase I ('pre-morphology'), one should not infer that the learner has acquired full grammatical control, for this can only be reached at a much later stage (Berman 2004); nevertheless, one must concede that persistent usage of a grammatical category

|                  | PRESENT          | PAST        | FUTURE                | INJUNCT.    | INFINIT.                 | SUBJUNCT.                |
|------------------|------------------|-------------|-----------------------|-------------|--------------------------|--------------------------|
|                  | √- <i>d</i> -DEC | √-DEC       | <i>na n</i> √-DEC     | √           | √                        | √                        |
|                  | √.IPFV-DEC       | √.PFV-DEC   | <i>na n</i> √.PFV-DEC | √.PFV       | √.PFV                    | √.PFV                    |
| <i>Abiba</i>     | 1;06.00 [1]      | 1;09.04 [2] | 2;00.00 [2]           | 1;07.21 [1] | 1;07.21 [1]              | 2;01.09 [3]              |
| <i>Balhaissa</i> | 1;07.05 [1]      | 1;11.08 [1] | 1;09.19 [1]           | 1;06.16 [1] | 1;06.16 [1]              | 2;01.05 [1]              |
| <i>Basite</i>    | 1;05.20 [2]      | 1;05.20 [2] | 1;11.24 [2]           | 1;04.13 [1] | (1;08.06)<br>1;11.24 [2] | (1;08.06)<br>2;02.07 [3] |
| <i>Gabin</i>     | 1;06.16 [1]      | 1;06.16 [1] | 1;06.16 [1]           | 1;06.16 [1] | 1;06.16 [1]              | 1;07.05 [1]              |

TABLE 12: AGE OF FIRST APPEARANCE OF EACH TENSE FOR THE INDIVIDUAL CHILD, COLLAPSING SINGLE- AND DOUBLE-ROOT VERBS. THE DEVELOPMENTAL PHASE IS INDICATED BETWEEN SQUARE BRACKETS. TIME INDICATIONS BETWEEN PARENTHESIS INDICATE THAT THE GIVEN FORM DID NOT REAPPEAR WITHIN THE NEXT TWO RECORDINGS.

is prerequisite for its taking root in the speaker’s competence.

The four children show a rather consistent picture. A notable fact is that there is no gap – or a short one with *Abiba* and *Balhaissa* – between the respective appearance of the Present and the Past. Even more striking, in terms of cross-linguistic comparison, is the already mentioned fact that the Future appears since the very first recording (*Gabin*), or it anyway precedes the Past (*Balhaissa*). With *Abiba* and *Basite* the Future also emerges quite early.

As for the different moods, it is no surprise that the Injunctive appears from the very first recording, considering its frequent use in child-adults interactions. Equally unsurprising is the early appearance of the Infinitive, since this mood frequently occurs after modal verbs, a typical communicative strategy of CDS. By contrast, the relatively early appearance of the Subjunctive is definitely surprising if one compares it, once again, with the children studied by Bertinetto *et al.* (2015). The explanation, however, follows from the morphological complexity factor. While Italian and Austrian German children need to learn the Subjunctive as a distinct form, for the *Mòosé* children this mood coincides with the verb root, exactly like the Injunctive and the Infinitive, except that it is used in a different syntactic environment. Hence, the child does not need to learn a new form, but just a different collocation of an independently learned one.

Considering now the single- vs. double-root verb divide, the complexity factor stands out as an especially powerful predictor with respect to the appearance of Present and Past. As repeated in Table 13, the Present of single-root verbs involves the adjunction of the IPFV affix *-d-*, often involving a morphophonological process. By contrast, the remaining forms in Table 13 consist of the mere root, except that with double-root verbs one has to learn two sup-

|                  | PRESENT                      |                        | PAST              |                          |
|------------------|------------------------------|------------------------|-------------------|--------------------------|
|                  | SINGLE-√<br>√- <i>d</i> -DEC | DOUBLE-√<br>√.IPFV-DEC | SINGLE-√<br>√-DEC | DOUBLE-√<br>√.PFV-DEC    |
| <i>Abiba</i>     | 2;01.24 [3]                  | 1;06.00 [1]            | 1;09.04 [2]       | 2;04.18 [3]              |
| <i>Balhaissa</i> | (1;08.08)<br>2;03.00 [3]     | 1;07.05 [1]            | 1;11.08 [1]       | 2;03.14 [3]              |
| <i>Basite</i>    | 2;01.10 [3]                  | 1;05.20 [2]            | 1;05.20 [2]       | 2;02.07 [3]              |
| <i>Gabin</i>     | (1;07.15)<br>1;11.08 [3]     | 1;06.16 [1]            | 1;06.16 [1]       | (1;06.16)<br>1;09.05 [2] |

TABLE 13: AGE OF FIRST APPEARANCE OF PRESENT AND PAST AS A FUNCTION OF SINGLE- vs. DOUBLE-ROOT VERBS. NUMBERS BETWEEN SQUARE BRACKETS INDICATE THE RESPECTIVE DEVELOPMENTAL PHASE. TIME INDICATIONS BETWEEN PARENTHESIS INDICATE THAT THE GIVEN FORM DID NOT REAPPEAR WITHIN THE NEXT TWO RECORDINGS.

pletive forms for Present and Past. The higher morphological complexity of the Present of single-root verbs explains the delayed appearance of this form, which invariably emerges during Phase III and with a restricted number of tokens. Similarly delayed, although for different reasons, is the emergence of the Past of double-root verbs (Balhaissa produced a single instance at 2;03.14). This form presupposes not only rote-learning of the suppletive perfective root, but also the detection of a purely semantic, hence abstract relationship between the two root allomorphs of each verb (imperfective *vs.* perfective).

