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Chapter 27: The Acquisition of Murrinhpatha (Northern Australia)

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Abstract

This chapter reports on initial findings of an ongoing large-scale research project into the acquisition of Murrinhpatha, a polysynthetic language of the Daly River region of the Northern Territory of Australia. The complex verbal structures in Murrinhpatha, which can contain a large number of morphs and bipartite stem morphology discontinuously distributed throughout the verbal template, raise a multitude of questions for acquisition. In this chapter we focus particularly on the acquisition of the complex predicate system in the verb, and the acquisition of subject marking categories and tense/aspect/mood. Our findings are based on the language development of five Murrinhpatha acquiring children aged from 2;7-4;11 years.

27.1 Introduction

This chapter presents initial findings of an ongoing research project into the acquisition of Murrinhpatha (Northern Territory, Australia) across various ages and stages of development, beginning with children's early multi-morphemic utterances through to complex utterances within relatively complex narrative structures.¹ We focus in particular on the acquisition of the complex predicate verbal system and the extent to which children between the ages of 2 and 5 acquire the full morphological complexity of the Murrinhpatha verb.

Much of the focus on the acquisition of morphology has been on languages that fall towards the isolating end of the continuum, such as English. Comparatively little work has examined the process by which children learn synthetic, especially polysynthetic, languages (Kelly, Wigglesworth, Nordlinger & Blythe 2014).² This is problematic given that we may hypothesise that the morphological learning task is substantially more challenging, or at least substantially different for polysynthetic languages. Clearly we cannot hope to have a complete picture of language acquisition until we understand the process across all linguistic types (Kelly et al. 2014; Evans & Levinson 2009); and the opportunities to investigate the acquisition of polysynthetic languages are rapidly diminishing as increasingly these languages are not being acquired by children (Mithun 1989).

Understanding acquisition processes across typologically different languages may challenge some of our widely held beliefs about how children learn language. As Brown (1998) argues, children learning Indo-European languages tend to demonstrate noun dominance. However research into a variety of non-Indo-European languages shows that this noun bias is not universal, and that in some languages there

is in fact a verb bias, as observed for Mandarin Chinese (Tardif 1996; Tardif, Shatz & Naigles 1997), Tzeltal (Brown 1998), and Tzotzil (de León 1999).

Turning to polysynthetic languages, Peters (1997) asks how children acquire the highly polysynthetic West Greenlandic at all given its morphological complexity which includes over 300 inflectional affixes, and 4-500 derivational affixes in the verbal word. However Fortescue and Lennert Olsen (1992), using data from children aged 2;2-5;2, show that children learning West Greenlandic begin to process the complexity very early on. Indeed, some research has indicated that greater morphological richness may facilitate morphological acquisition (see studies by Xanthos, Laaha, Gillis, Stephany, Aksu-Koç, Christofidou & Gagarina 2001; Demuth 1992), suggesting that a more relevant factor for ease of acquisition may be the regularity and frequency of morphological contrasts rather than lack of morphological richness.

Within this context, we focus here on the acquisition of aspects of the Murrinhpatha verb by children between the ages of 2;7 and 4;11. One question that arises in polysynthetic languages is how children identify and acquire the verbal stem if it only ever appears surrounded by complex morphological material (e.g. Courtney & Saville-Troike 2002). In Murrinhpatha this question is made more complex by the fact that most verbs consist of bipartite stems, forming complex predicates that are often discontinuous in the verbal word. In §27.4 we suggest that children make use of classifier stem productivity, the salience of lexical stems, and the presence of object marking in between the two stems to acquire this system.

27.2 Murrinhpatha Context and Language: Background

Murrinhpatha is spoken by approximately 2500-3000 people in and around Wadeye (Port Keats) in the Daly River region of the Northern Territory of Australia. It is one of only 18 traditional Australian languages still being acquired by children (AIATSIS 2005:3) and until they encounter English at school most children in Wadeye grow up as monolingual Murrinhpatha speakers (Kelly, Nordlinger & Wigglesworth 2010). The geographic isolation of Wadeye³ and Murrinhpatha's status as the 'official' language of the community (Wadeye is located on Murrinhpatha land) have favoured its persistence to the relative detriment of the other languages which today are rarely, if ever, spoken fluently (see Nordlinger this volume for further discussion of languages in this region).

Murrinhpatha has received considerable linguistic attention over the last forty years. The complex verbal morphosyntax has been described from synchronic perspectives (Blythe 2009; Nordlinger 2010a; 2010b; Nordlinger and Caudal 2012; Street 1987; Walsh 1996; 1987; 1976), as well as diachronic and variationist perspectives (Blythe 2013; 2010; Green 2003; Mansfield 2014). Furthermore, the polysynthetic nature of Murrinhpatha is discussed in more detail in other chapters in this volume (see Chapter 19 by Evans, and Chapter 45 by Nordlinger). In this section we introduce only those aspects of the Murrinhpatha verb that are relevant to the acquisition data we discuss in §27.4.

27.2.1 Verbal Morphosyntax

Verbs in Murrinhpatha exhibit a highly templatic morphological structure (Blythe 2009; Nordlinger 2010b), as shown in Table 27.1.⁴ The two shaded categories (classifier stem in slot 1 and lexical stem in slot 5), the two parts of the complex

predicate, are discussed further in §27.2.2.

[INSERT TABLE 27.1 HERE]

This templatic structure exhibits substantial multiple exponence, lack of a single structural head, and semantic dependencies between discontinuous morphological slots (Nordlinger 2010b). Thus in (1) the number of the subject is jointly marked as dual by the interaction between slots 1 and 2 (note that 3rd singular objects, as in this example, are unmarked). In (2), the object marker *-ngi-* appears in slot 2 which requires the subject number marker to appear in slot 8 instead. Thus in (2), the subject number is jointly marked as dual by the interaction between slots 1 and 8. The two parts of the predicate are shown in bold. Note that the presence of subject number markers or object/indirect markers results in the predicate being discontinuous.⁵

(1) ***bam-ngintha-ngkardu***

3SG.S.SEE(13).NFUT-DU.F.NSIB-see

1 2 5

‘The two non-siblings (either ♀♀ or ♀♂) saw him/her.’

(Nordlinger 2010b:334)

(2) ***bam-ngi-ngkardu-ngintha***

3SG.S.SEE(13).NFUT-1SG.O-see-DU.F.NSIB

1 2 5 8

‘The two non-siblings (either ♀♀ or ♀♂) saw me.’

