CHAPTER 1

Introduction

This dissertation examines language change and acquisition in the multilingual indigenous community of Lajamanu in northern Australia. It documents the emergence of a new language, Light Warlpiri, and examines the acquisition of this language, and of the heritage language, Lajamanu Warlpiri, by children. Three characteristics of the input to children in the community make the learning situation particularly interesting. First, the input contains frequent code-switching between languages. Second, properties which encode grammatical relations, specifically, ergative case-marking and word order, are applied in varying ways within and between Light Warlpiri and Lajamanu Warlpiri, the two languages spoken most. Third, it is likely that there is some variation between age cohorts in the
systems used by adults within Light Warlpiri and within Lajamanu Warlpiri, and these varied systems provide the input to the children. There could be variation within Light Warlpiri because the language is new and might not have fully stabilized, and there could be variation within Lajamanu Warlpiri because its speakers are in an environment of rapid language change. While there have been some studies on bilingual learning environments in which the input to the children includes code-switching (Burling 1959; Garcia 1983; Schlyter 1987; Lanza 1997a; Nicolaidis and Genesee 1997; Mishina 1999; Juan-Garau and Perez-Vidal 2001), none of them is about the kind of situation facing the child learners in this community, in which adult code-switching is the typical way of speaking.

Light Warlpiri has arisen from contact between Warlpiri (a Pama-Nyungan language), Kriol (an English lexified creole), and varieties of English. It is a Mixed Language, meaning that none of its source languages can be considered to be the sole parent language. Most verbs and the verbal morphology are from Aboriginal English or Kriol, while most nouns and the nominal morphology are from Warlpiri.

The language input to children is complex. Adults older than about 30 speak the Lajamanu variety of Warlpiri (Lajamanu Warlpiri) and code-switch into Aboriginal English or Kriol. Younger adults, the parents of the current cohort of children, speak Light Warlpiri and code-switch into Lajamanu Warlpiri and into Aboriginal English or Kriol. Children learn both Light Warlpiri and Lajamanu Warlpiri from birth, but they target Light Warlpiri as the language of their everyday interactions, and they speak it almost exclusively until 4 to 6 years of age.

Grammatical relations are indicated in Light Warlpiri partially through ergative case-marking, partially through word order and partially through pragmatic strategies. The thesis examines young children’s use of two of these strategies, erga-
tive case-marking and word order, in their spontaneous Light Warlpiri speech. It then investigates whether different age groups of speakers produce these strategies differently in the two languages that they speak most, Light Warlpiri and Lajamanu Warlpiri. Finally the thesis examines the use of ergative marking and word order strategies in sentence interpretation by children and adults in each language.

Terminology. I refer to Warlpiri as described in the literature (Hale 1973, 1982; Swartz 1982, 1991; Nash 1986; Simpson and Bresnan 1983; Simpson 1991; Hale et al. 1995; Laughren et al. 1996; Laughren 1982, 2002; Granites and Laughren 2001) as ‘classic Warlpiri’. The way Warlpiri is spoken in Lajamanu differs from classic Warlpiri, mainly with regard to phonology and whether words can end in consonants as well as vowels. These changes are described in Section 2.1. When I refer to Warlpiri specifically as spoken in Lajamanu, I use ‘Lajamanu Warlpiri’. Lajamanu Warlpiri is distinct from the new language, Light Warlpiri - Lajamanu Warlpiri can be thought of as classic Warlpiri with some sound changes. In Chapter 2 I describe the properties of Light Warlpiri in detail and explain how it differs from classic and Lajamanu Warlpiri.

I use the term ‘code-switching’ to mean using elements from more than one language in a string of speech. Code-switching can be categorized into two main types: insertional, in which single elements of one language are inserted into a longer string of the other language, and alternational, in which a switch in both lexicon and grammar takes place (Muysken 2000). The distinction between the types of code-switching is relevant to the genesis of Light Warlpiri, discussed in Chapter 2, but is not important for other discussions in the thesis. Unless it is necessary to be specific about which type of code-switching is being used, I will simply use the term code-switching to mean either insertional or alternational code-
switching. I use ‘borrowing’ to mean that a single word from another language is inserted into the clause and is a very common insertion for most speakers. Borrowing of English or Kriol words into Warlpiri often occurs when there is no Warlpiri word for an object or concept that was introduced relatively recently to the Warlpiri.

When speaking to non-Warlpiri people from other communities, people from Lajamanu speak a code which could be categorized as either Aboriginal English or acrolectal Kriol (Kriol with more properties from English, as opposed to basilectal Kriol, which has relatively more properties from heritage languages). There is lexical, phonological and syntactic overlap between Kriol and Aboriginal English, which means that when some elements are inserted into a Warlpiri clause, one cannot state whether the source language of the elements is Kriol or Aboriginal English. For this reason I label the source of elements which could be from either of these languages AE/Kriol, although I am aware that Aboriginal English and Kriol are considered separate languages, with distinct origins (Malcolm and Kaldor 1991; Eades 1993).

In discussing core arguments of verbs, I use the distinction of Dixon (1979) between A arguments (agentive arguments of transitive verbs), O arguments (non-agentive arguments of transitive verbs) and S arguments (arguments of intransitive verbs).

1.1 Research questions and plan of thesis

Three major questions are addressed in the thesis, and each has several components. The first is what the linguistic properties of Light Warlpiri are, and is addressed in Chapter 2. In that chapter I present the properties of Light Warlpiri
relevant to how grammatical relations are indicated, and situate Light Warlpiri as a newly emerged Mixed Language, rather than a practice of code-switching between Lajamanu Warlpiri and English or Kriol, or a variety of either. The data under analysis in Chapter 2 are spontaneous and elicited production speech from young adults and teenagers, aged about 15 to 20. The spontaneous data consist of video recordings of young parents talking to their children and to each other and teenagers talking to each other. The elicited production data consist of young adults telling narratives to each other from picture stimulus books. The documentation of Light Warlpiri and of synchronic code-switching shows that a new Mixed Language can arise as a consequence of alternational code-switching.

The second question is one for language acquisition, and asks how the children deal with varied and mixed input from two languages that have some similar lexical and grammatical properties. The rapid emergence of Light Warlpiri and the complex input situation raise the third major question of the thesis, that of language variation between age groups in the community. Do different age groups, including children, vary the strategies they use for indicating grammatical functions within and between languages? These two questions are addressed from several perspectives throughout Chapters 4 to 6 - within Light Warlpiri only in Chapter 4, within Lajamanu Warlpiri only in Chapter 5, and in a direct comparison of both languages in Chapter 6, examining both production and comprehension strategies. But first, to prepare for detailed analyses of how grammatical relations are indicated in Light Warlpiri, and how they are learned by children, I review typological and developmental literature on languages with variable ergative marking and variable word order in Chapter 3. Then, in Chapter 4, I analyze Light Warlpiri spontaneous speech from young children and adults in relation to the literature. Data
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under analysis in Chapter 4 are longitudinal spontaneous data of seven children aged 1;22 to 5;8 and young adult family members, aged about 20. Results show that ergative marking is used most often in non-prototypically transitive clauses - those in which the A argument is inanimate or postverbal, or the O argument is animate.

In Chapter 5 I examine the use of ergative case-marking and word order patterns in elicited narratives from different age groups of children (6 to 9) and adults (20 to 60+) in Lajamanu Warlpiri only. The results show that there is a correlation of ergative marking and word order such that postverbal A arguments are marked more often than preverbal A arguments, and that children produce this pattern more often than adults do.

For a more careful comparison of how children use the strategies of ergative case-marking and word order in the two languages, closely comparable data are needed. The analyses in Chapter 4 were conducted on spontaneous speech data from children under age 6 and young adults, and those in Chapter 5 on narrative data from children aged 6 to 9 and adults in several age groups. So in Chapter 6 I compare children’s and adults’ production and comprehension in Lajamanu Warlpiri and Light Warlpiri, holding genre and age constant. The production data under analysis in this chapter are elicited narratives in both Lajamanu Warlpiri and Light Warlpiri from 18 children aged 6 to 9, and 9 adults aged about 20. Results show that both children and adults use significantly less ergative marking in Light Warlpiri than in Warlpiri. But they provide more evidence that children produce a correlation of ergative marking and word order more often than adults do. The correlation could signal the beginning of further change in both languages. Having concentrated so far on productive skills, the final analysis of the thesis,
also in Chapter 6, examines how children and young adults interpret the cues of ergative case-marking and word order in comprehension tasks in both languages. In the comprehension tasks the children do not rely on different strategies in each language - they first rely most on a word order strategy, and gradually move towards relying on a case-marking strategy, in both languages. The difference between strategies used in production and comprehension point to children’s greater dependence on contextual and pragmatic properties in real discourse than in a less contextualized comprehension task. In Chapter 7 I present my conclusions.

The thesis documents children’s acquisition of two languages in a complex multilingual situation of a kind which has not previously been studied. Most bilingual acquisition studies are in contexts in which the languages are clearly distinct from each other, and the input to the children is clearly separated in terms of, for example, interlocutor, place and type of event. In the setting of this study the languages being learned share some lexical and grammatical features and there is considerable code-switching in the input children receive. An interesting ethnographic property documented in this dissertation is the meeting of language shift and language acquisition, as the children continue to learn the traditional language as well as the new language. It is not possible to predict how long this situation of bilingualism from birth will remain, because, based on what is happening in other indigenous communities in Australia, it is likely that there will be further shift away from the traditional language, Lajamanu Warlpiri, in favor of the new language. The dissertation captures a relatively unusual type of language shift as a result of contact at a moment in which the opportunity for documentation might be relatively small. In the remainder of this chapter I outline the sociolinguistic background of the studies and the type of data under analysis.
1.2 Sociolinguistic background

The studies are set in Lajamanu, a Warlpiri community of approximately 600 people, situated in the north of the Tanami Desert, in the Northern Territory of Australia. Languages spoken are Warlpiri (a Pama-Nyungan language), Aboriginal English or Kriol and Standard Australian English, and the new language, Light Warlpiri. Older Warlpiri speakers, over approximately thirty years old, typically code-switch and borrow from Kriol and English when speaking Warlpiri. They also code-switch between Warlpiri and English or acrolectal Kriol. Younger adults now speak the new language, Light Warlpiri, as their main language, and also code-switch into Warlpiri and English or Kriol.

An example of a Warlpiri sentence is given in (1), and an example of Warlpiri and AE/Kriol code-switching is given in (2). In the examples, elements drawn from classic or Lajamanu Warlpiri are in *italics*, and those from Kriol, Aboriginal English or Standard Australian English are in plain print. The auxiliary cluster is *underlined*.

(1) *karnta-jarra-rlu ka-pala-ø wajilipi-nyi kuuku*  
woman-dual-ERG IMPF-3dl-3sg chase-NPST monster  
The two women are chasing the monster. (A32:ERGstoryWA32.1)

(2) *yu kam kalkurnu luk iya Pada-piya kam kalkurnu*  
2sg come face:speaker look here name-like come face:speaker  
You come this way, look here, like Pada, come this way. (A57:C06.17)

Adults under age 30 typically speak Light Warlpiri and code-switch into Lajamanu Warlpiri. A Light Warlpiri clause typically has verbs and verbal morphology from Kriol, and most nouns and nominal morphology from Warlpiri. It has an innovative auxiliary paradigm, which is derived from Warlpiri and Kriol auxiliary
systems. The properties of Light Warlpiri are explained in detail in Chapter 2.

The diagnostic of Warlpiri is the use of a Warlpiri verb and auxiliary, as in (1) above, and the diagnostic of Light Warlpiri is the use of an AE/Kriol verb and Light Warlpiri auxiliary, as in (3) and (4).

(3) \[
de-m \text{ jeis-ing it kuuku det tu karnta-jarra}
\]
\[
3pl-NFUT chase-PROG 3sgO monster that two girl-dual
\]
Those two girls are chasing the monster. (A28:ERGstoryLA28.1)

(4) \[
rdaka-ngka i-m old-im kuja-ng jurlpu
\]
\[
hand-LOC 3sg-NFUT hold-TR thus-ERG bird
\]
He’s holding the bird in his hand like this. (A31:C03C04.5.3)

Example (3) is similar in semantics to the Warlpiri example (1). Example (3) has an AE/Kriol verb, a Light Warlpiri auxiliary, and Warlpiri nouns. The Light Warlpiri auxiliary paradigm is explained in detail in Section 2.2.2.2. Note that the A argument NP, karnta-jarra, ‘girl-dual’ in Light Warlpiri example (3), does not have ergative case-marking, but in the Warlpiri example, (1), it does have ergative case-marking. Example (4), also a Light Warlpiri example, has an AE/Kriol verb, a Light Warlpiri auxiliary, and Warlpiri nouns, and has Warlpiri semantic case-marking: ergative marking on the adverb kuja ‘thus’, and locative marking on the noun rdaka ‘hand’.

An example of code-switching between Light Warlpiri and Warlpiri is given in (5).

(5) a. \[
ant i-m krai-in nana
\]
\[
CONJ 3sg-NFUT cry-PROG DIS
\]
Is it crying, you know?

b. \[
yula-mi mayi
\]
\[
cry-NPST INTERR
\]
Is it crying? (A31:C04.2.1)
In (5) the speaker is a young mother who is telling a story from picture stimulus to her two-year-old daughter. She produces a clause in Light Warlpiri, (5a), which includes an AE/Kriol verb, ‘crying’, and a component drawn from Warlpiri, *nana* - a discourse marker which can loosely be glossed as ‘you know’. She then switches to Warlpiri in the next clause, (5b), with ‘Is it crying?’

Children typically speak Light Warlpiri, without code-switching into Warlpiri. They are spoken to in both Lajamanu Warlpiri and Light Warlpiri. They are addressed mainly in Lajamanu Warlpiri by people over age 30, with code-switching into AE/Kriol. They are addressed in Light Warlpiri by people under age 30, with some code-switching into Lajamanu Warlpiri. The amount of code-switching in adult speech varies between individuals. Children speak to each other in Light Warlpiri, but spend time in the company of people of all ages so they hear both languages spoken to and around them.

There have been indications since 1979 that children in Lajamanu do not speak classic Warlpiri to each other. A report of children’s speech in Lajamanu (Leeding and Laughren 1979) showed that children were mixing Warlpiri and English and that there were some “errors” in their Warlpiri (Leeding and Laughren 1979, 10). Some of the “errors” were allomorphic variation of the locative and ergative clitics, described in this thesis as part of the Lajamanu variety of Warlpiri. Another error reported in the children’s speech was omission of an ergative case marker from the subject nominal of a transitive verb, a precursor to what I present in this thesis as optional ergative case-marking in Light Warlpiri.

A 1995 report about the need to resume the bilingual education program in Lajamanu reported that children mix Warlpiri and English when speaking to each other and that it may be a “special kind of language that they’ve developed”
(Ash and Rockman 1995, 8). A 1992 survey about the use of creole varieties and Aboriginal English in schools found that in Lajamanu most children spoke Warlpiri as their first language, but the report noted that children code-switched between Warlpiri and English when talking to each other and that Warlpiri adults reported children mixing Warlpiri and “pidgin English” (Rhydwen 1992, 49). None of the reports provides details of the linguistic properties of the language mixing.

The mixing reported in 1979, 1992 and 1995 has conventionalized and become a new Mixed Language, Light Warlpiri. It is spoken by adults under the age of approximately 30 years, and by children. The code-switching of Warlpiri speakers aged 30 and older both resembles and differs from the combination of elements in Light Warlpiri. Specific differences are that, when code-switching, older Warlpiri speakers do not use a specific combination of Warlpiri verbs and AE/Kriol transitive affixes, as described in Section 2.2.2.1. Neither do they produce the Light Warlpiri auxiliary system, which is an innovation on the part of the younger generation (see Section 2.2.2.2). The use of the auxiliary system and the specific verb-suffix combination are the hallmarks of Light Warlpiri.

Warlpiri children live with their extended families. They are in constant contact with family members of all ages, from young babies to adults over 70 years old. So, young children, before the age at which they attend school, hear Lajamanu Warlpiri and Light Warlpiri from members of the extended family with which they live. Their young parents speak mainly Light Warlpiri but also code-switch into Warlpiri, both when addressing the child and addressing others in the presence of the child. Other children speak Light Warlpiri almost exclusively, with little code-switching into Warlpiri. Older family members speak Warlpiri with considerable code-switching into AE/Kriol, and at times code-switching into other traditional
The language learning situation in Lajamanu falls into a type described by Romaine (1995) as mixed language bilingualism, in which the child’s parents are bilingual, parts of the community are bilingual, and there is code-switching and mixing of languages in the input to the child. The children’s learning of Warlpiri and Light Warlpiri can be described as Bilingual First Language Acquisition (BFLA) (de Houwer 1995), which is when children are regularly addressed in two languages from birth or from within a month of birth. Lajamanu mothers must leave the community and travel to hospital in a nearby town to give birth, but usually return to the community with their new-born child within about fourteen days of the birth. From then on the baby is constantly in the arms of, or lying on the laps of family members, even when sleeping, and is held in the arms of any family member for extended periods. In the Warlpiri kinship system there are several people in each classificatory relationship to the child such as ‘mother’, ‘father’, ‘sister’, ‘brother’ and so on, all of whom have a responsibility to actively care for the child. This means that the child is regularly addressed in Warlpiri (with code-switching into AE/Kriol) and Light Warlpiri (with code-switching into Warlpiri) from within fourteen days of birth.

The children in Lajamanu regularly hear two languages which have some overlapping features. The children can partially separate the languages they hear in terms of interlocutor, since children and young adults mostly speak Light Warlpiri. But young adults also code-switch into Warlpiri, especially in the presence of older adults. Older adults mostly speak Warlpiri, but code-switch frequently into AE/Kriol.

Most children in the community produce only the new language, Light Warlpiri,
until they reach the ages of four to six years. From the ages of four to six on
they continue to speak Light Warlpiri almost exclusively, but elicited production
data from children aged six to nine years shows that they can speak Warlpiri, as
discussed in Chapter 5. When Lajamanu children visit other Warlpiri speaking
communities, they reportedly speak Warlpiri with children and adults there. The
definition of BFLA focuses on input to children rather than on their production,
so it applies to the children in this study even though they do not at first produce
both languages.

The sociolinguistic environment in Lajamanu contrasts with the setting of many
bilingual acquisition studies. The setting of most studies is one in which there are
clear boundaries between the languages spoken by the children’s interlocutors, both
in the home and in the wider community. For example, in a situation in which the
first language of one parent differs from that of the other parent and the wider
community, each parent might speak their primary language in the home, but
outside the home both parents and members of the wider community might speak
the dominant community language. Lanza (2004) explains that children are usually
exposed to more input than that provided by their parents, because the speakers of
the dominant community language may visit the children in their homes, and the
children may be taken out into the community and hear the dominant language
of the wider community spoken. The situation in Lajamanu is much more fluid
than in the bilingual situations documented to date and the distinction between
the home domain and the community domain is not so clear. Families live in
large, dynamic, extended family groups, with speakers of Lajamanu Warlpiri and
Light Warlpiri living together in the same house. People move frequently from
one house to another and from one community to another so a child is exposed
to different languages and language varieties from many speakers. The range of speech styles spoken within the home is the same as the range spoken outside the home in the community, with the exception that outside the home English is also heard, because non-Warlpiri people, for example those who work in the local store and health clinic, generally speak English rather than Lajamanu Warlpiri or Light Warlpiri.

1.3 Overview of data collection and analysis

Two types of production data, spontaneous speech and elicited production, and one set of comprehension data are analyzed in the thesis. Collection of the production data is explained at the beginning of the chapter in which each sub-set of the data is analyzed. The data for the sketch of the properties of Light Warlpiri in Chapter 2 are the speech of Light Warlpiri-speaking adults to their children and to other adults from a corpus of longitudinal spontaneous speech, collected by me during three fieldwork periods between 2002 and 2005. More details about this data set, specifically those about the children’s longitudinal spontaneous corpus, are explained in Chapter 4 before the quantitative analyses of the children’s and adults’ spontaneous Light Warlpiri speech. The elicited production data set is explained in Chapter 5, before the analyses of the Lajamanu Warlpiri narratives. The data for the comprehension study is explained in Section 6.3 because it pertains only to that section. Details of the type of statistical analyses conducted are explained in Appendix C.
CHAPTER 2

Properties of Light Warlpiri

In this chapter I sketch the properties of the grammar of Light Warlpiri that are relevant to how grammatical relations are indicated.¹ My analysis is based on approximately 20 hours of audio and video tape recordings of teenagers’ and young adults’ speech, collected between 2001 and 2005. It includes both spontaneous and elicited production data.

Light Warlpiri is spoken only with people from Lajamanu community. Light Warlpiri should not be confused with the Lajamanu variety of Warlpiri (here called ‘Lajamanu Warlpiri’), which varies only a little from classic Warlpiri, mainly in

¹An earlier version of this chapter was published as O’Shanessy, C. 2005. Light Warlpiri - a new language. *Australian Journal of Linguistics* 25 (1) 31-57
sound changes and case allomorphy, as discussed in Section 2.1. In contrast to Lajamanu Warlpiri, Light Warlpiri is a very different way of speaking. Older adults call the way younger adults and children speak ‘Light Warlpiri’, and I follow their lead. Using terminology such as ‘light/weak’ and ‘heavy/strong’ to talk about variants of traditional languages is common among indigenous Australians. The Warlpiri word *rampaku* can be glossed as both ‘light’ and ‘weak’ in English, and the word *pirrjirdi* as both ‘heavy’ and ‘strong’. In Lajamanu older people use the term *Warlpiri pirrjirdi* ‘heavy or strong Warlpiri’ to mean speaking Warlpiri with no borrowing or code-switching. They also use it to mean speaking Warlpiri using complex grammatical structures and complex vocabulary that are now used more by very old speakers and less by younger speakers. They use the term *Warlpiri rampaku* ‘light or weak Warlpiri’ to mean speaking Warlpiri with borrowing from and code-switching between English and Kriol, and also for omitting morphological elements such as ergative marking, and using vocabulary which is used more by younger speakers than by very old speakers. When I asked older speakers about the children’s speech, they would say that the children speak *Warlpiri rampaku* ‘Warlpiri light’. For this reason I have called the younger adults’ and children’s way of speaking ‘Light Warlpiri’.

Both adults and children think of Light Warlpiri as a kind of Warlpiri. My evidence for this is that both older and younger people have a metalanguage for talking about the ways people in the community speak. They group classic Warlpiri, Lajamanu Warlpiri and Light Warlpiri together as types of Warlpiri, and contrast the whole group with types of English (including what I refer to as English, Aboriginal English and Kriol).

Within their category of Warlpiri they form two new groups. They group classic
Properties of Light Warlpiri

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<thead>
<tr>
<th>Names used in this thesis</th>
<th>Perceived boundaries</th>
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<td>Local(^1) view</td>
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<td>Classic Warlpiri</td>
<td>Types of Warlpiri</td>
<td>‘Yurntumu style’</td>
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<td>Lajamanu Warlpiri</td>
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<td>Standard Aust. English</td>
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Table 2.1: Perceptions of language boundaries in Lajamanu. \(^1\)Local’ means people living in Lajamanu.

and Lajamanu Warlpiri together and call them *Yurntumu style*, because they associate them with the way people in the community of Yuendumu speak. (Yuendumu - *Yurntumu* in Warlpiri - is a larger Warlpiri community, approximately 600 kilometres south-east of Lajamanu.) In contrast they place Light Warlpiri in a sub-category of its own and refer to it as *Lajamanu style*, indicating that while it is a kind of Warlpiri, it is a distinct code spoken within Lajamanu community. The groupings are summarized in Table 2.1. The metalanguage the young adults and children use in talking about Warlpiri and Light Warlpiri shows that although they see the two codes as types of one language, which from a linguist’s point of view is arguable (see Chapter 3), they see them as differing along geographic lines. This indicates that Light Warlpiri performs an identity function for its speakers, which is that they belong to the group of Warlpiri who live in Lajamanu, as distinct from the groups of Warlpiri who live in other communities. Children and young adults also recognize that there is an age as well as a geographic variation. They describe the Warlpiri of older commu-
nity members as being *Yurntumu stail*, even though it is spoken in Lajamanu. The young people’s term *Lajamanu stail* refers only to the language called *Warlpiri rampaku* ‘Light Warlpiri’ by older people, not to classic or Lajamanu Warlpiri or any other language spoken by people who live in Lajamanu. I suggest that speaking Light Warlpiri enables the speaker to signal a two-way identity distinction: the distinctiveness of the group of Lajamanu Warlpiri from the Warlpiri of other communities, and of younger people in Lajamanu from the older people.

2.1 Phonology and Phonotactics

The phonology and phonotactic rules of Light Warlpiri are a combination of those of AE/Kriol and Lajamanu Warlpiri. The phoneme inventories of classic and Lajamanu Warlpiri are the same, but the phonotactic rules of Lajamanu Warlpiri differ in several respects from classic Warlpiri. For an accurate picture of Light Warlpiri it is necessary to understand the relevant properties of Lajamanu Warlpiri, as it is the Lajamanu variety which is a major source of Light Warlpiri. In this section I will present the phoneme inventory and orthography for classic and Lajamanu Warlpiri and explain how phonotactic rules differ between the two varieties. It is also necessary to understand the sound system and orthography of the other source of Light Warlpiri, AE/Kriol. The phoneme inventory and orthography of Kriol is complex because of considerable variation, which can be described as “a continuum of sounds with an Aboriginal type sound subsystem at one end and an English type sound subsystem at the other” (Sandefur 1979). Variation along the continuum is both between speakers and within the speech of one speaker. When someone speaks with a more Australian language-type subsystem their speech is called basilectal, and a more English type subsystem is called acrolectal. I outline
Properties of Light Warlpiri

the types of variation and present the orthography used for Kriol. Lastly I explain
how I use the orthographies of Warlpiri and Kriol to represent Light Warlpiri
speech.

2.1.1 Sounds and orthography of the source languages

2.1.1.1 Lajamanu Warlpiri

Classic Warlpiri has three vowels, /a/, /i/ and /u/, written as a, i and u. (Long
vowels are written as aa, ii and uu). The classic Warlpiri consonant inventory is
presented in Table 2.2 with the standard Warlpiri orthography (Laughren 1984),
which I will use for words from classic or Lajamanu Warlpiri.

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<tr>
<th>stops</th>
<th>Bilabial</th>
<th>Apico-alveolar</th>
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<td>flaps</td>
<td>rr</td>
<td>rd*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glides</td>
<td>w</td>
<td>r</td>
<td>y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Word initially, apico-dominal [t],[n],[l] are written t, n, l.

* rd contrasts with rt in Southern [classic] Warlpiri (Yuendumu)

but not in North Eastern Warlpiri (Willowra, Ali Curung) [or in Lajamanu Warlpiri](author)

Table 2.2: Phoneme inventory and orthography of classic and Lajamanu Warlpiri consonants
(cf. Laughren (1984))

The differences between classic Warlpiri (Nash 1986; Laughren 1984) and La-
jamanu Warlpiri are final vowel deletion, initial glide deletion, cluster modification,
and semi-vowel formation. Each is explained in turn.
Final vowel deletion Classic Warlpiri has three vowels and all words are consonant-initial and vowel-final, but Lajamanu Warlpiri allows occasional consonant-final words. The final high vowels /u/ and /i/ are omitted from some words and morphemes, for example on the dative case-marker ki → k. Syllable deletion commonly occurs with final vowel deletion in the pronunciation of some possessive pronouns, such as nyuntu-nyangu ‘you-POSS’, which becomes nyun-nyang in Lajamanu Warlpiri; and the possessive case-marker -kurlangu, which becomes -kang.

Cluster modification Cluster modification has two forms, cluster simplification and consonant addition. In cluster simplification a velar stop is deleted from nasal-plus-velar-stop consonant clusters in ergative and locative case-markers. The final vowel in the ergative and locative case markers may also be deleted. As a result, the velar-initial ergative case-marker in Lajamanu Warlpiri has three forms: -ngku, -ngu and ng, and the velar-initial locative case-marker has two: -ngka and nga. Cluster modification also occurs in some words where a palatal glide is substituted for a palatal stop, as in malju → malyu ‘young man’.

Other changes Semi-vowel formation occurs in some words where rhotics become semi-vowels, as in -pardu → -pawu (diminutive suffix), -jarrimi → -jayimi (inchoative verb). It is also a feature of Warlpiri baby talk (Laughren 1984). Initial glide deletion occurs mostly on the determiner, yinya ‘that/there’, which becomes inya, but also on other words beginning with /y/. Consonant addition has been observed in only one word: wirlingyi ‘hunting’, where a palatal stop is inserted, resulting in wirlingyji.
2.1.1.2 AE/Kriol

In AE/Kriol, English-derived words take on the phonology of traditional Australian languages (for Kriol see Sandefur (1979), for Aboriginal English see Malcolm and Kaldor (1991)). Representing Kriol speech in writing is difficult because there is a continuum of pronunciation - from acrolectal to basilectal. The orthography of Ngukurr-Bamyili Kriol (Sandefur 1979) uses English letters and letter combinations to represent a range of sounds, such as tj to represent sounds that range from the lamino-palatal stop found in Warlpiri to the alveo-palatal affricate found in English. Sandefur (1979) provides several spellings representing different Kriol pronunciations of one word derived from English, ‘sleep’: jilib, jilip, silip, slip (from basilectal to acrolectal pronunciations). He explains that any of the given spellings of ‘sleep’ is acceptable and a writer should choose the variant that most resembles the speech as it was actually heard. A consequence is that in Kriol texts the same word can be spelled in different ways, as in the spellings of ‘sleep’. The Sandefur (1979) orthography is commonly used across the north of Australia to represent Kriol (Hudson 1983, e.g.) so is used in this thesis to represent AE/Kriol. The range of Kriol consonant sounds and the orthography used to represent these is given in Table 2.3. The range and orthography of Kriol vowels are presented in Table 2.4.

There is a lot of variation among varieties of Kriol, for example between Ngukurr-Bamyili Kriol (cf. Sandefur 1979; Munro 2004)) and Fitzroy Valley Kriol (cf. Hudson 1983)), but varieties are mutually intelligible to speakers and have similar sound systems.
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<table>
<thead>
<tr>
<th>Kriol and Aboriginal English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilabial</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Stops</td>
</tr>
<tr>
<td>Voiceless</td>
</tr>
<tr>
<td>Voiced</td>
</tr>
<tr>
<td>Affricates</td>
</tr>
<tr>
<td>Voiceless</td>
</tr>
<tr>
<td>Voiced</td>
</tr>
<tr>
<td>Fricatives</td>
</tr>
<tr>
<td>Voiceless</td>
</tr>
<tr>
<td>Voiced</td>
</tr>
<tr>
<td>Nasals</td>
</tr>
<tr>
<td>Laterals</td>
</tr>
<tr>
<td>Rhotics</td>
</tr>
<tr>
<td>Semi-consonants</td>
</tr>
</tbody>
</table>

Table 2.3: Sound inventory and orthography of Kriol consonants (cf. Sandefur (1979))

<table>
<thead>
<tr>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>i</td>
<td>u</td>
</tr>
<tr>
<td>Mid</td>
<td>e</td>
<td>e:</td>
</tr>
<tr>
<td>Low</td>
<td>e/a</td>
<td>a</td>
</tr>
</tbody>
</table>

Diphthongs

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ai</td>
<td>low central to high front</td>
</tr>
<tr>
<td>oi</td>
<td>mid back to high front</td>
</tr>
<tr>
<td>ei</td>
<td>mid front to high front</td>
</tr>
<tr>
<td>au</td>
<td>low central to high back</td>
</tr>
</tbody>
</table>

Table 2.4: Sound range and orthography of Kriol vowels (cf. Sandefur (1979))
2.1.2 Light Warlpiri sounds and orthography

Light Warlpiri uses all the sounds of both Warlpiri and Kriol. Light Warlpiri words with Warlpiri as their source language follow the same phonotactic rules as Lajamanu Warlpiri, outlined in Section 2.1.1.1. In representing Light Warlpiri speech I use the standard Warlpiri orthography (cf. Laughren (1984)) for words of Warlpiri origin and the Kriol orthography of Sandefur (1979) for words of AE/Kriol origin. Some Light Warlpiri words, such as *bugi* (wash, ‘bogey’ in Kriol and Australian English), are from Kriol, while others are English-derived words with Warlpiri or Kriol phonology, such as *uuju* ‘horse’. Many English sounds, for example, fricatives, are retained in Light Warlpiri, even though they are not found in basilectal varieties of Kriol, or in Warlpiri. Fricatives are sometimes present in acrolectal varieties of Kriol and in Aboriginal English.

The Light Warlpiri sound system is a continuum similar to that of Kriol, in that the same phoneme can be pronounced in a more English-like way or in a more Warlpiri-like way. The variation is heard both within the speech of a single speaker and between speakers. For instance, when Light Warlpiri speakers say the English word ‘horse’, they might pronounce it more like /ɔːs/ (English-like) or more like /uːju/ (Warlpiri- and Kriol-like). In writing words from AE/Kriol in Light Warlpiri I will not try to represent the range of actual pronunciations, rather I will represent a common variant, for example, ‘*uuju*’ for ‘horse’, regardless of whether the speaker’s pronunciation was more like /ɔːs/ or more like /uːju/. 


2.2 Verb and auxiliary systems

The verb and auxiliary systems of Light Warlpiri are crucial for distinguishing it from both Lajamanu Warlpiri and AE/Kriol. The auxiliary system and certain verb+suffix combinations are the hallmark of the new language. For these reasons I explain the verb and auxiliary systems of the source languages and of Light Warlpiri in detail. In Section 2.2.1 I outline the features of the verb and auxiliary systems of Warlpiri and Kriol that are relevant to Light Warlpiri. In Section 2.2.2.1 I show how some features of each system in the source languages are present in innovative constructions in Light Warlpiri.