A caveat is in order here. One might observe that most of the tenses used by the children in this study are based on the verb root with no TAM affixes. One might thus wonder whether one can really speak of tense acquisition at the earlier phases, namely before the appearance of the single-root Present (featuring the IPFV suffix), which would finally present an explicit morphological contrast. This is, however, a misrepresentation of the facts. It would be a valid objection if, at Phases I and II, the four children only produced Injunctive, Infinitive and Subjunctive forms; indeed, allowance made for the different syntactic environment (also involving presence/absence and relative position of the subject), all such forms consist of the sheer verb root, as shown in Table 1 above. However, in addition to these forms, all four children offered from the very beginning instances of Indicative tenses: double-root Present, single- and double-root Past and Future, and even sporadic instances of single-root Present. Admittedly, some of these forms had a sparse distribution (except for double-root Present and single-root Past), which suggests that they were not fully acquired as elements of the verb system. But notice that all Indicative tenses require the DEC marker (possibly followed by the EXP marker); hence, they do not



merely consist of the verb root, but involve a morpho-phonological operation that sets them apart from Injunctive, Infinitive and Subjunctive forms. In other words: far from simply using an uninflected all-purpose form, the four Mòosé children showed, from very early on, a neat understanding of the Mood contrast opposing Realis vs. Irrealis (i.e. Indicative vs. non-Indicative moods). Needless to say, our labeling criteria were sufficiently liberal, because at this early age one cannot presume perfect control of the phonetic details. The acceptability criterion was based on the detectable manifestation of an attempt at producing the DEC marker. The overt opposition Realis vs. Irrealis conclusively demonstrates that the children did not passively repeat an uninflected verb form, but provided instead clear evidence of an incipient grammatical development, perfectly congruent with the Mood/Aspect-prominence character of the target language.

### 5.3 On the acquisition of the predicatives

In §2.4 the role of the so-called ‘predicatives’ in the Mòoré tense system was explained. Table 14 shows the predicatives produced by the caretakers, with the corresponding number of tokens. By far the most frequently used predicative is the prospective marker *na* (*n*). Excepting the prospective marker, whose early appearance can be inferred from the data concerning the Future in Table 12, the children’s production of predicatives was close to null. The exception is Gabin, who used the retrospective marker *ra* three times (between 2;02.02 and 2;05.10) and the temporal distance marker *wa* a single time (2;03.00). In addition, he produced the adverbial predicative marker *zoe* ‘already’ at 2;02.16 and the continuative marker *kèlle* ‘still’ at 2;04.26. The precocious behavior of this child is possibly related to the relatively higher cumulative number of predicates to be found in his CDS input, although their variety was more restricted as compared with the other children. At any rate, apart from the Future tense, it would be far-fetched to assume that, by the end of the recording period, Gabin had fully mastered the predicatives system.

|                  | PREDICATIVE MARKERS |          |              |           |            |           |           |          |           |           |           |           |            |           |           |            |            |              |           |            |
|------------------|---------------------|----------|--------------|-----------|------------|-----------|-----------|----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|------------|------------|--------------|-----------|------------|
|                  | <i>na</i>           | <i>n</i> | <i>ra(g)</i> | <i>na</i> | <i>nan</i> | <i>wa</i> | <i>na</i> | <i>n</i> | <i>wa</i> | <i>ra</i> | <i>na</i> | <i>om</i> | <i>kôn</i> | <i>ra</i> | <i>wa</i> | <i>ket</i> | <i>leb</i> | <i>singè</i> | <i>ya</i> | <i>zoe</i> |
| <i>Abiba</i>     | 213                 | 11       | 8            | 2         | 7          | 4         | 2         | 8        | -         | -         | -         | -         | -          | -         | -         | -          | -          | -            | -         | -          |
| <i>Balhaissa</i> | 593                 | 23       | 8            | 8         | 18         | 2         | 1         | 9        | 6         | -         | 1         | 1         | 1          | 1         | 1         | 1          | 1          | 1            | 1         | 1          |
| <i>Basite</i>    | 360                 | 7        | 11           | 1         | 5          | 4         | 4         | -        | 2         | 2         | -         | -         | -          | -         | -         | -          | -          | -            | -         | -          |
| <i>Gabin</i>     | 868                 | 44       | 20           | 11        | -          | -         | -         | -        | -         | -         | -         | -         | -          | -         | -         | -          | -          | -            | -         | -          |

TABLE 14: PREDICATIVE MARKERS (BY TOKENS) IN THE CDS OF THE FOUR MÒOSÉ CHILDREN.

The examples in (13) illustrate some of his productions. Needless to say, especially at the beginning, children oscillate in their pronunciation, producing various phonetic approximations. Hence, the presence of a predicative was certified to the extent that the context was conducive to the intended interpretation, despite less than perfect realization of the form.

(13) GABIN'S USAGE OF PREDICATIVES

- a. *á Náadii dàg n yeel-a máam*<sup>23</sup>  
 DET gwladys RETR LINK say.PFV-DEC 1SG  
 'Gwladys said to me' [His mother asked him why the sugar is on the ground] [GAB 2;02.02]
- b. *à tōtō zé n sòka máam*<sup>24</sup>  
 DET uncle PREC LINK ask-DEC 1SG  
 'Uncle already asked me' [GAB 2;02.16]
- c. *ñ náa sood-à dóog-é yàa*<sup>25</sup>  
 1SG PROSP hide.PFV-DEC house-LOC PHA  
 'I will hide myself in the house' [GAB 2;03.00]
- d. *sáag da wa ní máam*<sup>26</sup>  
 rain NEG DIST rain 1SG  
 'So that the rain won't make me wet' [GAB 2;03.00]

#### 5.4 The Mòoré tense acquisition sequence in a morphology-sensitive perspective

To summarize, the Mòoré tenses are acquired by L1 learners in the following order (see Table 3 for the overall picture of the TAM system).