These examples also illustrate kinship marking in Murrinhpatha verbs. As well as person, number and gender contrasts, Murrinhpatha verbs mark a distinction between (classificatory) siblings and non-siblings for subjects and objects. Thus for dual and paucal number, male non-brothers (as in (3)) are distinguished from ‘feminine’ non-siblings (comprised of at least one female), as in (4), which are further distinguished from siblings (brothers and/or sisters), as in (5). These contrasts allow Murrinhpatha verbs to distinguish up to 25 person/number/gender/siblinghood combinations (Blythe 2013:893). Examples (3)-(5) also serve as an illustration of other aspects of the verbal word, including the tense/aspect/mood markers (here *-dha*) in slot 6 and the incorporated adverbial *-dharra*.

(3) *dani-nintha-riwak-dha-dharra*

3SG.S.POKE(19).PST:IPFV-DU.M.NSIB-follow-PST:IPFV-moving

‘The two male non-brothers were following.’

(JBFieldNotebook2007-1:35)

(4) *dani-ngintha-riwak-dha-dharra*

3SG.S.POKE(19).PST:IPFV-DU.F.NSIB-follow-PST:IPFV-moving

‘The two non-siblings (female or mixed group) were following.’

(JBFieldNotebook2007-1:35)

(5) *parrane-riwak-dha-dharra*

3DU.S.POKE(19).PST:IPFV-follow-PST:IPFV-moving

‘The two siblings were following.’

27.2.2 Complex Predicates

Most Murrinhpatha verbs are complex predicates composed of two parts: a portmanteau classifier stem in slot 1 (also marking the subject and tense/aspect/mood categories) and a lexical stem in slot 5. There are approximately 38 classifier stem paradigms that combine with a closed, but large, set of lexical stems. A subset of these classifier stems (11 of the 38) may also appear alone as ‘simple verbs’, without combining with a lexical stem. An example of a classifier stem paradigm is given in Table 27.2.

[INSERT TABLE 27.2 HERE]

Whilst for a number of northern Australian languages the two predicative elements are independent, syntactically combined words (McGregor 2002; Schultze-Berndt 2000), in Murrinhpatha they are tightly bound units within a single morphological word. Each contributes to the lexical semantics, although the sense of the classifier is more generic. Typical classifier semantics involves motion, manipulation, posture or orientation toward the ground (McGregor 2002). Classifiers also convey valency-changing operations (e.g. reflexive/reciprocal; see Nordlinger: Chapter 45 this volume). In other cases the semantic contribution of the classifier stem toward classifying the lexical stem can be quite opaque. In (6)-(8), we see that the semantics of the complex predicate changes when we vary the classifier stem. In these cases, the modification relates to the manner or trajectory of the scratching.

(6) *mam-kurrk*

1SG.S.HANDS(8).NFUT-scratch

‘I scratched (something) with my hand, or a stick.’

(RN 20070608-002:038)

(7) *ngunungam-kurrk*

1SG.S.FEET(7).NFUT-scratch

‘I scratched (something) with my foot.’

(RN 20070608-002:038)

(8) *pan-kurrk*

1SG.S.SLASH(23).NFUT-scratch

‘I dug in the ground with a stick (e.g. for crabs).’

(RN 20070608-002:038)

We can think of the productivity of the classifiers in terms of how readily they combine with lexical stems to form complex predicates. The most productive classifier, “HANDS(8)” has been attested with 171 lexical stems, while the reciprocal classifier (38) has been attested with only two lexical stems. Of the 38 classifier paradigms, all appear within complex predicates except for the high frequency “SAY/DO(34)” which never combines with lexical stems in polysynthetic verbs.⁶ One important question for the acquisition of Murrinhpatha is the stage at which children identify this system as a productive system rather than learning each classifier-lexical stem combination as a fixed item. We discuss this issue further in §27.4.2.

27.3 Data and Methodology

The data discussed here have been collected by the Language Acquisition Murrinhpatha (LAMP) project for which we are constructing a corpus of spontaneous Murrinhpatha child interaction. Project data collection began in 2012 and will continue through 2016. The overall project data collection is centred around thirteen focus children aged between 1;9 and 5;6 at the commencement of the project. Data are collected on regular field trips by the first and second authors who visit Wadeye twice per year for between two to three months and record the focus children in a variety of contexts. The data are transcribed in the community with the assistance of local Murrinhpatha speaking research assistants and other team members (see Kelly, Forshaw, Nordlinger & Wigglesworth 2015 for further discussion).

This chapter focuses on a subset of the data being collected for the LAMP corpus. Thirty minutes of consecutive data for five focus children, aged between 2;7 and 4;11, were selected for analysis, in order to provide language production data in similar contexts across a wide variety of ages. Table 27.3 provides an overview of the participants and the amount of data analysed. The video recorded interactions for each child were transcribed in ELAN (<http://tla.mpi.nl/tools/tla-tools/elan/>; Sloetjes & Wittenberg 2008).

[INSERT TABLE 27.3 HERE]

Each recording involves two children and a single adult caregiver who is one of the children's mothers. In recordings I and III there are also other speakers present, but they do not participate in the transcribed sections of the recording.

Each session was recorded with two Sony HXR-NX30P video cameras fitted with wide angle conversion lenses. Audio for the sessions was recorded via two Sennheiser EW 112-p G3-B portable wireless microphone systems worn by the children in small custom-made backpacks. These microphone signals were captured in stereo by one of the video cameras with one microphone recorded to the left channel and the other to the right. This method of recording helped identify which child was speaking during transcription as this was clearly indicated by the strength of the audio signal in either the left or right channel. Surrounding speech was also adequately captured by this setup. The in-built microphone of the secondary camera recorded a secondary audio track.

These semi-naturalistic recordings involved the children and adult having a picnic somewhere in the bushland surrounding Wadeye. This scenario attempted to emulate weekend family trips in the local country, which often involve fishing, making damper (bread), preparing and drinking tea, burning off grass, collecting bush foods and swimming. Participants were provided with some food and the items to make tea on a fire, which helped animate people and allowed them to relax in a familiar environment.