2.2.1 Verb and auxiliary systems in the source languages

2.2.1.1 Warlpiri

A minimal finite Warlpiri verbal clause\(^3\) consists of an inflected verb (with optionally overt arguments) and an auxiliary cluster.\(^4\) The Warlpiri examples in this section are from Laughren et al. (1996) and Hale (1982), but with my glosses, following Hale et al. (1995). Example (6) shows an intransitive clause and (7) shows a transitive clause. The auxiliary cluster is underlined.

(6) \textit{wati} \textit{ka-ø ngurra-kurra ya-ni}  
\begin{tabular}{lll}
man & IMPF-3sg & home-ALL \\

goi & NPST&
\end{tabular}  
\begin{flushright}
\textit{The man is going home. (Laughren et al. 1996, 71)}
\end{flushright}

\textsuperscript{3}Warlpiri also has clauses with nominal predicators (Hale 1982), but these are not discussed here because they are not relevant to the questions addressed in the thesis.

\textsuperscript{4}For detailed discussion of the Warlpiri verb and auxiliary systems, see Hale (1973, 1982); Hale et al. (1995); Swartz (1982, 1991); Nash (1986); Simpson (1991); Laughren (2002); Laughren et al. (1996).
Verbs are categorized into 5 classes based on the forms of their inflections. The inflections for each class are given in Table 2.5. Verbal inflections operate in combination with elements in the auxiliary cluster to provide temporal and modal readings. The format of the auxiliary cluster is: **complementiser + BASE + pronominal clitics** (Laughren 2002). The **BASE** carries information about tense, mood and aspect (TMA). The **complementiser**, if present, includes forms with meanings such as ‘because, in order to’ and is also involved in the expression of TMA features in combination with the **BASE** and verbal inflections. The **pro** consists of pronominal clitics marking person and number of subject and some non-subject arguments. The auxiliary cluster typically occurs in second position in the clause, as in (8) and (9) (but see Legate (2002) for variation of auxiliary cluster position). The first constituent may be a phrase of any type. The verb may occur in any position.

---

5See Granites and Laughren (2001) for a comprehensive summary of the semantics of combinations of verbal inflections and auxiliary elements.
The following examples show how combinations of verbal inflections and auxiliary elements provide different TMA readings. Example (8) shows the imperfective auxiliary base, *ka*, and non-past inflection on the verb. The combination of these gives a present tense, imperfective aspect reading.

(8) \textit{ngarrka-patu-rlu ka-\text{lu-jana} karnta-patu nya-ngi}  
\textit{man-pl-ERG IMPF-3pl-3pl woman-pl see-NPST}  
The men see the women. (Laughren et al. 1996, 161)

In example (9) the combination of zero auxiliary base and past tense inflection on the verb indicates past tense and perfective aspect.

(9) \textit{karnta-patu-rlu-ø-lu-jana}  
\textit{woman-pl-ERG-perf-3pl-3pl}  
\textit{kurdu-kurdu-ku miyi yu-ngu}  
\textit{child-redup-DAT food give-PST}  
The women gave food to the children. (Laughren et al. 1996, 162)

In (10) the auxiliary base *-lpa* indicates past imperfective and the verbal inflection is past, so the reading is past imperfective.

(10) \textit{karnta-patu-rlu-lpa-lu-jana}  
\textit{woman-pl-ERG-IMPF-3pl-3pl}  
\textit{kurdu-kurdu-ku miyi yu-ngu}  
\textit{child-redup-DAT food give-PST}  
The women were giving food to the children. (Laughren et al. 1996, 162)

In (11) the future auxiliary base and nonpast verbal inflection gives a future tense reading.

(11) \textit{karnta kapu wangka-mi}  
\textit{woman FUT talk-NPST}  
A woman will speak. (Laughren et al. 1996, 127)

Core argument NPs may be omitted, as in (12).

(12) \textit{parda-rni ka-rna-jana}  
\textit{wait-NPST IMPF-1sg-3pl}  
I am waiting for them. (Hale 1982, 231)
Properties of Light Warlpiri

The omission of core arguments becomes relevant for discussions in subsequent chapters of how Light Warlpiri indicates grammatical relations.

2.2.1.2 Kriol

A minimal finite Kriol verbal clause consists of a verb and its argument(s). Transitive verbs take a transitive marker, -im (pronounced as /im/, /um/ or /om/), in harmony with the final vowel of the stem, but written in this thesis as ‘-im’). Verbs are not inflected for tense, person or number, but may take directional or locational affixes, as in example (13), and progressive or repetitive affixes, as in examples (14) and (15) (Hudson 1983; Munro 2004). I include examples of two forms of the progressive affix because in Light Warlpiri the -ing form occurs commonly but the -bat form is rare. The Kriol examples here are from the Ngukurr-Bamyili variety of Kriol (Munro 2004), but with my glosses.

(13) yu baj-im-ap det grin wan gap  la  mi
2sg pass-TR-DIR this green one cup PREP 1sg
You pass the green cup to me. (Munro 2004, 167) (directional)

(14) hei wot yu luk-ing-at-bat
DIS what 2sg look-PROG-DIR-PROG
Hey, what are you looking at? (Munro 2004, 169) (progressive)

(15) dei bin stat len-im-bat  mi
3pl PST start teach-TR-PROG 1sg
They started teaching me. (Munro 2004, 87) (progressive)

Apart from the affixes that encode progressive aspect on the verb, TMA properties are encoded in auxiliary verbs, which are separate words, as in (15) above (past), and (16) below (future or obligation). The auxiliary garra can give a future tense or obligatory mood reading depending on the context (Munro 2004).
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(16) ai garra lib-im yu olmen
    1sg OBL leave-TR 2sg old/respected:man
    I have to leave you old (respected) man. (future tense/obligatory mood)

(Munro 2004, 123)

An uncommon Kriol construction that is relevant to the Light Warlpiri auxiliary system is found in Munro (2004, 102). In the example, (17), the transitive verb *fait* ‘fight’ does not have the transitive *-im* affix, and the sentence expresses an unrealised negative event. This will become relevant to Light Warlpiri in Section 2.2.2.2.

(17) det mop gels bin wandi fait minbala
    DET mob girls PST want fight 1du.excl
    Those girls (that group of girls) wanted to fight us two (not including you).

(Munro 2004, 102)

In contrast with Warlpiri, the Kriol auxiliary system does not carry information about person or number (Sandefur 1979; Hudson 1983; Munro 2004). Sandefur (1979) describes five categories of information carried by the auxiliary verb for Kriol: negation, tense, mode, aspect and voice. He defines auxiliary verbs as those forms which “modify the meaning of the main verb of a verb phrase. They differ from main verbs in not being able to stand alone, except in topic-comment constructions which have no linking verbs” (Sandefur 1979, 125). A subset of Kriol auxiliaries appears in Lajamanu speakers’ AE/Kriol, and a subset of those appears in Light Warlpiri. For example, the past tense marker *bin* occurs frequently in Lajamanu speakers’ AE/Kriol but rarely in Light Warlpiri. I discuss how Light Warlpiri expresses the past in Section 2.2.2.2. Table 2.6 summarizes the Kriol forms which occur in Light Warlpiri.
Properties of Light Warlpiri

<table>
<thead>
<tr>
<th>Kriol auxiliary category</th>
<th>Kriol auxiliary sub-category</th>
<th>Kriol form</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negation</td>
<td>simple</td>
<td>no</td>
<td>not</td>
</tr>
<tr>
<td></td>
<td>emphatic</td>
<td>nat</td>
<td>not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>neba</td>
<td>past negative</td>
</tr>
<tr>
<td>Tense</td>
<td>past</td>
<td>bin*</td>
<td>past</td>
</tr>
<tr>
<td>Mode</td>
<td>necessity/ advisability</td>
<td>gada, ada</td>
<td>should</td>
</tr>
<tr>
<td></td>
<td>attempt</td>
<td>trai</td>
<td>try</td>
</tr>
</tbody>
</table>

*bin occurs only rarely in Light Warlpiri.

Table 2.6: Kriol auxiliaries of negation, tense and mode which appear in LW. Taken from Sandefur (1979)

Since the documentation of Kriol varieties by Sandefur (1979) and Hudson (1983), a change has occurred in the Kriol auxiliary, attested in several Kriol-speaking communities, but not documented in published work apart from O’Shannessy (2005) (see Section 2.2.2.2 for details). The Kriol auxiliary, garra, a free form encoding future or obligation, has been reduced to a bound form, -rra. The -rra form attaches to English-based pronouns, resulting in a new auxiliary sub-paradigm of a-rra, i-rra, yu-rra, wi-rra, de-rra ‘I will’, ‘he/she/it will’, ‘you will’, ‘we will’, ‘they will’. In this sub-paradigm there is a portmanteau morpheme for person and number (the pronominal element) and an element for tense-aspect (the -rra element). The new Kriol -rra sub-paradigm has been taken into Light Warlpiri as part of a larger Light Warlpiri auxiliary paradigm. Since I do not have Kriol examples, I will describe the -rra sub-paradigm as it is now in Light Warlpiri, in Section 2.2.2.2.
2.2.2 Verb and auxiliary systems in Light Warlpiri

2.2.2.1 Verbs

I discuss the verbal and auxiliary systems separately for Light Warlpiri, because the auxiliary system shows innovative properties that require separate presentation. I discuss the verbal system in this section and the auxiliary system in the next.

Light Warlpiri uses mostly English or Kriol verb stems, with Kriol verb morphology. Kriol and Light Warlpiri verb morphology is similar in the following ways:

- verbs are not inflected for tense, person or number (with the exception of some Warlpiri verb stems, explained below)
- transitive verbs typically take a transitive marker, -im, on the verb stem
- transitive and intransitive verbs may take Kriol directional, locational and progressive suffixes, but rarely the -bat form of the Kriol progressive.

Example (18) shows an English/Kriol verb stem with both a Kriol transitive affix and a locational affix.

(18) yeh det *watiya* de-*m* ged-im-at
    yes that tree 3pl-NFUT get-TR-out
    Yes, they got that tree out. (A36:ERGstoryLA36.2)

In Light Warlpiri the transitive suffix, -im, can change verb valency. Examples (19) and (20) show the same word used intransitively and transitively.

(19) *wurra* i-*rra* kam-at na
    wait 3sg-FUT come-out DIS
    Wait, it’ll come out now. (A22:C01.7.2)

(20) de-*m* kam-at-im na *watiya nyiya-janga rarrulykaji-janga*
    3pl-NFUT come-out-TR DIS tree what-ABL vehicle-ABL

30
Properties of Light Warlpiri

They took it off, now, the tree, from what? from the vehicle. (A35:ERGstoryLA36.2)

Light Warlpiri also uses some Warlpiri verb roots, all transitive, (*panti*- ‘pierce’, *kati*- ‘press’, *punta*- ‘steal/take from’, *paka*- ‘hit’ and *winji*- ‘pour, spill’) and they take the Kriol transitive affix *-im*, as in (21). They are not attested with other Kriol suffixes.

\[(21) \ jilkarla-ng \ i-m \ pantirn-im \ \\
\text{thorn-ERG 3sg-NFUT pierce-TR} \]

A thorn is piercing him/pierced him. (A22:C01.6.2)

The set of Warlpiri verb stems which occur in Light Warlpiri are all in the second Warlpiri verb class, and in Warlpiri, verbs in this class show regressive vowel harmony in the past tense (Nash 1986). In Light Warlpiri the second syllable of the verbs *kati* and *panti* can be pronounced with either a high front vowel (*katirn-, pantirn-*), like the form for nonpast in Warlpiri, or high back vowel (*katurn-, panturn-*), like the form for past in Warlpiri. The high back vowel pronunciation reflects the regressive vowel harmony found in classic Warlpiri, but adapted as forward vowel harmony in Light Warlpiri, as the transitive suffix harmonizes with the immediately prior syllable (*pantu-rn-*um, as in (22)).

\[(22) \ wa \ i-m \ panturn-um \ watiya-ng \ \\
\text{wa 3sg-NFUT pierce-TR  wood-ERG} \]

Gosh! a thorn pierced him. (A35:C02.3.5)

Both the *pantirn*- and *panturn*- forms are used for completed events, that is, in the past, but only the *pantirn*- form is used for events in the present or future. The process of verb formation using these Warlpiri verb stems is part of the evidence that Light Warlpiri is not a practice of code-switching (see Section 2.4).
2.2.2.2 Auxiliary system

Light Warlpiri has an innovative auxiliary system. It has forms derived from Kriol, yet it functions more like the Warlpiri auxiliary, in that the auxiliary appears in second position, and works in tandem with verb morphology to indicate tense, mood and aspect. Unlike the Warlpiri auxiliary, however, the Light Warlpiri auxiliary only indicates subject arguments, not non-subject arguments.

For Light Warlpiri I distinguish between the auxiliary cluster, consisting of a pair of elements occurring immediately before the verb in a clause, and the whole auxiliary system or paradigm. The cluster consists of a pronominal morpheme indicating the person and number features of the subject, and a morpheme marking elements of tense, aspect or mood. The auxiliary system or paradigm is the set of auxiliary cluster forms possible in Light Warlpiri, as exemplified in Table 2.7.

<table>
<thead>
<tr>
<th>LW aux forms</th>
<th>1 singular</th>
<th>1 plural</th>
<th>2 singular</th>
<th>2 plural</th>
<th>3 singular</th>
<th>3 plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present or past</td>
<td>a-m</td>
<td>wi-m</td>
<td>yu-m</td>
<td>-</td>
<td>i-m</td>
<td>de-m</td>
</tr>
<tr>
<td>Future</td>
<td>a-rra</td>
<td>wi-rra</td>
<td>yu-rra</td>
<td>yumob-rra</td>
<td>i-rra</td>
<td>de-rra</td>
</tr>
<tr>
<td></td>
<td>a-l</td>
<td>wi-l</td>
<td>yu-l</td>
<td>-</td>
<td>i-l</td>
<td>-</td>
</tr>
<tr>
<td>Desiderative</td>
<td>a-na</td>
<td>wi-na</td>
<td>yu-na</td>
<td>-</td>
<td>i-na</td>
<td>de-na</td>
</tr>
</tbody>
</table>

Table 2.7: Light Warlpiri auxiliary paradigm

As in classic Warlpiri, in Light Warlpiri a subject argument can be referred to by both a pronominal element in the auxiliary cluster and lexical NP or a Warlpiri free pronoun in the same clause, as in (23), and (24) respectively.

(23) en *karnta-pawu i-m* kam *geit-kirra*
CONJ girl-DIM 3sg-NFUT come yard-ALL

And the girl came to the yard. (A21:ERGstoryLA21.1)
Properties of Light Warlpiri

(24) wel i-m stat-ing nyanung-jala
    well 3sg-NFUT start-PROG 3sg-EMPH
    Well that one’s starting really. (C03:C03.C04.1.5)

In classic Warlpiri, the auxiliary cluster is obligatory, as in (25) and (26).

(25) ngaju ka-rna ya-ni
    1sg IMPF-1sg go-NPST
    I am going. (not from the data set)

(26) ya-ni ka-rna
    go-NPST IMPF-1sg
    I am going. (not from the data set)

Utterances such as (25) and (26) are acceptable, but not *ngaju yani ‘1sg go’, in which there is no auxiliary cluster. Similarly, in Light Warlpiri, a clause consisting of an auxiliary and a verb is acceptable, as in (27).

(27) a-rra go
    1sg-FUT go
    I’ll go. (not from the data set)

But constructions such as *a arra go ‘I’ll go’, in which an English or Kriol free pronoun would be combined with the Light Warlpiri auxiliary cluster, is not found in my data set. So the way of combining free pronouns with pronominal forms in the auxiliary cluster in Light Warlpiri is similar to that in classic Warlpiri.

Although in the Warlpiri auxiliary cluster a distinction is made between singular, dual and plural subjects and non-subjects, there are no special dual forms in the Light Warlpiri auxiliary cluster. Light Warlpiri has ways of expressing duality, through constructions derived from English and Kriol, as in (28) and (29), and through Warlpiri free pronouns, as in (30).

(28) yu-du tok a-m trai lisen
    2sg-two talk 1sg-NFUT try listen
You two talk, I’m trying to listen. (A22:C01.4.6)

(29) a-r'{ra} hit yu-du junga jirrama-juk
1sg-FUT hit you-two really two-still
I’ll hit you two, really, both of you. (A21:C03.6.2)

(30) Nakarra ngalijarra nana mayi kenga karnta-karnta wi-r'{ra} plei
subsect 1dl.incl DIS INTERR friend woman-woman 1pl-FUT play
resla-kurl
wrestler-COM
Nakarra, us two, you know? We’ll play a girls’ wrestling game. (C03:C03.17)

(spoken by a 4-year-old child)

Warlpiri free pronouns have an inclusive/exclusive distinction, as in (30), which is maintained in adult Light Warlpiri, but not always in the children’s speech.

The Light Warlpiri auxiliary forms are derived from combining English and Kriol pronouns with elements of the Kriol auxiliary verbs *bin* and *garra* and the contracted English auxiliary form *-l* (from English ‘will’). The subsystem of *-rra* ‘future’ forms probably came into Light Warlpiri directly from Kriol. Before the Kriol innovation of *-rra* ‘future’ subsystem forms, the Kriol pronominal and auxiliary verb systems were independent of each other. But the new Kriol *-rra* ‘future’ subsystem and the whole Light Warlpiri auxiliary system carry information about person and number of subject as well as for tense and aspect. The Light Warlpiri system is like the Warlpiri system in that information about tense, aspect and mood is provided by combinations of the auxiliary cluster and verb morphology (the combination of the *-rra* future auxiliary form and omission of the transitive *-im* suffix on the verb indicates a threat or warning). The Light Warlpiri pronominal subject element carries information about person and number, as the Warlpiri pronominal subject clitic does. The second Light Warlpiri element carries information about tense, aspect or mood. Unlike the Warlpiri auxiliary cluster, the Light
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Warlpiri auxiliary does not contain pronominal elements representing non-subject arguments such as direct or indirect objects. In the Light Warlpiri auxiliary system there is no morpheme whose sole function is to indicate tense. The order of elements in the auxiliary clusters in classic Warlpiri and Light Warlpiri are reversed, as shown in Table 2.8.

<table>
<thead>
<tr>
<th>Auxiliary cluster</th>
<th>First position</th>
<th>Second position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warlpiri</td>
<td>auxiliary base: tense, aspect</td>
<td>subject and non-subject pronouns</td>
</tr>
<tr>
<td>Light Warlpiri</td>
<td>subject pronoun</td>
<td>tense, aspect</td>
</tr>
</tbody>
</table>

Table 2.8: Order of Warlpiri and Light Warlpiri auxiliary cluster elements

The third person singular pronominal element \textit{i} in Light Warlpiri is like AE/Kriol in not distinguishing between genders or making a human/non-human distinction, in contrast to the English pronouns \textit{he/she/it}.

The tense-aspect-mood elements are bound forms. They are hosted by a) Light Warlpiri auxiliary pronouns, b) free pronouns drawn from Warlpiri and c) names. The Light Warlpiri pronominal forms also occur as free pronouns, with no tense-aspect suffix.

At first glance the third singular subject auxiliary, \textit{i-m}, appears to be the AE/Kriol third singular subject and object pronoun, \textit{im}. But in Light Warlpiri there are two homonymous \textit{im} forms. One can be analyzed as two elements, subject pronominal, \textit{i} and tense-aspect \textit{-m}, and is part of the Light Warlpiri auxiliary system, as in (31). The other is a form for third singular subject or non-subject (i.e. object or indirect object) drawn from AE/Kriol, which in Light Warlpiri is only a non-subject pronoun, as in (32). The motivation for the distinction between
the two forms is provided below in Section 2.2.2.2.

(31) \textit{Nungarrayi-ng i-m bai-im}  
\textit{subsect-ERG 3sg-NFUT buy-TR}  
Nungarrayi bought it. (A21:C03.10)

(32) ah kip-im bo im \textit{nyan-nyang ngula}  
ah give-TR for 3sg 3sg-POSS ANAPH  
Ah give it to him/her, that’s his/hers. (A21:C03.13)

In the following sections I present an analysis of each element of the Light Warlpiri auxiliary cluster. In describing tense and aspect I follow Klein’s (1994) time-relational analysis. In this analysis, the time being talked about, or topic time, is seen in relation to the time of the moment of speech and this relationship gives a tense reading. Topic time is also seen in relation to the time for which the situation is valid. This relationship gives an aspectual reading.

Auxiliary -rra, -l: future (temporal) The -rra and -l forms in the auxiliary are allomorphs in free variation and give a future tense reading, indicating that the time of the event being talked about is after the moment of speech, as in (33) and (34). The time may be immediately after, or at any interval after the moment of speech. The topic time is before the time of the situation for which it is valid, so the aspectual interpretation of -rra and -l is prospective.

(33) i-rra teik-im bek \textit{ngurra-kurra dis Nungarrayi-ng}  
\textit{3sg-FUT take-TR back home-ALL DEM subsect-ERG}  
She’ll take it back home, this Nungarrayi. (A21:C03.C04.1.1)

(34) yeh lib-im iya \textit{nyampu-rla pileit-rla a-l hab-im ngaka}  
yes leave-TR here DEM-LOC plate-LOC 1sg-FUT have-TR soon  
Yes leave it here on the plate, I’ll eat it soon. (A35:C02.3.6)
Properties of Light Warlpiri

The modal interpretation of -rra/-l is open, but a (usually negative) potential, as opposed to assertional, future reading is indicated by the combination of the -rra/-l auxiliary form and omission of the transitive marker on a transitive verb, as in (35) to (36). More specific modal readings must be inferred from the context. Examples (35) and (36) express a warning, threat, or action with potentially negative consequences.

(35)  i-rra   bait yu  det  jurlpu
      3sg-FUT bite you that bird
    That bird might bite you. (warning) (A22:C01.6.1)

(36)  i-l   kik yu nya-ngka
      3sg-FUT kick you look-IMP
    It might kick you, look out.(warning) (A35:C02.20)

A similar type of construction can occur in Kriol (Munro 2004, 102) (see page 28). Constructions in which the transitive verbal suffix is omitted are not common in Kriol, but example (17) suggests that this type of construction is used in contexts of potentially negative events. The Light Warlpiri construction may have been motivated by the Kriol one.

The -rra subsystem may also be the result of an internal change in Kriol, which has taken place since documentation by Sandefur (1979) and Hudson (1983). Kriol has a future auxiliary, garra (written as gada in Sandefur’s description). In Sandefur’s documentation (Table 2.2.1.2, above) there are both gada and ada forms. Sandefur says the ada form, which is infrequent, expresses necessity or advisability. It is future oriented, but can be used with past tense bin. He does not analyze it as having a pronominal element. The ada form, however, may have been a motivation for the development of -rra as a separate morpheme, presented here. In the change from gada/garra to a-rra, the initial ga- is omitted, leaving -rra as
the future form. The -rra is suffixed to the pronominal forms derived from English/Kriol (a, yu, i, wi, de). The third singular i-rra form is attested in Kriol spoken in the town of Elliott, north east of Lajamanu (R. Green, p.c.). The -rra suffix attached to Kriol pronouns is attested in Kriol-speaking communities which are geographically distant from each other, such as Kalkaringi, which is near Lajamanu, and Ngukurr and Beswick in the east of the Northern Territory (F. Meakins and S. Cutler, p.c.). Figure 2.1 shows the approximate positions of the towns and communities mentioned.

![Figure 2.1: Towns and communities in area north of Lajamanu.](image)

The change to the -rra subsystem probably came into Light Warlpiri from Kriol. Its emergence in Light Warlpiri could have been reinforced through a process akin to the code-switching process of congruent lexicalization (Muysken 2000). In congruent lexicalization “the two languages share a grammatical structure which can be filled lexically with elements from either language” (Muysken 2000). Light
Warlpiri shares with Warlpiri an auxiliary structure with an element marking person and number features (of S and A arguments) and a TMA morpheme. While adopting the -rra form from Kriol, Light Warlpiri combines it with a pronominal subject morpheme. So the change is from the earlier Kriol construction a garra (pronoun + garra), to modern Kriol and Light Warlpiri a-rra (pronoun + -rra).

The AE/Kriol garra still occurs in Light Warlpiri, but much less frequently than the -rra forms, and it usually has a reading of necessity rather than future, as in (37).

(37) Jakarra yu garra go junka a kan rid
subsect you FUT go true 1sg can::neg read
Jakarra you have to go really, I can’t read. (A21:C03.6.3)

Auxiliary -m: nonfuture (temporal) The -m auxiliary suffix indicates that the time of the event denoted by the verb began before the moment of speech, that is, in the past. It is left open whether that activity continues at the moment of speech, but -m cannot refer to the future. In (38), an adult asks a child where she put a piece from a puzzle. The situation of ‘putting’ was just before the mother spoke.

(38) nyiya nyampa nyarrpara yu-m pud-im
what this where 2sg-NFUT put-TR
What about this one? Where did you put it? (A21:C03.6.4)

In contrast, in (39), a mother is talking to her child about a video clip. In the scene an elephant leads a mouse out of a maze, and this takes a couple of seconds. The situation of ‘leading the mouse’ began before the moment of speech and continues while the mother is talking.

(39) i-m teik-im elient-i-ng
3sg-NFUT take-TR elephant-EPEN-ERG
The elephant is taking it. (A22:C01.6.4)

In examples (38) and (39) the difference in aspectual readings is inferred from the context. In (38) the topic time is after the time of the situation, so the aspect is perfective. In (39), the topic time is within the time of the situation, so the aspect is imperfective.

While a combination of the non-future morpheme -m in the auxiliary cluster and transitive suffix -im on the verb, as in (39), can be interpreted as either completed or not completed according to the context, the combination of -m in the auxiliary and the progressive -ing on the verb can only be interpreted as present progressive, as in (40b). The perfective/imperfective distinction is not formally marked in Light Warlpiri.

(40) a. CHI: der wita-pawu mami
    CHI: DEM small-DIM mummy
    There’s a little one mummy!

b. MOT: i-m luk-ing yu
    MOT: 3sg-nfut look-prog you
    It’s looking at you. (A35:C02.20)

In (40) an adult and two children are watching some horses. The 4-year-old child points out a foal to her mother, who replies ‘It’s looking at you.’

The -m form appears to be derived from AE/Kriol past tense marker bin. The form is related to two other forms, the English contraction I’m, and the AE/Kriol third singular pronoun im. I hypothesize that in AE/Kriol, when bin followed a pronoun (for example, in a bin go ‘I went’), the middle vowel was omitted, and the form became /abn/. Then, the manner of articulation of the bilabial stop /b/ was omitted, and the /n/ assimilated to the bilabial place of articulation, creating a bilabial nasal /m/. So the pronoun plus tense-aspect element became a-m. It is
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not surprising, then, that the -m element refers to past time, as did its putative source, the morpheme *bin*.

The same phonological process applies to each pronoun, resulting in *a-m* ‘1sg-NFUT’, *yu-m* ‘2sg-NFUT’, *wi-m* ‘1pl-NFUT’, *de-m* ‘3pl-NFUT’. Evidence of a pathway from AE/Kriol *bin* to Light Warlpiri -m is that the *abn* form has been heard in the Tennant Creek area, alongside the earlier ‘*a bin*’ forms (J.Simpson, p.c.), and it occurs once in my Light Warlpiri data alongside the -m forms. (Tennant Creek is a small town about 400 kilometers east of Lajamanu, and people from Lajamanu have family there.) So far the -m subsystem, with a pronominal element for first, second and third persons, is not attested in languages other than Light Warlpiri. The -m form occurs with verbal and nominal predicates. An example of a nominal predicate is given in (41).

(41) **yu-m**  

\[ yu-m \quad pina \quad Napaljarri \]  

\[ 2sg-NFUT \quad knowledge \quad subsect \]

You know it, Napaljarri. (A35:C02.13d)

The occurrence of the -m form with nominal predicates is consistent with my interpretation of its temporal meaning - that it is imperfective, and the action or state denoted by the verb started before the moment of speech.

A pronominal clitic can also co-occur with a nominal predicate in Warlpiri. The -m form resembles English, except that in English the ‘*m of I’m* represents a copula verb. The English *I’m* probably reinforced development of the Light Warlpiri -m forms, because, in addition to the formal similarity, only the Light Warlpiri -m forms, and not the -rra or -na forms, occur with nominal predicates (*a-rra pina*).

Another probable source of the Light Warlpiri -m form is the AE/Kriol third singular subject and object pronoun *im*. Its presence as a subject form is likely to have reinforced the other re-analyses. In Light Warlpiri *im* also exists unaltered
from its AE/Kriol source as a third singular object pronoun. Multiple sources may have simultaneously influenced the development of new forms and paradigms.

The future auxiliary -rra sub-paradigm is attested in several places in the Kriol speaking area. In contrast, the nonfuture -m sub-paradigm is attested only in Lajamanu. So the nonfuture -m sub-paradigm originates in Lajamanu and we have yet to see if it spreads into the Kriol speaking area.

Auxiliary -na: desiderative (modal) The -na form is a modal suffix which indicates ‘wanting to’; it occurs with transitive and intransitive verbs. When used with the third person subject, -i, the -na form can indicate what the speaker wants in relation to that person, rather than what the person who is the subject referent wants. So i-na also has a reading of ‘necessity’, as in (43).

(42) a shap mayi yu-na go
    DIS shop INTERR 2sg-want go
    Ah do you want to go to the shop? (A22:C01.1.5)

(43) i-na sid-dan nyampu-rla
    3sg-want sit-down here-LOC
    She has to sit here. (A22:C01.1.5)

It occurs with the Kriol past morpheme bin to indicate past time, as in (44).

(44) ngaju bin a-na luk
    1sg BIN 1sg-want look
    I wanted to look. (C03:C03.17 From a 5-year-old child.)

The -na form is derived from English ‘want to’, when pronounced as ‘wanna’. In a development similar to that of the -rra forms, the initial wa is omitted, resulting in -na which is suffixed to each pronoun. The -na affix is the only auxiliary element
which alone indicates mood. The reanalysis of -na completes the Light Warlpiri auxiliary paradigm.

2.2.2.3 Verbal affixes and auxiliary forms

The transitive marker -im typically occurs on transitive verbs, as seen in several examples above. But the -im affix does not always occur on transitive verbs and can sometimes be omitted without any particular temporal, aspectual or modal interpretation, as in (45).

(45) yu matha-ri-ng teik yu ospil
     2sg mother-EPEN-ERG take 2sg clinic
     Did your mother take you to the clinic? (A22:C01.4.3)

My interpretation of why omission of the -im affix is possible in constructions such as (45) is that they are influenced more by Light Warlpiri speakers’ contact with English than with Kriol. But I have observed that the -im affix is systematically omitted from the verb luk ‘look’, as in (46), and I suggest that this is because ‘look’ is low in transitivity. In Kriol, verbs low in transitivity such as ‘look’, ‘listen’ and ‘see’ tend not to take transitive suffixes (McConvell and Simpson 2006). A full analysis of the transitivity of the contexts of verbs with and without the -im affix has not yet been undertaken for the Light Warlpiri data set. In classic Warlpiri, the verb for ‘look’, nya- requires an ergative marker on the A argument, and in Light Warlpiri also the A argument of look can take an ergative marker, as in (46).

(46) an uuju-ng i-m luk dem
     CONJ horse-ERG 3sg-NFUT look 3pl
     And the horse is looking at/looked at them. (A22:C01.4.3)

The -im affix is meaningfully omitted when -rra is present in the auxiliary cluster and the function of the clause is to issue a threat or warning, as in (35) and (36).
on page 37; and when the transitive verb has the progressive -ing marker.

The progressive -ing affix on transitive verbs, as in (47), and intransitive verbs, as in (48), indicates events which are in progress at the moment of speech. In contrast to the English progressive -ing, which can be used with past and future, the Light Warlpiri -ing specifically indicates ‘activity-in-progress-now’. In line with this, it does not occur with the future -rra auxiliary suffix.

(47) *yakarra i-m heb-ing it loli
   DIS 3sg-NFUT have-PROG it lolly
   Gosh, she’s having the lolly. (A50:C01.2.5)

(48) *a-m weit-ing tarunga-juk
    1sg-NFUT wait-PROG long-time-still
    I've been waiting for a long time. (in my notes, not recorded on video)

Although a progressive transitive verb does not take the transitive marker -im, it is very often followed by the third person pronoun it, as in (47) above, unless the object is first or second person. The third person pronoun it rarely occurs as a subject pronoun, or as the object of a non-progressive verb. So while it is not a dedicated marker of transitivity, it mostly occurs following a progressive transitive verb, and so acts like a transitive marker. An overt object NP is optional, and may occur before or after the auxiliary-plus-verb component. The third person pronoun it does not follow intransitive progressive verbs. Example (49) shows an intransitive progressive verb not followed by it.

(49) *karnta i-m play-ing raun jarnu-kurlu
    woman 3sg-NFUT play-PROG around dog-COM
    The woman is playing around with the dog. (A36:ERGstoryLA36)

In early Australian Pidgin both -im and -it were transitivity markers (Koch 2000), so it is not surprising that in a contact situation between English and a traditional
Australian language, -it functions somewhat like a transitivity marker. The -it form is still used in some dialects of Kriol as a transitivity marker for some verbs, such as gibit ‘give it’ (Sandefur 1979). Gibit ‘give it’ and occasionally libit ‘leave it’ are also found in the neighboring mixed language, Gurindji Kriol (Meakins, p.c.).

As described earlier, the -m auxiliary indicates that the situation denoted by the verb began before the moment of speech. So in examples (47) and (48), the activities began before the moment of speech, as indicated by -m, and are still in progress at the moment of speech, as denoted by -ing. How long before the moment of speech the activity was in progress is left open, and can be expressed by an adverb, for example, tarnnga-juk ‘long time-still’ in (48). The context of (48) is that the woman had been waiting for some time before the moment of speech and was still waiting when she spoke. Table 2.9 gives a summary of the temporal and modal interpretations of Light Warlpiri auxiliary and verbal combinations.