First, children learn the bare root of the verb, which – as far as single-root verbs are concerned – is used in four different functions, as distinguished by their different syntactic constructions: Injunctive, Infinitive, Past, Subjunctive (in this order of appearance). With double-root verbs, the earliest acquired root is in most cases the imperfective allomorph (i.e. the Present). Let us reiterate, at any rate, that in order to produce the Indicative tenses one needs to add the appropriate DEC and, if required, the EXP marker, while no such complications arise with Injunctive, Infinitive and Subjunctive. Hence, it is not the case that children merely learn an all-purpose form (the verb root), because the minimal but substantial opposition *Realis vs. Irrealis* is soon in place.

<sup>23</sup> standing for: *à Gwladys dàg n yeela máam.*

<sup>24</sup> standing for: *à tōtō zóe n sòka máam.*

<sup>25</sup> standing for: *ñ ná n soodà róog-é yàa.*

<sup>26</sup> standing for: *tì saag ní maam ye.*

As Figure 2 shows, all Mòosé children exhibit an early spurt in the production rate of the Past of (mostly) single-root verbs and of the Present of double-root verbs. Excepting Balhaissa, this phenomenon is essentially synchronized with the V-spurt (as discussed in §4.2). This suggests that, at this early stage, children are likely to learn a sizeable number of new verbs in one of these two forms: Past of single-root verbs, Present of double-root verbs.

The Future, which involves the predicative marker *na* (*n*) preceding the verb root (in turn followed by DEC and possibly EXP marker) is also acquired fairly early, although its growth occurs significantly later (see the asterisks in the panels of Figure 2). With the only addition of the dedicated predicative, the Future is formally identical to the Past, since the seldom used imperfective Future is absent in early CS and CDS. Hence, children encounter no morphophonological difficulty in learning the Future, especially with single-root verbs.

The Present of single-root verbs appears relatively late. As noted above, this tense involves the IPFV suffix *-d-* or its allomorphs, plus the DEC and, possibly, the EXP marker. The Subjunctive is also acquired relatively late; bearing no DEC or EXP marker, it formally coincides with the Injunctive and the Infinitive, but it is of course used in more complex constructions.

Finally, Mòosé children begin to learn other predicative markers, besides the early acquired prospective predicative *na* (*n*), thus gradually building up the remaining part of the tense system. Among the four children studied, only Gabin was able to introduce sporadic examples of such markers.

The Mòoré data lend support to the morphology-sensitive approach proposed by Bertinetto *et al.* (2015), who highlighted the morphological component as the leading factor in the acquisition process. In essence, the claim is that the first structures to be acquired are those that stand out as morphophonologically more transparent and semantically less ambiguous, i.e. those that best approximate the ideal of one-to-one relation of form and meaning. This does not mean that the ATAM features play no role, but rather that they must find their way through the intricacies of the morphological component. This is in particular shown, in the Mòoré case, by the diverging behavior of one and the same tense (Present or Past) as a function of verb type (single- *vs.* double-root). As far as we know, this datum emerges here for the first time. This is a crucial discovery: if tense acquisition were guided by a mainly semantic logic, one would not expect it to be so deeply affected by a formal factor such as morphological complexity. This contradicts claim (iii) in §1.1.

Needless to say, we do not intend to suggest that a claim concerning the exclusive role of semantics in tense-aspect acquisition was ever put forth explicitly. However, it is undeniable that while several labels with ostensive promi-

nence of semantic factors were proposed in the literature (such as ‘Aspect Before Tense’ and the like; see the next section), Bertinetto *et al.* (2015) is the first paper, to our knowledge, that emphasized the prominence of the morphological component. In other words: while morphology is mentioned in virtually all studies of ATAM acquisition, its pervasive role was not sufficiently pinpointed, and definitely not with respect to the complexity parameter.

Another powerful predictor is, of course, frequency of usage in the input, as often pointed out in the literature. Actually, in the present case, despite substantial match between CS and CDS, there were some exceptions, like the Future outnumbering the Present in Phase III of Basite and Gabin (see Table 11). In any case, the combination of degree of morphological complexity and frequency in the input offers a convincing assessment of the acquisition process in cross-linguistic perspective.

However, a caveat is in order here. Since the Mòoré double-root verbs mostly consist of statives, while most single-root verbs are eventive, it is possible that the early emergence of the Present with the former type of verbs, and of the Past with the latter type, is influenced by Actionality. As a matter of fact, the converging effect of Actionality, Aspect and time-reference in ATAM acquisition has often been pointed out in the literature, as the next section will detail.

## 6. SEMANTIC VS. MORPHOLOGICAL FACTORS

### 6.1 *Two alternative views of ATAM acquisition*

In the past decades, it has often been suggested that ATAM acquisition is substantially driven by aspect, or more specifically by a combination of Actionality and Aspect, according to the following, repeatedly found correspondences:

ATELIC VERBS  $\longleftrightarrow$  IMPERFECTIVE TENSES  $\longleftrightarrow$  PRESENT-REFERRING

TELIC VERBS  $\longleftrightarrow$  PERFECTIVE TENSES  $\longleftrightarrow$  PAST-REFERRING

The idea is that, at the beginning, toddlers are not able to exploit all the morphological choices available in the target language, and thus use the few verbs they know in more or less constrained combinations. This view has received different names by different scholars: ‘Aspect Before Tense’ (Bloom *et al.* 1980, ‘Defective Tense’ (Weist *et al.* 1984), ‘Aspect First’ (Wagner 2001), ‘Prototype account’ (Shirai & Andersen 1995, Andersen & Shirai 1996, Shirai 1998), and it was emphatically included in the ‘Language Bioprogram’ proposed by Bickerton (1981).