In order to provide an indicative comparison between the children's speech and that of adults', below we draw on a subset of the adult data analysed in Forshaw, Nordlinger & Blythe's (2012) frequency study of Murrinhpatha verb use. This data consists of three 10-minute extracts from three separate multiparty conversations (30 minutes in total). In two of the conversations, most participants were over fifty years of age and were affiliated to Murrinhpatha clans. In the third conversation the participants were young males (20-30 years old) who were not affiliated to Murrinhpatha clans. As these samples capture some of the variation in the

community, they provide a representative account of adult verb use in Murrinpatha and the range of input Murrinpatha children receive.

27.4 Verb Acquisition

In this section we focus on four different aspects of the acquisition of the verbal word. In §27.4.2 we consider productivity in the combination of classifier and lexical stems. We show that productivity is limited in the youngest children, and that the number of productive classifier and lexical stem combinations increases with age, but remains limited to a subset of classifier stems even by the oldest child in this dataset (4;11). Then, in §27.4.3, we examine which categories (subject person/number, tense/aspect/mood) children are encoding with classifier stems. We find that children in this dataset predominantly use only a small section of the paradigms, with the vast number of categories and forms unattested. Thirdly (§27.4.4) we consider the overall complexity of children's verb usage in terms of the number of template slots children are utilising. Finally (§27.4.5) a number of errors made by each of the children are analysed in terms of how they may relate to the potential developmental pathways identified in the previous sections.

27.4.1 Data Summary

All verbs in the data set were coded in terms of their morphological composition in SPSS Version 20.0. Multiple repetitions of a verb within an utterance (where an utterance is a stretch of speech under a single intonation contour) were treated as a single instance, as in the example below.⁷

(9)

Emily: *mama na-nga*

na-nga

Mum 2SG.S.HANDS(8).FUT-1SG.IO

2SG.S.HANDS(8).FUT-1SG.IO

‘Mum do it for me, do it for me.’

(LAMP_20130502_WF_01_V1 00:15:28)

Verbs produced by children as the result of prompting by either an adult or another child were not excluded, as prompting was not found to be a predictor of whether or not a child would produce a correct form. The younger children in particular produced both correct and erroneous forms in response to prompts.

Table 27.4 presents raw numbers of verbs coded for each child. In addition to type and token counts, the table includes the number of distinct classifier and lexical stem combinations found in a child’s corpus. We refer to these as ‘stem combination types’. Where a classifier stem occurs without a lexical stem this is also considered a stem combination type, as the absence of a lexical stem in this instance contrasts with the presence of a lexical stem in another. Error token counts are also included. These are categorised as either errors of omission (morphological material is missing) or errors of commission (additional erroneous or incorrect morphological material is present) and are discussed in §27.4.5. The same counts are included for the adult conversation corpus.

[INSERT TABLE 27.4 HERE]

Unsurprisingly the number of verbs coded varied greatly per participant. The two youngest children, Acacia (2;7) and Emily (3;1), used very few verbs in the sampled half hour of interaction, whereas Nathan (3;7), Molly (4;5), and Mavis (4;11) all produced over 60 verb tokens during their respective sessions, and produced more verb types. Interestingly, however, there was not a similar increase in the number of stem combination types produced according to age, with the notable exception of Mavis. Table 27.4 also shows that younger children produce errors of omission more frequently.

The variation in sample size between participants raises issues for the comparability of data across participants. This is a common issue for acquisition studies, particularly for lesser-known languages where building an extensive corpus is often difficult (Kelly et al. 2015). This issue has been addressed recently in a number of different ways in order to aid statistical analyses (e.g. Stoll et al. 2012; Xanthos & Gillis 2010). Our aim, however, is not to provide a description or premature argument based on statistical analysis. Rather, we provide here a largely descriptive and qualitative analysis which concretely presents children's use of Murrinhpatha's complex verbal structures.

27.4.2 Classifier Stem Productivity

One of the major challenges facing a Murrinhpatha speaking child is uncovering the complex predicate system in which the verbal stem is composed of a classifier stem and a lexical stem, which may be discontinuous. As outlined in §27.2 (see also Nordlinger: Chapter 45 this volume), these two elements combine productively in a variety of combinations, although some classifier and lexical stems are much more productive than others.

The children varied greatly in the number of stem combination types they produced. Acacia (2;7) produced 6 stem combination types, Emily (3;1), Nathan (3;7) and Molly (4;5) produced between 11 and 18, and Mavis (4;11) produced 31. For each child, lexical stems only co-occurred in a single stem combination type. This suggests that the children have not yet acquired the full productivity of the system; they do not yet treat the lexical stem as an element that can be productively combined with different classifier stems to generate new verbal meanings (cf. examples (6)-(8)). At this stage verb semantics are likely to be associated closely with the fixed form of lexical stems rather than being compositional, with classifier stems only encoding subject person/number and tense/aspect/mood.

By contrast, classifier stems were found to co-occur with more than one lexical stem in all children's data with the exception of the youngest, Acacia. Figure 27.1 shows the classifier stems used by each child and the number of stem combination types in which they occurred. We have excluded here classifier stems only found in a single stem combination in order to more clearly represent the data.

[INSERT FIGURE 27.1 HERE]

A number of observations can be made. Firstly it is apparent that some classifier stems (e.g. SIT(1) and HANDS(8)) are more productive than others in the children's data. Secondly, classifier stems that are productive are often productive for more than one child; most notably the classifier stem HANDS(8) is used in multiple combinations by almost all the children. Mavis uses it in four different combinations, Molly in three, and Nathan and Emily in two each. Two other productive classifier stems are SIT(1) in Mavis's data, and POKE(19), which is found to occur in various

combinations in four of the children's data. The classifier stems which show the earliest signs of productivity (i.e. in Emily's data) are BE(4), HANDS(8) and POKE(19).

It is likely that various factors contribute to this classifier stem usage. The first is the relative frequency and productivity of classifier stems in the language overall. Figure 27.2 shows the number of different stem combination types for classifier stems in the adult data (excluding classifiers that only occurred in one stem combination).

[INSERT FIGURE 27.2 HERE]

As with the children's data, some classifier stems in the adult data are considerably more productive than others. Interestingly, the most productive classifier stems in the children's data also tend to be the most productive in the adult data, (except for BE(4), which is more productive in the adult data). It is likely that because these classifiers are frequently contrasted by adults they are acquired earlier by children. This link between input productivity and acquisition is most clearly indicated by the fact that the most productive classifier stems in the adult data (HANDS(8), BE(4) and POKE(19)) are the earliest to display productivity in the children's data.