In sum, the Light Warlpiri verbal system is largely drawn from Kriol. The Light Warlpiri auxiliary system is partly from Kriol, but also shows innovative properties that are probably motivated by properties of both Kriol and Warlpiri, but are not the same as those in either of the source languages.

2.3 Nouns and nominal morphology

2.3.1 Case-marking: core functions

2.3.1.1 Source languages

Grammatical relations are indicated in Warlpiri through an ergative-absolutive case-marking system - A arguments are marked with ergative case and S and
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<table>
<thead>
<tr>
<th>Auxiliary affix</th>
<th>Transitive clauses</th>
<th></th>
<th>Intransitive clauses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Verb-(im)</td>
<td>Verb-(\emptyset)</td>
<td>Verb-(ing)</td>
<td></td>
</tr>
<tr>
<td>-im</td>
<td>Event began before moment of speech</td>
<td>Event began before moment of speech</td>
<td>Event happens at moment of speech</td>
<td></td>
</tr>
<tr>
<td>-rra</td>
<td>Future/unrealised event</td>
<td>Potentially negative event</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>-na</td>
<td>Want to/necessity</td>
<td>Want to/necessity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.9: Temporal and modal interpretations of combinations of Light Warlpiri auxiliaries and verb affixes. An '-' means that the combination of morphemes for that cell is not found in the data set.

O arguments are marked with absolutive case. But syntactically Warlpiri has a nominative-accusative system - A and S arguments behave the same way, and O arguments behave differently (Hale 1983; Simpson and Bresnan 1983). In AE/Kriol grammatical relations are indicated through fixed SVO word order in a nominative-accusative system.
Properties of Light Warlpiri

2.3.1.2 Light Warlpiri

Syntactically Light Warlpiri is nominative-accusative - it treats A and S arguments in one way and O arguments differently. Evidence for this is that the pronominal element in the auxiliary (a, i, yu, wi, de) agrees with both S and A arguments, as in examples (50) and (51), respectively, and not with O arguments, as in (51)).

(50) karnta-pawu i-m sit-ing jarntu-kurl swing-wana
     woman-DIM 3sg-NFUT sit-PROG dog-COM swing-Perl
     The woman is sitting by the swing with the dog. (A21:ERGstoryLA21.1) (intransitive)

(51) karnta-pardu-ng i-m puj-ing it kurdu-pawu
     woman-DIM-ERG 3sg-NFUT push-PROG 3sg child-DIM
     The woman is pushing the child. (A26:ERGstoryLA26.1) (transitive)

In Light Warlpiri the ergative-absolutive case-marking system of Warlpiri and the nominative-accusative word order system of AE/Kriol meet. The two systems can be said to be competing for the function of indicating grammatical relations in Light Warlpiri. While syntactic behavior involving control and reflexivity in Light Warlpiri has not been investigated, there is no evidence that Light Warlpiri does not function syntactically in a nominative-accusative pattern. In addition, given that both sources, Warlpiri and AE/Kriol, are syntactically nominative-accusative, there is no motivation for Light Warlpiri to have different syntactic patterning.

Light Warlpiri takes ergative case-marking from classic and Lajamanu Warlpiri, which differ from each other. The set of ergative allomorphs in classic and Lajamanu Warlpiri and Light Warlpiri is summarized in Table 2.10.

In classic Warlpiri the ergative case-marker has four allomorphs. Velar-initial forms, -ngku and -ngki, occur on words of two morae, according to vowel harmony with the final vowel of the host word. The -ngku form attaches to bimoraic words ending
in [u] and [a], and the -ngki form attaches to bimoraic words ending in [i]. The other two forms attach to words of three or more morae, following the same rules of vowel harmony. The -rlu form attaches to trimoraic or longer words ending in [u] and [a], and the -rli form attaches to trimoraic or longer words ending in [i].

In Lajamanu Warlpiri, as explained on page 20, final vowel deletion and cluster modification have resulted in an increase in velar-initial forms. In Lajamanu Warlpiri, in addition to the forms in classic Warlpiri, there are also -ngu, -ngi and -ng allomorphs. In Lajamanu Warlpiri the forms are distributed differently from in classic Warlpiri. In Lajamanu Warlpiri the velar-initial forms appear on words of any length, while the lateral-initial forms are restricted to trimoraic or longer words.

Ergative allomorphy in Light Warlpiri is similar to that in Lajamanu Warlpiri, except that in Light Warlpiri the -ng form is by far the most common form.

Table 2.10: Allomorphy of the ergative marker in classic Warlpiri (Laughren et al. 1996) and Lajamanu Warlpiri. ¹Not common in Light Warlpiri.

<table>
<thead>
<tr>
<th>Final vowel of word stem</th>
<th>a,u</th>
<th>i</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classic Warlpiri</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word stem 2 morae</td>
<td>-ngku</td>
<td>-ngki</td>
</tr>
<tr>
<td>Word stem 3 morae</td>
<td>-rlu</td>
<td>-rli</td>
</tr>
<tr>
<td><strong>Lajamanu Warlpiri</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word stem 2 morae</td>
<td>-ngku/-ngu/-ng</td>
<td>-ngki/-ngi/-ng</td>
</tr>
<tr>
<td>Word stem 3 morae</td>
<td>-rlu/-ngku/-ngu/-ng</td>
<td>-rli/-ngki/-ngi/-ng</td>
</tr>
<tr>
<td><strong>Light Warlpiri</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word stem 2 morae</td>
<td>-ngku¹/-ngu/-ng</td>
<td>-ngki¹/-ngi/-ng</td>
</tr>
<tr>
<td>Word stem 3 morae</td>
<td>-rlu¹/-ngku¹/-ngu/-ng</td>
<td>-rli¹/-ngki¹/-ngi/-ng</td>
</tr>
</tbody>
</table>
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In addition to slightly different allomorphy, the distribution of ergative marking differs between classic and Lajamanu Warlpiri, and Light Warlpiri. In classic Warlpiri the ergative is obligatory on A arguments except on first and second person singular pronouns (Bavin and Shopen 1985) - it can be omitted from a preverbal pronoun, but is rarely omitted from a postverbal pronoun (Laughren, p.c.). In Chapter 4 I show that the ergative in Lajamanu Warlpiri is no longer obligatory, but occurs on about 90% of A arguments. In Light Warlpiri the ergative occurs variably on A arguments. It does not typically occur on S (intransitive) arguments.\(^6\)

Light Warlpiri is a very new language which shows variation within and between speakers along several parameters (see Section 2.3.2 on variation between case-marking and prepositions, and Section 4.4 on variation in word order). It is likely that the language has not yet fully stabilized, and that in the next few generations the constraints on when ergative marking occurs will be more systematic than they are today. Light Warlpiri has emerged through very rapid and radical change, so it is plausible that at this early stage it is more dynamic than many older languages. Evidence that the motivation for ergative marking has not fully stabilized is that there is considerable variation between speakers in the proportion of A arguments which are ergatively-marked. Table 2.11 shows the proportion of ergative-marked A arguments in the speech of four mothers speaking to their young children. The data for this table are completely spontaneous speech and speech prompted by a picture book or game provided by me.

\(^6\)There are 3 occurrences of the ergative on S arguments in the adult Light Warlpiri data, in a corpus of thousands of intransitive clauses. It is not possible to say at the moment if these represent performance errors or signal incipient change.
In Table 2.11 we can see that A31 applies ergative marking to 93% of A arguments, compared to 48% for A22.

The variation between speakers raises the question of how much variation there is in the texts of a single speaker. We are able to examine two kinds of texts from two of the speakers in the spontaneous data sample, A21 and A35, who also participated in an elicited production task of telling narratives to another Light Warlpiri-speaking adult, using a picture stimulus book. The proportions of use of ergative marking are similar for these two adults in the two types of text, as shown in Table 2.12.

Although there are fewer A arguments in the narrative texts than in the spontaneous data, we can see that each adult uses ergative marking on approximately the same proportion of A arguments in the two types of text. This suggests that there is some consistency in the speech of a single speaker, and some stability in the
variation between speakers, in their quantitative use of ergative marking. Neither qualitative nor quantitative analyses have yielded evidence of idiosyncratic motivations for use of the ergative marker. The factors conditioning optional ergative marking in other languages and in Light Warlpiri are discussed in Sections 3.1.1 and 4.3 respectively.

2.3.2 Case-marking: non-core functions

2.3.2.1 Ergative marker

The ergative case-marker in Light Warlpiri has three functions other than that of marking A-role NPs. The other functions need to be explained here for two reasons - for completeness in terms of a description of noun morphology in Light Warlpiri, and because child language research shows that a case-marking form that has more than one function is more difficult to learn than a form with a unique function (Slobin and Bever 1982). In Section 3.2.1 I discuss the reliability and availability of the ergative case-marker in Light Warlpiri and Warlpiri, drawing on the descriptions presented in this section. In Light Warlpiri and Warlpiri, NPs other than subjects in transitive clauses host the ergative marker. While cues such as the semantics of the NP and structural properties of the NP+case-marker provide information that in these instances the ergative is not marking an A argument, it may take some time for the child learner to tap into these cues.

In classic Warlpiri, ergative case is used on modifiers of the A argument, whether the A is an overt NP marked with ergative case or whether it is elided. The definition of “modifier” is loose, and extends to nominals bearing semantic functions such as instrument, time and manner. In Light Warlpiri also, the ergative case-marker indicates these functions. But in Light Warlpiri the ergative can be used
in place of the ablative case-marker to indicate an NP that causes an action - a function which is so far attested only in Lajamanu community, in both Light Warlpiri and Lajamanu Warlpiri.

**Instrumental NPs.** Ergative marking is applied to instrument NPs in Warlpiri. The ergative marker can attach directly to the NP, as in (52), or to a comitative case-marker which is attached to the NP, as in (53).

(52) *watiya-rlu kapi-rna-ngku mapa-rni*

stick-ERG FUT-1sg-2sg rub-NPST

*I will paint you with a stick.* (Warlpiri dictionary)

(53) *kuyu ka-ø-jana panti-rni wujita-kurlu-rlu*

game IMPF-3sg-3pl pierce-NPST spear-COM-ERG

*He is spearing the game with a spear.* (A04:EMUstoryA04)

In the Warlpiri of older speakers in Lajamanu, the allomorphy of the ergative in instrumental function is the same as in classic Warlpiri, with the velar nasal -ngki and -ngku forms attached to word stems of two syllables, and the -rlu and -rli forms attached to longer word stems, as shown in (52) and (53).

In my Warlpiri texts the ergative-as-instrument marker attaches to the comitative marker much more often than it does directly to the instrument NP, so there is little opportunity for ambiguity about whether the NP is an instrument or a subject. When the ergative marker attaches directly to the instrument NP, information as to the semantic role of the NP is provided by the probability of an event occurring, the semantics of the verb and the semantics and animacy of the NP referents. Although A arguments in both Warlpiri and Light Warlpiri can be inanimate, an instrument is rarely animate unless it is a body part, so animacy provides useful disambiguation information. When the instrument is inanimate,
the semantics of the NP make its role clear. For example, in (53) above, the semantics of *wujita* ‘spear’ tell us that it is likely to be an instrument, not an agent. If the A is overt then there is further information as to who the A argument is, and if it is not, then information structure principles tell us that the A argument is likely to be the topic continued from the previous talk.

In the Warlpiri of younger speakers in Lajamanu the ergative form occurs on NPs in instrumental and adverbial roles in transitive clauses, and has the same allomorphic variation as it has when it marks the semantic role of agent. The most common form is *-ng*, but *-ngu, -ngi, -ngku, -ngki, -rlu* and *-rli* forms are also found. The velar-initial forms are used regardless of the length of the host stem. The ergative is optionally attached to a comitative case-marker, as in (54), and this construction is typical, although there are also ergative markers attached directly to instrumental NPs, as in (55).

(54)  
\[ watiya \textit{ka-ø-ø} \quad \textit{paji-rni} \quad \textit{junma-kurlu-ng} \quad \textit{karnta-pardu-ng} \]  
\[ \text{tree} \quad \text{IMPF-3sg-3sg} \quad \text{cut-NPST} \quad \text{knife-COM-ERG} \quad \text{woman-DIM-ERG} \]  
A woman is cutting a tree with a knife. (A25:cutWA25)

(55)  
\[ marda-rni \textit{ka-npa-ø} \quad \textit{yartiwaji} \quad \textit{karnta-ngku-ju} \quad \textit{kuja} \textit{ka-ø-ø} \]  
\[ \text{hold-NPST} \quad \text{IMPF-2sg-3sg} \quad \text{picture} \quad \text{woman-ERG-TOP \ REL \ IMPF-3sg-3sg} \]  
\[ watiya \textit{paka-rnu} \textit{walkurruru-rlu} \]  
\[ \text{tree} \quad \text{hit-PST} \quad \text{axe-ERG} \]  
Have you got a picture of a woman who is chopping a tree with an axe?  
(ERGcardWA30A32)

In Light Warlpiri also, the ergative-as-instrument marker usually attaches to a comitative marker on the instrument NP, as in (56).

(56)  
\[ i-m \quad \textit{kad-im} \quad \textit{walkurruru-kurlu-ng} \quad \textit{wita-pawu} \quad \textit{watiya} \]  
\[ 3sg-NFUT \quad \text{cut-TR} \quad \text{axe-COM-ERG} \quad \text{small-DIM} \quad \text{tree} \]  
She cut the little tree with an axe. (CutLA27)
Adverbial NPs. In classic Warlpiri (Hale 1982) and Lajamanu Warlpiri the ergative marker optionally occurs on adverbial nominals of manner and time, as in (57) and (58), respectively.

(57) karnta-ngku ka-a-ø kurdu muurlpa-rlu ka-nj-a-ni
woman-ERG IMPF-3sg-3sg child carefully-ERG carry-INF-go-NPST
The woman is carrying the child along carefully. (Hale 1982, 280)

(58) jalangu-rlu ka-lu-jana puluku turnu-ma-ni yapa-ngku
today-ERG IMPF-3pl-3pl cattle assembled-CAUSE-NPST people-ERG
The people are mustering the cattle today. (Hale 1982, 281)

When the ergative marker is on an adverbial noun, the semantics of the noun provide information that the noun is not an agent.

As in Lajamanu Warlpiri, ergative case-marking is also variably present in Light Warlpiri on adverbs of manner, as in (59).

(59) kuuku-ng i-m luk dem kuja-ng na
monster-ERG 3sg-NFUT look 3pl thus-ERG DIS
The monster looks at them like this now. (C02-13a)

I expect that ergative case-marking can also be variably present in Light Warlpiri on adverbs of time, but there are no examples in my data set. The semantics of the case-marked adverb play the same disambiguation role in Light Warlpiri as outlined above for Warlpiri.

Ergative-marked locations. In Warlpiri the ergative can also occur on locative-marked NPs to indicate that a transitive action is taking place in the location indicated by the locative-marked NP, as in (60).

(60) warlu-ngka-rlu ka-lu-ø purra-mi
fire-LOC-ERG IMPF-3pl-3sg cook-NPST
They are cooking it on the fire. (A01:EMUstoryWA01)
Properties of Light Warlpiri

In Light Warlpiri also a combination of locative and ergative marking indicates that a transitive event is taking place in a certain location, as in (61).

(61) an nyampu-rla-ng manki i-m luk dem
    CONJ DEM-LOC-ERG monkey 3sg-NFUT look 3pl
    And the monkey on here watches them. (A53: C01.4.8)

Note that in (61), there is no ergative marker on ‘monkey’.

**Ergative-as-ablative marker.** In Lajamanu Warlpiri either the ergative or the ablative marker can occur on an oblique NP which has caused an event denoted by the verb to occur, whereas in documentation of classic Warlpiri the ablative function is reserved for the ablative marker alone. An example of the ablative is given in (62), and an example of the ergative in the same function is given in (63).

(62) watiya-warnu-ø wanti-ja
    tree-ABL-3sg fall-PST
    He fell as a result of the tree. (A59:BIRDstoryWA59)

(63) jinta-kari-ø jangayi-rli-ji wanti-ja
    one-other-3sg slingshot-ERG-TOP fall-PST
    The other one fell as a result of the slingshot. (A23:BIRDstoryWA23)

In example (63) the ergative appears on the NP which has caused the event of falling. In each example the overt subject is omitted and is recoverable anaphorically (although the whole text is not included in the examples). In each occurrence of this construction the verb is intransitive, and all of the events are events of falling. It is not the case that in this construction the ergative marks an S (intransitive) argument, because it is not the referent of the ergatively-marked NP, the slingshot, that is falling. The referent, ‘the other one’, is falling as a consequence of something about the ergatively-marked NP, the slingshot.
In Light Warlpiri both the ergative and ablative markers occur in the role of the classic Warlpiri ablative to indicate causation, as in examples (64) (ablative-as-ablative) and (65) (ergative-as-ablative).

(64) yeh jurlpu-janga i-m fal-dan
    yes bird-ABL 3sg-NFUT fall-down
    Yes, he fell because of the bird. (A35: C01.4.4)

(65) watiya-ng i-m fal-dan
    tree-ERG 3sg-NFUT fall-down
    He fell because of the tree. (A21:C03.6.3)

While the ergative case-marker indicates several semantic roles in Warlpiri and Light Warlpiri, other information in the clause is available to show that the marked NPs are not agents. The information can be structural, as in the NP+COM+ERG construction for instruments, or semantic, as is the case for adverbial NPs and some instrumental NPs, or it can be both structural and semantic. Interpreting the ergative-as-ablative marking is more complex, because the verb is intransitive, and the role of the ergative marker is more like that of an instrument. This is the only context in the Light Warlpiri data in which an ergative marker consistently appears in intransitive clauses.

2.3.2.2 Other case-markers

In Light Warlpiri, oblique functions are indicated by Warlpiri case-marking and English prepositions. Warlpiri case-marking occurs in 80% of all contexts in which there is either Warlpiri case-marking or an English preposition. In dative, locative and possessive case functions, both Warlpiri case-markers and English prepositions are commonly used, so the distributions of both types of form are discussed here. But in allative, evitative and perlative case functions Warlpiri case-marking is
mainly used so these are simply listed for illustrative purposes.

**Dative case.** The only AE/Kriol preposition used in Light Warlpiri is *bo/fo*, as in (66). It is derived from English *for* and functions as the dative case-marker does in Warlpiri.

(66) wat yu-m do-im bo-r-im?
what 2sg-NFUT do-TR for-EPEN-3sg
What did you do to her? (A22:C01.1.6)

In Warlpiri, the verb *wangka* ‘talk’, takes a dative case-marked non-subject NP, and dative case is also registered in the auxiliary cluster, as in (67).

(67) karnta ka-ø-rla ngarrka-ku wangka-mi
woman IMPF-3sg-DAT man-DAT talk-NPST
The woman is speaking to the man. (Laughren et al. 1996, 101)

In Light Warlpiri, the verb for speak or talk, *tok*, also takes a dative case-marked NP, but the marking can be either a dative case-marker from Warlpiri, as in (68) or the AE/Kriol preposition *bo/fo*, as in (69). Unlike in Warlpiri, the dative in Light Warlpiri is not registered in the auxiliary cluster.

(68) *Nungarrayi i-m tok-ing Napangardi-k*
subsect 3sg-NFUT talk-PROG subsect-DAT
*Nungarrayi is talking to Napangardi. (C02-19)

(69) an yu tok bo-r-im yangka a-m tok fo yu
and you talk for-EPEN-3sg you:know 1sg-NFUT talk for you
And you talk to her the way I talked to you before. (A22:C01.4.6)

The Light Warlpiri construction for the verb *tok* ‘speak, talk’ is similar to that of Warlpiri *wangka*- ‘speak, talk’ in taking a dative-marked NP, but differs in that dative case is not registered in the auxiliary.
Locative case. In classic Warlpiri the locative case-marker has two allomorphs. A velar-initial locative allomorph -ngka occurs on two-syllable words, and a coronal-initial allomorph -rla occurs on words of three or more syllables. In Lajamanu Warlpiri (especially in speech from speakers under 60 years old), there are two changes in locative allomorphy: (1) the velar initial form has two pronunciations, -ngka and -nga, which appear to be in free variation; (2) both velar-initial forms occur on words of any syllable length. This change in allomorphy parallels that of the ergative allomorphy, but the distribution of the locative allomorphs is different from that of the ergative. In Light Warlpiri the number and distribution of locative allomorphs is similar to that in Lajamanu Warlpiri, but in addition, the -ngka/-nga and -rla forms are in partial complementary distribution. Statistical analyses (of types and tokens of word stems) show that the -rla form occurs significantly more often on words of any length which are from English or Kriol than on words from Warlpiri, as in (70). The -nga/-ngka form occurs significantly more often on words of any length which are drawn from Warlpiri than on words from English or Kriol, as in (71).  

(70) pens-rla yu-rра шat-im-ap ngula-j
    fence-LOC 2sg-NFUT shut-TR-up ANAPH-TOP

   Lock that one up inside the fence. (A35:C02.13c)

7 Multilevel Logistic Regression analyses with a binomial link function shows that -rla is more likely to occur on types of word stem drawn from English (p=0.02), and also on tokens of words drawn from English (p=0.001). The analysis of tokens also shows that the -rla form is more likely to occur on words of two syllables than the -nga/-ngka form (p=0.029), but this might be because the -rla form is often used on demonstratives (nyampu ‘this, here’, (y)inya ‘that, there’), which have two-syllables, and occur very frequently in the data set. In classic and Lajamanu Warlpiri demonstratives take the -rla form even though they have two syllables.
Properties of Light Warlpiri

(71) *karnta-pawu ngula yu got-im ngula-jala rdaka-ngo*  
woman-DIM ANAPH you got-TR ANAPH-EMPH hand-LOC  
You’ve got the woman, there in your hand. (A35:C02.13c)

Another redistribution of Warlpiri locative allomorphy is that in Warlpiri, determiners *nyampu* (this/here) and *(y)inya* (that/there) take the -rla locative allomorph. In Light Warlpiri they take both the -nga/-ngka and -rla allomorphs. The partial complementary distribution of locative allomorphs in Light Warlpiri is probably motivated by their complementary distribution in classic Warlpiri. But in classic Warlpiri the distribution is according to length of word stem, while in Light Warlpiri it is according to source language of word stem. Light Warlpiri mostly retains the suffixing locative case-marking system of classic Warlpiri, with a reanalysis of how the allomorphs should be distributed, rather than using the prepositional locational systems of English or Kriol.

**Possessive case.** Possessive structures in Light Warlpiri draw on both Warlpiri and AE/Kriol. In Warlpiri, inalienable possession is expressed by apposition of NPs, and alienable possession is expressed by a possessive case-marked NP. There are two forms of alienable possession marking, one for free pronouns *-nyangu*, as in (72), and one for nouns *-kurlangu/-kirlangu* as in (73). The choice of *-kurlangu* or *-kirlangu* depends on vowel harmony, and in Lajamanu Warlpiri is often shortened to *-kang*, as in (74), which dispenses with the need for vowel harmony.

(72) *nya-nyi ka-ø-ø nganayi mangarri nyanungu-nyangu*  
look-NPST IMPF-3sg-3sg something food 3sg-POSS  
It is looking at something, its food. (A14:EMUstoryWA14)

*For a full discussion of the variation in possessives in Light Warlpiri, see Meakins and O’Shannessy (2005).*
Possession can be expressed in AE/Kriol through apposition of the possessor and possessed nouns, as in (75).

(75) Shila fatha
Sheila father
Sheila’s father. (Meakins and O’Shannessy 2005, 10)

This type of construction also occurs in Light Warlpiri, as in (76).

(76) Nangala nyiya yu neim yu-rra tok
subsect what 2sg name 2sg-FUT talk
Nangala, what’s your name? You say it. (C02.9a)

The English possessive construction, ‘possessor+possessive s’ (e.g. Mary’s bag), is not found in my Light Warlpiri data set, but a construction from English ‘his+NP’ is found, as in (77). The construction ‘her+NP’ is not found in the data set.

(77) i-m go is aus
3sg-NFUT go 3sg:POSS house
He/she/it went to his/her/its house. (A21:C03.10)

Where Warlpiri possessive forms are used in Light Warlpiri, their distribution differs from that in classic Warlpiri, as summarized in Table 2.13.

In Warlpiri the -nyangu form occurs on all pronouns regardless of person and number, but in Light Warlpiri it occurs only on singular pronouns. All other Light Warlpiri dependent NPs take the -kurlangu/-kirlangu/-kang forms.
Properties of Light Warlpiri

<table>
<thead>
<tr>
<th>Possessive form</th>
<th>Source language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classic Warlpiri</td>
</tr>
<tr>
<td>-nyangu</td>
<td>all pronouns</td>
</tr>
<tr>
<td>-kurlangu</td>
<td>all nouns</td>
</tr>
</tbody>
</table>

Table 2.13: Change between Classic Warlpiri and Light Warlpiri distribution of possessive case-marker forms.

Possessive constructions in Light Warlpiri can also involve a locative, and, when the possessed NP is a body part, are inalienable possessive constructions.

(78)  
\[ i-m \text{ bait-im } wiriya-nga \]
\[ 3\text{sg-NFUT } \text{bite-TR leg-LOC} \]

It bit him on the leg/It bit his leg. (A36:ERGstoryLA36.3)

Example (78) involves a whole-part relationship of a person to a body part. The person whose body part is affected is known from previous clauses so is not overtly mentioned in the same clause as the body part. In this kind of construction the focus is on the body part being named. Constructions in which the body part is affected, but the person is not mentioned except as a clitic, are common in classic Warlpiri (Hale 1982), but the use of a locative case-marker on the affected body part is not (Hale 1981, Simpson, p.c). In Light Warlpiri a locative case-marker on the affected body part is common, and mirrors the English construction ‘It bit him on the leg’.

Other cases  All other oblique case-markers that occur in Warlpiri also occur in Light Warlpiri, and their functions are the same as in Warlpiri. They are included here for a full understanding of the morphology of Light Warlpiri. In the allative,
perlative and evitative cases, Warlpiri case-markers are typically used. Prepositions from Standard Australian English or AE/Kriol are not found in my data set, except for the English preposition ‘to’ (e.g. ‘to school’), which occurs 3 times.

Allative case

(79) jinta wati i-m go watiya-kurra kanta-k-pura
    one man 3sg-NFUT go tree-ALL bush:coconut-DAT-DESID
    A man goes towards the tree to get a bush coconut. (ERGstoryLA21.3)

Perlative case

(80) karnta-pawu i-m sit-ing jarntu-kurl swing-wana
    woman-DIM 3sg-NFUT sit-PROG dog-COM swing-PERL
    A woman is sitting with a dog near the swing. (ERGstoryLA21.1)

Evitative case

(81) an de-m ran bek rarralykaji-kirra jarntu an yapa-wat
    CONJ 3pl-NFUT run back car-ALL dog CONJ person-pl
    ngapa-kujaku
    water-EVIT
    And they ran back to the car, the dog and the people did, in case they got wet. (ERGstoryLA21.1)

In sum, both Warlpiri case-marking and AE/Kriol prepositions play a role in indicating semantic roles of nouns in Light Warlpiri. Table 2.14 summarizes the source languages drawn on for each of the most common semantic cases in Light Warlpiri.

Table 2.14 shows that while Warlpiri case-marking and AE/Kriol prepositions are both present in Light Warlpiri, the bulk of the nominal morphology is from Warlpiri.
Properties of Light Warlpiri

<table>
<thead>
<tr>
<th>Case</th>
<th>Source language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Warlpiri</td>
</tr>
<tr>
<td>Dative</td>
<td>✓</td>
</tr>
<tr>
<td>Possessive</td>
<td>✓</td>
</tr>
<tr>
<td>Locative</td>
<td>✓</td>
</tr>
<tr>
<td>Allative</td>
<td>✓</td>
</tr>
<tr>
<td>Perlative</td>
<td>✓</td>
</tr>
<tr>
<td>Ablative</td>
<td>✓</td>
</tr>
<tr>
<td>Evitative</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 2.14: Source language contributions to forms indicating semantic cases in Light Warlpiri

2.3.3 Pronouns

Free pronouns in Light Warlpiri come from both Warlpiri and AE/Kriol. Kriol pronouns such as ‘mela’, ‘melabat’, ‘mipala’ and ‘minpala’ (Munro 2004) are not used. English pronouns occur both as free pronouns and as pronominal elements in the auxiliary cluster. There are no Warlpiri bound pronouns in Light Warlpiri, rather there is an innovative auxiliary system, explained in Section 2.2.2.2.
### Table 2.15: Source languages and forms of free pronouns in Light Warlpiri

<table>
<thead>
<tr>
<th></th>
<th>First person</th>
<th>Second person</th>
<th>Third person</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singular</strong></td>
<td><strong>Warlpiri</strong></td>
<td><strong>Eng/Kriol</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>ngaju</em></td>
<td><em>a</em> (sub)</td>
<td><em>nyunta</em></td>
</tr>
<tr>
<td></td>
<td><em>mi</em> (obj)</td>
<td></td>
<td><em>nyanungu</em></td>
</tr>
<tr>
<td><strong>Dual</strong></td>
<td><strong>Warlpiri</strong></td>
<td><strong>Eng/Kriol</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>ngajarru</em> (excl)</td>
<td><em>wi</em> (sub)</td>
<td><em>nyuntu-jarra</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>us</em> (obj)</td>
<td><em>nyanungu-jarra</em></td>
</tr>
<tr>
<td><strong>Plural</strong></td>
<td><strong>Warlpiriocc</strong></td>
<td><strong>Eng/Kriol</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>ngalipa</em> (incl)</td>
<td><em>wi</em> (sub)</td>
<td><em>yuumob</em> (sub, obj)</td>
</tr>
<tr>
<td></td>
<td><em>nganimpa</em> (excl)</td>
<td></td>
<td><em>yapapa-patu</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>usmob</em> (obj)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.15 shows the distribution of pronouns drawn from each source language. Free pronouns from Warlpiri have the same form for both subject and object. The Warlpiri inclusive-exclusive distinction is partially maintained in Light Warlpiri - adults appear to uphold it, but children do not always do so. A singular, dual, plural distinction is partially maintained in second person in the forms from AE/Kriol - either a Warlpiri dual pronoun or a construction from English can be used to express duality (but there is no unique dual form in the auxiliary cluster). Warlpiri free pronouns can host the ergative case-marker, but English pronouns can not.

In sum, Light Warlpiri consists of a systematic combination of elements from classic and Lajamanu Warlpiri and from AE/Kriol. Most of the verbs and verbal morphology are from AE/Kriol, while most of the nominal morphology is from classic and Lajamanu Warlpiri. Nominals are drawn from both source languages. Light Warlpiri makes use of ergative case-marking from Warlpiri, but, in contrast
to Warlpiri, Light Warlpiri speakers apply it to only approximately 60% of A arguments. Light Warlpiri has an innovative auxiliary system, which draws on Kriol, English and classic and Lajamanu Warlpiri. There is evidence that Light Warlpiri is redistributing some systems, for example locative and ergative case-marking, in a manner which differs from that in the source languages.

Although Light Warlpiri consists of elements drawn from both Lajamanu Warlpiri and AE/Kriol, it is a way of speaking that is distinct from both of them. It cannot be construed as a practice of code-switching between Lajamanu Warlpiri and AE/Kriol. In the next section I present evidence for Light Warlpiri as a new language, and show that it is one of several documented ‘Mixed Languages’ - languages which can be traced to more than one source language.

2.4 Light Warlpiri: a new mixed language

The definition of ‘a language’ can be controversial and often involves nonlinguistic criteria such as political or geographic boundaries. Some would consider that arguing for the ‘languagehood’ of a way of speaking is unnecessary and in the case of Light Warlpiri it is indeed perhaps unnecessary for its speakers. But the grammar of Light Warlpiri differs from patterns in Warlpiri-AE/Kriol code-switching practices and also from the grammars of Warlpiri and AE/Kriol. I will present four reasons for considering Light Warlpiri as a language rather then as a code-switching practice.

The first supporting point for Light Warlpiri as a new language is that Light Warlpiri is now being transmitted to children as one of their first languages. Very young children do not speak Aboriginal English or Kriol, so they cannot be code-switching. Children target Light Warlpiri as the language they produce first when
they begin to speak, and children and young adults almost always use it, even when they are speaking to an older person who is speaking to them in Warlpiri or code-switching between Warlpiri and AE/Kriol. Lajamanu children’s ‘mixing’ of Warlpiri and English, the precursor to Light Warlpiri, was first documented in 1979 (Leeding and Laughren 1979), which is consistent with the fact that the oldest Light Warlpiri speakers are now around 30 years old.

The second point is that the code-switching patterns of people over age 30 are not the same as the patterns in Light Warlpiri because the code-switchers do not use the Light Warlpiri auxiliary paradigm or the Light Warlpiri combination of Warlpiri verb stems with Kriol transitive affixes. Examples of code-switching from speakers over 30 years old follow in (82) and (84).

(82) \textit{nyarrpara} yu \textit{garra} pud-im  \\
where 2sg \textit{FUT} put-\textit{TR}  \\
Where will you put it? (A57:C06.16)

Example (82) shows the use of the AE/Kriol future auxiliary verb \textit{garra} in a question which contains code-switching between AE/Kriol (in plain font) and Warlpiri (in italics). The speaker is about 40 years old. She does not use the Light Warlpiri \textit{yu-rra} auxiliary form. The equivalent question with the Light Warlpiri auxiliary is presented in 83.