In this paper we refer to this view under the label ‘Actionality-Tense-Aspect Convergence Hypothesis’ (ATACH). Its basic assumption is that children start out with a strongly polarized usage, before they gradually converge towards the more flexible adult behavior. Although Aspect is often mentioned as the main conditioning factor (as implied in labels such as ‘Aspect First’ or ‘Defective Tense’), the crucial factor is the existence of strict correspondences between the three semantic domains involved. As a matter of fact, one might also see the issue from an apparently different, but in fact perfectly equivalent angle, as hinted at by the label ‘Aspectual Under-Extension’ introduced by Wagner (2012). Whatever the case, evidence in favor of ATACH has been found in as disparate languages as English, Italian, Greek, Turkish, Japanese, Mandarin, French, German, Hebrew, Russian; see at least Antinucci & Miller (1976), De Lemos (1981), Rispoli (1981), Stephany (1981, 1985), Berman (1983), Meisel (1985), Cziko & Koda (1987), Aksu-Koç (1988), Li (1989), Tomasello (1992), Behrens (1993), Li & Shirai (2000), Stoll (2001), Labelle *et al.* (2002), Noccetti (2002), Noccetti (2003), Johnson & Fey (2006).

As an alternative, Bertinetto *et al.* (2015) claimed that the correspondences in (15) are due to the strong polarization of stative and telic verbs, and thus only hold if stative and activity verbs are lumped together in the atelic set. As soon as activities are separately examined, it emerges that they do not conform to the received view, i.e. they do not support the alleged convergences. Hence, the feature [ $\pm$ telic] cannot be considered as a universal leading factor in the ATAM acquisition process. To prevent misunderstanding, it is important to underline that ATACH advocates are perfectly aware that activities and statives belong in different classes, and indeed explicit criteria to distinguish these types of predicates are often provided in the acquisition literature. However, as soon as one assumes (15) as a guiding principle in the acquisition process, such divide becomes ineffective.

As mentioned in §5.4, Bertinetto *et al.* (2015) proposed instead a morphology-sensitive approach, based on the observation that the acquisition of the ATAM features is governed by the morphological shape of the target language. This proposal is not entirely new, as shown by Behrens (2001), and more generally by the vast project launched by Slobin (1985/1997; see also Slobin 2001). However, while Slobin’s position was very explicit, for instance, in the case of spatial matters (Johnston & Slobin 1979), it remained rather vague precisely with respect to the acquisition of ATAM features, because the actual translation of the cognitive notions ‘result’ and ‘process’ (Slobin 1985) into the language-specific arrangement of Actionality features was never spelled out.

To prevent misunderstanding, let us repeat that the contribution of morphology was not ignored in previous works on ATAM acquisition. In virtually

every paper there are explicit observations to this effect. However, one thing is to suggest that the morphological structure of the target language is a modulating factor; quite another thing is to point out the morphological structure, and its degree of complexity, as the main factor in the acquisition process. Such a view is totally alien to the ATACH approach.<sup>27</sup>

According to the alternative proposed by Bertinetto *et al.* (2015), the learning child makes clever use of the formal features manifested in the target language, in order to gradually master the whole system. This entails that there is no universal ATAM acquisition path, but rather an array of possible strategies based on the most prominent feature(s) to be detected in the target language, as modulated by the morphological complexity factor (see the Mòré hierarchies of ATAM features discussed in §2.6). Adopting Bhat (1999) perspective on the relative prominence of the different ATAM components – and supposing, for the sake of the argument, that no other factors interact – one might want to claim that Aspect plays the leading role in Aspect-prominent languages (e.g. Mandarin: Li 1989), whereas Temporality takes the lead in Temporality-prominent languages (e.g. German: Behrens 1993), Mood in Mood-prominent languages (e.g. Turkish: see Aksu-Koç 1998 on the early emergence of evidentiality), and Actionality in Actionality-prominent languages (e.g. Polish: Weist *et al.* 2004).<sup>28</sup>

One objection that might be raised is that the category of Actionality is present in any language, and might therefore be pointed out as an obvious candidate for the role of universal leading factor. However, Actionality is in most cases a massively covered feature, as also pointed out by Smith (1991), i.e. with no morphological exponents. And even where it is at least partially manifested (as in English, with pairs such as *eat* vs. *eat up*), it does not cover the whole verb lexicon. The Slavic languages are the most notable exception in this regard, but precisely for this reason they can be pointed out as the clearest Actionality-prominent example. Radically contrasting with the Slavic type are, instead, the many languages in which the very assessment of telicity strictly depends on context. One can here refer to the notion of ‘non-culminating telic verbs’ (Demirdache & Martin 2015); see, for example, the Mandarin sentence

<sup>27</sup> Needless to say, language acquisition involves a large array of cognitive capacities, whose gradual maturation sustains the whole process. A thorough assessment of this issue can be found in Tomasello (2003). However, this paper focuses on the language-internal factors that guide ATAM acquisition. Besides, it is worth observing that the pages devoted to this topic in the cited book (Tomasello 2003: 218-224) essentially repeat the received ATACH view.

<sup>28</sup> The ATAM structure of northern Slavic languages is fairly complex, since the lexical contrast ‘perfective’/‘imperfective’ expresses both actional and aspectual values. However, since most ‘perfectives’ are telic, the prominence of Actionality is undeniable (Bertinetto & Lentovskaya 2012). See also footnote 30.