Further support for this analysis would be if children overgeneralized more productive classifiers to inappropriate contexts. Although erroneous stem combinations do occur later in development (see Forshaw, forthcoming), they are rare and not found in the corpus for this study. We note however that there does not seem to be any clear association between the high productivity of classifier stem SIT(1) in Mavis's data and the adult data usage, at least for this small sample.

Although the data suggests a link between the productivity type frequency in input and the acquisition of verbs, it is also the case that the distribution of classifier stems in the child data broadly reflects the distribution in adult usage. That is, the more productive classifier stems in adult usage are also more productive in children's language use. Thus, the relationship between the children's data and the adult data in this respect may simply reflect frequency facts in the language overall, rather than the process of acquisition.

In both the child and adult data many classifier stems were either unattested or confined to a single combination. In the children's data eight classifier stems were used in only one stem combination type, and seventeen were unattested, whereas in the adult corpus nine classifier stems were used in only one stem combination type and fifteen were unattested. Eleven classifier stems were not attested in either data set. This lack of productivity for many stem combinations suggests that children may initially acquire classifier and lexical stem combinations as unanalysed chunks rather than as distinct elements which are combined online. This is further supported by the early predominance of particular classifier stem categories (see §27.4.3), and the paucity of non-stem morphology which causes stems to be discontinuous (see §27.4.4).

Children appear to use more productive classifier stems as 'pathbreaking' forms. This small subset of frequently used and contrasted classifier stems (e.g. BE(4), HANDS(8) and POKE(19)) are one key to unlocking the bipartite verb system, providing children with the clearest evidence that classifier and lexical stems are distinct elements that combine to encode verb semantics and argument structure.

Another factor influencing the early productivity of some classifier stems over others is pragmatic. Table 27.5 shows all the meanings of the verbs using the most

productive classifier, HANDS(8), in the children's data. This classifier often contributes a general meaning of 'do with hands' – useful for children who are often talking about their immediate physical environment and making requests of others to do particular things. All these examples relate to concrete physical actions in the surrounding context and often come in the form of requests.

[INSERT TABLE 27.5 HERE]

As is commonly reported crosslinguistically for the acquisition of the broader lexicon, the classifiers most commonly found in the children's speech have relatively general semantic meanings related to activities taking place in the here and now (Clark 1993). These classifiers are the most useful in achieving the sorts of tasks children need to perform. This suggests the classifiers that children use are not only motivated by their productivity and frequency in adult use, but also by the functions that they perform.⁸

27.4.3 Morphology of Classifier Stems

Turning to classifier stems, these semantically dense portmanteau morphs encode categorial information such as subject person/number, and tense/aspect/mood, in addition to their lexical meaning. However, children do not begin to encode all these categories at once and instead begin by using just a small subset of the available categories.

As shown in Table 27.6, the least diversity across categories is seen from the two youngest children, Acacia (2;7) and Emily (3;1).

[INSERT TABLE 27.6 HERE]

Acacia and Emily use only singular subject classifiers, and their verb productions are dominated by future and existential tense/aspect/mood forms. We argue that the high proportion of these categories is due to the functions that they perform. Existential forms are commonly used to refer to the location of people and objects in the recording space, a common function of children's early verbs in Murrinhpatha as shown in (10). In addition to being pragmatically useful these forms are also morphologically relatively simple, usually being monomorphemic and only one to two syllables long.

(10)

1 Adult: *ngarra ku=yu?*
 where CLF:ANIMATE=CTC
 'Where's the animal?'

2 Acacia: *kem* *pangu-gathu*
 3SG.S.SIT(1).EXIST DIST-hither
 'It's over that way.'

(LAMP_20130502_WF_01_V1 00:23:07)

The other regularly used classifier stem category is 2nd singular future, used in Murrinhpatha to construct imperative forms. Both Acacia and Emily use a number of imperative forms in their speech. These forms typically consist of two to three morphs and are used to make requests of others as in line 6 of example (11), and in (12).

(11)

1 Emily: *kura nhinhi=ka kanhi kura ngay*
CLF:WATER 2SG=TOP PROX CLF:WATER 1SG
'Your drink, this is my drink.'

2 Acacia: *kura nukun?*
target: *kura nangkai-nukun?*
CLF:WATER who-POSS
'Whose drink?'

3 Emily: *kura ngay*
CLF:WATER 1SG
'My drink.'

4 Acacia: *kura ngay*
CLF:WATER 1SG
'My drink.'

5 Emily: *kura ngay kanhi*
CLF:WATER 1SG PROX
'That's my drink.'

6 Acacia: *nart ne*
na -art **ne**
2SG.S.SNATCH(9).FUT-get TAG
'You get that one, alright?'
(points to another cup)

(LAMP_20130502_WF_01_V1 00:30:10)

(12)

Emily: *kura nangart,*
kura na-nga-art

CLF:WATER 2SG.S.SNATCH(9).FUT-1SG.IO-get

mama kura nangart

mama kura **na-nga-art**

Mum CLF:WATER 2SG.S.SNATCH(9).FUT-1SG.IO-get

‘Get me a drink, Mum get me a drink.’

(LAMP_20130502_WF_01_V1 00:15:47)

We know that in other languages (e.g. Swahili (Deen 2005)) children are frequently exposed to imperative forms and preliminary observations suggest this is also the case in Murrinhpatha. The usefulness of these forms, partnered with their high frequency in input and their relatively simple morphology, means that children acquire these types of structures early. However, the predominance of these forms means that children do not often contrast classifier and lexical stem forms; this supports the initial production of verbs as unanalysed imperative chunks rather than a composition of productive stems.

The three older children, Nathan (3;7), Molly (4;5) and Mavis (4;11), use a much greater variety of subject and tense/aspect/mood categories in their sessions, although their use is still limited to a subset of categories, as shown in Tables 27.7-8. Classifier stems still predominantly encode singular subjects and future tense but there is a substantial increase in use of the non-future category by these three children, largely absent from the younger children’s speech. There is also a much more even distribution in the encoding of subject person. The classifier stems of the eldest child, Mavis, employ the greatest number of categories, including past imperfective tense/aspect/mood, as well as dual subject number.