(83) \textit{nyarrpara} yu-\textit{rra} pud-im  \\
where 2sg-FUT put-\textit{TR}  \\
Where will you put it? (NOT RECORDED)

Example (84) shows consecutive clauses from a 40-year-old woman who is telling a story to another adult from picture stimuli. In the first three clauses all elements are in Warlpiri. In (84d) the speaker begins the sentence in Warlpiri, then code-switches into AE/Kriol mid-sentence with “\textit{im bin luk} ‘he saw’. In her inserted
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phrase she uses an AE/Kriol third singular pronoun *im* and the AE/Kriol simple past tense form *bin*, not the Light Warlpiri auxiliary *-m* form. She then switches back into Warlpiri with an A argument *kurdu-pardu-ngu-ju* ‘the little child-erg’.

(84)  

a. *kurdu-pardu-ø yalulu-kurra wanti-ja*  
   child-DIM-3sg blood-ALL fall-PST  
   The child fell, bleeding.

b. *yalulu-kurra-ø ya-nu-rnu*  
   blood-ALL-3sg go-PST-HITHER  
   He came this way, bleeding.

c. *watiya-nga-ø nyina-ja*  
   tree-LOC-3sg sit-PST  
   He sat under the tree.

d. *wara yuparlî im bin luk kurdu-pardu-ngu-ju*  
   DIS bush:banana 3sg PST look child-DIM-ERG-TOP  
   Gosh! The child saw the bush banana. (A34:ERGstoryWA34.3)

Example (85) is from another woman about 40 years old who is playing a card game. It shows an English word, ‘push’, borrowed into a Warlpiri verb as *puj-i-mani* ‘push-cause’.  

(85)  

*marda-rni ka-npa-ø wati kuja ka-ø-ø*  
   hold-NPST IMPF-2SG-3SG man REL IMPF-3SG-3SG  
   *puj-i-ma-ni* toyota  
   push-EPEN-cause-NPST car  
   Have you got a man who is pushing a car? (A40:ERGcardWA40A37)

Examples (84) and (85) are typical of the type of code-switching and borrowing, respectively, in the speech of people over approximately age 30 in Lajamanu.

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9An English or Kriol word with a final consonant can optionally be integrated phonologically into Warlpiri by vowel epenthesis (glossed as ‘EPEN’), as in 85.
To understand the difference between patterns of Warlpiri-AE/Kriol borrowing or code-switching and patterns of source language combinations in Light Warlpiri, it is necessary to understand the productive means of verb formation in Warlpiri. A Warlpiri verb commonly consists of a preverb and an inflected main verb (Nash 1986). New verbs are formed by using a nominal with either of two bound main verbs, the inchoative -jarrimi ‘become’ or transitive -mani ‘cause’. However, an item from any language, including English or Kriol, can be borrowed into the nominal slot, as in (86) and (87), even if it is a verb in the source language.

(86) jinta-kari-rlí ka-ø-ø open-i-ma-ni
    one-other-ERG IMPF-3sg-3sg open-EPEN-CAUSE-NPST
    The other one is opening it. (transitive) (A02:cutWA02)

(87) yama-ngka ka-ø slip-jarri-mi
    shade-LOC IMPF-3sg sleep-INCHO-NPST
    He is sleeping in the shade. (intransitive) (A10:ERGstoryWA10.3)

An entire AE/Kriol verb, with the transitive affix and a directional suffix, can be borrowed into Warlpiri as a preverb, as in (88).

(88) teik-im-at-ma-ni ka-ø-ø
    take-TR-out-CAUSE-NPST IMPF-3sg-3sg
    He's taking it out. (A02:cutWA02)

In (86) to (88) English verbs are inserted into Warlpiri preverb slots, and combined with Warlpiri bound verbs and the Warlpiri auxiliary system. This strategy is typical of Warlpiri speakers. In contrast, in Light Warlpiri, neither the Warlpiri ‘preverb+main verb’ combination nor the Warlpiri auxiliary occurs.

Examples (89) and (90) show consecutive utterances from a conversation between J, who is in his 40s and is not a Light Warlpiri speaker, and N, who is in her 20s and is a Light Warlpiri speaker. They are arguing about who owns the money.
a child is playing with. J, who is speaking AE/Kriol in this utterance, claims that Jangala gave the money to him, and N claims that the money belongs to the other child, Nungarrayi.

(89)  
J: na a **bin** teik- **Jangala** **bin** gi-me old-im bo im  
J: no 1sg PST take subsect PST give-1sg hold-TR for 3sg  
No I took- Jangala gave it to me to keep it for him.

(90)  
N: **nyan-nyang-jala** **a-m** gib-im faib dola **Nungarrayi-k**  
N: 3sg-POSS-EMPH 1sg-NFUT give-TR five dollar subsect-DAT  
It’s hers, actually! I gave five dollars to Nungarrayi.

In (89) J uses the AE/Kriol simple past tense form **bin** in two clauses. In contrast, in (90) N uses the Light Warlpiri auxiliary nonfuture **a-m** form. There is no transitive suffix on the verb **teik** in (89) because it is a false start. The examples show someone who is not a Light Warlpiri speaker using the AE/Kriol auxiliary **bin**, and in contrast, a Light Warlpiri speaker using the Light Warlpiri nonfuture **a-m** form in the same conversation. If both speakers were code-switching they would both use the AE/Kriol **bin** form, or if they were both speaking Light Warlpiri they would both use the Light Warlpiri **a-m** form.

Example (84) on page 67 shows how Warlpiri speakers code-switch between AE/Kriol and Warlpiri, and (86) to (88) on page 68 show how they borrow English or Kriol words into Warlpiri. Example (90) demonstrates that Light Warlpiri resembles the code-switching of older people in that it consists of elements from AE/Kriol and Warlpiri. But it also demonstrates a contrast with older people’s speech in the use of the Light Warlpiri auxiliary form **a-m**, not the AE/Kriol past form **bin**.

Auer (1999) explains that the difference between language mixing and a stabilized mixed variety is that in language mixing speakers are free to mix elements of
each language as they wish but in stabilized mixed varieties speakers do not have this choice - the conventions of the variety dictate how elements can be combined. Light Warlpiri grew out of the AE/Kriol code-switching of Warlpiri speakers, but the Light Warlpiri system has conventionalized such that in certain domains speakers have no choice as to which element from each source language they should use (for example, Warlpiri inflected main verbs and the Warlpiri auxiliary cluster cannot be used in Light Warlpiri). The ways in which the source languages combine in Light Warlpiri both resemble and differ from the code-switching of older Warlpiri speakers. Light Warlpiri is like Warlpiri speakers’ practice of code-switching in that in both ways of speaking there are AE/Kriol verbs and Warlpiri nominals and nominal morphology. But Light Warlpiri is unlike Warlpiri speakers’ code-switching in that the Warlpiri speakers, when code-switching, do not use the Light Warlpiri auxiliary system or the Light Warlpiri combination of a Warlpiri verb stem with an AE/Kriol transitive suffix.

Speakers cannot be code-switching if the elements involved are not present in any of the languages they are allegedly mixing. The Light Warlpiri auxiliary paradigm does not occur as a complete system in Kriol. A subset of the system, some of the -rra forms, are attested in Kriol, but the -m and -na subsystems are not attested beyond Light Warlpiri. If Light Warlpiri involved code-switching between AE/Kriol and Warlpiri, we would expect to find the source auxiliary system in AE or Kriol spoken outside Lajamanu. Warlpiri, AE/Kriol and Light Warlpiri have different verb and auxiliary systems. Older speakers of Warlpiri do code-switch by inserting AE/Kriol verbs with a transitive -im suffix into otherwise Warlpiri clauses, but they do not use the Light Warlpiri auxiliary paradigm with these verbs. Rather, they use the third singular subject pronoun im and AE/Kriol auxiliaries.
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- future *garra* and past *bin* - or else no auxiliary. Since older Warlpiri speakers do not use the Light Warlpiri paradigm as a system, but use only the AE/Kriol subject pronoun *im*, they have not analyzed *im* as it is analyzed in Light Warlpiri’s auxiliary system, that is, as bimorphemic *i-m* (pronominal element + TMA element). Some of the Warlpiri code-switched clauses resemble Light Warlpiri clauses where there is no tense-aspect element in the auxiliary cluster. But *garra* and *bin* occur frequently in Warlpiri code-switching, whereas Light Warlpiri speakers only sometimes use *garra* and rarely use *bin*. When *garra* is used in Light Warlpiri it has the meaning of ‘necessity’, that is, ‘must’ or ‘should’ rather than that of indicating a future event. In Kriol it has both meanings, and most commonly that of indicating a future event.

A distinctive feature of Light Warlpiri is that it has combined a subset of Warlpiri verb stems with Kriol transitive affixes in a way that does not occur in Warlpiri or AE/Kriol, as in (91) (for more details see examples (21) and (22) on page 30).

(91)  
\[
\text{Nakarra} \text{ ngula i mait katirn-im yu wirliya}
\]&
\[
\text{Nakarra, that one might squeeze your leg.} \quad \text{(C53:C04.7)}
\]

The set of Warlpiri verb stems occurs in Light Warlpiri only with the transitive affix -im, as in *(katirn-im ‘press down on’)*, and not in the same form as Warlpiri inflected verbs *(katirn-rni, katurn-rnu)*, without the Kriol -im affix (*i-m katurnu ‘he/she/it pressed down on it’)*. The only attested examples of this kind of word-formation in Light Warlpiri are from a small set of Warlpiri verbs from one verb class, suggesting that in Light Warlpiri this process is a conventionalized way of combining a restricted range of elements from the two source languages.

To sum up the second point, the structures used by people speaking Warlpiri or code-switching between Warlpiri and AE/Kriol are not the same as those in Light
Warlpiri. When speaking Warlpiri, speakers use a traditional way of creating verbs with inflected bound Warlpiri verbs, one for transitives (preverb + mani) and one for intransitives (preverb + jarrimi). When code-switching between Warlpiri and AE/Kriol they use AE/Kriol pronouns and auxiliary verbs (im bin verb-im, im garra verb-im). In contrast to both of those ways of speaking, Light Warlpiri speakers apply the Light Warlpiri auxiliary-verb system, that is, the i-rra/i-m/i-na system plus AE/Kriol (or a particular subset of Warlpiri) verbs, with -im attached if transitive.

The third piece of evidence supporting the view of Light Warlpiri as a new language is that the distribution of certain morphological elements in Light Warlpiri differs from that in older Warlpiri speakers’ code-switching. The most striking example of the difference is the distribution of ergative case-marking in Light Warlpiri and Warlpiri, explained in detail in Section 2.3.1. The distribution of locative case-marking also differs in the two languages. Older Warlpiri speakers apply the -rla form to words of three syllables or more and to lexically specified determiners, and the -ngka/-nga forms to words of two syllables. In Light Warlpiri the distinction is based on the source language of the word: -rla is applied significantly more often to English words and -ngka/-nga to Warlpiri words (see page 58 for details).

The fourth point is that Light Warlpiri is neither AE/Kriol with extreme borrowing, nor Warlpiri with extreme borrowing. Extreme borrowing (Bakker 2003) means that a large number of lexical items are borrowed into a host language from a source language.10 In Light Warlpiri, grammatical structures as well as lexical items from each of the source languages occur consistently. There is too much Warlpiri morphology for the language to be Aboriginal English or Kriol.

10Muysken (2006) includes languages with heavy borrowing as a type of mixed code.
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with extreme borrowing from Warlpiri. Since the verbs and verbal morphology in Light Warlpiri are from AE/Kriol, Light Warlpiri is not a variety of Warlpiri with heavy borrowing, despite the view taken by Warlpiri speakers themselves that Light Warlpiri is a type of Warlpiri.

In addition to being able to talk about the different languages with their own terms for them, Light Warlpiri speakers differentiate between Warlpiri and Light Warlpiri in their production. When children over 5 years and young adults speak Warlpiri - for example, in elicited production tasks - they use the Warlpiri verb and auxiliary systems. When they borrow from AE/Kriol into Warlpiri, they insert an AE/Kriol item into the Warlpiri preverb slot and use an inflected main verb from Warlpiri, as do older Warlpiri speakers. The use of different verb-auxiliary systems in Warlpiri and Light Warlpiri shows that the two codes are differentiated into two separate systems.

The evidence presented here demonstrates that Light Warlpiri is a new language for which AE/Kriol and Warlpiri are the source languages. Most verb stems and verbal inflections are from AE/Kriol, and the bulk of the nominal morphology is from Warlpiri. Light Warlpiri has an innovative auxiliary system consisting of a subject prefix and a TMA marking element. Subject function is indicated by auxiliary prefixes derived from English pronouns, and, in the case of A arguments, variably by ergative case-marking. Light Warlpiri is transmitted to children as one of their two first languages and is the language of their everyday interactions.

Assuming that Light Warlpiri is a new language, what kind of language is it? Following Bakker (2003, 1) I use the term Mixed Language to mean languages that emerged in situations of community bilingualism, and whose structures show an etymological split that is not marginal, but dominant, so
that it is difficult to define the variety’s linguistic parentage as involving just one ancestor language.\footnote{Auer (1999) includes Mixed Languages in his broader category of Fused Lects.}

The ways in which Mixed Languages can draw on their source languages vary. Bakker (2003) lists several types of Mixed Language: (1) ‘intertwined language’, in which the lexicon is from one language and the grammatical system from another; (2) ‘converted language’, in which one language takes over the complete grammatical system of another, without borrowing any lexical material or grammatical morphemes; and (3) ‘lexically mixed language’, in which the lexicon is drawn fairly equally from two source languages. A characteristic of a lexically mixed language is that verbs and verbal morphology are from one language and nouns and nominal morphology are from another, called a V-N (verb-noun) Mixed Language by Bakker (2003). The classic example of this type of Mixed Language is Michif (Bakker 1994), which combines verbs and verbal morphology from Cree and nouns and nominal morphology from French. Light Warlpiri draws its verbs and verbal morphology from AE/Kriol and its nouns and nominal morphology from Warlpiri, so using Bakker’s categorization it is a V-N mixed language.

The processes involved in the genesis of Mixed Languages are interesting because they provide information about the types of processes and outcomes that are possible in language contact situations. Most researchers hypothesize that Mixed Languages are the product of code-switching practices (Auer 1999; Thomason 2003; Myers-Scotton 2003). Only Bakker (2003) claims that code-switching cannot lead to the formation of a Mixed Language - see McConvell and Meakins (2005) and Muysken (2006) for responses to his arguments. Until recently there was no empirical evidence to support the hypothesized transition from code-switching practices
to a new Mixed Language, because the Mixed Languages had been studied long after the time of their genesis. But such evidence is provided by diachronic data from Gurindji and Gurindji Kriol (McConvell and Meakins 2005) and synchronic data from Warlpiri and Light Warlpiri presented in this thesis. The structure of Light Warlpiri resembles code-switching between synchronic Warlpiri and AE/Kriol (see for instance, example (84) on page 67), with the exception of the new Light Warlpiri auxiliary subsystem. The code-switching practice was probably conventionalized by a group of children or teenagers as their default way of talking. That group of teenagers are now the 25-30-year-old parents of the next generation, and they have transmitted the conventionalized code to their children. The auxiliary subsystem is probably an innovation of the group who are now Light Warlpiri-speaking adults, since both the adults and children use the same auxiliary subsystem, but older adults, when code-switching, do not.

The Light Warlpiri data raises an interesting question about the kinds of code-switching that can lead to a Mixed Language. It is generally thought that only insertional code-switching, in which single elements of one language are inserted into a longer string of the other language, can lead to a new Mixed Language (Auer 1999; Backus 2003). But the Warlpiri-AE/Kriol code-switching practices that lead to the formation of Light Warlpiri are more like alternational code-switching, in which a switch in both lexicon and grammar takes place (Muysken 2000, 2006), as in (92).

(92) dem jeis-im kuuku nganta jarntu-kurl
   3pl chase-TR monster reportedly dog-COM

They’re chasing the monster with the dog, they say. (A30:ERGstoryWA.1)

The speaker in (92) began with an AE/Kriol pronoun and verb, then switched to Warlpiri vocabulary and case-marking. Light Warlpiri is the result of what
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seems to be alternational code-switching (Muysken 2006), a pattern not previously documented as leading to a new Mixed Language.

The sociolinguistic background of Light Warlpiri is similar to that of many other Mixed Languages. Mixed Languages are formed within a situation of bilingualism and are then transmitted to new generations (Bakker and Muysken 1995; Thomason 2003; Myers-Scotton 2003). Speakers of the new Mixed Language who are not the founding generation might, but need not, additionally speak either or both of the source languages (Auer 1999). The founding generation of Light Warlpiri (the cohort currently aged 25 to 30) speak Lajamanu Warlpiri and varieties of English/Kriol. Their children learn Lajamanu Warlpiri and Light Warlpiri before they are of school age, then add varieties of English/Kriol to their repertoire. Light Warlpiri speakers identify themselves as Warlpiri people, and call their language *Lajamanu stail*, which could be glossed as ‘the speech style of young Warlpiri in Lajamanu’.

The first speakers of some mixed languages were the children of marriages between people from separate linguistic groups, for instance, the original speakers of Michif were the children of marriages between Cree-speaking and French-speaking couples (Bakker 1994). The speakers of some other Mixed Languages or mixed codes conventionalized an ingroup way of speaking in order to keep their communication secret from other linguistic groups, for instance, speakers of Romani (Boretsky 1994), or to indicate a distinctive identity, for example, speakers of Media Lengua (Muysken 1994). While Light Warlpiri is not a secret language, it is a distinctive ingroup language. The first cohort of Light Warlpiri speakers are bilingual in Aboriginal English and Warlpiri as a result of English being dominant in the wider community and Warlpiri in the local community, not because
of mixed parentage. Light Warlpiri developed as an ingroup language, through Warlpiri speakers code-switching between Warlpiri and AE/Kriol when speaking to each other. Unlike the lexically-mixed languages discussed in Bakker (2003), Light Warlpiri has not resulted from a process of pidginization, because the group of adults who developed Light Warlpiri were not in a situation in which there were two groups who spoke different languages and needed to use a third way of speaking to communicate with each other. It is not an interlanguage, because it did not arise from the need to learn a language other than Warlpiri for communication with a non-Warlpiri speaking group, nor did it come from Kriol or English speakers who needed to learn Warlpiri. Light Warlpiri arose among a group of Warlpiri speakers. They typically code-switched between Warlpiri and AE/Kriol, and their code-switching has conventionalized into a new language, which is now learned by children as one of their two first languages.

2.5 Summary

In this chapter I have described a way of speaking by young people in Lajamanu Community that was previously unknown to the field of linguistics. The speakers are participants in a complex linguistic environment in which a new language, Light Warlpiri, has emerged in the community within the last 30 years as a result of contact with AE/Kriol. Light Warlpiri systematically combines elements of its source languages in its verbal and nominal lexicon and morphology, and has an innovative auxiliary subsystem which draws on the source languages, but is not the same as either of them. Typologically, Light Warlpiri is best construed as a new Mixed Language rather than as a practice of code-switching or as a variety of either Warlpiri or AE/Kriol. Two interesting properties of Light Warlpiri are that erga-
tive marking is variably applied to A arguments and the order of core arguments is also variable. A closer examination of how these are used to indicate grammatical relations is needed. In the next chapter I review relevant crosslinguistic literature taking two perspectives: (1) the ways in which variable ergative marking and variable word order are motivated in other languages, and (2) how they are acquired by children. The two perspectives provide background for a closer examination of ergative marking and word order in adult and child speech in Light Warlpiri in Chapter 4. In that chapter data from both adults and children are analyzed together in each statistical analysis (one to determine the conditions of ergative marking and one to determine the conditions of word order patterns), to minimize the risk of finding correlations in the data that are really due to chance. Literature from both typological and acquisition perspectives are presented before further Light Warlpiri data analyses because the literature provides the motivations for the analyses conducted.
CHAPTER 3

Variable ergative marking and word order across languages and in language acquisition

3.1 Variable ergative marking and word order in crosslinguistic perspective

In this chapter I review two fields of literature that are relevant to how grammatical relations are indicated in Light Warlpiri, from typological and developmental
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perspectives. In the first part, Section 3.1.1, I review typological literature on languages with non-obligatory ergative marking and variable word order. In Section 3.2 I turn to the literature on children’s learning of systems of case-marking and word order, because children learning Light Warlpiri need to learn how both of these systems contribute to indicating grammatical relations. Having provided the reader with an overview of the typological literature relevant to ergative marking and word order in Light Warlpiri and children’s acquisition of languages with some similar properties in this chapter, I present analyses of ergative marking and word order in Light Warlpiri in Chapter 4.

3.1.1 Optional ergative marking

In the previous chapter I situated Light Warlpiri typologically as a new Mixed Language, with Warlpiri and AE/Kriol as its sources. Now more specific questions can be asked about its grammatical structure which relate directly to its having arisen from the combination of two different types of source language. Warlpiri indicates A arguments with ergative case-marking (and word order plays no syntactic role), while AE/Kriol indicates A arguments through fixed AVO word order (and case-marking plays no syntactic role). When these two systems come together in Light Warlpiri, neither one nor the other takes on the role of always indicating A arguments. Rather, ergative case-marking does so in some transitive clauses, and AVO word order seems to play a role in other transitive clauses, but does not reliably indicate A arguments. But it does not appear that the systems of word order and case-marking are in complete complementary distribution. If they were, then an N in an NV order clause would always signal an A argument, preverbal A arguments would not be ergatively-marked, and postverbal A arguments would always be
marked. It appears that A arguments are variably marked in both preverbal and postverbal position, and word order is variable. This observation raises questions about the roles ergative marking and word order play in Light Warlpiri, and how children learn these roles. Before conducting analyses of the Light Warlpiri data to see the motivations for ergative marking and word order patterns, I first review relevant literature on other languages with optional ergative marking and variable word order. I then review literature on children’s acquisition of languages with these types of system.

In ergative languages the ergative patterning is often not uniform (Van Valin 1992). The languages Van Valin discusses have split ergative patterning, in which the ergative-absolutive system operates only under specific conditions and another system operates under other conditions. In split ergative languages the marking (or its absence) is categorical in its domain of application. There are several different factors that can condition the split, and more than one factor can apply within a language. One is the distinction between nouns and free or bound pronouns, with nouns and free pronouns following one pattern and bound pronouns following another (Dixon 1994). Other factors are the position of the A referent on the person/animacy hierarchy, and the lexical semantics of the verb. Still other factors relate to grammatical structure - whether the clause is a main or subordinate clause, and the aspectual properties of the clause (Dixon 1994).

In another kind of patterning, the ergative marker is optional. In optional ergative languages “there is some variation between use and non-use of the ergative marker within its normal domain of application” (McGregor and Verstraete 2005, 1), but the grammatical role borne by the A is not affected (McGregor and Verstraete 2005). In optional ergative languages the variation in marking is not cate-
gorical, whereas in split ergative languages marking in particular environments is categorical - either it is required, or it is not permitted. Optional ergative marking has been documented in many languages, many of which are in Australia (for Australian languages, see McGregor (1992, 1998) on Gooniyandi, Hercus (1976) on Baagandji, Schultze-Berndt (2000) on Jaminjung, Verstraete (2005) on Umpithamu, Cook (1988) on Wagiman, McGregor (2006) on Warrwa, Gaby (Forthcoming) on Kuuk Thaayorre, Walsh (1976) on Murrinth-patha, Pensalfini (1999) on Jingulu, Schmidt (1985a,b) on Dyirbal, and for languages outside Australia, see, for example, Ochs (1985) on Samoan, Saxena (Forthcoming) on Kinnauri.)

Samoan is of particular interest because it has been studied from the perspective of children’s language acquisition, and will be discussed again in Section 3.2. A close examination of the contexts in which the marking occurs has been undertaken for only some of the languages documented, but is the focus of current research on several languages (Gooniyandi (McGregor 1992, 1998), Gurindji Kriol (McConvell and Meakins 2005), Kinnauri (Saxena Forthcoming), Kuuk Thaayorre (Gaby Forthcoming), Umpithamu (Verstraete 2005) and Warrwa (McGregor 2006)).

In the languages for which optional ergative marking has been examined closely, the variation in marking is often conditioned partly by semantic properties, for example, A animacy, and partly by discourse properties, for example, contrasts between discourse referents (Gaby Forthcoming; Verstraete 2005; McConvell and Meakins 2005; McGregor 1992, 1998, 2006; Pensalfini 1999). The conditions of marking in Samoan differ from those in the other languages - in Samoan ergative

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1The small amount of work to date will be supplemented by a forthcoming special issue of Lingua, edited by William McGregor and Jean-Christophe Verstraete (McGregor and Verstraete 2005).
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marking is conditioned by social distance (Ochs 1985). In intimate, familial contexts ergative marking is often not applied, but in more formal contexts, such as radio broadcasts, it is required when there is VA word order. It is applied more in the speech of men than in the speech of women. The specific conditions under which marking is applied in informal contexts in Samoan have not been examined (McGregor and Verstraete 2005). Table 3.1 summarizes the typical contexts of marking for each of the three sub-types of ergative language.

<table>
<thead>
<tr>
<th>Sub-type of ergative language</th>
<th>Ergative</th>
<th>Split</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking required in domain of application?</td>
<td>required</td>
<td>required</td>
<td>optional</td>
</tr>
<tr>
<td>Marking typically conditioned by:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free/bound pronoun split</td>
<td>n.a.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lexico-semantic properties (e.g. aspect)</td>
<td>n.a.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Semantic properties (e.g. A animacy)</td>
<td>n.a.</td>
<td>✓</td>
<td>optional or obligatory</td>
</tr>
<tr>
<td>Properties of discourse</td>
<td>n.a.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Properties of social distance</td>
<td>n.a.</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.1: Typical contexts of ergative marking

The groups in Table 3.1 are categorized according to whether ergative marking is (a) obligatory, (b) obligatory in specific environments, or (c) optional. But as shown in the column for optional languages, marking can be obligatory in some contexts (dependent on the animacy of the A referent) and optional in others, but the language is still considered to have optional marking (for example, Gooniyandi (McGregor 1992, 1998)). Categorization of the languages into these groups is not absolute - the groups are best thought of as being points on a continuum.
Another language that does not clearly fall into one group or the other is Kaluli (Schieffelin 1985), spoken in Papua New Guinea, which is of interest in this thesis because children’s acquisition of it has been studied. Kaluli has variable word order and variable ergative marking conditioned by pragmatics. Ergative marking is obligatory on A arguments when word order is AOV and both A and O arguments are proper names or kin terms. But the ergative in Kaluli also performs a pragmatic function - when an A referent is in focus it is positioned immediately before the verb and, if non-pronominal, marked with the ergative. So the distinction between categories of split and optional ergative marking is not immediately clear when applied to Kaluli - ergative marking is obligatory for certain word orders, but the word orders are determined by pragmatic criteria. However, I follow Schieffelin (1985) in considering Kaluli to be a split ergative language, because the ergative is obligatory in specific word orders for specific degrees of animacy of A referents.

Optional marking does not imply marking at random - when ergative marking is optional it tends to be applied in certain environments more often than in others. The domains of application shown in Table 3.1 are not intended as diagnostics of each type of ergative language, rather they are provided to summarize the domains in which marking in each of the three types of language tends to appear. The table shows that split ergative languages tend to have a division in marking conditioned by structural and/or semantic properties. Optional ergative languages also tend to have a division in marking conditioned by semantic properties, and additionally by discourse properties.

Optional ergative languages differ as to which discourse factors are most important in attracting the ergative marker, and researchers take different approaches to finding the constraints, but there are major similarities in how marking is ap-
plied. One common property is that ergative marking occurs either very often, or obligatorily, on inanimate A arguments. The optionality of the marking applies mainly to animate A arguments. For three languages (Gooniyandi, Warrwa and Kuuk Thaayorre (McGregor 1992, 1998, 2006; Gaby Forthcoming)), ergative marking pertains to the identity or degree of agentivity of the A referent. In others (for example, Jingulu (Pensalfini 1999) and Umpithamu (Verstraete 2005)), marking is more likely to occur when the A referent is in focus. McGregor (1998, 2006) summarizes the functions of ergative marking in Gooniyandi and Warrwa as marking the grammatical role of Agent, and marking a non-prototypical Agent. His summary is important for the analysis of ergative marking in Light Warlpiri spontaneous speech presented in Chapter 4. In all of the languages listed here, in contrast to Light Warlpiri, ergative marking frequently occurs on S arguments (intransitives) as well as on A arguments. This raises the question of whether the marking should still be called ergative, as it can be argued that it no longer fulfills the grammatical function of ergative, that of marking A arguments differently from S and O arguments. But since the issue does not apply to Light Warlpiri, I will leave that question to others. McGregor (2006) argues that for Gooniyandi the morphemes are rightly considered to be ergative markers.

The optional ergative language which most resembles Light Warlpiri in structure is its geographical neighbor, Gurindji Kriol. Like Light Warlpiri, Gurindji Kriol is a V-N mixed language. Its source languages are Kriol and Gurindji, and ergative case-marking has come into it from Gurindji (McConvell and Meakins 2005). In contrast to the other optional ergative languages, in Gurindji Kriol the strongest predictor of ergative marking on A arguments is not animacy or discourse factors (although these play a role), but word order - postverbal A arguments almost al-
ways have ergative marking (McConvell and Meakins 2005). The relative animacy of A and O argument referents also plays a role - when A and O argument referents are of equal animacy (for example, both human), the A is more likely to be marked.

An analysis of the role of ergative marking in Light Warlpiri spontaneous speech is presented in Chapter 4. In the following section I review literature on variable word order languages, because variable word order is another relevant property of Light Warlpiri.

3.1.2 Word order

3.1.2.1 Variable word order across languages

In the previous section I outlined the roles played by ergative marking in other optional ergative languages to provide background for an analysis of the role of ergative marking in Light Warlpiri in Chapter 4. I will now review relevant literature on word order, in preparation for an analysis of word order in Light Warlpiri, also in Chapter 4. The question about word order in Light Warlpiri stems from my observation that there seem to be two word order strategies operating at the same time, or perhaps, in competition with each other - a variable order system, from Warlpiri and a rigid order system, from AE/Kriol.

Mithun (1987) and Givon (1988) both distinguish between rigid or fixed order languages and flexible or variable order languages and make similar claims about how word order in flexible order languages is determined. Givon’s distinction is based on whether or not the positions of the subject and object are flexible with regard to the verb. Mithun’s distinction is based on the motivation for the order in each type. Rigid order languages, which she calls syntactically ordered languages,
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are those in which word order is syntactically based and for which there are pragmatic re-orderings (for example, English). Variable order languages, which she calls pragmatically ordered languages, are those for which there is no syntactically based word order and all orderings are based on pragmatics.

A language with a syntactically based word order has a single basic order, usually the most statistically frequent, but allows re-ordering of constituents for pragmatic reasons. These re-orderings are functionally marked, in the sense of being unusual and having specific discourse interpretations, and they are often also formally marked by morphological elements or by intonation. A language with a pragmatically based word order has no single, basic order which is more grammatically acceptable than any other. All orders reflect pragmatic considerations, and no order represents a departure from a more basic order. The distinction between syntactically and pragmatically based orders will be important for the analysis of word order in Light Warlpiri in Chapter 4.

There is a cluster of pragmatic properties that determines word order in flexible order languages. The properties pertain to the relative ‘newsworthiness’ of the constituents in the sentence (Mithun 1987) or their predictability and accessibility (Givon 1988). More newsworthy (Mithun 1987), less predictable and less accessible elements (Givon 1988) occur earlier in the sentence.

Mithun (1987) uses three polysynthetic languages to illustrate her claims about pragmatically ordered languages. These are pro-drop or null-anaphora languages in which the A and O argument role NPs need not be overt and referents are represented by agreement forms on the verb. Warlpiri and Light Warlpiri share some structural properties with the languages Mithun examined. Although neither Warlpiri nor Light Warlpiri is polysynthetic, Warlpiri is an agglutinative,
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pro-drop language and core arguments are represented by clitic forms in the auxiliary. In Light Warlpiri, core arguments can be omitted and S and A referents are represented by pronominal forms in the auxiliary cluster.

Mithun (1987) provides criteria for deciding whether a language has a basic word order or is a pragmatically ordered language - (1) statistical frequency, (2) descriptive simplicity, and (3) pragmatic neutrality. The criteria are useful for a discussion of the role word order plays in Light Warlpiri. Statistical frequency refers to how frequently each order occurs. Although all orders may be grammatical, one order might occur more often than others. The criterion of descriptive simplicity asks how useful a particular order is when describing the language. If a clause with one order is representative of the structure of the language, then the order in that clause is a candidate for being the basic order. Also, if departures from a particular order require the use of additional morphological or intonational elements, then perhaps the original order is more basic. The third criterion, pragmatic neutrality, is more difficult to operationalize. It refers to word order used in the most pragmatically neutral context, but Mithun (1987) explains that a neutral context is difficult to define. Discourse-initial sentences have been posited as being the most pragmatically neutral, since there is no previous linguistic context in which to establish information, and they are often declarative, affirmative clauses (Pullum 1977). While Mithun finds that discourse-initial sentences in the languages she studied are often not declaratives, the narratives in my Light Warlpiri data set do often begin with declarative affirmative sentences with lexical NPs, so I examine the word order patterns of these in Section 4.4.

Interplay between word order and case-marking. Many languages have word orders that are flexible to some degree, but are not entirely pragmatically
ordered (Givon 1988). In some of the less flexible languages there are correlations between word order and case-marking. In two such languages mentioned earlier, Samoan and Kaluli, ergative case-marking is applied to A arguments in specific word orders. In Samoan it is applied to A arguments in VA order (Ochs 1985), and in Kaluli it is applied to A arguments when they are immediately before the verb (Schieffelin 1985). Another language which has a less categorical correlation between word order and ergative marking is Gurindji Kriol, also mentioned above. In Gurindji Kriol ergative marking is applied to almost all postverbal A arguments, but it is also optionally applied to preverbal A arguments (McConvell and Meakins 2005). Correlations between word order and case-marking also occur in languages with nominative-accusative case-marking patterns. One of these, Serbo-Croatian, is also of interest to this thesis because it was used in an influential study of children’s comprehension of word order and case-marking patterns (Slobin and Bever 1982) and provides an interesting testing ground for theories of acquisition of word order and case-marking. In Serbo-Croatian O arguments are usually case-marked, but there are some contexts in which they are not. If the O argument is not case-marked and the semantics of the verb and both A and O arguments are such that either NP could be the A, then the first NP is interpreted as the A argument. In the next section I review relevant literature on word order patterns in the source languages of Light Warlpiri. In Chapter 4 I investigate whether there is a correlation between word order and ergative marking in Light Warlpiri.