*Yuēhàn shāo le tā-de shu* ‘Yuēhàn burned his book’, which does not necessarily entail that the book was consumed by fire, as the English translation would normally suggest.<sup>29</sup> Therefore, it is definitely unlikely that Actionality can be singled out as a universal ATAM acquisition trigger, to the extent that such a thing exists.

Actually, languages often present a mixed situation as far as ATAM-prominence is concerned. Italian is a case in point, with Temporality dominating Aspect, Mood and Actionality in this order (Bertinetto *et al.* 2015). The same holds for Mòoré. However, as shown in §2.6, this language offers a clearly different picture as compared with Italian. The exact calibration needs to be assessed in each case, taking into account: (a) the pervasiveness of the given ATAM component in the whole verb paradigm; (b) the degree of explicitness, i.e. one-to-one mapping of form and meaning; (c) the degree of morphophonological transparency. Even highly salient features might be neutralized in specific cases, thus introducing a certain amount of underdetermination in the system (see the occasional aspectual neutralization of the IPFV marker in Mòoré, which involves factor b); or else they might turn out to be relatively opaque owing to morphophonological processes (see the discussion in §5.2, as involving factor c).

The next section will detail the role of Actionality and Aspect in the acquisition of Mòoré.

## 6.2 *The interplay of Actionality and Aspect in the acquisition of Mòoré*

As often observed in the literature, the correlations highlighted at the beginning of §6.1 can also be observed in CDS. It is thus no wonder that children show such a behavior. Andersen & Shirai (1996) proposed, however, a possible interpretation within their ‘Prototype’ account of ATAM acquisition. According to it, at the initial stage children exaggerate the tendency to associate telic verbs with perfectivity and atelic verbs with imperfectivity, but then gradually converge towards the adults’ behavior as soon as such ‘prototypical’ mutual attractions begin to relax.

In order to check the actual evolution of the Actionality-Aspect correlation, one can exploit the Pointwise Mutual Information formula (PMI), which allows one to study the fine-grained time-course of the correlation between the individual actional values and the aspectual contrast perfective *vs.* imper-

<sup>29</sup> One might contend that even the English translation of this sentence can have a non-culminating reading, although it is not the most obvious interpretation. But the point is that, in languages like Mandarin, many verbs are radically underdetermined with respect to the [±telic] opposition and may easily be interpreted both ways depending on the context.

fective. The PMI formula (Evert 2008) indicates to what extent the observed joined frequency of two statistical events  $e_1$  and  $e_2$  departs from independence. It is computed as the logarithm of the ratio between the probability of observing the two events together, and the probability of observing one of them occurring independently of the other. Positive *vs.* negative values indicate positive or, respectively, negative correlations between actional and aspectual categories, with ‘Ø’ marking lack of association. PMI is therefore a measure of association strength.

$$(2) \quad PMI(e_1, e_2) = \log_2 \frac{p(e_1, e_2)}{p(e_1)p(e_2)}$$

Using PMI, Bertinetto *et al.* (2015) showed that their four children (one Austrian German and three Italian) exhibited a neat aspect polarization with stative and telic verbs: the former verbs had a clear preference for imperfective contexts, while the latter ones had a sharp inclination towards perfective contexts. This was consistent with ATACH. Activity verbs, by contrast, did not show any preference, despite belonging to the [-telic] class just like stative verbs. The authors concluded that the traditional ATACH view can only be defended at the price of lumping together activities and statives within the class of atelic verbs, rather than inspecting their individual behavior.

Actually, Weist *et al.* (1984), studying the behavior of Polish children, observed that:

[...] the number of ‘imperfective’ activity verb phrases used in the past tense increased steadily with age. This type of verb phrase became just as common as past ‘perfective’ telic verb phrases by 2;6.<sup>30</sup> (Weist *et al.* 1984: 368)

This finding, which includes reference to Temporality in addition to Actionality and Aspect, supports Andersen & Shirai (1996) ‘Prototype’ account. However, in the two languages investigated by Bertinetto *et al.* (2015) the amount of past tense usage with activities was quite remarkable from the very beginning.

Figures 3, 4 and 5 show the PMI plots of Actionality x Aspect for the Mòosé children, relative to statives, telics and activities respectively. The data essentially replicate the crucial result of Bertinetto *et al.* (2015), showing that activities do not conform to ATACH: despite being atelic, they sharply diverge

<sup>30</sup> The quotes surrounding the terms perfective/imperfective are added here to underline the mixed nature (actional-aspectual) of these two classes of predicates in most Slavic languages, including Polish. In particular, atelic situations are necessarily expressed by ‘imperfective’ verbs, although the latter can also have a telic interpretation in the relevant contexts.