[INSERT TABLE 27.7 HERE]

[INSERT TABLE 27.8 HERE]

The continued predominance of classifier stems encoding singular subjects is not surprising as the adult corpus shows that the majority of classifier stems encode singular subjects. The child data does however show that children's early verbs encode *only* singular subjects. Only the older children in this corpus begin to use 1st person inclusive subjects (Nathan, Molly, and Mavis), dual non-sibling subjects (Molly and Mavis), dual sibling subjects (Mavis) and paucal non-sibling subjects (Molly and Mavis). None of the children use a classifier stem which encodes a paucal sibling/plural subject.

The classifier stems used by Nathan, Molly, and Mavis predominantly encode future tense, although to a lesser extent than for Acacia and Emily. In contrast to the two younger children there is a lesser proportion of 2nd person imperative constructions. Nathan, Molly, and Mavis produce a variety of 1st, 2nd and 1st inclusive subject future forms, as in (13)-(15). These verbs are typically used by the children to encode actions by animate entities in the surrounding recording environment that have not yet occurred. Third person subject future forms continue to be rare.

(13)

Nathan: *awu buy-bat-nukun*
 no 1SG.S.(18).FUT-fall-FUT:IRR
 'Don't, I might fall.'

(LAMP_20120830_WF_01_V1 00:33:50)

(14)

Molly: *kay=ya* *pani-ngkala -nu*
let's_go=CTC 1INCL.S.BE(4).FUT-climb_onto-FUT
'Come on we'll climb up.'

(LAMP_20120830_WF_01_V1 00:13:11)

(15)

Mavis: *kagawu* *ngu-nhi-bat-nu*
come_here 1SG.S.SLASH(23).FUT-2SG.O-hit-FUT
'Come here, I will give you a smack.'

(LAMP_20131025_WF_01_V1 00:10:23)

Another key difference between Acacia and Emily, compared with Nathan, Molly, and Mavis, is that the older children use a variety of classifier stems which encode non-future tense/aspect/mood. These are used primarily to describe actions by animate entities that are currently underway (16). They are also used by Molly and Mavis in circumstances where the subject is not animate (17)-(18).

(16)

Nathan: *dannhiriwak-kanam*
dam-nhi-riwak=kanam
3SG.S.POKE(19).NFUT-1DU.INCL.O-follow=3SG.S.BE(4).NFUT
'He's still following us.'

(LAMP_20120830_WF_01_V1 00:07:01)

(17)

Molly: *menhtharl*
mem-dharl=pirrim

3SG.S.HANDS:RR(10).NFUT-open=3SG.S.STAND(3).NFUT

ne-birl

2.SG.S.HANDS(10):RR.FUT-turn_to_look

‘It’s opening itself, look.’

(LAMP_20120830_WF_01_V1 00:02:16)

(18)

Mavis: *dem-pek-warda*

3SG.S.POKE(21):RR.NFUT-burn-now

‘It’s burning.’

(LAMP_20131025_WF_01_V1 00:14:32)

Only Molly (4;5) and Mavis (4;11) use classifier stems with past imperfective tense/aspect/mood. Mavis in particular uses a variety of past imperfective verbs when she tells a story about a previous visit to the recording location, such as in utterance 1 of (19).

(19)

1 Mavis: *ngay Katherine nganaka=ya*

1SG woman's_name you_know?=CTC

ngarde-ngime-dha

1DU.S.BE(4).PST:PFV-PAUC.F.NSIB-PST:PFV

‘Me and Katherine, our group were there.’

2 Adult: *ngarra-ngu ne-dha-ngime?*

where-way 2DU.S.BE(4).PST:IPFV-PST:IPFV-PC.F.NSIB

‘Where were you mob?’

3 Mavis: *kanhi-matha palyirr wakal*
PROX-INTS hill little
'Right here, the little hill.'

(LAMP_20131025_WF_01_V1 00:11:11)

Thus, children initially only use a small subset of the categories that can be encoded by classifier stems. With age, they begin to use a greater variety of classifier stem categories and their usage becomes more adult like. The types of classifier stem categories that children use early in their development can be explained in terms of the function that these verbs perform. In the early stages of verb use there are high proportions of 2nd singular subject future verbs, as children are largely using verbs as imperatives to make requests and demands of others. Children also use 3rd singular existential verbs to direct attention to people and objects around them. As their verb use gets more sophisticated, the diversity of categories encoded also increases. This is seen in the use of verbs with 1st person singular and 1st person inclusive subjects (by 3;7), as well as the use of the non-future tense to describe observable current events. The use of categories such as past imperfective relies on children talking about past events which appears to occur only in older children's speech (by 4;5).

Categories not found in a child's speech are absent because they are not functionally necessary. For example Acacia (2;7), Emily (3;1), and Nathan (3;7) do not use past imperfective forms as they do not refer to past events. Nor do they refer to dual sibling subjects. Interestingly a number of these classifier stem categories are also rarely attested in the adult data, raising questions as to how children acquire these rarely attested forms. Answering this question requires experimental methods to test children's knowledge of these rarer forms, see Forshaw (2014) for one such study.

27.4.4 Morphological Complexity

Murrinhpatha verbs have the potential to be long multi-morphemic strings which fill a number of verb template slots.⁹ In this section we consider the morphological complexity of children's verbs in terms of the number of morphological slots filled in the verbs they produce. Figure 27.3 shows each of the children's mean morph slot counts over all verb tokens, excluding errors. The same count is included for the adult corpus.

[INSERT FIGURE 27.3 HERE]

As expected children's verbs are on average morphologically simpler than adult forms with adult verbs containing on average one additional non-stem affix. In contrast, Acacia (2;7) utilises almost no non-stem morphology, whereas Emily (3;1), Nathan (3;7), and Molly (4;5) show a mean of 0.5 non-stem affixes per verb. This discrepancy in complexity cannot be explained by the omission of morphs, as the averages exclude errors made by children. Rather this difference is largely a consequence of the types of verbs children produce. Our analysis in previous sections shows that children use high proportions of morphologically relatively simple verb structures such as existential and imperative constructions, particularly Acacia and Emily. Nathan and Molly's data showed an increase in the use of future and non-future forms; future forms often have additional tense marking in slot 6. Mavis's use of past imperfective forms requires the past tense morph *-dha* in slot 6. Furthermore her use of non-sibling subjects requires the use of *-ngintha-/-nintha-* or *-ngime-/-neme-* (slots 2 and 8). This probably contributed to her higher than average morphological complexity. Also contributing to the children's lower morphological

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complexity is that they use relatively few optional adverbials. In the adult corpus optional adverbials were used in 17.3% of all verbs, whereas in the child data they were used with less than 10% of all verbs (Acacia 0.0%, Emily 9.5%, Nathan 5.5%, Molly 3.5%, and Mavis 7.0%).¹⁰

We understand why children’s verb forms tend to be morphologically less complex than adults’, however children are still using some non-stem morphology. The earliest non-stem morphology in the children’s data is typically either the additional future marker *-nu* (slot 6) or the use of indirect objects (slot 2). The future marker *-nu* is found in the speech of all children except for the youngest, Acacia. Example (20) is produced by Emily (3;1).