3.1.2.2 Word order in source languages of LW

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2I use the name Serbo-Croatian because that name was used at the time the literature I report on was published. I understand that today Serbian and Croatian are considered by the speakers to be separate languages.
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**Warlpiri.** Hale (1992), like Mithun (1987), differentiates between a grammatically basic word order, and a word order based on discourse principles, and demonstrates that classic Warlpiri does not have a grammatically basic word order. Hale refers to an “element in focus” (EIF) and an “element out of focus” (EOF), and explains that the two core arguments in a clause are in or out of focus relative to each other and any other nominals in the clause. He provides an example of a question and answer pair to illustrate this:

(93) a. *nyiya ka-o-o karli-mi karnta-ngku*
    What IMPF-3sg-3sg dig-NPST woman-ERG
    What is the woman digging?

b. *yarla ka-o-o karli-mi*
    yam IMPF-3sg-3sg dig-NPST
    She is digging yams.

(Hale 1992, 67)

In (93a) the question word is the focal element, and is before the verb. The A argument, being relatively out of focus, follows the verb. In the answer, (93b), the O argument is also in preverbal position because it is in focus by supplying the content of the answer. The focal element *yarla* ‘yam’, can be considered to be the most newsworthy (cf. Mithun (1987)), and the least accessible or predictable (cf. Givon (1988)).

Hale (1992, 66) posits two ordering principles in Warlpiri discourse, as follows.

1. EIF precedes the predicator (e.g. the V)
2. EOF follows the predicator, or it is elided.

In a study of Warlpiri traditional oral narratives, Swartz (1991) also finds that preverbal position is the position for pragmatically prominent NPs. Neither Hale
nor Swartz discusses word order when it is the verb that is the focal element. Laughren (2002) shows that in Warlpiri, verbs can also occur in sentence initial position for reasons of discourse salience, as in (94).

(94)  

a. wangka-mi ka-rna-jana kurdu-kurdu-ku  
talk-NPST IMPF-1sg-3pl child-child-DAT  
I am talking to the children. (In reply to “What are you doing?”)

b. kurdu-kurdu-ku ka-rna-jana wangka-mi  
child-child-DAT IMPF-1sg-3pl talk-NPST  
I am talking to the children. (In reply to “Who are you talking to?”)

(Laughren 2002 ex 30c, d)

Mushin (2005) discusses word order in a group of Australian languages, of which Warlpiri is one, and finds that the role of initial position in these languages is the position for the most highly pragmatically marked information.

In sum, there is agreement that Warlpiri is a pragmatically ordered language, and the order of constituents is from most newsworthy to least newsworthy (cf. Mithun (1987)) or from least predictable and accessible to more predictable and accessible (cf. Givon (1988)).

**English and Kriol.** English and Kriol are fixed SVO order languages (for Kriol see Hudson (1983); Munro (2004), for English see Pullum (1977); Givon (1988)). Standard varieties of English are fairly resistant to pragmatic re-ordering (Givon 1988), but Kriol and Aboriginal English might be less resistant. In Fitzroy River Kriol an NP is moved to initial position if it is in focus (Hudson 1983). Example (95) shows an O argument in initial position and an A argument following it (represented by a pronoun).

(95) najawan gowena na dei bin dig-im-ap from hol  
another goanna EMPH 3pl PST dig-TR-up from hole
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Another goanna they dug up from its hole. ((Hudson 1983, 46) Example 2-63)

An S or A argument can occur in final position in Kriol to specify additional information about the referent of one of the arguments, or where information about the S or A referent can be added as an afterthought (Hudson 1983, 47). Example (96) is an example of a clause-final S argument.

(96) en dei bin dens-ing orla purrku
    CONJ 3pl PST dance-PROG PL old:man
    And they were dancing all the old men. ((Hudson 1983, 47) Example 2-68)

Note that the S argument in (96) is represented by both a pronoun dei ‘they’ and a lexical NP orla purrku ‘all the old men’, a structure that also occurs in Light Warlpiri.

The word order in some varieties of Aboriginal English has also been shown to be more flexible than that of Standard Australian English. The Handbook of Aboriginal English for the Courts (1998) provides two examples of non-SVO order in Aboriginal English. I use the spelling provided in the examples in the handbook, which is a text for non-linguist readers.

(97) That’s why they bin moving old people.

That’s why the old people moved.

(98) We paint up all the Jakamarra and Jupurrula.

All of us Jakamarras and Jupurrulas get painted up.

In (97) and (98) the S and A arguments are postverbal.

In sum, the basic word order of both English and Kriol is SVO, and non-SVO orders are pragmatically marked, but Kriol and Aboriginal English might allow
non-SVO orders more frequently than standard English varieties do.

3.1.3 Summary

An interesting property of Light Warlpiri with regard to how grammatical relations are indicated is that it has optional ergative marking and variable word order. In this section I reviewed the literature relevant to these phenomena. Ergative marking in optional ergative languages is often conditioned by animacy of the A argument referent and also by pragmatic properties. But in the language that is structurally the most similar to Light Warlpiri, Gurindji Kriol, it correlates with word order patterns. Word order in Warlpiri and in some other flexible order languages is conditioned by pragmatic properties, and in some languages there is a correlation of ergative marking and word order patterns.

In the next section I review literature relevant to children’s acquisition of strategies for indicating grammatical relations, specifically case-marking and word order. In Chapter 4 I analyze ergative case-marking and word order in adults’ and children’s spontaneous Light Warlpiri speech in relation to the literature discussed in this chapter.

3.2 Variable ergative marking and word order in developmental perspective

A fundamental question about any language is, ‘What resources does the language use to indicate grammatical relations?’ Most languages use either word order or morphological marking (in the verbal system, as inflections on NPs, or as separate particles) for this purpose (Dixon 1979). Light Warlpiri is interesting with
regard to this question because each of its source languages uses a different type of resource. In Warlpiri, grammatical relations are consistently indicated by case-marking on NPs and there is no syntactic role for word order. In contrast, English and Kriol both use SVO word order (for Kriol, see Munro (2004), and for English, see Pullum (1977) and Givon (1988)). While there are remnants of case in the English pronominal system (Slobin and Bever 1982), morphological case-marking plays no syntactic role.

When these source languages come together in a new Mixed Language, there are many options for how the new language could indicate grammatical relations. If the new language draws only on the options provided by the source languages, it could, in principle, be positioned at any point along a continuum from using only word order to using only case-marking. The language could also use a combination of both word order and case-marking, and this is what happens in Light Warlpiri. Ergative case-markers, from Warlpiri, occur on a little more than half of all lexical A argument NPs, and the most common word order is SVO, as in English and Kriol. Although the analysis in Chapter 4 will provide more information on the roles of both ergative case-marking and word order in Light Warlpiri, it seems that both systems play roles in indicating grammatical relations in Light Warlpiri. How children learn to use the two mechanisms has long been of interest to the field of language acquisition (Bowerman 1981). In the following sections I review the literature most relevant to children’s acquisition of case-marking and word order.

3.2.1 Case-marking and word order

A useful way of thinking about the different ways languages indicate grammatical relations is provided by the Competition Model (MacWhinney and Bates 1978).
In this model certain properties of a language, such as case-marking, word order or intonation, are seen as cues to sentence interpretation. Different cues may occur in different contexts, so are considered to be in competition with each other to indicate grammatical functions. All languages are thought to be of the same ease or difficulty for child learners overall, but some subsystems of some languages might be more difficult to learn than those of other languages (Slobin 1982), because the cues they use might occur less often or be less easy to recognize. Children learning languages that indicate grammatical relations through fixed word order learn the word order patterns very early (Bowerman 1981; Radford 1990), and children learning languages that indicate grammatical relations through regular morphological patterns master the morphological patterns early (Slobin 1982; Slobin and Bever 1982). But many languages rely on combinations of morphological marking and word order patterns, as in Samoan (Ochs 1985), Kaluli (Schieffelin 1985) and Serbo-Croatian (Slobin 1977, 1982; Slobin and Bever 1982) and these patterns might be more difficult to learn because the learners have to know when to rely on each one.

An influential crosslinguistic study focusing on children's comprehension of word order and/or case-marking showed that the more regular and simple the system of cues, regardless of whether it is a morphological or word order system, the more easily it is learned (Slobin 1982; Slobin and Bever 1982). The study found that when the system for indicating A and O arguments is regular and transparent, such as in Turkish, children perform very accurately on sentence interpretation at an early age. Conversely, if the language has a system which is irregular and combines more than one cue for indicating grammatical relations, such as in Serbo-Croatian, children develop accuracy of interpretation more slowly. In addition,
children learning a language with very regular morphology, such as Turkish, learn it more quickly than children learning a language with regular word order, such as English (Slobin 1977, 1982; Slobin and Bever 1982). Slobin (1982) suggests that children learn a case-marking language faster than a fixed word order language because case-markers are local cues, that is, they are immediately available on particular nouns, regardless of the position of the noun in the clause, and can be interpreted without taking the entire clause into account. In contrast, a learner of a fixed word order language needs to take the whole clause into account to interpret who is acting on whom.

Morphological marking systems usually follow one of two patterns - either a nominative-accusative pattern, in which the A and S arguments are treated the same way and the O argument is treated differently, or an ergative-absolutive pattern, in which the A argument is treated one way and the S and O arguments are treated in another way. Children learn both kinds of morphological patterns equally easily (Pye 1990). All of the morphologically ergative languages for which there is empirical acquisition data are syntactically nominative-accusative. Languages which are morphologically ergative, but syntactically nominative-accusative, present a specific challenge for child learners. In a language that is nominative-accusative in both syntax and morphology, A and S arguments are consistently treated in the same way syntactically and also receive the same morphological marking. O arguments are consistently treated differently from S and A arguments.

\[3\] Goddard (1982) suggests a tripartite core case system of ergative, nominative and accusative cases but such an analysis is not adopted here.

\[4\] The acquisition of languages which show ergative patterns in their syntax (Dixon 1979, 1994) is discussed in Pye (1990) and Van Valin (1992). Since neither Warlpiri nor Light Warlpiri shows syntactic ergative patterning I do not discuss it.
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- both syntactically and morphologically. But in a morphologically ergative language which is syntactically nominative-accusative, although A and S arguments are treated in the same way syntactically, the morphological marking for each is different - the A argument is marked in one way, but the S argument is marked differently. The O argument is treated differently from both S and A arguments syntactically, but receives the same morphological marking as the S argument. Table 3.2 summarizes the problem. The questions are how children learn that A and

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Table 3.2: Treatments of A, S and O arguments in nominative-accusative versus ergative-absolutive patterns

S arguments are treated the same way syntactically, but have different morphological marking, and how they learn that O arguments are treated differently from S and A arguments syntactically, but have the same marking as S. Much of the research on the acquisition of morphologically ergative languages focuses on these questions. Because S and A arguments are treated in the same way syntactically, children might at first erroneously treat them in the same way morphologically, until they learned the distinction between S and A arguments.

In addition to questions about whether children initially apply marking more often than their language requires, there is a question about the choices children make when they first start to apply marking and are not yet marking arguments
in all obligatory contexts. When children first begin to string morphemes or words together they do not include morphological marking in every string, regardless of the pattern of marking the language uses. This raises the question of which environments children apply marking to first. Slobin (1985) suggests that regardless of whether children are learning a nominative-accusative or ergative-absolutive morphological system, they will apply marking to clauses representing the most prototypically transitive events. Drawing on semantic work by Fillmore (1977), the transitivity hierarchy of Hopper and Thompson (1980), and his own earlier work (Slobin 1981), Slobin (1985, 13) posits a ‘manipulative activity scene’, which is a basic causal event in which an agent carries out a physical and perceptible change of state in a patient by means of direct body contact or with an instrument under the agent’s control.

In this view the child’s marking represents marking of a prototypical manipulative activity scene, rather than of individual participants. This allows for the hypothesis to pertain to any system of marking - ergative-absolutive systems, in which the A is marked, nominative-accusative systems in which the O argument is marked, and systems that combine patterns or have differential patterning. Evidence that children overtly mark scenes higher in transitivity before they mark scenes lower in transitivity, regardless of the system of patterning, is gathered from children learning Kaluli, which has ergative-absolutive case-marking, and Russian, which has nominative-accusative case-marking. Slobin (1985) suggests that the children’s early patterns of marking are due to their underlying universal concepts of prototypical scenes and prototypical transitivity. In later work, Slobin (2001) explains that the child’s grammatical concepts are not predetermined, but are learned from the child’s experience, specifically “the interpersonal communicative and cognitive
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processes that ... shape language in its particular expression of content and relation” Slobin (2001, 407). He claims that manipulative activity scenes are salient in the child’s experience, and that children should apply marking to them before applying it to other scenes.

Slobin’s (1985, 2001) manipulative activity scene hypothesis makes two predictions about children learning ergative languages: (1) they will initially apply marking only to the most prototypically transitive clauses, and (2) they will not erroneously extend ergative marking to S (intransitive) arguments. But Pye (1990, 1306) examines acquisition data from several ergative-absolutive and nominative-accusative languages and reports that children do not have an initial bias “to extend subject markers in any particular way based on an underlying semantic relation”, contrary to Slobin’s hypothesis. Although children are very attuned to the contexts in which they should apply marking, they do sometimes wrongly identify a context as requiring or permitting marking, for instance, by applying ergative marking to S arguments (Pye 1990), or absolutive marking to A arguments (Schieffelin 1985; Pye 1990).

3.2.2 Differential case-marking

More difficult learning situations for children are those in which there is differential marking - marking is applied to only some A arguments (in an ergative language), or to only some O arguments (in an accusative language). Many ergative languages which have been studied from the perspective of first language acquisition show split marking (Hindi (Narasimhan In Press), Georgian (Imedadze and Tuite 1992), Basque (Ezeizabarrena and Larranaga 1996), West Greenlandic (Fortescue and Lennert Olsen 1992), Kaluli (Schieffelin 1985)) and one shows optional marking.
(Samoan (Ochs 1985)). In these languages, ergative marking is restricted to a subset of A arguments, so children learning these languages need to learn that while marking is applied to A arguments but not to S arguments, its application is further restricted to only those A arguments in particular environments. Children might at first overextend marking by treating all A arguments in the same way, until they learned the pattern of differential A marking. In optional ergative languages, in which marking is not categorical in its domain of application but variable, it might be more difficult for children to work out the environments in which ergative marking is applied. So children learning these languages could initially over-extend ergative marking in two ways: (1) they could mark S arguments in the same way as A arguments, and/or (2) they could mark all A arguments in the same way.

Learning languages with differential argument marking presents another problem. The cue for indicating arguments is not always present in the input, so it is more difficult for children to learn its function and its domain of application than if the cue occurred in the input regularly and frequently. The different aspects of this kind of learning problem are captured by the Competition Model (MacWhinney and Bates 1978), in which the validity of different cues is compared. Cue validity involves the availability and reliability of a cue. Cue availability is defined as how often the cue is available when the person needs to make the relevant decision. For instance, in some ergative languages the cue of ergative marking is always available on A arguments, but in optional ergative languages the same cue is available less often. Cue reliability is how often the cue leads to the correct conclusion when it is used. If a cue always leads to the right conclusion, then it is highly reliable. For instance, if the ergative marker only occurs on A arguments, then it is completely reliable, because an ergatively-marked NP will always be the
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A argument. But if it also occurs on instrument NPs then it is a less reliable cue to A arguments, because it also occurs on words that are not A arguments. Cue validity is the product of cue availability and cue reliability - the cues highest in validity are those that are most often available and most reliable. Another factor is cue strength, determined by a combination of cue validity and how frequently the cue is needed. A cue that is always available and reliable AND the context in which it is needed occurs frequently is a stronger cue than one that is available and reliable but is needed less frequently. The Competition Model predicts that split and optional marking systems are more difficult for children to learn than systems in which marking occurs more often.

Studies of the acquisition of split ergative languages, in which ergative marking is applied to A arguments in particular environments, show that children begin to use ergative marking early, but not in all obligatory contexts, whereas in Turkish, in which accusative marking is available more regularly, the children apply accusative marking in all obligatory contexts early (Slobin 1982; Slobin and Bever 1982; Aksu-Koc 1992). Although children learning Kaluli (Schieffelin 1985) and K’iche’ Maya (Pye 1990) sometimes overextend ergative marking to S arguments, studies of children learning several other languages report that the children do not wrongly apply ergative marking to S arguments (for example, in Hindi (Narasimhan In Press), Georgian (Imedadze and Tuite 1992), Basque (Ezeizabarrena and Larranaga 1996), or West Greenlandic (Fortescue and Lennert Olsen 1992)). None of these studies reports children’s over-application of ergative marking to A arguments in non-obligatory contexts - to A arguments that would not receive marking in adult speech. An optional ergative language for which there is acquisition data, Samoan (Ochs 1985), has ergative morphology which is applied according to so-
cialinguistic criteria. In intimate, familial contexts ergative case marking is often not applied, but in more formal contexts, such as radio broadcasts, it is required when there is VA word order. It is applied less often in the speech of women than in the speech of men. Samoan children rarely use ergative case-marking until age four, reflecting the minimal amount they hear it in the input, since they are most often in the company of women and other young children in the home. But although young Samoan children use case-marking only minimally, they show ergative patterning in their speech through word order. S and O arguments tend to occur after the verb, and A arguments tend to occur before the verb. All word orders are permissible in adult Samoan, but verb-initial orders are preferred, so the children’s VS and VO orders are very adult-like, whereas AV order occurs in adult speech but is not an especially frequent pattern. Ochs’ (1985) argument is that the patterns of AV versus VS and VO occur very systematically in the young children’s speech, and the AV pattern in particular is not especially adult-like.

Acquisition data for Japanese is also relevant here because it shows optional argument marking. In Japanese one postposition indicates both S and A arguments, and another indicates O arguments. Both markers (for S and A, and for O) are optionally omitted in informal speech in certain structural and pragmatic environments (Miyamoto et al. 1999) and more in speech to young children (Aida 1993). When young children first start to speak they omit the subject marker at a higher rate than do adults (Clancy 1985), but mostly in contexts in which adults find the omission acceptable (Miyamoto et al. 1999). Children gradually increase the frequency and consistency of subject marking until it is similar to that of adults, at approximately age 2;5 (Mayes and Ono 1990). They have more difficulty with the O argument marker, which is omitted in the input more often than the S and
A argument marker is (Slobin 1982; Aksu-Koc 1992). Surprisingly Turkish, described earlier as being easy to learn because its case-marking system is so regular, also has a restriction on the use of O argument marking - accusative case-marking is applied only to definite O arguments (Slobin 1977, 1982). But this does not hinder child learners of Turkish, who learn the complete system almost error free by age 2;0. The reason differential O argument marking in Turkish does not hinder young child learners could be that although the cue is applied only in certain contexts (on definite O arguments), in those contexts it is obligatory, and since the system is so regular overall, the regularity of the system wins out over maximal availability of the cue. That is, the cue is not always available, but it is available regularly in certain contexts, and in those contexts it is always reliable. Regularity of the system overall and reliability of the cue when it is available might mean that the cue is easier to learn than a cue with low availability and irregular forms or one that is in a system in which other cues are also irregular or unreliable.

As mentioned earlier, children learning fixed word order languages learn to produce and comprehend the word order patterns early (Bowerman 1981; Radford 1990). Children learning variable word order languages, in which case-marking plays the major role in indicating grammatical relations, learn even earlier to rely on case-marking rather than on word order, but still learn to use adult-like word order preferences early (Slobin 1982; Slobin and Bever 1982; Aksu-Koc 1992). Children learning languages in which both case-marking and word order indicate grammatical relations take a little longer to learn when to rely on each subsystem.

5Since the word order preferences in variable order languages are based on pragmatics (Mithun 1987; Givon 1988), children need to learn the pragmatic properties associated with each word order. I will not investigate children's acquisition of pragmatics and word order in Light Warlpiri since the patterns in adult Light Warlpiri speech have not yet been fully investigated.
(Slobin 1982; Slobin and Bever 1982). Only Samoan children are reported as systematically producing different word order patterns from those they hear in the input (Ochs 1985).

In all languages, regardless of the system used to indicate arguments, information about arguments is provided by more than one cue. I have mentioned morphological marking and word order as major cues, and that in some languages both of these indicate core arguments. In addition, properties such as verbal agreement, information in verbal auxiliaries or pronominal clitics, animacy of NP referents, lexical semantics and event probability provide information about arguments. By lexical semantics and event probability I mean that the meanings of nouns and verbs in relation to each other and in relation to our experiences of the world provide clues as to what kind of event is probable. For example, if there are two nouns, ‘woman’ and ‘apple’, and a verb ‘eat’ in a clause, the meanings of each of the words, the animacy of the nouns, and knowledge of real-world events of people eating apples assist us to arrive at the conclusion that the A argument is the woman and the O argument is the apple. In the Competition Model these cues can be pitted against each other to determine which are the most informative in a language.

3.2.3 Strategies used in the acquisition of classic Warlpiri

The language learning situation in Lajamanu is interesting with regard to strategies for indicating grammatical relations because the children are initially learning two languages which indicate grammatical relations in ways that show similarities and differences. Both Lajamanu Warlpiri and Light Warlpiri use ergative case-marking to indicate A arguments, but to differing extents - ergative marking
is near-obligatory in Lajamanu Warlpiri (see Chapter 5), and optional in Light Warlpiri. Word order seems to play a role in Light Warlpiri (see Section 4.4), but not in Lajamanu Warlpiri. Bavin and Shopen (1985, 1989) examined the cues children use in sentence interpretation in classic Warlpiri in the community of Yuendumu, 600 kilometers from Lajamanu. Bavin and Shopen’s (1985) study, following the methodology of Slobin and Bever (1982), aimed to determine which characteristics of simple transitive sentences the classic Warlpiri-speaking children pay attention to in developing sentence processing strategies. The method was similar to that of Slobin and Bever (1982), in that the children acted out simple transitive sentences using toys, but there were fewer verbs and fewer trials. The set of verbs represented the three case arrays in classic Warlpiri, ergative-absolutive (using verbs ‘hit’ and ‘throw’), ergative-dative (‘look for’), and absolutive-dative (‘jump on/over’, ‘climb on’). The children’s accuracy of interpretation increased with age, but in contrast to all children in the Slobin and Bever (1982) study of sentence interpretation, the classic Warlpiri-speaking children reached 67% accuracy in choosing A referents for ergative-absolutive sentences only after age 4. They reached this rate of accuracy for the other two case frames only at age 5:5.

In a later study, Bavin and Shopen (1989) examined children’s sentence interpretation with respect to the cues of case-marking, word order, subject animacy and event probability (tested by verb reversibility, such that the action denoted by the verb could be carried out on either of the NPs in the clause). The study consisted of eight tests, each designed to pit two of the selected cues against each other. The method again followed that of earlier studies (Slobin and Bever 1982; Bavin and Shopen 1985), in which children listened to simple reversible transitive sentences and acted them out with toys. This study found that for children under
5, pragmatic and semantic cues in sentence processing, including verb semantics and A animacy, are much stronger than the cues of case-marking and word order. In trying to account for why children learning classic Warlpiri come to rely on case-marking so late (given that word order plays no syntactic role in the language), Bavin and Shopen (1985, 1989) explain that the cue of case-marking is not fully available or reliable, is not regular in form and is difficult to detect, so the child is forced to rely on other cues such as lexical semantics and event probability in sentence interpretation.

Bavin and Shopen (1985, 1989) outline several problems with the availability, reliability and regularity of ergative marking in classic Warlpiri. The first is that core arguments can be omitted, so that the case-marker is not available at all, as in example (99). The second is that if there are two or more words in an NP, often only the final word carries the case-marker, as in example (100).

(99) nya-nyi ka-rna-ngku
    see-NPST IMPF-1sg-2sg
    I am looking at you. (Bavin and Shopen 1989, 187)

(100) jarntu wiri yalumpu-rlu-ø kuyu nga-rnu
    dog   big that-ERG-PST meat eat-PST
    That big dog ate the meat. (Bavin and Shopen 1989, 188)

The problem with regularity of form is that the classic Warlpiri ergative marker has four allomorphs, conditioned by length of word stem and vowel harmony, as listed in (101) and outlined earlier in Section 2.3.

(101) a. wirriya-rlu
    boy-ERG
    3 syllable stem ending in a/u → rlu allomorph

b. malju-ngku
    boy-ERG
Variable ergative marking and word order across languages and in language acquisition

2 syllable stem ending in \(a/u \rightarrow -ngku\) allomorph

c. \texttt{nyalali-rli} \\
girl-ERG

3 syllable stem ending in \(i \rightarrow -rli\) allomorph

d. \texttt{wati-ngki} \\
man-ERG

2 syllable stem ending in \(i \rightarrow -ngki\) allomorph

In my view, although the allomorphy makes case-markers harder to learn because there are four forms mapped onto one function, the markers are not difficult to detect because they do not fuse with other forms.

The problem with reliability that Bavin and Shopen (1985, 1989) give is that the ergative has homonyms, so each form has more than one function. Two of the ergative allomorphs have the same form as bound pronouns. The ergative form \(-rli\), in (102a), is the same as the first person dual inclusive subject bound pronoun, in (102b). The ergative form \(-ngku\), in (103a), is the same as the second person singular subject bound pronoun, in (103b) (examples adapted from Bavin and Shopen (1989, 191)).

\[(102)\]  
  a. \texttt{nyalali-rli-ø-ø-ø nya-ngu} \\
girl-ERG-PST-3sg-3sg see-PST  
  The girl saw it.  
  b. \texttt{nyalali-ø-rli-ø nya-ngu} \\
girl-PST-1dl.incl-3sg see-PST  
  You and I saw the girl.  

\[(103)\]  
  a. \texttt{karnta-ngku-ø-ø-ø nya-ngu} \\
woman-ERG-PST-3sg-3sg see-PST  
  The woman saw it.  
  b. \texttt{karnta-ø-ø-ngku nya-ngu} \\
woman-PST-3sg-2sg see-PST
He/she saw you as a woman.

There are two possible interpretations for each of (102) and (103), shown in the segmentation of the example sentences and in the glosses. Bavin and Shopen (1989) conclude that in Warlpiri the ergative marker is irregular in form, is not always available and is unreliable, so children first use cues of animacy, verb reversibility and event probability to understand sentences.

Types of homonymity that Bavin and Shopen (1989) do not discuss are where the ergative operates as a marker of instrumental case and as an adverbial marker, as explained in Section 2.3.2. In my view the ergative-as-instrument and ergative-as-ablative markers are more likely to confuse children than examples (102) and (103) because the instrument and ablative markers are more common, only occur in transitive clauses, and the instrument marker is like the ergative marker in attaching to NPs. In contrast, the pronominal forms in (102) and (103) occur in intransitive and transitive clauses and can attach to any part of speech. Of relevance to the situation in Lajamanu is that the ergative marker is less available in Lajamanu Warlpiri than in classic Warlpiri because it is not obligatory for speakers under approximately age 60 (see Section 5.3).

There are several cues that additionally provide information about grammatical relations in classic Warlpiri - information in the pronominal clitics in the auxiliary, animacy of NP referents, lexical semantics and event probability. Information in the auxiliary for person and number of A, S and O argument referents is available in every clause, but how useful that information is varies according to how much information is needed to disambiguate referents - sometimes information for

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6The ergative marker in an ablative case function is not documented for classic Warlpiri so was not relevant to Bavin and Shopen (1989).
person and subject might not be sufficient for argument disambiguation. As in all languages, lexical semantics, animacy and event probability information are always available and their reliability depends on how much information is needed for clarification in a particular situation.

The research discussed above leads to several predictions about the early speech of children learning Light Warlpiri. In Light Warlpiri, the strategies of case-marking and word order are in competition to indicate grammatical relations, providing an interesting context for Slobin’s (1982) hypothesis that local marking (i.e. case-marking) is easier to learn than non-local marking (i.e. word order patterns). If this hypothesis holds, children should rely on case-marking earlier and more often than they rely on word order. But ergative marking is not always available in the input, and there is a preference for AVO word order in adult Light Warlpiri speech, so the children might orient to AVO order as a more reliable strategy for indicating grammatical relations than case-marking. The studies on ergative and split ergative languages lead us to expect that children learning Light Warlpiri might not apply ergative marking to A arguments in all obligatory contexts when they first begin to speak, but would rarely overextend marking to S or O arguments, or to those A arguments in contexts which are not marked in adult speech. According to Slobin’s (1985, 2001) hypothesis children should mark more prototypically transitive scenes before those which are lower in transitivity, so if children do initially underextend ergative marking it should be restricted to A arguments in clauses which are the highest in transitivity. If the Light Warlpiri-speaking children do not produce ergative marking when they first begin to speak, they might show ergative patterning in their word order, as do the Samoan children. Alternatively, they might follow the variable word order patterns of the Light Warlpiri and Warlpiri
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input.
In Chapter 3 I reviewed literature relevant to languages with variable word order and optional ergative marking, from the perspectives of language typology and language acquisition. In this chapter I analyze spontaneous Light Warlpiri speech data from adults and children under age 6 to determine the roles played by ergative case-marking and word order in indicating grammatical relations. Before reporting the results of the analyses, I present details of the collection of the spontaneous speech data.
4.1 Spontaneous speech: data collection

To collect the data under analysis, I regularly video-recorded each of five children, who I will call ‘focus’ children, in natural or naturalistic contexts, interacting with family members or friends. The recording sessions were for approximately one hour per week in three blocks, each lasting about ten weeks, within an overall period of 22 months. Each focus child was recorded between 5 and 8 times in each recording period, because not every child was available every week. Table 4.1 presents the data collection dates.

<table>
<thead>
<tr>
<th>Block</th>
<th>Start date</th>
<th>Finish date</th>
<th>No. of weeks</th>
<th>No. of hours recorded</th>
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</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>25 June -</td>
<td>8 Sep 2003</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>Block 2</td>
<td>5 March -</td>
<td>8 May 2004</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Block 3</td>
<td>7 January -</td>
<td>9 April 2005</td>
<td>13</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 4.1: Dates of data collection periods

There are about 10 hours of adult talk and 76 hours of child talk in the data. The recordings usually took place at the children’s homes, either on the verandah or in the yard where the children regularly play. Some of the recordings took place on the verandah of the house I was staying in, or at a public area in the community, because a recording at the child’s home was not possible at the time. Reasons for not recording at the child’s home were usually either that there was too much noise, or there were several people at the house who did not want to be involved in the recording. Adult speech includes speech directed to the focus children and to other adults and older siblings who were present. From about age three the children spent increasing amounts of time playing with other children, without adult carers present, so there is increasingly less adult speech in the recordings.
In this section I provide more details about the ages at which children were recorded and how I distributed their data into several abstract age groups for analysis. The children participating in the study were at different ages at the beginning of the first recording period, so that overall there are data from more than 2 children at each of several points in a 4 year age range. Across all the children whose speech is under analysis there is an age range spanning 1 year and 10 months (1;10) to 6 years (6;0). Each child was assigned a unique identification code consisting of a letter and a number, and the focus children have codes C01 to C06, not including C05. Data from 3 children who are not focus children are included in the analyses (children with identification codes C09, C41 and C53) because they spent a lot of time with the focus children, they were involved in the recordings in more than one data collection period and there is a reasonable amount of data from each of them. Data from children who participated in fewer than two recordings are not included. Table 4.2 shows the age of each child at the beginning and end of the data collection.

The children were at different ages when recording started, and recording took place over 22 months, so there is overlap in the children’s ages as the younger children reach the ages at which the older children were recorded during earlier data collection periods. For example, child C03 was 3;10 at the beginning of the

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1When data collection began I thought that child C05, who was then too young to be speaking, could become a focus child later because he is the younger brother of child C03 and he would naturally be part of the family context. But when he was between 2 and 3 years old it became clear that he had a speech difficulty. He is present in the recordings as a family member but his production is not analyzed.

2Children C01 and C06 were available only for two data collection periods. The number of hours of recordings per child exceeds the total number of hours of recordings because often two or more children were in the same recording session.
Language contact and bilingual acquisition

<table>
<thead>
<tr>
<th>child</th>
<th>C01</th>
<th>C02</th>
<th>C03</th>
<th>C04</th>
<th>C06</th>
<th>C09</th>
<th>C41</th>
<th>C53</th>
</tr>
</thead>
<tbody>
<tr>
<td>age, start</td>
<td>1;10</td>
<td>2;5</td>
<td>3;10</td>
<td>2;4</td>
<td>3;6</td>
<td>4;8</td>
<td>3;2</td>
<td>4;5</td>
</tr>
<tr>
<td>age, end</td>
<td>2;8</td>
<td>4;2</td>
<td>5;8</td>
<td>4;1</td>
<td>5;3</td>
<td>5;0</td>
<td>5;0</td>
<td>6;0</td>
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<tr>
<td>Sex</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
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<td></td>
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</tr>
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</table>

Table 4.2: Ages of children at beginning and end of data collection

first data collection period. By the third data collection period child C02 was also 3;10, so the utterances from these two children at age 3;10 are put into the same abstract ‘age group’ for analysis. Rather than grouping the children by age, I have selected all of the utterances produced by each child at certain ages, and grouped the utterances. I created 5 groups, as shown in Table 4.3, with each group containing utterances spoken by two or more children when they were at a similar age. The table shows how utterances were selected from children at certain ages and grouped together into abstract age groups\(^3\). The number of hours of recordings represented by the utterances in each group is also given. The Light Warlpiri speech of adults who were present in two or more of the recordings is also included in the analyses.