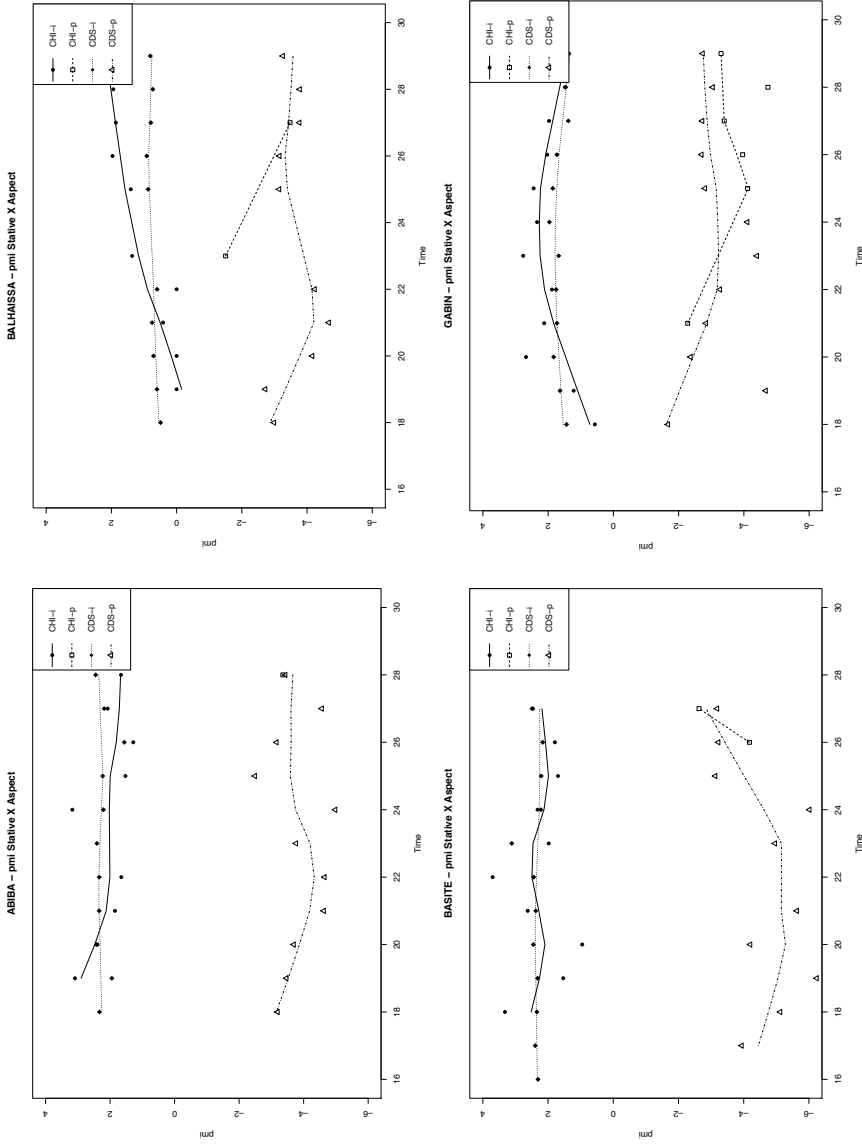


FIGURE 3: PMI VALUES, FOR CHI (= CHILD) AND CDS, OF THE STATIVE X ASPECT ASSOCIATION, WITH I/P = (IM)PERFECTIVE.

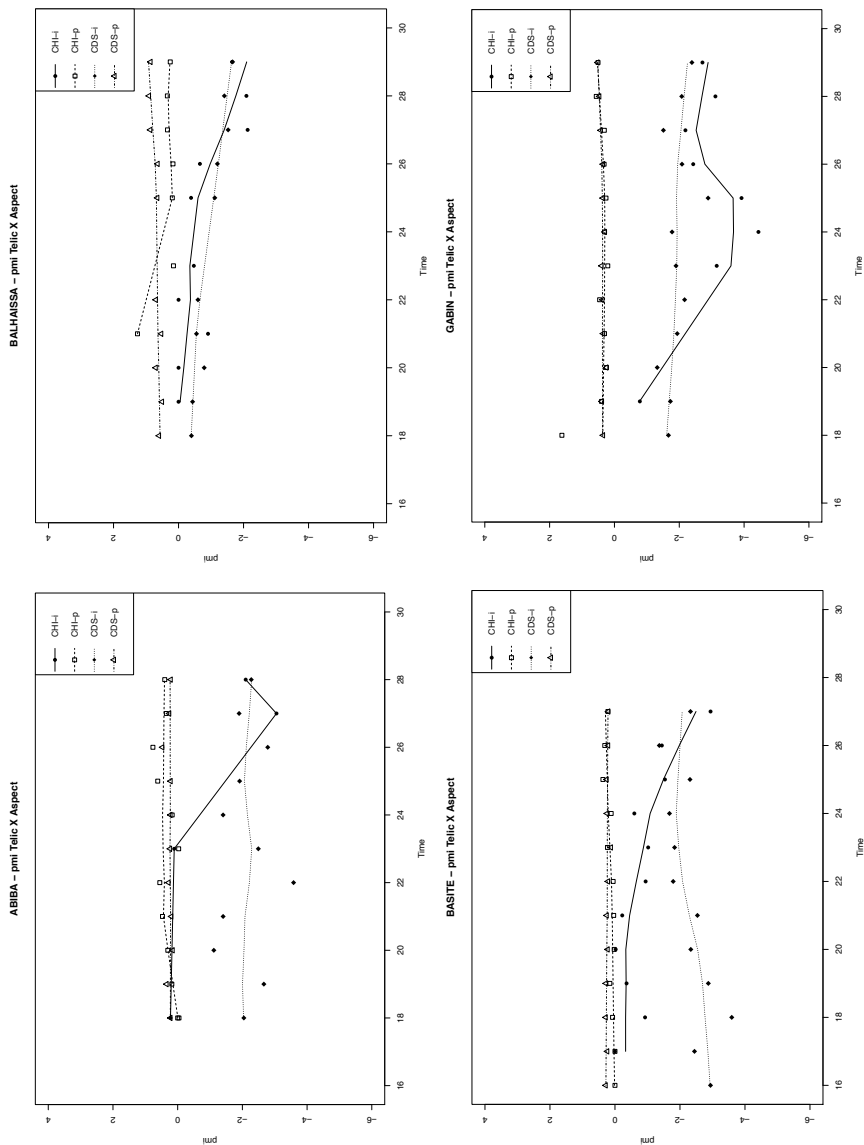


FIGURE 4: PMI VALUES, FOR CHI (= CHILD) AND CDS, OF THE TELIC X ASPECT ASSOCIATION, WITH I/P = (IM)PERFECTIVE.