(20)

Emily: *ngay=ka kura ti kura ti*
 1SG=TOP CLF:WATER tea CLF:WATER tea

ba-gurduk-nu

1SG.S.SEE(13).FUT-drink-FUT

‘My tea, tea, I will drink it.’

(LAMP_20130502_WF_01_V1 00:21:41)

While indirect objects (slot 2) are used from an early age, only a small subset of forms are used –the singular indirect objects *-nga-* (1SG.IO), *-mpa-* (2SG.IO), *-nge-* (3SG.IO.F), and *-na-* (3SG.IO.M). The early use of these indirect object markers is central to children’s learning of Murrinhpatha’s bipartite verb structure, since they occur between the classifier stem and lexical stem, providing evidence that these

stems are distinct morphological elements. Emily (3;1) is the youngest child to use an indirect object marker with a bipartite stem verb.

(21)

Emily: *na-nga-dharl-nu*

2SG.S.SNATCH(9).FUT-1SG.IO-open-FUT

‘You will open it for me’

(LAMP_20130502_WF_01_V1 00:21:05)

The indirect object *-nga-* in this example separates the classifier stem *na-* from the lexical stem *-dharl* suggesting that children may recognise, at least for some bipartite stem verbs, that classifier and lexical stems are independent from an early age. The use of this stem-intervening slot is another key step in acquiring verbs in Murrinhpatha.

27.4.5 Errors

Children’s productions that deviate from adult forms have been used by proponents of various theoretical perspectives to support their analyses of children’s language development. We now consider the errors identified in this corpus in relation to the findings discussed above, firstly addressing errors of omission and then errors of commission.

27.4.5.1 Errors of Omission

All children made errors of omission, omitting obligatory parts of verbs on at least one occasion. Acacia (2;11), Emily (3;1), and Nathan (3;7), who accounted for the

majority of omission errors, typically omitted material from the beginning of the verb, either by omitting the entire classifier stem, as in (22) and (23), or producing an underspecified variant filler syllable in place of the classifier stem (24) (the primary stress is marked with ' in these examples). In all these examples the remaining verb elements, including the lexical stem, are correctly produced suggesting that the ends of verbs, and the lexical stem in particular, are highly salient for children acquiring Murrinhpatha. Peters (1985) argues that the ends of words are especially prominent for children and this also has been shown to be a factor in the acquisition of some Mayan languages with morphologically complex verbs (Pye, Pfeiler, de León, Brown & Mateo 2007).

(22)

Acacia: *lalenu Mavis*

target: **ba-'lele-nu** Mavis

3SG.S.BASH(14).FUT-bite-FUT woman's_name

'It will bite Mavis.'

(LAMP_20130502_WF_01_V1 00:27:14)

(23)

Nathan: *ngay-ka nhiriwak*

target: ngay=ka **nga-'nhi-riwak**

1SG=TOP 1SG.S.POKE(19).FUT-2SG.O-follow

Molly ne-birl

woman's_name **2SG.S.HANDS(10):RR.FUT-turn_to_look**

'I will follow you, Molly look'

(LAMP_20120830_WF_01_V1 00:06:48)

(24)

1 Adult: *Acacia* *thi-'kaykay* *thama*
woman's_name 2SG.S.SIT(1).FUT-call_out 2SG.S.SAY(34).FUT
'Say 'you call out, Acacia.'

2 Emily: *Acacia* *yuwakay*
target: *Acacia* ***thi-'kaykay***
woman's_name 2SG.S.SIT(1).FUT-call_out
'You call out, Acacia.'

3 Acacia: *diyakay*
target: ***thi-'kaykay***
2SG.S.SIT(1).FUT-call_out
'You call out.'

(LAMP_20130502_WF_01_V1 00:18:38)

In the cross-linguistic literature concerning the acquisition of morphology, a central question is what predicts errors of omission. There are two broad, regularly adopted approaches. The first focuses on the role of morphology where omission of elements is sensitive to morphological boundaries. This analysis is attractive for languages where children initially produce bare verb roots, as in Navajo and Quechua (Courtney & Saville-Troike 2002), and Tzeltal Mayan (Brown 1997). The second approach argues that errors of omission can largely be explained by the prosodic patterns of the language being acquired, with non-stressed unfooted elements more likely to be omitted (Demuth 2014; 1996; Demuth & McCullough 2009; Gerken 1996; Lleó 2006).

The examples of omission above are predicted by a stress-based account with elements prior to the primary lexical stress of the verb (shown with ') being either omitted or filled with variant forms. However, a morphological account would also be plausible as it is the classifier stem in all instances which is either omitted or underspecified.

Examples (22-24) all involve the omission or underspecification of monosyllabic classifier stems. The situation however becomes more complex when we consider examples of omission in bipartite verbs with disyllabic classifier stems. For example in (25), Molly (4;5) omits the initial *nga-* segment of the classifier stem *ngani-* omitting part of a classifier stem in contrast to the entire stem. This presents problems for a purely morphological account as the omission neither coincides with morphological boundaries nor with the primary lexical stress of the bipartite verb, with Molly producing a well-formed preceding syllable.

(25)

Molly: *ngay-ka ning'kalanu*
 target: ngay=ka **ngani-ngkala-nu**
 1SG=TOP 1SG.S.BE(4).FUT-climb_onto-FUT
 'I will climb onto it'

(LAMP_20120830_WF_01_V1 00:10:31)

It is therefore unclear what exactly is driving errors of omission in Murrinhpatha bipartite verbs but it is likely that both prosodic and morphological accounts have some role to play (as discussed by Forshaw et al. 2014). What is clear, however, is the importance and salience of the ends of verbs and, in particular, lexical stems.¹¹ In all

of the above examples the lexical stem is well-formed; it is not subject to omission of any type.