\(^3\)There is overlap in the age range of Group A and B because I have kept the data from each child that was recorded in one recording block in one group. Children C02 and C04 were 2;8 at the end of recording Block 1, but all of their recordings from Block 1 are in one group, Group A, and all of their recordings from Block 2 are in Group B. Child C01 was 2;6 at the beginning of the second recording block. I kept her recordings from Block 1 in Group A, and from Block 2 in Group B.
4.2 Distribution of core arguments and ergative marking

The data were transcribed in CHAT format (MacWhinney 1987), and clauses with intransitive verbs, transitive verbs and utterances with ergatively-marked nominals, even if there was no verb, were extracted using the CLAN program (MacWhinney 1987). Imperative clauses were eliminated from the data set because, with a few exceptions, they do not contain overt A or S arguments. Since the study is about indicating arguments in transitive clauses, all A and O arguments, for example free pronouns and demonstratives from Warlpiri, need to be included. If only lexical NPs were included, some possible hosts of the ergative marker would be omitted, and an accurate picture of argument marking would not be provided. NPs that can host ergative marking in Light Warlpiri include lexical NPs, regardless of source language, plus Warlpiri free pronouns and Warlpiri demonstratives.
I refer to these as ‘host’ arguments.

Table 4.4 presents an overview of the data - the number of intransitive and transitive declarative or question clauses in each abstract age group, and the number and percentage of overt S, A or O arguments in those clauses. The table shows that the number of overt A arguments in the youngest groups, A and B, is small. The children simply did not produce many overt A arguments, even though they produced 80 to 100 transitive clauses. This is because most of their talk is about what they and their interlocutors are doing at the time of the interaction, so they only need to use the pronominal element in the Light Warlpiri auxiliary cluster for reference, rather than an overt NP. The proportion of overt A arguments in the adult data is also small, although adults have a higher percentage of clauses (24%) in which both A and O arguments are overt than do the children. In all of the age groups, the children produce a higher proportion of transitive clauses with only an overt O argument than with overt A arguments.

4.3 Ergative marking

4.3.1 Conditions for ergative marking in adult and child speech

It was clear from the beginning of data collection that ergative marking in Light Warlpiri does not occur on all A arguments. But the contexts in which it is preferred or required are not as easy to see. The first question was whether ergative marking is required in particular grammatical or semantic contexts (i.e. is split ergative marking), or is optional. To see whether it is required in particular grammatical or semantic contexts I coded all transitive clauses for factors which condition split ergative marking in other languages, as outlined in Chapter 3. These
Marking grammatical relations in adult and child Light Warlpiri

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Adult</th>
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<tr>
<td>age</td>
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<td>3:11</td>
<td>4:10</td>
<td>5:7</td>
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### Intransitive clauses

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</thead>
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</tr>
<tr>
<td>No. overt S</td>
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</tr>
<tr>
<td>% overt S</td>
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</tr>
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### Transitive clauses

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>No. transitive clauses</td>
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</tr>
</tbody>
</table>

### NPs overt: A and O

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<tr>
<th>No. clauses</th>
<th>8</th>
<th>5</th>
<th>17</th>
<th>47</th>
<th>15</th>
<th>191</th>
<th>283</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>24</td>
<td></td>
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### NPs overt: A only

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<th>No. clauses</th>
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<th>5</th>
<th>22</th>
<th>77</th>
<th>28</th>
<th>118</th>
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<tbody>
<tr>
<td>% A only overt</td>
<td>13</td>
<td>6</td>
<td>9</td>
<td>13</td>
<td>9</td>
<td>15</td>
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### NPs overt: O argument only

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<th>No. clauses</th>
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<th>53</th>
<th>144</th>
<th>291</th>
<th>148</th>
<th>120</th>
<th>815</th>
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</thead>
<tbody>
<tr>
<td>% O argument only overt</td>
<td>58</td>
<td>63</td>
<td>58</td>
<td>50</td>
<td>46</td>
<td>15</td>
<td></td>
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</tbody>
</table>

Table 4.4: Number of transitive and intransitive clauses with overt S, A or O arguments, Light Warlpiri, adults and children under 6, spontaneous speech

are:

- nouns versus pronouns
- animacy of A and O arguments
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- definiteness of A and O arguments
- temporal and modal properties: +/- action is completed, future action
- other properties contributing to the transitivity of the clause: +/-telic, punctual, O argument affected, individuated (Hopper and Thompson 1980).

Coding for nouns versus pronouns and whether argument referents are animate or inanimate is fairly straightforward. But coding for definiteness is less straightforward because definiteness need not be overtly marked in Light Warlpiri. From examining the context of each utterance my interpretation is that most overt arguments in the data are definite, because both adults and children are talking about things that are in the immediate context, so there are few indefinite arguments to contrast them with. This means that while patterns with regard to definiteness are not apparent in the data set, analysis of a data set with more indefinite arguments might be more informative. Temporal (including aspectual) and modal properties coded for are whether the event denoted was completed at the time of the utterance, as opposed to being in progress or as yet unrealized at the time of the utterance, for example a future event. Transitivity properties of the clause include the components described by Hopper and Thompson (1980) as contributing to the transitivity of an event, for example, whether the event was punctual or telic, and the degree of affectedness of the O referent. After coding it was clear that ergative marking or its absence is not categorical for any of these contexts, rather, marking is applied to some extent in all of the above contexts. The first conclusion, then, is that ergative marking in adult Light Warlpiri speech is not applied according to a categorical split between grammatical or semantic properties but is optionally applied in a range of contexts. For this reason I classify Light Warlpiri as an optional ergative language.
To examine the conditions of the optionality a small set of possible explanatory factors were chosen for statistical analysis. In choosing these I took into account that the primary role of case-marking is considered to be argument disambiguation (Dixon 1979, 1994), and in some other optional ergative languages the ergative marks non-prototypical A arguments (McGregor 1992, 1998, 2006). It seemed likely that ergative marking in Light Warlpiri could be used when disambiguation of arguments was most necessary. The need for the ergative for disambiguation of arguments is consistent with the use of the ergative on non-prototypical A arguments - when the A is not a prototypical A it might be difficult to distinguish it from an O argument. So I coded the transitive clauses in Light Warlpiri for properties that would mean explicit disambiguation of A arguments was necessary. If ergative marking is used when disambiguation is most needed, then it would be used most often in the clauses in which the identification of A referents is most difficult. I also took into account that word order plays a strong role in the neighboring mixed language Gurindji Kriol (McConvell and Meakins 2005), which has some properties that resemble Light Warlpiri, so I also coded for word order (pre- or postverbal A). In sum, the following properties were coded for and entered into the analysis as independent variables:

- +/- Preverbal A
- +/- Animate A
- +/- Animate O argument
- +/- Overt O argument
- Age group of speaker (age 2;3, 3;1, 3;11, 4;10, 5;7, adult).
The dependent variable is ergative marking and ‘speaker’ is a random effect. The spontaneous speech data from children and adults are in the same analysis for two reasons: (1) conducting a single analysis lowers the probability of finding a significant result that is really due to chance, and (2) if the adults and children show different patterns in using ergative marking the differences will be detected. Only spontaneous data, not elicited production data, are included in the analysis, because spontaneous data are more comparable with each other across age groups than are different genre types. During the analysis it became clear that there are no significant differences between age groups of children for any of the explanatory factors, and the youngest age groups have few overt A arguments, so the data in all of the children’s groups were put into one new children’s group. There were then two groups, one with data from adults, and one with data from children. Table 4.5 shows the number of A arguments with ergative marking in adults’ and children’s speech for each contributing factor. The factor of O animacy refers to O referents whether or not the O argument is overt in the clause, because even if an O argument is not overt, it is being referred to in a transitive clause, and there might still be ambiguity over which argument role it has.

The table has 4 parts, one for each contributing factor, independent of each other factor. A multilevel logistic regression analysis with a binomial link function (see Appendix C for why this analysis was chosen) shows that ergative marking is used more often when A arguments are postverbal \((p < 0.001)\) or inanimate \((p = 0.002)\), and when O arguments are animate \((p = 0.02)\) (see Appendix D for a table of the statistical output). Whether or not an O argument is overt does not make a difference to the occurrence of ergative marking. There is no significant

\[\text{4I will show in Chapter 6, when analyzing a different combination of data sets, that animacy is not as strong a predictor of ergative marking as word order is.}\]
Table 4.5: % Ergative marking in transitive clauses per independent variable, Light Warlpiri adults and children under 6, spontaneous speech.

difference between the adult group and the children’s group for any of the factors, meaning that children and adults do not differ very much from each other in the factors that condition their application of ergative marking. There is a high value for the standard deviation (0.49), meaning that there is a lot of variation within each group as to when ergative marking is applied, but the findings show that despite the variation there is also considerable consistency.

The following examples illustrate each factor that makes a difference to the occurrence of ergative marking in Light Warlpiri. For each factor I provide one example from adult speech and one from child speech.
Postverbal A

(104)  i-m  bring-im  *naliJA  Nungarrayi-ng  
   3sg-NFUT bring-TR tea  subsect-ERG  
Nungarrayi is bringing tea. (Adult speech: A22:C01.6.1)

(105)  a-na  ged-im andaweya  sta-kurL  ngaju-ng  
   3sg-WANT get-TR underwear star-COM 1sg-ERG  
I want to get underwear with a star. (Child speech: C41:C03.12)

In examples (104) and (105), lexical semantics and the different animacy of the two arguments provide enough information for disambiguation of A and O arguments. But when the A is postverbal, as here, it has a higher likelihood of being marked than when it is preverbal.

Inanimate A.

(106)  kala  nyampu  car-ng  i-m  bamp-im  watiyi-rla  
   DISJ DEM  car-ERG 3sg-NFUT hit-TR  tree-LOC  
But here the car hit the tree. (Adult speech: A31:C04.2.2)

(107)  Jim  i-m  pantirn-im  watiyi-ng  
   name 3sg-NFUT pierce-TR thorn-ERG  
The thorn pierced Jim. (Child speech: C03:C03.6.1)

There are relatively few inanimate A arguments in the data, but almost all of them have ergative case-marking. One might ask whether the inanimate NPs could be more accurately construed as instruments. But since there is no other agent in the context, and the referent of the NP is not being controlled by another A referent, I take the view that the referent is an inanimate A and not an instrument.

Not all inanimate A arguments are case-marked. One reason that some are not case-marked is phonotactic. If the final syllable of the A ends with a velar nasal,
for example \(-ing\) in \textit{lightning}, speakers are unlikely to add another velar nasal to the end of the word.

(108) \begin{verbatim}
  an rdaka i-m shut-im laitning rdaka
  CONJ hand 3sg-NFUT shoot-TR lightning hand

  And lightning struck him on the hand, on the hand.
\end{verbatim}

The strategy of not duplicating a morpheme also occurs in the pronominal clitic system of classic Warlpiri (Bavin and Shopen 1987, 164). Bavin and Shopen (1987, 164) explain that “the non-plural second person subject clitic is \(n\) preceding \textit{palangu} or \textit{pala}; it is \textit{npa} elsewhere. It appears that the allomorph \(n\) is used to prevent a repetition of the syllable \(pa\) in the clitic sequence.” The phenomenon has been documented for other languages as the “repeated morph constraint” (Menn and MacWhinney 1984). I have noticed that in older speakers’ Warlpiri, when the morpheme \(-lku\) precedes the imperfective auxiliary base \(ka\), the two morphemes are typically combined so that \('-lku ka'\) is pronounced as \('-lka\}'. The same strategy of simplification seems to be in process when the ergative marker would occur on a subject ending in \(-ing\). Rather than produce a word with final syllables \('-ing-i-ng'\), the ergative \(-ng\) and the epenthetic \(-i-\) that would precede it are omitted.

**Animate O.** O referents were coded for animacy regardless of whether they are overt in the clause. (Recall that the property of +/- overt O argument was included in the analysis but did not contribute to the occurrence of ergative marking.) An animate O argument is not a prototypical O and can be said to be more ‘subject-like’, increasing the potential for argument ambiguity. If an O argument is not overt in a clause it is assumed by the speaker to be identifiable from the context or preceding discourse (Givon 1988), so there is still the potential for ambiguity with the A argument. Marking an A morphologically when an O is animate eliminates
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the potential ambiguity.

(109)  
yeh i-m kis-im Melana na Libiya-nq
  yes 3sg-NFUT kiss-TR name DIS name-ERG
  Yes, Libiya is kissing Melana now.

(110)  
i-rra bait yu Jili nama-ng
  3sg-FUT bite 2sg name ant-ERG
  The ant might bite you Jili. (Child speech: C04:C03.6.4)

In example (109) the speaker is playing a puzzle game, asking her two-year-old child to find pictures depicting different events. The O argument is animate and overt, and the A argument, Libiya, is ergatively-marked. In (110) a four-year-old child warns an adult that there are ants in the grass she, the adult, is sitting on. Note the lack of a transitive suffix on the verb in (110), because it is a warning, as discussed earlier on page 36.

In some optional ergative languages (see Section 3.1.1) the ergative marks A arguments when the referents are unexpected, in focus or in contrast with other referents (Gaby Forthcoming; Verstraete 2005; McGregor 1992, 1998, 2006; Pensalfini 1999). These pragmatic properties are difficult to operationalize and code for objectively and systematically so they are not included in the quantitative analysis. Nevertheless I think that pragmatic properties, especially that of contrastive referents, do play a role in ergative marking in adult and child speech so I present examples here.

Preverbal, animate A arguments are often marked when the referent is being emphasized or contrasted with other discourse referents. A contrast between referents can be made explicitly in the discourse or implicitly in the context (Allen In press). Examples (111) and (112) show explicit contrasts between referents, and examples (113) and (114) show implicit contrasts.
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(111) a. a gib-im fo-r-im nyan-nyang ngula
1sg give-TR for-EPEN-3sg 3sg-POSS ANAPH
I gave it to him, that one’s his.

b. nyan-nyang Jangala
3sg-POSS subsect
It’s his, Jangala’s.

c. Mapin-i-ng mayi i-m breik-im brom im
name-epen-ERG INTERR 3sg-NFUT break-TR from 3sg
nyan-nyangu-ju
3sg-POSS-TOP
Did Mapin break it on him, the one that is his [Jangala’s]? (Adult
speech: A21:C03.14)

In (111), an adult is trying to stop two children from arguing about a toy. She
explains in (111a and b) that she gave the toy to Jangala, then asks, in (111c), if
another child, Mapin, broke Jangala’s toy. To emphasize the contrast between the
two children she applies ergative marking to the A argument in (111c).

(112) a. na nat kuja yu du-ing it faní-wan
DIS NEG thus 2sg do-PROG 3sg funny-one
No, not like that, you’re doing it badly.

b. ngaju-ng a du-im nit-wan
1sg-ERG 1sg do-TR neat-wan
I’m doing it neatly. (Child speech: C41:C03.11)

Example (112) shows two consecutive utterances from a four-year-old child, who
is playing with toys with another child. In (112a) Child C41 tells another child
that she, the other child, is doing something badly, and in (112b) she contrasts
her own way of doing it, which is the neater way. To emphasize the contrast she
applies ergative marking to the reference to herself, ngaju-ng ‘I-ERG’.

Most of the contrasts in the data are implicit, as in example (113).
In (113), three consecutive clauses from one speaker, an adult is calling a group of children to come and eat some cake they left on the verandah when they went inside the house. She calls them in (a), and in (b) says that the dog might eat the cake. In (c) she juxtaposes another clause. In Light Warlpiri juxtaposition of clauses implicitly indicates cohesion and a lexical cohesive device such as ‘because’ or ‘so’ is not needed. The third clause can be read as ‘because you aren’t coming’, or ‘if you aren’t coming’. The contrast in these clauses is between the dog, in (b), and the children in both (a) and (c). If the children do not come and eat the cake, the dog might get it. The clauses in (a) and (c) are intransitive, so no case-marking is applied, even though the subject referents are part of the contrastive context. Note that, in (b), the combination of future -rra in the auxiliary cluster and lack of transitive -im on the verb indicate a warning or threat, as described for Light Warlpiri on page 36.

(114) Mina wi plei geim nyampa-k
    name we play game DEM-DAT

    Mina we’ll play a game with these.
Example (114) shows three consecutive utterances from Child C41, in which she is suggesting to Child C03 that they should play a game with a set of cards. In (114a) she suggests that they play a game and, not getting an affirmative response from C03, explains what she’ll do in (114b). Then, still without a confirming response from C03, in (114c) she makes her role in the game preparation clear, in contrast to C03, who is not taking an active role in the preparation.

Another context of systematic ergative marking conditioned by pragmatic factors is when an utterance consists of only an A argument, perhaps with a question word. A typical situation is when participants share a lot of contextual knowledge and only the A referent is being questioned, or constitutes the answer to a question. For instance, when children are part of the discourse context and one of them is crying, it is typical for an adult present to ask simply, ‘ngana-ng?’ ‘who-ERG?’ The implication is that the child is crying because of the actions of another child, and the question means, ‘Who caused this child to cry?’ The context is understood by everyone involved and a verbal clause is not needed. In this context the question word, ‘who?’, is always case-marked. Similarly, the adult might then suggest someone who might have caused the child to cry and say, for example, ‘Nakamarra-ng?’ ‘subsect-ERG’, meaning ‘Did Nakamarra cause the child to cry?’ The name in this context is always case-marked.
The animacy of A referents plays a major role in other optional ergative languages (Gaby Forthcoming; Verstraete 2005; McGregor 1992, 1998, 2006; Pensalfini 1999). As we have seen, in Light Warlpiri, the animacy of the A argument, the animacy of the O argument and word order all play roles in ergative marking in Light Warlpiri. This combination of factors is explained by the notion of strategies in competition to indicate grammatical functions and the notion of a prototypical transitive construction. The source languages of Light Warlpiri each use one main cue to indicate core arguments - Warlpiri uses case-marking and AE/Kriol uses word order. In addition, as in all languages, the cue of the animacy of referents is available in addition to language-specific strategies. In Light Warlpiri, word order (specifically, AV order) and ergative marking are in competition to indicate A arguments, but there is a correlation between them - preverbal A arguments are less likely to be ergatively-marked (and conversely, postverbal A arguments are more likely to be ergatively-marked). This means that the two strategies of word order and ergative marking are moving towards a complementary distribution. AVO order is the most frequent order, and when the order is altered, ergative marking comes into play. The cues of animacy are also in competition with ergative marking, and show a correlation - there is more likely to be ergative marking when A arguments are inanimate and O arguments are animate. The correlations of more marking when A arguments are postverbal and inanimate, and O arguments are animate, suggest that marking is more likely to be applied to a non-prototypically transitive construction. Comrie (1989) explains that the most natural kind of transitive construction is one where the A is high in animacy and definiteness and O argument is lower in animacy and definiteness. Constructions which deviate from this kind of information flow, for example an A argument lower in animacy or
definiteness, or an O argument higher in animacy or definiteness, can be marked formally. If AVO word order is the unmarked order for Light Warlpiri then a departure from this order would be a functionally marked construction. The context of ergative marking in Light Warlpiri can be summarized as “A arguments in non-prototypical transitive constructions are more likely to have ergative marking than A arguments in prototypical constructions”. This summary is very similar to McGregor’s (1998) summary of ergative marking in Gooniyandi, according to which non-prototypical agents are more likely to be marked, but it invokes properties of the construction as a whole rather than of the A argument only.

In the next Section I present the results of the analysis of children’s early uses of ergative marking.

4.3.2 Young children’s use of ergative marking

I now turn to ergative marking in the young Lajamanu children’s speech. Table 4.6 provides the number of A arguments in transitive clauses in each abstract age group, whether or not there is an overt O, and the percentage of A arguments that is ergatively-marked.

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>2:3</td>
<td>3:1</td>
<td>3:11</td>
<td>4:10</td>
<td>5:7</td>
<td>20</td>
</tr>
<tr>
<td>No. overt A</td>
<td>21</td>
<td>10</td>
<td>55</td>
<td>146</td>
<td>48</td>
<td>309</td>
</tr>
<tr>
<td>No. erg on A</td>
<td>8</td>
<td>1</td>
<td>31</td>
<td>87</td>
<td>22</td>
<td>187</td>
</tr>
<tr>
<td>% erg on A</td>
<td>38</td>
<td>10</td>
<td>56</td>
<td>60</td>
<td>46</td>
<td>61</td>
</tr>
</tbody>
</table>

Table 4.6: Light Warlpiri transitive clauses: number of overt A arguments and percentage of ergative marking, adults and children under 6, spontaneous speech
The table shows that children do not mark all A arguments, which is consistent with learning a language with optional ergative marking. The literature on acquisition of ergative and split ergative languages has examined the question of whether children initially overextend ergative marking to S or O arguments or to A arguments that would not be marked in adult speech. In the main, ergative marking in my data set is restricted to A arguments, but there are two examples of marking on S arguments by a nine-year-old (which I discuss later), and an example of marking on an O argument by a four-year-old, given in example (115). I will discuss the example of O argument marking first.

(115) der toy-wati-ng i-m get-ing it toy-wat there toy-PL-ERG 3sg-NFUT get-PROG it toy-PL
    There toys, she’s getting toys. (C08:C01.7.1a)

The context of (115) is that I was recording a group of children who were playing in their yard. Child C08 saw me getting some toys out of my car for them to play with, and excitedly called out to the other children that I was getting toys. While this example of O argument marking could be an error, it could also be the beginnings of a change in the function of the ergative marker. I suggest this because ergative marking on an O argument occurs once in adult speech in my data set, in (116).

(116) yeh Mapan hit yu Melana-ng mayi
    yes name  hit 2sg name-ERG INTERR
    Yeh, Mapan hit you Melana, did he? (A22:C01.1.6)

In (116), Melana is aged about 2, and her mother is comforting her because an older child hit her. The first part of this utterance is more English-like than Light Warlpiri-like, because there is no transitive marker on the verb, and the Light
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Warlpiri auxiliary is not used. A possible alternative explanation for the use of the ergative morpheme on the O argument in (116) is that the -ng is not an ergative marker but a locative marker without a final vowel. Recall that on page 56 we saw that locative case-marking is used in Light Warlpiri to talk about affected body parts. Arguments against the locative explanation are that in (116) the O argument is not a body part, and I have not noticed any other locatives in the data that do not have a final vowel. There are too few examples to know whether (115) and (116) represent performance errors or the beginnings of a change in the function of the ergative marker. But a change in function should not be ruled out, because the two examples share a pragmatic property - emphasis of the O argument. I suggest that in (116) the ergative highlights that it is Melana who was hit, and in (115) it highlights that the O argument referent is something exciting. Example (115) represents a kind of overextension of marking for which there was no empirical evidence when Pye (1990) wrote the paper I discussed in Section 3.2 - extending marking from A to O arguments. The extension in the Light Warlpiri data set lends support to Pye’s (1990) claim that children do not tend to overextend in any particular direction based on an underlying semantic representation - it seems that all kinds of overextension are possible.

There are some occurrences of marking which are difficult to classify, for example (117), which is from a four-year-old child.

(117) a. c41: na det men yangka
c41: dis that man you:know
Now that man, you know.

b. c03: na a-rра tok na tu leit na
c03: NEG 1sg-FUT talk dis too late dis
No, I’ll talk, now, too late now.
c. C41: det *jarntu-piya-ng*
   C41: that dog-like-ERG
   That one who is like a dog.

d. C41: det *men ana bidiyo-nga i-m wok kuja-nga na*
   C41: that man DIS video-LOC 3sg-NFUT walk thus-LOC DIS
   That man, you know, on the video, walks like this now,

e. *meik-im nyurrpala-piya*
   make-TR urine-like
   like he’s going to urinate. (C41:C03.17)

In (117a) C41 introduces a referent into the discourse, but C03 does not take up
the line of conversation in (117b). C41 tries again in (117c), marking the NP ‘the
one who is like a dog’ with the ergative morpheme. The marking here is difficult to
classify because there is no verb in the utterance, and the NP does not represent
an answer to a question. The next utterance from C41, (117d), is an intransitive
clause, but is followed by a transitive clause in (117e). It is possible that C41 had
planned to follow the NP in (117c) with a transitive clause, but she began again
and re-framed her utterance. Alternatively, the use of ergative marking in this
example might simply emphasize the NP referent that C41 wants to talk about
and bring it to the attention of her interlocutor. Such an analysis is consistent
with the analysis of ergative marking on O arguments above - that the function
of the ergative in Light Warlpiri might be changing to that of emphasizing an
NP. The use of an ergative marker to indicate prominence of an A argument is
found in some other optional ergative languages (Gaby Forthcoming; Verstraete

5There are some examples in the data set in which it is difficult to hear whether an NP has
ergative marking or not - there is often a lot of background noise in the spontaneous recordings
and a word-final velar nasal can be difficult to detect in a noisy environment. I only report
examples in which I can hear the velar nasal clearly.
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2005; McGregor 1992, 1998, 2006), so a prominence-marking function is not new. But its use for this purpose on O arguments has not been found in other optional ergative languages.

The examples of ergative marking on S arguments are not from spontaneous speech data, which are under analysis in this section, but from elicited production data. I report them here because they are relevant to the question of overextensions of marking. Examples (118a) and (118b) are consecutive utterances from a nine-year-old who is telling a story based on picture stimuli.

(118) a. an nyampu kanta-ng i-m fal-dan fo-r-im
   CONJ DEM bush:coconut-ERG 3sg-NFUT fall-down DAT-EPEN-3sg karnta
   woman
   And here the bush coconut fell down on the woman.

b. nyampu dis kanta-ng i-m fal-dan fo-r-im
   DEM this bush:coconut-ERG 3sg-NFUT fall-down DAT-EPEN-3sg karnta
   woman
   Here this bush coconut fell down on the woman. (C32:ERGstoryLC32al)

The marking on S arguments here is interesting because the clauses have something in common with transitive clauses - an action occurred which had an effect on an entity. In the story being told, a bush coconut fell from a tree and hit a woman on the head, knocking her over and resulting in her having a lump on her head. So each clause in (118) encodes two parts of an event - the bush coconut falls, and it hits someone. The child used an intransitive verb, ‘fall’, to encode the first part of the event. She encoded the second part of the event (hitting the woman) using dative case, fo-r-im, ‘to her’, with the dative realized in these clauses as a Kriol preposition, fo. So although the ergative marker occurs on S arguments in these examples, it is in clauses that have two participants and in which the S argument
causes an effect on another entity. Another relevant property of the S argument in this case is that it is inanimate. As I showed earlier in this Chapter, inanimate A arguments in Light Warlpiri spontaneous speech are more likely to be ergatively-marked than animate A arguments. The child could be confusing an inanimate S with an inanimate A argument. As with the O argument marking, it is difficult to know whether the examples represent an error or the beginnings of change in the function of the ergative marker.

I now turn to marking on A arguments by the youngest children. From age 3;11 the proportion of ergative marking on A arguments is fairly similar to that in adult speech, but in the youngest age groups (ages 2;3 and 3;1) smaller proportions of A arguments are marked. According to Slobin’s (1985, 2001) hypothesis, the A arguments that are marked by the youngest children would be expected to be those whose referents are agents in manipulative activity scenes. Details of the marking of A referents by the two youngest groups are presented in Table 4.7

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6Details of Groups A, B and C are presented in B in Appendix D.
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<table>
<thead>
<tr>
<th>Child</th>
<th>Verb</th>
<th>A animate?</th>
<th>O animate?</th>
<th>Manipulative scene?</th>
<th>With ergative marking?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A, age of group: 2;3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C04</td>
<td>fill up</td>
<td>✓</td>
<td>x</td>
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<td>✓</td>
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<td></td>
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<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>break</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
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<td>C01</td>
<td>hit</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(meaning urinate)</td>
<td></td>
<td></td>
<td></td>
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<td>pierce</td>
<td>x</td>
<td>✓</td>
<td>x</td>
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</tr>
<tr>
<td></td>
<td>hit (x2)</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>can’t do</td>
<td>✓</td>
<td>?</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>C02</td>
<td>like</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Group B, age of group: 3;1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C01</td>
<td>get (x2)</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>C02</td>
<td>get</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>C04</td>
<td>take</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>C06</td>
<td>throw</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>C41</td>
<td>get</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(meaning have)</td>
<td></td>
<td></td>
<td></td>
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<td>throw</td>
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</tr>
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<td>win</td>
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<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>can’t give</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Table 4.7: Case-marking on children’s first overt A arguments, with reference to Slobin’s (1985, 2001) manipulative activity scenes
The table presents the verbs produced by each child in groups A (mean age 2;3) and B (mean age 3;1), the animacy of the A and O argument referents (✓ = yes, x = no), the type of scene represented (manipulative or not), and whether or not the A arguments are ergatively-marked. The verbs and the animacy of the A and O argument referents contribute to how manipulative the scene is. A scene is considered to be manipulative if the verb is highly transitive, and an animate A referent deliberately causes an effect on an inanimate O referent. In group A (mean age 2;3), only four A arguments are marked, and for three of these scenes the marked A arguments are manipulative - the verb is highly transitive, the A referents are animate and the O referents are inanimate. The ergatively-marked A arguments in Group A are from two children. Child C01 applied ergative marking to A referents in two events; one in which one child hit another, as in (119) and one in which she pressed a button on a toy phone and it started to ring, as in (120).

(119) Mapan-\textit{i-ng i-m} hit-im Pada
name-EPEN-ERG 3sg-NFUT hit-TR name
Mapan hit Pada. (C01:C01.1.6)

(120) Mana-\textit{ng} pres-TR
name-ERG press-TR
Mana pressed it. (C01:C01.6.4)

The scene of pressing is a manipulative activity scene. But the scene of hitting, while highly transitive, does not exactly fit Slobin's manipulative activity scene because the affected entity is animate, and not under the control of the hitter. The same child did not mark other highly manipulative scenes, in which there are events of hitting, taking and poking.

Child C04 marked six of the seven overt A arguments she produced. Of the
utterances with marked A arguments, five are variations on telling me that another child is throwing toys around the room, as in (121), and one denotes a scene of filling up a container with water, as in (122). All of these utterances represent highly manipulative scenes.

(121) *Jupurru* ng-im jak-im
subsect-ERG 3sg-NFUT throw-TR
Jakamarra is throwing them around. (C04:C03.C04.5.1.2)

(122) a-l fil-im-ap *nyampu-nga ngaju-ng*
1sg-FUT fill-TR-up DEM-LOC ngaju-ERG
I’ll fill this one up. (C04:C03.6.3)

In the next age group (mean age 3;1) only one child used ergative marking and she used it only once, saying that she has a knife, but using the verb “got”, as in example (123).

(123) a got junma ngaju-ng
1sg get:PST knife 1sg-ERG
I’ve got a knife, me. (C41:C03.C04.1.4)

Example (123) is difficult to categorize. Although ‘having’ is not a prototypical manipulative activity scene, the object, the knife, is under the control of the child. But to be conservative I place the scene denoted by (123) in the non-manipulative group, as a scene of ‘having’. There are many unmarked A arguments whose referents are participants in manipulative scenes. In group B (mean age 3;1), only one A is marked, and its referent is a participant in a scene of having, mentioned earlier as (123), and judged to be a non-manipulative scene. In both groups, more manipulative activity scenes are unmarked than marked, but most non-manipulative scenes are at first not marked. In Group C (mean age 3;11) (see Appendix B), there are 58 overt A arguments and 33 of them are marked (52%). Of the 33 that
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are marked, 14 are manipulative activity scenes, including events of hitting, biting, poking, giving and breaking. 19 scenes are not manipulative, and are mostly events of looking, holding and having. As the children grow older they mark A arguments in highly manipulative scenes and also mark an increasing number of A arguments in non-manipulative scenes.

The distribution of ergative marking in groups A and B is inconclusive with regard to Slobin’s (1985, 2001) hypothesis, because so few A arguments are marked at all. Seven of ten A arguments that are marked represent referents in manipulative activity scenes, but five of these are repetitions from one child (C04, about a throwing event). Something that might be relevant to this child’s use of ergative marking is that her mother uses ergative marking more often than some other Light Warlpiri speakers - her mother is Adult A31, who applies ergative marking to 93% of A arguments (as shown in Table 2.11 on page 50). Child C04 might use ergative marking often because she hears it frequently.

The other two A arguments that are marked in Groups A and B do not represent referents in manipulative activity scenes, although one of those scenes is highly transitive. Although most non-manipulative scenes are not marked, most manipulative scenes are similarly not marked. A data set with a higher number of overt A arguments is needed for a conclusive finding.

In sum, in the main children restrict marking to the contexts in which it occurs in adult speech - to A arguments. When they first start to produce A arguments they do not mark them all. There are too few A arguments in the recorded speech of the youngest children to determine whether they target manipulative activity scenes for marking. Although children mostly restrict marking to A arguments, there are some examples of overextension, from children aged 4 and 9, and the
extensions are to both S and O arguments. The same types of overextension also
occur in adult speech. It is difficult to know whether they are performance errors
or the first signs of change in the function of the ergative marker. Since they are
heard in the speech of older children and adults, it is possible that they represent
the beginnings of change, rather than errors.

4.3.3 Summary

Ergative marking in spontaneous Light Warlpiri is conditioned by word order
(postverbal A arguments are more likely to be marked than preverbal A argu-
ments), by the animacy of A referents (inanimate A arguments are more likely
to be marked than animate A arguments), and by the animacy of O referents (A
arguments in clauses with animate O referents are more likely to be marked than
A arguments in clauses with inanimate O referents). These conditions for ergative
marking are shown in both adult and child speech.