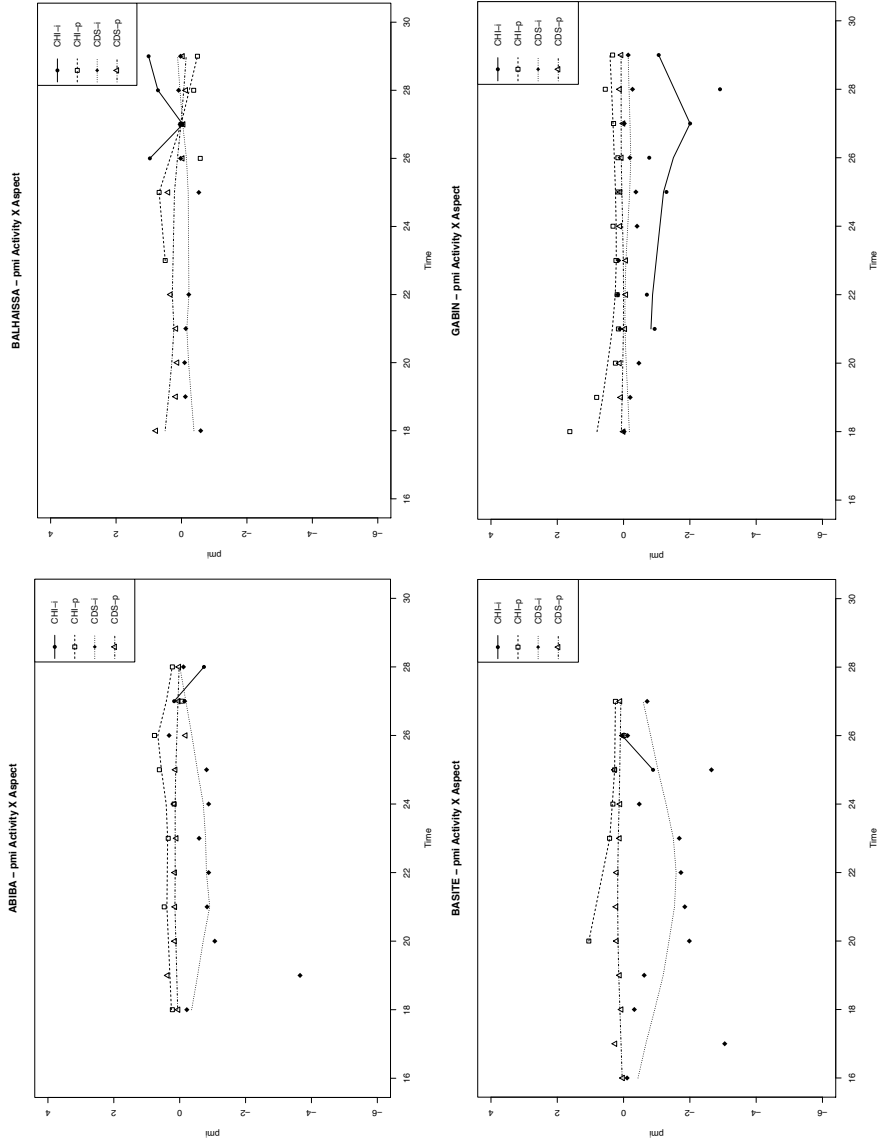


FIGURE 5. PMI VALUES, FOR CHI (= CHILD) AND CDS, OF THE ACTIVITY X ASPECT ASSOCIATION, WITH I/P = (IM)PERFECTIVE.

from statives from the very beginning. However, the Mòoré data show a notable difference with respect to the Italian and Austrian German results as far as telic verbs are concerned. Instead of a generalized dispreference for imperfective contexts, Abiba and Basite present an initial phase in which telic verbs are substantially unaffected by the  $[\pm\text{perfective}]$  divide. In the case of Balhaissa, this behavior is also shared by the interacting adults. Gabin is the only child who exhibits, together with his caretakers, a constantly neat contrast between perfective and imperfective contexts relative to telic verbs. Thus, the behavior of some Mòosé children definitely contradicts the ATACH predictions, even in the attenuated form proposed by Andersen & Shirai (1996) ‘Prototype’ account. The plots of Abiba and Basite, and partly that of Balhaissa, indicate that the children’s initially sharp preference for the association ‘telic  $\leftrightarrow$  perfective’ is not universally observed. Interestingly, this is congruent with the relatively sharp Aspect-prominence of Mòoré (see §2.6), for it indicates that the features ‘perfective’ (Aspect) and ‘telic’ (Actionality) are substantially disjointed.

Given the particular nature of the Mòoré verb system, with the fundamental split of single- *vs.* double-root verbs, it is advisable to further check whether such a divide has a differential impact on the three actional classes considered in this study. The answer can be found in Tables 8 and 9, which present the percent distribution by tokens, to be compared with the corresponding distribution by types in Tables 4 and 5. The large majority of telic and activity predicates are expressed by single-root verbs, while statives are mostly expressed by double-root verbs. Hence, Actionality has a strong impact on the single- *vs.* double-root divide, and this is consistent with its historical origin. However, the neat polarization of activity predicates in terms of morphological structure (with sharp prevalence of single-root verbs) does not correlate with their balanced association with both perfective and imperfective contexts (see the PMI data in Figures 3, 4 and 5). One can thus conclude that the semantic and morphological parameters do not converge, at least as far as this particular class of predicates is concerned. Moreover, neither parameter points to the direction predicted by ATACH: morphologically, the Mòoré activity verbs pattern with telics, rather than with statives; semantically, they diverge not only from telics but, crucially, also from statives.