These patterns of omission suggest that for children acquiring bipartite verbs, the lexical stem is the ‘true’ stem element. It is a fixed form that often occurs in a salient word final position and often attracts primary lexical stress. In contrast, classifier stems, which undergo omission, are paradigms of up to 50 forms which do not typically attract primary stress in bipartite verbs. In the earlier stages of development the lexical stem may be treated more as a ‘true’ stem and the classifier stem more as an affix. The ‘stemhood’ of the lexical stem is also supported by the finding that lexical stems do not occur with a variety of classifier stems in the child data (see §27.4.2), further indicating that this is the key semantic element for children at this stage of verb-learning.

27.4.5.2 Errors of Commission

In contrast to errors of omission, errors of commission involve the use of a morphological form in an inappropriate context. Best known are errors in English past tense morphology where children overgeneralise the past morph *-ed* to irregular verbs, resulting in forms such as *goed* (Cazden 1968). In the Murrinhpatha children’s data it is again classifier stems that are typically impacted by errors of commission.

Our focus on children’s combinations of classifier and lexical stems has shown that some classifiers are much more productive and frequent than others (§27.4.2). We therefore might expect children to overgeneralise and combine some of the more frequent classifier stems with incompatible lexical stems. However, no examples of this type of overgeneralisation were found in the dataset.¹²

Instead, children's errors of commission typically involve the overgeneralisation of a particular inflected form within a classifier paradigm, constructing erroneous forms based on other forms of the same paradigm which they have already acquired. In many classifier stem paradigms non-future forms have a final *m*. For a number of paradigms this is all that distinguishes non-future from future forms. In example (26) Molly (4;5) should produce the 1st inclusive non-future form of classifier SIT(1), *thim*. Instead of the anticipated initial *th-* Molly produces an initial *p-*. When we look within the classifier paradigm SIT(1) we notice that the 1st inclusive future form is *pi-*. Since children initially use more future classifier stem forms it appears that Molly has constructed the non-future form based on the future form by adding an *-m* which would produce the correct form for many paradigms.

(26)

Molly: **pimngime*
 target: **thim-ngime**
 1PL.INCL.S.SIT(1).NFUT-PC.F.NSIB
 'We are here.'

(LAMP_20120830_WF_01_V1 00:30:50)

This explanation is supported by the findings in §27.4.3 that children initially use predominantly future forms and only later begin to use more varied tense/aspect/mood categories. These future forms provide clues as to what the non-future and other forms will be, but the patterns are not entirely systematic, varying across classifier stem paradigms, resulting in errors of commission as in (26). Such errors are overgeneralisations based on characteristics of earlier acquired forms.

27.4.6 Summary and Conclusions

Our findings show that across this dataset, all children were able to produce bipartite stem verbs, although lexical stems were only found to co-occur in a single stem combination type. By looking beyond the verbal complexity and examining productivity in use and morphological regularity, we have shown that productivity is limited across the dataset, and although there is development with age, productivity is still limited for children aged nearly five years. For all the children, the number of classifier and lexical stem combinations is restricted to a small subset of classifiers in the children's production, with the majority of categories and forms unattested. In addition to the low level of productivity, children utilize only a small number of morphological slots in their verb productions. This, together with our brief discussion of children's errors, suggests that a relevant factor for the acquisition of Murrinhpatha may not be just morphological complexity, but morphological regularity and frequency and the extent to which these intersect.

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Abbreviations:

CLF ‘noun classifier’

CTC ‘clitic’

DIST ‘distal marker’

DU ‘dual’

EXIST ‘existential’

F ‘female’

FUT ‘future tense’

INCL ‘inclusive’

INTS ‘intensifier’

IO ‘indirect object’

IPFV ‘imperfective’

IRR ‘irrealis’

M ‘male’

NFUT ‘non-future tense’

NSIB ‘non-sibling’

O ‘object’

PIMP ‘past imperfective’

PC ‘paucal’

PFV ‘perfective’

PL ‘plural’

POSS ‘possessive’

PROX ‘proximate’

PST ‘past’

RR ‘reflexive/reciprocal’

S ‘subject’

SG ‘singular’

TEMP ‘temporal adverbial’

TOP ‘topic’

Table 27.1 Murrinhpatha verbal template (Nordlinger 2010b)

1	2	3	4	5	6	7	8	9
Classifier stem (portmanteau with SUBJ person/number and TAM)	SUBJ Number / OBJ marker/ Indirect OBJ marker	Reflexive-reciprocal	Incorporated body part / APPLicative	Lexical Stem	Tense/aspect/mood (TAM)	Incorporated adverbial	Number (SUBJ or OBJ) Incorporated adverbial	Incorporated adverbial

Table 27.2 Paradigm for Classifier Stem BE(4)

		NFUT	PIMP	FUT	FUT:IRR	PST:IRR	EXIST
SG	1	<i>nganam</i>	<i>ngardi</i>	<i>ngani</i>	<i>ngani</i>	<i>ngani</i>	
	2	<i>thanam</i>	<i>thardi</i>	<i>thani</i>	<i>thani</i>	<i>thani</i>	
	3	<i>kanam</i>	<i>kardi</i>	<i>pani</i>	<i>kani</i>	<i>karni</i>	<i>kanam</i>
<hr/>							
1 INCL		<i>thanam</i>	<i>thardi</i>	<i>pani</i>	<i>pani</i>	<i>thani</i>	
<hr/>							
DU	1	<i>ngarnamka</i>	<i>ngarde</i>	<i>ngarne</i>	<i>ngarne</i>	<i>ngarne</i>	
	2	<i>narnamka</i>	<i>narde</i>	<i>narne</i>	<i>narne</i>	<i>narne</i>	
	3	<i>parnamka</i>	<i>parde</i>	<i>parne</i>	<i>karne</i>	<i>parne</i> <i>karne</i>	<i>karnamka</i>
<hr/>							
PL	1	<i>ngarnam</i>	<i>ngardi</i>	<i>ngarni</i>	<i>ngarni</i>	<i>ngarni</i>	
	2	<i>narnam</i>	<i>nardi</i>	<i>narni</i>	<i>narni</i>	<i>narni</i>	
	3	<i>parnam</i>	<i>pardi</i>	<i>parni</i>	<i>karni</i>	<i>parni</i> <i>karni</i>	<i>karnam</i>