When children first start to speak they do not mark all A arguments, but the
data is inconclusive as to whether they show underextension of marking according
to a semantic bias. There are some overextensions, to both S and O arguments, and
these occur in both adult and child speech, although rarely. The overextensions
show that children do not always restrict marking only to A arguments, and that
marking can occur on any type of argument.
4.4 Word order

4.4.1 Word order variability in adult and child speech

In the previous sections I conducted analyses to determine the factors that condition ergative marking in Light Warlpiri and children’s early use of ergative marking. I now analyze the same data to see which factors condition word order patterns and to see what children’s early word order patterns are.

In transitive clauses with two overt argument NPs the most frequent order in Light Warlpiri is AVO. Table 4.8 shows the relative distributions of word orders in transitive clauses for each age group. Regardless of the number of overt core arguments, the most frequent orders are AV and VO. Groups B and C (mean ages 3;1 and 3;11) have fewer preverbal A arguments than the other groups, but by group D (mean age 4;10) the percentage of preverbal A arguments produced by the children resembles that of the adults. It could be that at age 3;1 the children realize that A arguments can be moved around but are not sure of the contexts in which to move them, but by age 4;10 are more confident about how to position them. At age 4;10 there are still fewer preverbal A arguments when both A and O arguments are overt than for the older groups. This could be because when there is an overt O the A arguments are postverbal and case-marked (although the presence of an overt O was not found to be statistically significant in the analysis of ergative marking; see Section 4.3.1). Each group has a similar percentage of postverbal O, and it is clear that most O arguments are postverbal.

Word order in free word order languages is conditioned by pragmatic properties (Mithun 1987; Givon 1988), but, as explained in the section about erga-
Marking grammatical relations in adult and child Light Warlpiri

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>2:3</td>
<td>3:1</td>
<td>3:11</td>
<td>4:10</td>
<td>5:7</td>
<td>20</td>
</tr>
</tbody>
</table>

### Intransitive clauses

| No. overt NPs | 24 | 15 | 33 | 93 | 2 | 167 | 334 |
| % Preverbal S | 88 | 80 | 58 | 74 | 100 |

### Transitive clauses

| No. transitive clauses | 101 | 84 | 249 | 581 | 321 | 792 | 2128 |

#### NPs overt: A and O

| No. clauses | 8 | 5 | 17 | 47 | 15 | 191 | 283 |
| % Preverbal A | 100 | 20 | 55 | 57 | 80 | 60 |

#### NPs overt: A only

| No. clauses | 13 | 5 | 38 | 99 | 33 | 118 | 263 |
| % Preverbal A | 75 | 40 | 32 | 71 | 67 | 70 |

#### NPs overt: O argument only

| No. clauses | 59 | 53 | 144 | 291 | 148 | 120 | 815 |
| % POSTverbal O | 80 | 80 | 76 | 74 | 80 | 72 |

#### No NPs overt

| No. clauses | 21 | 21 | 66 | 166 | 130 | 363 | 767 |

Table 4.8: Distributions of A and O arguments in transitive clauses, Light Warlpiri, adults and children under 6, spontaneous speech

Objective marking, these are difficult to operationalize and code for objectively. But one pragmatic property included in Mithun’s ‘most newsworthy’ category, that of ‘newness’, can be operationalized in a way that is objective, so ‘newness’ is coded for and included in a statistical analysis as an additional independent variable. An A referent is coded as ‘new’ if it has not been mentioned or referred to in any way.
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in the discourse prior to its current occurrence. If the A referent was previously referred to as a member of a group, or with a pronoun, or as an O argument referent, it is not coded as new. The coding disregards whether the A referent was present in the context or not and only takes into account whether it was referred to in the discourse.

A statistical analysis was carried out on the same data set as for the analysis of ergative marking, discussed in Section 4.3.1, to see how word order is conditioned in Light Warlpiri. In this analysis word order is the dependent variable. A multilevel logistic regression analysis with a binomial link function was used, as in the analysis of ergative marking. The properties coded for and entered into the analysis as independent variables are:

- +/- Ergative marking on A
- +/- Animate A
- +/- new A
- +/- Animate O argument
- +/- Overt O argument
- age group of speaker (age 2;3, 3;1, 3;11, 4;10, 5;7, adult).

The dependent variable is word order (preverbal or postverbal A) and speaker is a random effect. As in the analysis of ergative marking, it became clear during the analysis that there was no statistical difference between the age groups of children, so all of the children’s groups were collapsed into one group, leaving a group of adults and a group of children.
The analysis shows that A arguments are more likely to be preverbal when they are not case-marked ($p < 0.001$), when the A referent is animate ($p = 0.01$), or when it is new ($p = 0.01$) (see Appendix D for the statistical output table). The finding that A arguments that are NOT case-marked are more likely to be preverbal is consistent with the finding in the analysis of ergative marking that A arguments that are case-marked are more likely to be postverbal. The finding in regard to A animacy, that animate A arguments are more likely to be preverbal, can be taken as evidence that preverbal position is the position for prototypical A arguments, because animate A arguments are more prototypical than inanimate A arguments. The finding of newness of A as a factor contributing to its preverbal position means that although AVO is the most frequent order in Light Warlpiri, word order is also partially conditioned by pragmatic factors. There was no significant difference between the adults and the children in their word order patterns, meaning that both groups use the same strategies. I now present examples of each factor that was found to condition word order patterns, from both adult and child speech.

**Unmarked A argument.**

(124) Mapin-jarra na inya-jarra de-rra go ged-im na
name-DL DIS DEM-DL 3pl-FUT go-TR DIS

Mapin and someone else, now, those two, are going to get it now. (Adult speech A22:C03.14)

(125) ngula i mait katirn-im yu wirliya
ANAPH 3sg might squash-TR 2sg leg
That one might squash your leg. (Child speech C53:C04.7)

In (124) and (125) the A arguments are not case-marked and are preverbal.

**Animate A argument referent.** An A argument is more likely to be preverbal if it is animate.

(126) \textit{wawirri-ng i-m drink-ing it \textit{ngapa}}

kangaroo-\textsc{erg} 3sg-\textsc{nfut} drink-\textsc{prog} it water

The kangaroo is drinking water. (Adult speech: A53:C01.4.8)

(127) \textit{Nunayi-ng i-m paind-im \textit{wumara}}

\textsc{subsect}-\textsc{erg} 3sg-\textsc{nfut} find-\textsc{tr} money

Nunayi found some money. (Child speech: C03:C06.7)

In (126) and (127) the A arguments are animate and are preverbal.

**New A argument referent.** An A is more likely to be preverbal if it newly introduced into the discourse\textsuperscript{7}.

(128) \textit{yeh Alpi-ng i-m kuk-im mangarri \textit{ngula-piya} na}

\textsc{yes name}-\textsc{erg} 3sg-\textsc{nfut} cook-\textsc{tr} bread \textsc{anaph}-like \textsc{dis}

Yeh, Alpi cooks bread like that now. (Adult speech: A23:C06.5.4)

\textsuperscript{7}A good test of the position of new arguments would be to code O arguments for newness also, and see if new O arguments are positioned preverbally, but this is left for future research.
In (128) a mother and her child are watching a video clip in which a character is cooking pancakes. The mother introduces a referent, Alpi, into the discourse with an A argument in preverbal position.

(129) a. c41: telefon  Nunayi telefon
c41: telephone name  telephone
Telephone, Nunayi, telephone.

b. c03: where
c03: where
Where?

c. c41: mai  matha i got-im  nyampa-piya angka
c41: 1sg:POSS mother 3sg get:PST-TR DEM-like DIS
My mother has one like that, hasn’t she? (Child speech: C41:C03.9a)

In (129) Child C03 and Child C41 start to talk about a toy telephone. Child C41 introduces her mother into the discourse with the A argument in preverbal position.

Other pragmatic factors. Pragmatic factors other than newness, for example, the relative newsworthiness of an argument (Mithun 1987), might also account for word order variability, but because of the difficulty of coding for them objectively, they were not included in the quantitative analysis. Nevertheless I think that an A argument might be moved out of preverbal position when it is less newsworthy than the verb or the O argument, and I present an example here, in (130).

(130) a. A22: loli  nya-ngka nampu loli  baby-pawu
A22: sweet look-IMP DEM  sweet baby-DIM
Sweet, look, here, sweet, little baby.

b. A53: loli i gad-im  baby-pawu-ng
A53: sweet 3sg get:PST-TR baby-DIM-ERG
The little baby has a sweet. (A53: C01.4.8)
In (130), two adults, A22 and A53, are trying to get the attention of a 22-month-old child by pretending that a doll has a sweet. In (130b), A53 positions the O argument initially, because the sweet is the most newsworthy element, that is, the element most likely to draw the child’s attention.

Criteria for a basic word order. I will now discuss each of the criteria for determining a basic word order in a language, outlined in Section 3.1.2.1 above, in relation to the statistical analysis.

Statistical frequency. As shown in Table 4.8, the most frequent order is AVO. Although word order is variable and core arguments can be omitted, there are more AV, AVO and VO patterns than other patterns.

Descriptive simplicity. The criterion of descriptive simplicity means that a departure from a basic word order will require the use of additional morphological elements. The likely candidate for morphological marking in Light Warlpiri is case-marking, and the analysis of ergative marking in Section 4.3.1, and of word order in this section, show that postverbal A arguments attract case-marking more often than preverbal A arguments. The criterion of descriptive simplicity suggests that the basic word order of transitive clauses is AV and that if the A is moved to postverbal position it is more likely to have ergative marking.

Pragmatic neutrality. Pragmatic neutrality refers to word order used in the most pragmatically neutral context. As I explained in Section 3.1.2.1, discourse-initial sentences have been posited as being the most pragmatically neutral, since there is no previous linguistic context in which to establish information, and they are often declarative, affirmative clauses (Pullum 1977). The spontaneous speech
data does not often contain discourse-initial utterances, because the discourse was already underway when recording began. But the narratives in the data set often begin with declarative affirmative sentences with lexical NPs, so although this chapter is about spontaneous speech, I will present the word order patterns from the narratives here. Ten narratives begin with a verbal clause, and all are intransitive clauses. Nine clauses have SV order, and one has VS order. So in this neutral context SV is the most frequent order.

Another criterion for pragmatic neutrality is whether the clause has neutral prosody. For Mithun, whether the NP is within the intonational unit or not does not alter her claims about word order. But whether or not the core NPs are within the intonational unit of the predicate could provide information about how basic the word order pattern is. We saw above that when certain pragmatic features are present in a clause, VA order attracts more morphological material than AV order. Perhaps VA order also attracts different intonational material than does AV order. A hypothesis which might further explain the word order variation in Light Warlpiri is the following:

1. The basic order of transitive clauses is AVO.

2. VA and OV orders are marked intonationally.

It could be that when an A occurs in clause-final position, it is outside the intonation unit of its predicate, or is marked intonationally in a particular way.

To test this I examined the pitch contours of 58 transitive clauses with lexical A arguments from adult speech. The A arguments were in both clause-initial and clause-final positions, with and without ergative case-marking. The clauses were chosen because they have the clearest acoustic quality, and are from both spontaneous speech and narrative speech. There are two main intonation patterns
in Light Warlpiri. The initial boundary tone is high relative to the rest of the clause, the pitch falls in the middle of the clause, and the final boundary tone is either rising or falling. The question is whether the final boundary tone differs systematically in the two types of clause, A-initial and A-final.

Both types of clause have both types of final boundary tone, falling and rising, but A-final clauses have very few falling boundary tones. In some A-final clauses the A argument falls within the same intonational contour as the verb, but in most A-final clauses there is a clear intonational boundary before the final word. The boundary can be signalled by lengthening of the stressed syllable of the previous word, a pitch reset at the beginning of the final word, a pause, or a combination of these three features (Cruttenden 1977). In most A-final clauses there is at least one of these features, meaning that there is an intonational boundary before the A argument. In O-final clauses there can also be a boundary before the final word, but it does not occur as often as in A-initial clauses.

The different intonational patterns of the two types of clause show that a final noun that is an A argument is more likely to be set off intonationally than a final noun that is an O argument. In other words, an A-final clause usually receives different intonational treatment from an A-initial clause. While this information by itself does not tell us anything about which order is pragmatically neutral, it can be combined with other information about word order. AV order is much more common than VA order, and the two usually have different intonation patterns. The A argument of an A-final clause is not usually part of the same intonational phrase as its predicate.

**Summary.** According to the above criteria, AV order is the basic word order in Light Warlpiri, but there is also variation. The combination of a degree of fixed
order and a degree of variation is explained by the competition between two systems for indicating grammatical relations in Light Warlpiri - fixed word order versus case-marking. The case-marking system implies variable word order. Although word order in Light Warlpiri is much more variable than in English or Kriol, and although the order does not necessarily signal the syntactic status of arguments, the high number of AV and AVO clauses compared to other orders, and the finding that postverbal A arguments are marked more often than preverbal A arguments suggests that AV is a preferred order for speakers regardless of pragmatic considerations. The preference for animate A arguments to be preverbal is informative - Light Warlpiri is not a ‘free word order’ language in the way that the languages Mithun (1987) and Givon (1988) discuss are, because in Light Warlpiri pragmatic factors alone do not account for word order. Word order and case-marking are competing to perform the same functions. If the unmarked word order in Light Warlpiri is AVO, then we would expect a prototypical A, one that is high in animacy, to be in the prototypical ‘subject’ position - in Light Warlpiri, preverbal position, because of the role of preverbal position in one of its source languages, AE/Kriol. I suggest that in Light Warlpiri preverbal position is the unmarked position for a prototypical A or S argument. But since Light Warlpiri also has a free word order language as a major source, in which word order is conditioned by pragmatic factors, these factors also play a role.

In Light Warlpiri the position of the O argument can be preverbal, in accordance with Mithun’s ‘most newsworthy first’ principle. But it is more likely to be postverbal, again suggesting that pragmatic considerations are not uppermost in determining word order. OV position probably reflects the ‘most newsworthy first’ principle, as in Warlpiri, but VO position reflects a pattern imitating that of
English and Kriol, but without the implication for syntax.

In sum, the word order strategies of the source languages are both operating in Light Warlpiri, resulting in a predominantly AVO word order which interacts with case-marking - a postverbal A argument is more likely to be case-marked than a preverbal A argument.

4.4.2 Young children’s word order patterns

Light Warlpiri-speaking children do not at first produce many ergatively-marked A arguments, so they might use fixed word order as the main strategy for indicating core arguments. In addition, research on children’s acquisition of Samoan has shown that young children show an ergative pattern in word order rather than in morphological marking (Ochs 1985). In an ergative word order pattern A arguments consistently appear in a certain position (for instance, always before the verb), and S and O arguments consistently appear in a different position. Since very young Light Warlpiri-speaking children do not at first produce many ergatively-marked A arguments, they might show an ergative pattern in word order, as the Samoan children do.

The positions of each argument for each age group of Light Warlpiri children are presented in Table 4.9. In the table, preverbal position is chosen as the reference point because most A arguments are preverbal. We see that across all age groups S and A arguments appear most often preverbally, so they are in general in the same position. O arguments appear preverbally in only approximately 20% of clauses, so S and O arguments are generally not in the same position. It is not the case, then, that S and O arguments pattern differently from A arguments, so there is no evidence that the children show an ergative pattern in word order. Rather, A and
Marking grammatical relations in adult and child Light Warlpiri

<table>
<thead>
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<th>Group</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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</thead>
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</tr>
<tr>
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<table>
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</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>% POSTverbal O argument</td>
</tr>
</tbody>
</table>

Table 4.9: % Preverbal overt S, A, O arguments, children under 6, per age group, spontaneous Light Warlpiri speech.

S arguments pattern alike, more like the word order pattern in English and Kriol.

As mentioned earlier, we see in Table 4.9 that Groups B and C (mean ages 3;1 and 3;11) have fewer preverbal A arguments than the other groups. I suggested that the variation in Groups B and C could be due to the children’s discovering at that age that A arguments can be moved, then later tuning in to adult patterns. Another reason that children have more variable word order patterns when they are younger might be that, before the age of about three years, they spend more time in groups in which there are older people present who speak Warlpiri to and around them. Word order in Warlpiri is more variable than in Light Warlpiri, and the children might be influenced more by the Warlpiri speakers than when they are older and spend more time with other Light Warlpiri-speaking children. The data
do show that in Groups B and C the children do not rely on word order to indicate S and A arguments, since most S and A arguments are not in a fixed position, but they do consistently seem to use word order to indicate O arguments, since most O arguments are postverbal. This suggests that word order is used to indicate O arguments, and that other strategies, such as ergative marking and pragmatic strategies (discussed in Section 4.5), are used in addition to word order to indicate A arguments. The children’s lack of reliance on one strategy alone, for example, on either case-marking or word order, suggest that children are aware that neither of these is completely reliable in adult speech.

4.4.3 Summary

Word order in Light Warlpiri adult and child spontaneous speech is variable, but SVO is the most common order. A arguments are more likely to be preverbal when they are new or their referents are animate. There is a correlation between ergative marking and word order such that postverbal A arguments are more likely to be marked than preverbal A arguments.

4.5 Alternative strategies for indicating A arguments in Light Warlpiri

Since ergative case-marking is variably applied, and word order is also variable, there must be times in Light Warlpiri talk when there is no ergative case-marking to identify the A, and word order is not AVO. If, when there is only one overt argument in a transitive clause, NV does not necessarily indicate the A argument, and VN does not necessarily indicate the O argument, what cues are there to iden-
Marking grammatical relations in adult and child Light Warlpiri

tify a noun as an A or O argument? Light Warlpiri utilizes several cues other than case-marking and word order to disambiguate A and O arguments. The pronominal element in the auxiliary cluster agrees with subject person and number, and plays a major role through anaphoric reference to the A argument, as in (131). Example (131) consists of consecutive clauses from a mother telling a story from a picture book stimulus.

(131)  

a. de-m luk puluk  
3pl-NFUT look cow  
They saw the cow.

b. de-m shut-im  
3pl-NFUT shoot-TR  
They shot it.

c. pens-wana de-m shut-im  
fence-PERL 3pl-NFUT shoot-TR  
They shot it near the fence.

d. an i-m fal-dan  
CONJ 3sg-NFUT fall-down  
And it fell.

e. de-m folo-im na puluk  
3pl-NFUT follow-TR DIS cow  
They went over to the cow. (A35:ERGstory.2)

In (131), the referent of third plural pronominal element de- in (a) was established earlier in the text as a family group consisting of a mother, father and child. In (b) and (c) de- continues to refer to the family group. In (d), third singular i- refers to the single cow, and in (e) de- again refers to the family group because it is plural.

In discourse there are often several referents with the same person and number, typically third person singular, and in these cases information about person and

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number in the auxiliary will not differentiate referents. Other cues are needed, and in Light Warlpiri the way the information is structured plays a role. The referent of an NP which is given information in the discourse is the most likely to be non-overt (Givon 1988; Du Bois 2003). A and S arguments are more likely to be non-overt than are O arguments (Du Bois 2003). In example (131), the subject referent was non-overt and represented by the pronominal element in the auxiliary cluster of each clause.

The other major cues are lexical semantics, animacy of A and O referents, and knowledge of event probability - real world knowledge of the likelihood that certain types of events happen. This is illustrated in (132).

(132) a. MOT: *jarntu* midil-rla **de-m** pud-im, *jarntu* midil-rla
   MOT: dog middle-LOC 3pl-NFUT put-TR dog middle-LOC
   They put the dog in the middle, the dog in the middle.

b. MOT: *an kurdu-pawu nyampu* midil-rla
   MOT: CONJ child-DIM DEM middle-LOC
   And the little child, here, in the middle.

c. CHI: **i-rra** slip *mayi jarntu*
   CHI: 3sg-FUT sleep INTERR dog
   Is the dog going to sleep?

d. MOT: yeh *nuuku-kuyjac*
   MOT: yes monster-EVIT
   Yes, for fear of the monster.

e. MOT: yeh **de-m** pud-im midil-rla na *nuuku-kuyjac*
   MOT: yes 3pl-NFUT put-TR middle-LOC DIS monster-EVIT
   Yes they put it in the middle, you know, for fear of the monster.

f. MOT: i ma it ged-im
   MOT: 3sg might get-TR
   It might get it. (A35:C02.13b)
The context of (132) is that the mother had just finished telling a story to her four-year-old child using a picture book stimulus about a monster who steals a child’s pet dog. Additional relevant information is that a recurrent theme in traditional Warlpiri stories is that of a monster stealing children, and this scenario is often presented to young children to prevent them from straying too far from their parents. The mother is now putting toys and dolls into positions as she tells a made-up story. The A referent in (a), referred to by the pronoun de, is a group of animals in the context of the story. In (c) the S referent is the dog, referred to by the child with a lexical NP, and in (e) the subject referent is again the group from line (a), referred to by the third plural pronoun de. In (f) the A referent changes and is now the monster, previously referred to in adjunct phrases in (d) and (e), kuuku-kujaku ‘for fear of the monster’. In (f), even though the subject is not continued from the previous utterance, a pronominal element is used to refer to the monster, and the O argument referent, the dog, is elided. Both A and O referents are recoverable from the context and from real world (Warlpiri) knowledge telling us that it is likely that a monster would steal the dog or the child, not that the dog or other characters would get the monster.

Example (133) shows how verb semantics and the animacy of the A referent provide information about the role of the overt argument.

(133) i-rra breik-im Jangala
     3sg-FUT break-TR subsect
     Jangala will break it.

In (133) the word order is VA, and there is no ergative marking on the A, Jangala (a subsection term), so neither word order nor case-marking indicates the subject. But the semantics of the verb break tell us that the O argument is likely to be inanimate, because usually inanimate things are broken, and the subject referent is
likely to be animate. Even without knowing the context a reasonable interpretation is that \textit{Jangala} is the A referent, not the O argument referent.

4.6 Summary and discussion

In Section 3.2 I presented Slobin’s (1982) claim that a morphological system of indicating grammatical relations is easier for children to learn than a word order system, because morphological marking on nominals is immediately available, or local, so the learners know immediately which element represents which argument. Conversely, in a language that uses word order to indicate grammatical relations, the learners need to interpret the whole string before they know which elements represent which core arguments. Slobin (1982) based his claim on both production and comprehension data. (Light Warlpiri-speaking children’s comprehension of transitive sentences is presented in Chapter 6.) If Slobin’s (1982) claim holds for Light Warlpiri, the children should find case-marking easier to learn than word order, so should use case-marking more often than word order when they first begin to speak. But the children in this study do not rely strongly on case-marking in their earliest utterances.
Table 4.10: Number of clauses with overt A arguments, percentage of ergative marking, and percentage of AV order, Light Warlpiri, children under 6, spontaneous speech

Table 4.10 shows the number of clauses with overt A arguments, the percentage of AV word order and the percentage of ergative marking on A arguments for each age group. As the table shows, in the earliest age group the children produce AV order in 86% of transitive clauses, but only 38% of A arguments have ergative marking. This suggests that the children in this group might be relying on AV order more than on case-marking to indicate grammatical relations. In age group B 1% of A arguments are marked, and 30% of clauses with overt A arguments have AV order. This suggests that the children are relying on AV order more than on case-marking to indicate grammatical relations, but even so are not relying on AV order very much. In Group C, 31% of A arguments are marked and 23% of clauses with overt A arguments have AV order, suggesting that children rely somewhat on both case-marking and word order strategies to some extent, but not entirely on either. The children’s lack of reliance on case-marking is explained by the optionality of ergative marking in Light Warlpiri. The same reasoning applies to why they do not rely more on word order either - although AVO is the most
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common word order in the input, there is variation. The children’s production of case-marking and word order patterns in Light Warlpiri suggests that when grammatical relations in a language are indicated by the use of more than one system (for example, case-marking and word order), children use both systems in their production, and are not biased to rely consistently more on one than on the other.

Light Warlpiri makes use of the structural cues used in its source languages to a certain extent. They are ergative case-marking, word order and information in the auxiliary cluster about person and number of subject referents. Light Warlpiri also makes use of other cues - animacy, lexical semantics and event probability, which are also available in the source languages, but not relied on as much as they are in Light Warlpiri. A speaker of Warlpiri or English or Kriol needs to rely on pragmatic cues less than a speaker of Light Warlpiri, because Warlpiri, English and Kriol use the morphosyntactic cues of case-marking and word order, respectively, more consistently than does Light Warlpiri.

Some of the problems of the validity of ergative case-marking as a cue to grammatical relations in classic Warlpiri reviewed earlier in Section 3.2 also apply to Light Warlpiri. These are that core arguments can be omitted and that the ergative marker also functions as a marker of instrumental and ablative cases. Availability is further reduced because in Light Warlpiri ergative marking is variably applied.

Bavin and Shopen (1989) did not discuss the validity of word order as a cue in classic Warlpiri because it does not play a grammatical role. I concluded in Section 4.4 that word order in Light Warlpiri is not syntactic, yet there is a quantitative preference for AVO order. This preference means that word order can provide some information about grammatical relations, because a noun in preverbal position will
often be an A argument, but word order cannot be relied upon as an indicator of arguments.

As in classic and Lajamanu Warlpiri, there are several other cues for indicating grammatical relations in Light Warlpiri: information in the auxiliary, verb semantics, animacy of referents and world knowledge. In Light Warlpiri, information in the auxiliary for person and number is available for S and A referents only. This information, along with lexical semantics, animacy of referents and event probability is relied upon more in Light Warlpiri than in classic or Lajamanu Warlpiri because case-marking is not always available and word order is not fully reliable.

The motivation for Light Warlpiri speakers to increase their reliance on pragmatic and semantic cues is perhaps found in the processing strategies used by children when learning Warlpiri. As reported in Section 3.2, in a study of children’s sentence processing strategies in Warlpiri, Bavin and Shopen (1989) found that for young Warlpiri children, aged under 5 years, semantic and pragmatic cues in sentence processing are much stronger cues than case-marking and word order. The cues that the children aged under 5 years in Bavin’s study used are the same cues that are now used in adult Light Warlpiri, in addition to case-marking and word order. The cohort of speakers who developed Light Warlpiri might have called upon the resources they used as young learners of Warlpiri. Semantic and pragmatic cues are available in all languages regardless of the means of indicating core grammatical functions, so they are readily available to be called upon in Light Warlpiri when needed. The strategies of using pragmatic and semantic cues might have been retained by children as they grew older and as they conventionalized their AE/Kriol and Warlpiri code-switching practices into the new language.

Children in Lajamanu community face several difficulties with regard to the
validity of ergative case-marking in Lajamanu Warlpiri and Light Warlpiri, and in addition, they are learning the two languages simultaneously. Another complicating factor is that speakers of Lajamanu Warlpiri often code-switch between Warlpiri and AE/Kriol. In AE/Kriol, SVO word order indicates grammatical relations, providing more input in which word order is relied on.

In summary, in Light Warlpiri there is no single morphosyntactic strategy for indicating grammatical relations. The speakers draw on the strategies used in both types of source language, that is, ergative case-marking from Warlpiri, and word order from English and Kriol. They make use of both of these strategies, but to a lesser extent than is necessary in either of the source languages, and in a slightly different way. Ergative case-marking is not used in exactly the same way as it is in classic Warlpiri, since it is applied more to A arguments in non-prototypical transitive constructions than to other A arguments. Word order is not used the same way as it is in English and Kriol, since it does not indicate a syntactic relation. In addition, speakers make use of strategies that are used by children early in the language acquisition process - lexical semantics, animacy of A and O, and knowledge of the likelihood of various events happening.
CHAPTER 5

Ergative marking and word order in adult and child Lajamanu Warlpiri

Speakers in Lajamanu are participants in a complex multilingual situation in which there has been a dramatic change from Lajamanu Warlpiri to Light Warlpiri over the last thirty years. There is also a lot of code-switching, between Lajamanu Warlpiri and AE/Kriol, and between Lajamanu Warlpiri, Light Warlpiri and AE/Kriol. Since there are several ways of speaking in one community, and changes to a new way of speaking can be rapid, we might expect that there is variation between speakers in how the main language, Lajamanu Warlpiri, is spoken. The emergence of Light Warlpiri was brought about by one age group, who
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are now young adults in the community, so there might be other types of systematic variation between age cohorts of speakers. There are broad age-groups in the community that might be useful for grouping speakers for a linguistic analysis. There are four natural age-groups, which roughly approximate generations: (1) the community elders, people over about age 60, (2) the middle-aged group, between ages of about 30 to 50, (3) the Light Warlpiri-speaking group, aged about 15-29, and (4) children under age 15. In terms of the properties in focus in this study, we might expect that the age groups behave differently in how they distribute ergative marking and word order patterns when speaking Lajamanu Warlpiri. For instance, do speakers in all age groups apply ergative marking obligatorily on A arguments in Lajamanu Warlpiri? Or do younger speakers apply it less often, as they do in Light Warlpiri?

Understanding the degree of variation within and between groups of speakers is important for understanding processes of language change in the community, and for gaining an accurate picture of the children’s learning environment. The simplest learning environment for the children would be one in which all speakers of Warlpiri distribute ergative marking and word order patterns similarly, regardless of age. In this input environment the children would have the greatest opportunity for identifying the relevant patterns. A less simple input situation is one in which age cohorts distribute ergative marking and word order patterns such that they show similar patterns within age groups, but differences between age groups. In this kind of input situation the children have to tune in to different patterns from speakers of different ages, making it more difficult to identify the patterns used by each group. The most difficult input environment is one in which there is a lot of variation between speakers and no similarities within age groups. If each speaker
Ergative marking and word order in adult and child Lajamanu Warlpiri

varies from every other speaker in how they distribute ergative marking and word order patterns, then it will be more difficult for the children to learn how they should interpret and distribute the properties.

5.1 Language variation in language contact settings

I use the variationist framework pioneered by Labov (1963) to examine the question of whether age groups show within-group similarity and between-group differences in how they distribute ergative marking and word order patterns in Lajamanu Warlpiri. This framework observes language use in natural social settings. When a particular linguistic property is observed to vary among speakers, quantitative analysis is used to describe the variation between groups of speakers along social parameters, for example social class, age or gender (Chambers 2002). Labov’s ‘apparent-time’ construct showed that synchronic differences between age groups can herald diachronic change.

Labov hypothesized that when social and stylistic factors were held constant, linguistic differences among different generations of a population (apparent-time differences) would mirror actual diachronic developments in the language (Bailey 2002, 313).

Significant differences between age groups reflect diachronic change, while homogeneity between age groups reflects stable variation. The apparent-time construct relies on the assumption that “individual vernaculars remain stable throughout the course of an adult life time” Bailey (2002, 313). It has been shown to be robust for both phonological and grammatical features in monolingual communities (Bailey 2002), although not yet for communities such as Lajamanu in which there is rapid
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Language contact situations have been the focus of relatively little variationist work because the variation in multilingual communities is greater than in monolingual and majority language communities (Mougeon and Nadasdi 1998, cited in Sankoff 2002). Describing variation in a bilingual community “involves more social parameters, more daunting inter-individual variation and major sampling and other methodological problems” Sankoff (2002, 640). Nevertheless studies in these situations have identified minority-language influences on the dominant societal language and also influences of the dominant language on the minority languages (King 2000; Sankoff et al 1997; Prince 1998; Matras 1998; Kroskrity 1978; Fortescue 1993; Silva-Corvalan 1994; Poplack 1997; all cited in Sankoff 2002).

There are also relatively few studies of variation in child speech. These concentrate on when children “acquire particular patterns of variation and their constraints” (Roberts 2002, 336). Roberts (1997a,b) found that three- and four-year-old English-speaking children produce systematic phonological variation along the lines of their parents, showing that children tune in to stable variation patterns in phonology early.

Roberts and Labov (1995) examined the phonology of English-speaking preschool children in a context in which some of the properties affecting adult variation are in the process of change. The children showed different patterns from the adults for some properties of the changing sounds. This suggests that the children

were beginning to participate actively in the process of language change.

This finding has important implications to the future study of this area as it highlights the possibility that children of this age are interesting to variationists, not only because they are actively acquiring socially-
Ergative marking and word order in adult and child Lajamanu Warlpiri

governed features but also because they are influencing changes and may be indicating sites of change that may be accelerated or otherwise modified as the children mature (Roberts 2002, 339).

So young children tune in to phonological patterns in environments of input variation, and they can also be agents of change.

In this chapter I use a quantitative analysis to explore within- and between-group variation for age groups of speakers of Lajamanu Warlpiri. Specifically, I ask whether the age groups (including groups of adults and children) show within-group similarities and between-group differences in how they distribute ergative marking and word order patterns. My methodology departs from that of variationist studies in that I am not analyzing a spontaneous speech corpus, because a very large corpus would be needed to investigate the phenomenon of ergative case-marking. In this chapter I examine a set of elicited narratives described in the following section, and compare 5 age groups: older speakers who do not speak Light Warlpiri (two age groups, 30 to 50 and 60+), and younger speakers who speak both Lajamanu Warlpiri and Light Warlpiri (ages 20, 9 and 7). All adults are women and the one social variable is age. Each adult used picture stimulus books to tell a story to another adult who used toys and dolls to act out the story as she heard it unfold, while children told the story to me. The next section presents the results of age group comparisons within Lajamanu Warlpiri.
5.2 Elicited production studies: Data collection and methodology

In this section I describe the methodology that was used for collecting narrative data in both Lajamanu Warlpiri and Light Warlpiri, because I used the same methodology for each language, but only the Lajamanu Warlpiri data are analyzed in this chapter. The studies focus on ergative case-marking and on the order of A and O arguments, so require overt A and O argument NPs for analysis. Crosslinguistically A arguments are more likely to occur as pronouns, or to be elided in null-subject languages, than to occur as lexical NPs (Du Bois 2003). In both Lajamanu Warlpiri and Light Warlpiri, core argument NPs can be omitted and subject information is provided by bound pronouns. If the A argument is omitted, ergative case-marking cannot occur, so data with overt A arguments are required for analysis. This means that in spontaneous speech it is unlikely that there will be many lexical A arguments which can take ergative case-marking, so an enormous amount of data would need to be collected to extract enough data points for analysis.