## 7. CONCLUSION

The goal of this paper was twofold. First, it aimed at presenting the first longitudinal study so far carried out on the acquisition of ATAM features by speakers of an African language. Second, it aimed at checking three major claims that have been put forth in the specialized literature.

With respect to claim (i), it was shown that, in the early productions of Mòosé children, verbs outnumber nouns, and this is also true of the respective CDS (§4.1). Although this is not the only such case described in the literature, it is worth underlining it, for it contradicts an assumption that enjoyed popularity in the past.

With respect to claim (ii), it was found that our Mòosé children learn the Future from very early on (§5.1). Hence, it is not the case that, at the early stage of language acquisition, reference to the future is cognitively more demanding than reference to the past. In the case of Mòoré, morphological simplicity turns out to be a facilitating factor.

Finally, with respect to claim (iii), strong evidence was collected (confirming the results of Bertinetto *et al.* 2015) that the often observed convergence between actional, aspectual and temporal values (see §6.1) does indeed occur with the strongly polarized stative verbs, but does not apply to activities, although both verb classes share the [-telic] feature. As for telic verbs, their polarization is surprisingly less sharp in Mòoré than in most other languages, possibly as an effect of the single- vs. double-root divide. These findings disconfirm the alleged universal dynamics of ATAM acquisition presupposed by the ATACH account.

What should one then think of the constantly observed cross-linguistic regularities condensed in the correspondences shown at the beginning of §6.1 (ignoring, for the sake of the argument, the confound produced by collapsing statives and activities)? The evidence indicates that they are a collateral observational output, devoid of any substantial explanatory power. They most likely stem from robust textual tendencies, as rooted in naturally emerging communicative needs, which favor specific statistical associations between certain classes of predicates and certain tenses. They spontaneously emerge in CS for the same reason that justifies their presence in CDS. Although in some cases one observes gradual convergence of CS towards CDS, as shown by Andersen & Shirai (1996), this is not universally the case as proven by the data presented here and in Bertinetto *et al.* (2015). Besides, even if this were a universal datum, it would not explain the cross-linguistic differences detected in the acquisition of the verbal tenses.

Altogether, the Mòoré data lend support to the Morphology-Sensitive approach proposed by Bertinetto *et al.* (2015) in their study of ATAM acquisition by one Austrian German and three Italian children. This paper provides robust evidence that the learning child exploits the morphological shape of the target language, by capitalizing on:

- (a) the degree of morphological explicitness (one-to-one mapping) of each component of the ATAM set, which assigns priority to overt, i.e. semantically unambiguous, and frequent markers;
- (b) the degree of morphophonological complexity, which favors transparent markers.

In particular, the results of this investigation underline a point which, to the knowledge of the present authors, has never been highlighted in previous research: namely, the fact that one and the same tense may have a different acquisition dynamics depending on the type of verb, as an effect of formal complexity. The crucial parameter, here, is the single- *vs.* double-root divide: the early acquisition of the Present of double-root verbs and of the Past of single-root verbs significantly contrasted with the later acquisition of the Present of single-root verbs and of the Past of double-root verbs. The ATACH approach, with its exclusive attention to the ATAM features, can not account for these Mòoré findings.

The data presented here are compatible with a usage-based approach to language acquisition (Tomasello 2003; Elman 2009; Bybee 2010), according to which the learning child exploits the input redundancies in order to gradually extract, by way of generalization, the language categories. In practice, language structure emerges from use, with the help of the cognitive skills common to every normally developing human being. This view is based on a kind of “occamistic” approach with respect to the innate biases that are postulated to explain the acquisitional dynamics. One does not need to assume that the learning child is endowed with an innate capacity with respect to the linguistic categories. Words and constructions are acquired by isolating them from larger utterances. Through experience, children discover that words tend to reappear in similar contexts and begin to insert them in previously learned constructions. These implement a semi-structured inventory of predicative islands that feed analogical connections between meanings and forms. In their learning effort, children are of course strongly motivated by the need to establish a communicative contact with their caretakers. Hence, the growth of grammatical competence is triggered and supported by functional motivations. This said, in contradistinction with the most extreme usage-based views, we do not a priori exclude the existence of a language-specific cognitive device. On this point we remain agnostic. It all depends on what one assumes to be part of it.

To conclude, there does not seem to exist a single, universal path of ATAM acquisition. The primacy of any ATAM component ultimately depends on the idiosyncratic morphological structure of the given verb system.

## ABBREVIATIONS

1/2/3 = personal pronoun; ABR= abruptive; ANT= anteriore; ASS = associative; CDS = child-directed speech; CLAS = classifier; CONT = continuative; CS = child speech; DEC = declarative marker; DEF = definite; DEM = demonstrative; DET = determiner; DIST = distant; DUR = durative; EXP = expletive; FAC = factual; FREQ = frequency; FUT = future; HYP = hypothetic; IPFV = imperfective; IPFV.√= imperfective suppletive form of double-root verbs; ITER = iterative; LINK = linking element; LOC = locative; NEG = negation; PFV = perfective; PFV.√= perfective suppletive form of single-root verbs; PHS = phatic; PL = plural; POSTP = postposition; PREC = precocity; PROSP = prospective; REL = relator; RETR = retrospective; SG= singular.

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*Pier Marco Bertinetto*  
Scuola Normale Superiore  
Piazza dei Cavalieri 7 - 56126 Pisa  
Italy  
e-mail: bertinetto@sns.it

*Clémentine Talaato Pacmogda*  
e-mail: pacmotine@gmail.com

*Alessandro Lenci*  
Università di Pisa  
Via S. Maria 36 - 56126 Pisa  
Italy  
e-mail: alessandro.lenci@unipi.it