Table 27.3 Overview of participant data

Child	Age (Y;M)	Sex	Recording Session	Session Code	Length (mm:ss)
<i>Acacia</i>	2;7	Female	LAMP_20130502_WF_01_V1 00:09:05 – 00:39:13	I	30:08
<i>Emily</i>	3;1	Female	LAMP_20130502_WF_01_V1 00:09:05 – 00:39:13	I	30:08
<i>Nathan</i>	3;7	Male	LAMP_20120830_WF_01_V1 00:00:00 – 00:34:17	II	34:17
<i>Molly</i>	4;5	Female	LAMP_20120830_WF_01_V1 00:00:00 – 00:34:17	II	34:17
<i>Mavis</i>	4;11	Female	LAMP_20131025_WF_01_V1 00:00:31 – 00:34:28	III	33:57

Table 27.4 Verb Tokens, Types, Stem Combination Types & Errors

Participant	Age	Tokens (Total)	Tokens (Correct)	Types	Stem Combination Types	Errors	Omission	Commission
<i>Acacia</i>	2;7	16	8	7	6	8	7	1
<i>Emily</i>	3;1	35	23	13	11	12	11	1
<i>Nathan</i>	3;7	66	54	25	14	12	11	1
<i>Molly</i>	4;5	85	78	53	18	7	3	5
<i>Mavis</i>	4;11	72	70	53	31	2	1	1
<i>Adult</i>		145	145	122	63	-	-	-

Table 27.5 Stem Combinations with Classifier Stem HANDS(8)

Lexical Verb Stem	Free Translation	Participant
-	do/say	<i>Emily, Nathan, Molly, Mavis</i>
-watha	make	<i>Nathan, Molly</i>
-rara	peel (fruit)	<i>Molly</i>
-yit	hold	<i>Mavis</i>
-derdi	hide	<i>Mavis</i>
-bath	take/bring	<i>Mavis</i>
-dharl	open	<i>Emily</i>

Table 27.6 Percentage of Classifier Stem Category Per Participant

TAM	Subject Person	Participant	
		<i>Acacia (2;7)</i>	<i>Emily (3;1)</i>
Future	1.SG	-	25
	2.SG	42.9	50
	3.SG	-	8.3
Non-Future	1.SG	14.3	-
Existential	3.SG	42.9	16.7
Total		100	100

Table 27.7 Percentage of Classifier Stem Subject Person Categories

Participant	Subject Person Categories			
	1st	2nd	3rd	1st Inclusive
<i>Nathan</i>	30.4	21.7	43.5	4.3
<i>Molly</i>	29.8	17.0	38.3	14.9
<i>Mavis</i>	32.7	25.0	34.6	7.7
<i>Adult</i>	17.7	21.0	58.1	3.2

Table 27.8 **Percentage of Classifier Tense/Aspect/Mood Categories**

Participant	Tense/Aspect/Mood Categories				
	Non-Future	Future	Past Imperfective	Past Irrealis	Existential
<i>Nathan</i>	30.4	56.5	-	-	13.0
<i>Molly</i>	25.5	65.9	2.1	-	6.4
<i>Mavis</i>	26.9	46.2	17.3	-	9.6
<i>Adult</i>	40.2	28.7	23.0	4.1	4.1

Fig. 27.1 Stem Combination Types by Classifier Stem

Fig. 27.2 Adult Stem Combination Types by Classifier Stem

Fig. 27.3 Mean Template Slots & Non-Stem Slots by Participant

Endnotes

1 This project is supported by Australian Research Council Discovery and DECRA projects (DP110100961, DE130100399). We are very grateful to the children and their families for so generously contributing to our understanding of the language acquisition processes of Murrinhpatha, and to Nick Evans for helpful comments on an earlier version of this chapter.

2 Although there has been some excellent work on the acquisition of a few polysynthetic languages, including Inuktitut (e.g. Allen 1996, Allen this volume), Chintang (e.g. Stoll, Bickel, Lieven, Paudyal, Banjade, Bhatta & Gaenszle 2012; Lieven & Stoll 2013, Stoll this volume), Cree (Rose and Brittain 2011), Navajo (e.g. Courtney & Saville-Troike 2002), Mohawk (Mithun 1989) and West Greenlandic (Fortescue 1985; Fortescue & Lennert Olsen 1992).

3 Although only 260 km from Darwin, Wadeye is surrounded by three major rivers, a flood plain, and the coast. For many months of the year road access is very limited.

4 In fact, this template varies in detail across Murrinhpatha speakers, due to generational change in progress. Such change accounts for the differences between Blythe's (2009; 2013) and Nordlinger's (2010b; 2011) templates representing the speech of middle-aged and older speakers. Mansfield (2014) reports further differences in the varieties spoken by young men. These differences do not impact upon the issues discussed in this chapter.

5 The semantics of the classifier system is not well understood. In this chapter, all classifier stem paradigms are numbered as per Blythe, Nordlinger & Reid (2007), for consistency with earlier research. If it is possible to identify the generic sense of the

classifier then the generic sense is also given as an indicative gloss (e.g. the classifier stem that classifies events prototypically done with the hands is glossed HANDS(8)).

6 It does however combine with coverbs in phrasal verb constructions (Mansfield 2014).

7 In all child data examples the relevant verbs are bolded.

8 It is possible that the predominance of some stem combination types and classifier stems is linked to the similar contexts in which the data was collected. Evaluating this factor is beyond the scope of this study as it would require varied contexts of interaction. We leave this for further research.

9 See Forshaw et al. (2012) who show that in adult-to-adult spontaneous speech, Murrinhpatha verbs have only one non-stem affix on average.

10 Mansfield (2014) reports an almost complete abandonment of incorporated adverbials in young men's Murrinhpatha. It is unclear however whether this represents a change in the language, limitations of the corpus, or is a feature of this particular sociolect.

11 Forshaw et al. (2012) showed that lexical stems occurred word finally 41% of the time in a corpus of adult-to-adult spontaneous speech.

12 The larger LAMP corpus reveals a small number of such examples, as discussed by Forshaw (Forthcoming). However, examples of this type are strikingly infrequent in the children's speech.