To solve this problem I used an elicited production technique for data collection. I developed three picture books, in each of which the pictures form the stimuli for telling a narrative. The pictures are designed so that throughout the narrative there are several protagonists. The speaker must use lexical NPs in order to disambiguate the protagonists, providing a higher number of lexical NPs in the narratives than is typically found in spontaneous speech. Although the stimulus tool leads the speaker to use lexical NPs, it does not force the speaker to use a lexical NP as an A argument as opposed to an S argument. For instance, if the stimulus picture
shows a woman picking up a dog, there is nothing to stop the speaker from (re-)introducing the woman as an intransitive actor (e.g. “the woman comes”), and then using a null or pronominal form for the A argument (e.g. “and (she) picks up the dog”). The stimulus tool itself does not distort a speaker’s distribution of lexical versus non-lexical NPs according to Du Bois’ (2003) Preferred Argument Structure, it simply makes it necessary for a speaker to use a lexical S or A argument instead of a pronoun. A drawback of the stimulus tool is that the narratives are all told in the third person, so that analysis of ‘person’ as a factor in the use of case-marking is not possible. The stimulus stories were constructed so that pairs of A and O argument referents involve different combinations of animacy.

To encourage the adults to tell the narratives in the speech style that they typically use when speaking with other community members, a specific task design was implemented. The speaker told the narrative to a listener, and the listener used toys and dolls to ‘act out’ the narrative while she heard it being told. Each speaker chose who they would perform the task with, so that she was speaking directly to someone with whom she felt comfortable and with whom she often talked. This was to encourage the speaker to talk as naturally as possible, given the contrived nature of the task.

The same picture stimuli were used with the children, but without a speech partner acting out the narrative. Trial sessions showed that the children were not able to narrate the story for a partner; rather, they tended to give instructions as to how to move the toys, resulting in a series of imperatives. So the children narrated the stories to the researcher, having been asked to talk in either Lajamanu Warlpiri or Light Warlpiri\(^1\). To help the children cue into the language they were

\(^1\)The Light Warlpiri narratives are analyzed in the next Chapter. I tried to have children tell the story to a Warlpiri-speaking adult, but some children were either reluctant to talk to the adult

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asked to speak in, before the task they watched a short video clip of a child telling a story in the target language of the narrative. The narrative in the video clip included transitive and intransitive verbs and some lexical argument NPs. The children were given a sandwich to eat while they watched the video clip so that they were not distracted by being hungry. After the children watched the video clip they were asked to talk like the child in the video while narrating the story in the picture book. As a result of the narrative task, sufficient numbers of transitive clauses with lexical NPs were collected from both adults and children to allow me to analyze third person ergative case-marking and word order both quantitatively and qualitatively.

Narratives were collected in Lajamanu Warlpiri from 3 age groups of adults (20, 30-50, 60+ years) and two age groups of children (mean ages 6;11 and 8;11), and also in Light Warlpiri for the three groups who also speak it (mean ages 20, 6;11 and 8;11). All adult speakers are women. Children age six and above were selected because at that age they are confident enough to tell a story in both Lajamanu Warlpiri and Light Warlpiri. While some children aged 4;0 can tell a story in Warlpiri, pilot work showed that this was not true for all children at that age, so for ease of comparability I chose 6 years old as the minimum age. The mean ages of the two groups are 6;11 and 8;11, so for convenience I will call the age groups ages 7 and 9 from now on.

Table 5.1 shows the languages, number of speakers and age groups from which because of family relationships or reluctant to talk in Warlpiri, whereas they would talk to me in Warlpiri. I think some children were reluctant to talk to a Warlpiri adult in Warlpiri because they have a conventional way of talking to community members - usually in Light Warlpiri - and to change that convention felt uncomfortable to them. Although the children know me well, I fall outside the community conventions so within-group constraints do not apply.
Table 5.1: Number of speakers, age groups and languages from whom narratives were collected.

<table>
<thead>
<tr>
<th>Age in years</th>
<th>7</th>
<th>9</th>
<th>20</th>
<th>30 to 50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lajamanu Warlpiri</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Light Warlpiri</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

In this chapter a subset of the narrative texts is used to examine within- and between-group variation within Lajamanu Warlpiri across age groups. In the following chapter a partially overlapping subset is used to examine systematic differences between Warlpiri and Light Warlpiri. Table 5.2 shows the analysis for which each set of texts provides the data.

Table 5.2: Analyses in which subsets of narratives texts form the data.

The stories were transcribed by me in CHAT format (MacWhinney and Bates 1978; MacWhinney 1987) with the help of a speaker of Lajamanu Warlpiri or Light Warlpiri. Clauses which were partly unintelligible were deleted. All remaining clauses were coded for language, age group, speaker identification code, transitivity (+/- transitive), and if transitive, whether or not the A argument can host an ergative case-marker. As in the data for the analysis of Light Warlpiri spontaneous
speech in Section 4.1, host A arguments in Lajamanu Warlpiri include lexical NPs, free pronouns and demonstratives.

5.3 Ergative marking and word order in Lajamanu Warlpiri narratives

5.3.1 Ergative marking

The total number of transitive clauses with overt host A arguments (i.e. lexical NPs, free Warlpiri pronouns and Warlpiri demonstratives) included in the analysis of Lajamanu Warlpiri in this chapter is 560. Table 5.3 shows the percentage of transitive clauses with ergative marking for each age group.

<table>
<thead>
<tr>
<th>Age</th>
<th>7</th>
<th>9</th>
<th>20</th>
<th>30 to 50</th>
<th>60</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans clauses</td>
<td>66</td>
<td>95</td>
<td>59</td>
<td>128</td>
<td>212</td>
<td>560</td>
</tr>
<tr>
<td>% ergative</td>
<td>80</td>
<td>79</td>
<td>86</td>
<td>89</td>
<td>100</td>
<td>Mean: 90</td>
</tr>
</tbody>
</table>

Table 5.3: Child and adult Warlpiri narratives: number of transitive clauses and percentage with ergative marking, per age group

Table 5.3 shows that in each age group there are far more host A arguments with ergative marking than without. The 60+ age group contributes many more transitive clauses than the other groups and always uses ergative marking on A arguments.

As with the analysis of the Light Warlpiri spontaneous speech in Section 4, a multilevel logistic regression analysis with a binomial link function was conducted. The dependent variable is ergative marking. Only transitive clauses with host A
arguments are included in the analysis, and they were coded for the following properties, which are entered into the analysis as independent variables:

- +/- Preverbal A argument
- +/- Animate A argument
- +/- Animate O argument
- +/- Overt O argument
- Age group of speaker (7, 9, 20, 30 to 50, 60+).

Text (book a, b or c of three stimulus books) and speaker are included as random effects. The 60+ age group was removed from the analysis because speakers in this group use ergative marking on all A arguments, so the question of what conditions ergative marking does not apply to them. In the remaining groups, there is a lot of within-group variation in when ergative marking is used - the standard deviation is 0.77 - so differences between the age groups are difficult to see. To solve this problem the two remaining adult groups (ages 20 and 30 to 50) were collapsed together as one new group of adults and the two children’s groups (ages 7 and 9) were joined as one new group of children.

Table 5.4 shows the percentage of host A arguments with and without ergative marking for each of the independent variables, for the new adult and children’s groups.

The results show that overall A arguments are more likely to have ergative marking when they are postverbal (p = 0.003), or animate (p = 0.046). But preverbal A arguments (90%) is higher than that for postverbal A arguments (85%), the difference is not significant.
arguments are more likely to have ergative marking when the speaker is an adult than when the speaker is a child (p = 0.004). In other words, all age groups are likely to mark A arguments more often when they are postverbal and children do so even more than adults do.

### 5.3.2 Word order

Previous research on Warlpiri (Swartz 1991; Hale 1992; Mushin 2005; Simpson To appear) shows that A arguments that are prominent for some reason tend to be in preverbal position (see Section 3.1.2.1). Research on other flexible word
order languages shows that elements that are newsworthy or important are positioned early in the string (Mithun 1987; Givon 1988). In this section I analyze Lajamanu Warlpiri narratives from children and adults to see how word order is conditioned, and whether the word order patterns of the children are like those of the adults. Specifically, I want to see whether the factors that were shown in the previous chapter to condition word order in spontaneous speech in Light Warlpiri also condition word order in Lajamanu Warlpiri narratives. Table 5.5 provides an overview of the word order patterns in the Lajamanu Warlpiri narratives, showing the number of transitive clauses for each age group and the percentage of those with preverbal A arguments.

<table>
<thead>
<tr>
<th>Age</th>
<th>7</th>
<th>9</th>
<th>20</th>
<th>30 to 50</th>
<th>60+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans clauses</td>
<td>66</td>
<td>95</td>
<td>59</td>
<td>128</td>
<td>212</td>
<td>560</td>
</tr>
<tr>
<td>No. preverbal A</td>
<td>34</td>
<td>79</td>
<td>47</td>
<td>88</td>
<td>141</td>
<td>389</td>
</tr>
<tr>
<td>% Preverbal A</td>
<td>51</td>
<td>83</td>
<td>79</td>
<td>68</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

Table 5.5: Child and adult Lajamanu Warlpiri narratives: number of transitive clauses and percentage with preverbal A arguments, per age group

The factors that were used in the analysis of Light Warlpiri in Section 4.4 (page 140), were used in the analysis of the narrative texts in this study. They are:

- +/- A argument animate
- +/- A argument new
- +/- Ergative marking
- +/- O argument overt
- +/- O argument animate.
As in the analysis of ergative marking, age groups are collapsed to form a single group of adults and a single group of children, but the 60+ age group is included in the adult group in this analysis. Table 5.6 presents the percentage of preverbal A arguments for each independent variable in adults’ and children’s narratives. A multilevel logistic regression analysis with a binomial link function was used, as in the previous quantitative analyses. The dependent variable is Preverbal A arguments, the independent variables are the factors listed above, and speaker and text (book a, b, or c of three picture books) are random effects.

The results show that there is a lot of variation between speakers in each group, but there is still considerable systematicity. Overall, A arguments are more likely to be preverbal when they do not have ergative marking ($p < 0.001$), or are newly introduced into the discourse ($p < 0.001$). A arguments are more likely to be preverbal and to have ergative marking when the speakers are adults than when they are children ($p = 0.002$). These findings are consistent with the findings for the conditions of ergative marking in Lajamanu Warlpiri - that postverbal A arguments are more likely to be ergatively-marked, and that children’s narratives show a stronger correlation between ergative marking and word order than adult narratives do.

5.3.3 Summary and discussion

Labov’s (1963) ‘apparent time’ construct is useful in interpreting the variation between adult groups in how often host A arguments have ergative marking. Although the analysis of ergative marking did not include the oldest group, the difference between always applying marking and not always applying it is an important one. The difference between generations in this synchronic study reflects
Table 5.6: Lajamanu Warlpiri narratives: percentage of preverbal A arguments per variable, children (ages 7, 9) and adults (ages 20, 30-50, 60+)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Adults</th>
<th></th>
<th>Children</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% preverbal A</td>
<td>No.</td>
<td>% preverbal A</td>
<td></td>
</tr>
<tr>
<td>Case-marking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With ergative</td>
<td>377</td>
<td>69</td>
<td>128</td>
<td>65</td>
<td>505</td>
</tr>
<tr>
<td>No ergative</td>
<td>22</td>
<td>64</td>
<td>33</td>
<td>91</td>
<td>55</td>
</tr>
<tr>
<td>Sub-total</td>
<td>399</td>
<td>161</td>
<td></td>
<td></td>
<td>560</td>
</tr>
<tr>
<td>A animacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animate</td>
<td>342</td>
<td>70</td>
<td>131</td>
<td>70</td>
<td>473</td>
</tr>
<tr>
<td>Inanimate</td>
<td>57</td>
<td>67</td>
<td>30</td>
<td>70</td>
<td>87</td>
</tr>
<tr>
<td>Sub-total</td>
<td>399</td>
<td>161</td>
<td></td>
<td></td>
<td>560</td>
</tr>
<tr>
<td>O animacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animate</td>
<td>125</td>
<td>70</td>
<td>116</td>
<td>66</td>
<td>241</td>
</tr>
<tr>
<td>Inanimate</td>
<td>274</td>
<td>69</td>
<td>45</td>
<td>82</td>
<td>319</td>
</tr>
<tr>
<td>Sub-total</td>
<td>399</td>
<td>161</td>
<td></td>
<td></td>
<td>560</td>
</tr>
<tr>
<td>O overtness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overt</td>
<td>172</td>
<td>73</td>
<td>109</td>
<td>76</td>
<td>281</td>
</tr>
<tr>
<td>Not overt</td>
<td>227</td>
<td>67</td>
<td>52</td>
<td>58</td>
<td>279</td>
</tr>
<tr>
<td>Sub-total</td>
<td>399</td>
<td>161</td>
<td></td>
<td></td>
<td>560</td>
</tr>
<tr>
<td>Newness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New A</td>
<td>51</td>
<td>78</td>
<td>75</td>
<td>80</td>
<td>126</td>
</tr>
<tr>
<td>Not new A</td>
<td>348</td>
<td>68</td>
<td>86</td>
<td>62</td>
<td>434</td>
</tr>
<tr>
<td>Sub-total</td>
<td>399</td>
<td>161</td>
<td></td>
<td></td>
<td>560</td>
</tr>
</tbody>
</table>

a diachronic change, from obligatory to non-obligatory ergative marking on A arguments. The most likely reason for the change is contact with English and Kriol. The oldest group of speakers came into contact with English speakers first in adolescence, but at that time contact was only minimal. As they grew older there was increasing contact with English speakers, although not intensively. This group of
adults worked on cattle stations and in government community organizations and were exposed to varieties of English from a small number of individuals but they did not attend school or become literate in English (with one exception, who is not a participant in the study). The next age groups, in contrast, were in contact with English speakers from a younger age, and the contact was more intensive, because they were taught in English at school. The group that had more intensive contact with English from a younger age is the group that first shows non-obligatory ergative marking.

The difference seen in the children’s patterns, that of marking postverbal A arguments more often than preverbal A arguments, may also reflect diachronic change, but this cannot be confirmed or disconfirmed until the children are adults. For the moment I can say that the children have tuned in to a pattern found in adult speech, and reproduce it with even greater regularity than the adults do. Children can be active agents of change by reproducing one pattern more frequently than other patterns found in the input (Roberts 2002), and they might be agents of change in Lajamanu Warlpiri.

Although in this dissertation the findings about ergative marking in Light Warlpiri are presented before those in Lajamanu Warlpiri, chronologically the changes in Lajamanu Warlpiri took place before Light Warlpiri emerged. Evidence for this is that there are Warlpiri speakers in the 30-to-50 age group for whom ergative marking is not obligatory, but Light Warlpiri speakers are no older than 30. Ergative marking had probably become non-obligatory in Lajamanu Warlpiri before code-switching between Lajamanu Warlpiri and AE/Kriol conventionalized into Light Warlpiri.

In Lajamanu Warlpiri, animate A arguments are more likely to be marked than
inanimates, which is the opposite of the pattern found in the Light Warlpiri spontaneous data (see Section 4.3). In Light Warlpiri the pattern is explained by invoking the notion of the prototypical transitive clause (Comrie 1989) or scene (Slobin 1985, 2001) - in Light Warlpiri the less prototypically transitive the clause is, the more likely it is to be marked. But in Lajamanu Warlpiri the pattern of ergative marking and A animacy is the opposite - animate A arguments are more likely to be marked. This can be made sense of by looking at Lajamanu Warlpiri diachronically. The oldest speakers always mark an A argument, and younger speakers mark A arguments slightly less often, so the language as spoken in this community is changing from being a language in which all A arguments are marked to one in which not all A arguments are marked. But the percentage of marking is still quite high - around 90%. If we assume that obligatory ergative marking means marking the ‘more agentive’ arguments (A arguments as opposed to S or O arguments), then when marking is less than obligatory it seems reasonable to continue to mark the more agentive arguments - the A arguments that are higher in animacy. If some A arguments are not going to be marked, they are the ‘less agentive’ ones - those lower in animacy. The differences in marking patterns and animacy in the two languages are explained by their history and by what is a default system for marking A arguments. In Lajamanu Warlpiri, the default A argument is case-marked, and departing from this is unusual, so the unusual A arguments, those low in animacy, are not morphologically marked. In Light Warlpiri, in contrast, the default A argument is unmarked, and departing from this means marking an unusual A argument - one in a clause that is low in transitivity.

Turning now to word order, in adult Lajamanu Warlpiri more A arguments are preverbal than postverbal overall, suggesting that preverbal position is becoming
the canonical position for A arguments. Animate A arguments are more prototypical A arguments than inanimates (Comrie 1989), and a more prototypical A argument is likely to be in the canonical position, that is, preverbal position. When ergative marking is applied to less than 100% of A arguments, those A arguments in what could be considered to be in ‘non-canonical-A’ position can be seen to be most in need of morphological marking to indicate their subjecthood. The proportion of preverbal A arguments in the narratives in this study is similar to the figures given by Swartz (1991) for another set of Lajamanu Warlpiri narratives (60% AV order), so I consider AV order to be a stable pattern. In the data in my study, A arguments are preverbal more often when the referents are new to the discourse, or animate. Positioning A arguments that are new to the discourse preverbally is consistent with word order pragmatics of other flexible word order languages (Mithun 1987; Givon 1988), and with the observation that prominent arguments are positioned preverbally in classic Warlpiri (Hale 1992; Mushin 2005; Simpson To appear) and Lajamanu Warlpiri (Swartz 1991).

The correlation of ergative marking and word order found for the age groups under age 60 (i.e. that postverbal A arguments are more likely to be marked than preverbal A arguments), suggests that word order in Lajamanu Warlpiri spoken by younger adults and children is less variable than that for the oldest group of speakers. The finding that children reproduce this pattern more than adults do suggests that the correlation might become stronger over time, as the current cohorts of children grow older. If the current children’s groups maintain the relationship between case-marking and word order as they grow older, and if their patterns form the input for the next generation of child learners, then the pattern will become more entrenched.
CHAPTER 6

Children’s ergative marking and word order:
Light Warlpiri vs Lajamanu Warlpiri

In the complex multilingual situation described in this thesis, very young children first produce Light Warlpiri, then later, Warlpiri. These two languages share lexical and grammatical properties; of interest to this thesis are how the properties of ergative case-marking and word order are used to indicate A arguments. Most of the literature on child bilingual acquisition has focused on the question of how and when children show differentiation between the two languages they are learning.
Language contact and bilingual acquisition

In a context such as the one in this thesis, this question is particularly interesting, because the two languages the children are learning differ only in subtle ways. The issues addressed in this chapter are the extent to which children show differences between the two languages in how they indicate A arguments in their speech, and in how they interpret sentences, and whether the strategies they use are adult-like.

6.1 Bilingual children’s differentiation of languages

Most of the literature on bilingual acquisition has addressed this question from a psycholinguistic angle - do children begin learning their languages with one linguistic system or two separate systems? (Lanza 1992, 1997b) Much of the study has been undertaken with children of middle class academic families in which the parents have a conscious policy of ‘one parent, one language’. In this context each parent is a native speaker of a different language and each speaks his or her first language to the child. The input is fairly clearly separated in terms of interlocutor and also often by context, for example, if the family lives in the father’s home country, the father’s language is spoken when shopping and with friends. Increasingly, studies which examine the input in situations of ‘one parent, one language’ find that parents do not keep the two languages as separate as they aim to, and that code-switching does occur (de Houwer 1995), but to a limited degree. While there is some support for the idea that children begin with one system (Imedadze and Uznadze 1967; Volterra and Taeschner 1978; Redlinger and Park 1980; Vihman 1985; Arnberg 1992), increasingly the conclusions from studies of bilingual children are that children show separation of languages from as early as the two-word stage (Burling 1959; Fantini 1974; Hansen-Bede 1975; Ronjat 1978; Genesee 1989; de Houwer 1983; Pham 1994; Romaine 1995; Pearson et al. 180
1995; Quay 1995; de Houwer 1995; Lanza 1992, 1997b; Du 2002; Deuchar and Quay 2001; Genesee 2001, 2003; Paradis and Navarro 2003). Genesee et al. (1995) found that children use their developing languages differentially as early as the one word stage. Children as young as seven months old can discriminate between languages with distinctly different rhythms (Nazzi et al. 2000).

Deuchar and Quay (2001) suggest that the most asked question, “one system or two?”, is not the most useful in terms of discerning how the child learns two languages, and that a more useful question is “how and when does language differentiation occur?” They study a bilingual learning environment in which the input languages are separated along similar lines to ‘one parent, one language’ but with more fluidity in terms of context, for instance, when visitors who speak the dominant community language are present, everyone in the household speaks that language. They conclude that the child in their study learned to differentiate her two languages gradually, but did so before age 2;0.

Studies of language variation among children in monolingual environments show that the children learn variable phonological patterns from as early as preschool age and that their tuning in to the variability in these patterns probably begins earlier (Roberts 2002). As explained in Section 5.1, the variation is in distributions of certain properties, usually phonological, in different social contexts. Just as monolingual children tune in to different distributions of variable properties within one language, bilingual children tune in to differing distributions of properties between two languages. In a study of a Dutch-English bilingual child, aged 2;7 to 3;4, de Houwer (1997) found that the child followed the relative distributions of grammatical forms (simple past versus present perfect) of adult input in each language. Dutch speakers produce more present perfect forms in contexts in
which English speakers use more past simple forms, and the child reproduced these
distributions when speaking her respective languages.

There have been relatively few studies in which there is less clear separation in
the input to children, although this is a common learning situation (de Houwer
1995; Deuchar and Quay 2001). For many years an environment with mixed input
was viewed negatively as a context in which to raise a bilingual child (de Houwer
1995). People believed that if children received code-switching in the input they
would not understand that they were learning two different languages. Even in
monolingual environments variation has been viewed negatively in terms of its
effect on child language learning (Roberts 2002).

The studies of parental mixing of languages compare the parental input to the
children’s language mixing (Schlyter 1987; Lanza 1997a; Nicoladis and Genesee
1997; Mishina 1999; Juan-Garau and Perez-Vidal 2001). Most studies find some
structural similarity in the mixing of parents and of children, and also that soci-
olinguistic and pragmatic factors play a role. These studies are set in communities
in which use of the target language involves little, but some, code-switching. Al-
though the parents code-switch to some extent, a lack of language mixing is still
considered to be the community norm. In other words, the accepted norm in the
bilingual acquisition literature is that bilingual adult speakers speak two unmixed
languages and that this is the target for the children, although Genesee (2003)
argues that the acquisition field should not take such a narrow view. In contrast,
there is increasingly more literature on bilingual and multilingual communities in
which borrowing and code-switching are considered to be the norm (Cheng and
Butler 1989; Kamwangamalu 1989; Denison 1992; Valle 2000; Rahim and Har-
roon 2003). But there are few studies of child language acquisition in this type of
community, even though it is the type that many children are socialized into.

Lanza (2004) calls for more work describing socialization in the speech communities in which bilingual children live and more work analyzing the children’s production in the light of their socialization practices. Referring to Ochs’ (1985) description of adult use of ergative case-marking in Samoan, Lanza explains that a language socialization perspective renders a more enriched model of grammatical development in that it provides insights into the sociocultural parameters that influence children’s use of grammatical forms.

(Lanza 2004, 9)

Socialization is very relevant to the language learning situation in Lajamanu because of the complex input environment. Although the children are learning two languages simultaneously, they are not expected to demonstrate their ability in both of them when they first begin to talk. It is acceptable for the children to respond in Light Warlpiri even when addressed in Lajamanu Warlpiri. Adults in the community assume that the children will learn Lajamanu Warlpiri as they grow up even though they do not produce it when they are young (information from unrecorded conversations with adults).

All existing studies of bilingual acquisition examine children’s production in their two languages at an early age. My study differs from these in several ways. First, the learning environment for the children in my study is much more complex than in previous studies. Second, this study examines children’s comprehension as well as their production. Third, it compares the children’s production in the two languages at a later age, six years and older. This is because the children in Lajamanu generally do not produce both languages when they first begin to speak. In this study the children’s production in each language is compared from age 6;0,
when most children first start to produce Warlpiri.\(^1\) Their comprehension in each language is compared from age 4;0.

6.2 Children’s productive strategies in Light Warlpiri and Lajamanu Warlpiri

6.2.1 Ergative marking and word order

The children in Lajamanu show differences between the two languages they are learning in several ways. The first is that they target only one of the two languages, Light Warlpiri, as the language of their everyday interactions when they first start to speak. This partly reflects the input they hear - their primary carers speak Light Warlpiri more often than Lajamanu Warlpiri, so more of their input is in Light Warlpiri. But the amount of input in each language does not explain why the children hardly produce Lajamanu Warlpiri at all until about age 4 or older. From the age of about three years old, as soon as they can confidently walk and run around independently, children spend most of their time in the company of other children, so they then receive even more input in Light Warlpiri, from the other children. I suggest that they choose the speech of the other children as their target, rather than that of older adults with whom they might have spent a lot of

\(^1\)Not all children produce Light Warlpiri exclusively when they first start to speak. Some children are raised in their early years within a group of senior women, which means that much of their input is in Warlpiri, and adults in some families speak more Warlpiri to their children than do other families. There are several children who reportedly produce both Warlpiri and Light Warlpiri in their early years, then produce more Light Warlpiri once they start interacting more with other children their own age.
time when they were younger.

Children show that they recognize the hallmarks of each language - they use the Light Warlpiri verb and auxiliary systems when speaking Light Warlpiri, and in the main they use the Warlpiri verb and auxiliary systems when speaking Lajamanu Warlpiri, although I will provide some exceptions to this, later, in Section 6.2.3. The interest for this section is whether the children recognize the subtle morphosyntactic differences between the two languages, especially the difference in the distributions of ergative marking. To a large extent the same allomorph of the ergative marker, -ng, is used in both languages in adult speech. In Lajamanu Warlpiri other allomorphs of the ergative are also used, -ngi/-ngu, -ngki/-ngku and -rli/-rlu. The only other variation in use of the ergative is in its distribution. It is applied to between 30% and 80% of A arguments in spontaneous speech in Light Warlpiri (see Chapter 4), and to between 80% and 100% of A arguments in adult Lajamanu Warlpiri narratives (see Chapter 5). As shown in Chapters 4 and 5, word order does not differ much between the two languages - it is variable in both languages and both have more clauses with AV order than with VA order. In both languages postverbal A arguments are marked more often than preverbal A arguments, by adults and children, but the correlation is stronger in Lajamanu Warlpiri for children than for adults.

The analyses in Chapters 4 and 5 examined ergative marking and word order in each language independently of the other and found that ergative marking is more likely to occur in certain contexts than in others, but that word order patterns are similar. In the spontaneous Light Warlpiri of adults and children under 6, examined in Chapter 4, there is more ergative marking when A arguments are inanimate or postverbal, or O arguments are animate. In Warlpiri narratives,
examined in Chapter 5, there is more ergative marking when A arguments are animate or postverbal. But the genres of speech and ages of participants examined in each chapter are not closely comparable - spontaneous speech from children under age 6, and 20-year-old adults, is examined in Chapter 4, while narrative speech from children aged 6 to 9, and adults aged 20 to 60+, is examined in Chapter 5. A comparison of texts of one genre from similar age groups might be more informative about whether speakers use similar or different strategies in the two languages. So the purpose of the statistical analyses in this section is to see if children and young adults show differences between the two languages in how they distribute ergative marking and word order patterns when genre and age are held constant. Later in the section the same data are analyzed qualitatively to see if other strategies are used to show differences between the two languages.

The analyses in this section make a two-way comparison. They compare the patterns 20-year-old adults and children produce in Light Warlpiri with the patterns they produce in Warlpiri, and they examine the extent to which the children are adult-like in the distributions they produce. The same procedure with the same set of stimulus picture books as described in Section 5.2 on page 166 was used. Three age groups - adults aged 20 and children of ages 7 and 9 - told narratives in both Light Warlpiri and Warlpiri. In the adult group two different sets of speakers each told the stories in one language only. The children each told the stories twice, once in each language, with two or more weeks between each story-telling session. The order in which they told a story in one language or the other was counter-balanced.
6.2.1.1 Overview of transitive clauses in each language

Table 6.1 presents the number of transitive clauses with A arguments that can host ergative marking, the percentage of ergative marking and the percentage of A arguments that are preverbal. The table shows that speakers in all age groups use ergative marking in Lajamanu Warlpiri narratives more often than in Light Warlpiri narratives, but that the percentage of preverbal A arguments does not differ much between languages. To examine the strategies used in more detail I conducted statistical analyses.

6.2.1.2 Ergative marking

A statistical analysis was undertaken to find out whether the distributions of ergative marking in each language are really different, or are due to chance. The potentially explanatory factors are the same as those used in my previous analyses of adult and child ergative marking, except that in this study the language that the story was told in is also a potentially explanatory factor. The factors entered into the analysis as independent variables are:

Table 6.1: Warlpiri and Light Warlpiri narratives: number of A arguments, percentage ergative marking, percentage preverbal A, per age group
Language contact and bilingual acquisition

- Language (Warlpiri or Light Warlpiri)
- Age group of speaker (7, 9 or 20)
- +/- Animate A argument
- +/- Preverbal A argument
- +/- Overt O argument
- +/- Animate O argument.

Table 6.2 shows the number of A arguments and the percentage of ergative marking for each independent variable in the analysis of Light Warlpiri, while Table 6.3 shows the number of A arguments and the percentage of ergative marking for each independent variable in the analysis of Lajamanu Warlpiri.

The same type of analysis as that used in the studies reported in the previous chapters was conducted - a multilevel logistic regression analysis with a binomial link function. The dependent variable is ergative marking and speaker and text (book a, b, or c of three picture books) are random effects.

The results show that for all age groups, when a story is told in Warlpiri, there is more ergative marking on A arguments than when it is told in Light Warlpiri ($p < 0.001$). Children aged 7 mark postverbal A arguments in both languages more often than children aged 9 and adults ($p < 0.001$). Children aged 9 are approaching significance in marking postverbal A arguments in both languages more often than the adults ($p = 0.055$).

So there is a clear difference between languages in how often A arguments are marked overall, and children are adult-like in distributing marking in different quantities in each language. But the children use the same strategy in both languages for choosing when to mark A arguments, which is to mark postverbal A
### LIGHT WARLPIRI

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age 7</th>
<th>Age 9</th>
<th>Age 20</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. A</td>
<td>%</td>
<td>No. A</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>ergative</td>
<td></td>
<td>ergative</td>
<td></td>
</tr>
<tr>
<td>Word order</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preverbal A</td>
<td>47</td>
<td>49</td>
<td>60</td>
<td>42</td>
</tr>
<tr>
<td>Postverbal A</td>
<td>31</td>
<td>71</td>
<td>21</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>81</td>
<td>81</td>
<td>66</td>
</tr>
<tr>
<td>A animacy</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Animate</td>
<td>51</td>
<td>57</td>
<td>58</td>
<td>45</td>
</tr>
<tr>
<td>Inanimate</td>
<td>27</td>
<td>59</td>
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<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>81</td>
<td>81</td>
<td>66</td>
</tr>
<tr>
<td>O animacy</td>
<td></td>
<td></td>
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</table>

Table 6.2: Light Warlpiri narratives: percentage of ergative marking per independent variable, ages 7, 9, and 20.
language contact and bilingual acquisition

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age 7</th>
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<th>Age 20</th>
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<tr>
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</tr>
<tr>
<td>Animate</td>
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</tbody>
</table>

Table 6.3: Lajamanu Warlpiri narratives: percentage of ergative marking per independent variable, ages 7, 9, and 20.

arguments more often than those that are preverbal. Recall that the analysis of Lajamanu Warlpiri narratives, in Section 5.3 on page 170, showed that postverbal A arguments are marked more often across all age groups. That pattern did not emerge for the adults in this analysis - only the children mark postverbal A arguments more often. This might be because there are only 4 to 5 adults in each of the adult groups in this study and there were not enough data points for the adult pattern to emerge.
6.2.1.3 Word order

Turning now to word order, the purpose of the statistical analysis in this section is to see if children and young adults show differences between Lajamanu Warlpiri and Light Warlpiri in word order preferences when genre and age are held constant. The independent variables are the same as those used in my previous analyses of word order patterns, except that in this analysis language is also a potentially predictive factor. The factors entered into the analysis as independent variables are:

- Language (Warlpiri or Light Warlpiri)
- Age group of speaker (7, 9 or 20)
- +/- Ergative marker present
- +/- A argument animate
- +/- A argument new
- +/- O argument overt
- +/- O argument animate.

Table 6.4 shows the percentage of Preverbal A arguments in Light Warlpiri for each variable in the analysis, while Table 6.5 shows the percentage of Preverbal A arguments in Lajamanu Warlpiri for each variable in the analysis. The dependent variable is preverbal A arguments, and speaker and text (book a, b, or c of three picture books) are random effects.

The results show that children and adults use similar word order strategies in both languages - there is no main effect of language, nor any interaction effect of
## LIGHT WARLPIRI

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Age 9</th>
<th>Age 20</th>
<th>Total</th>
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Table 6.4: Light Warlpiri narratives: % Preverbal A per independent variable, ages 7, 9, and 20.

Language contact and bilingual acquisition. Across all age groups there is more AV order when A arguments are new (p < 0.001), or animate (p < 0.001), or the O argument is inanimate (p = 0.004). The seven-year-olds use AV order more often than the nine-year-olds do (p < 0.001), and the nine-year-olds use it more often than the adults (p = 0.001). Both groups of children position inanimate A arguments preverbally more often than animates (age 7: p < 0.001; age 9: p = 0.006). Ergative marking
<table>
<thead>
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<th>Age 9</th>
<th>Age 20</th>
<th>Total</th>
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<td>No. A</td>
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<tr>
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<tr>
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<tr>
<td>Total</td>
<td>66</td>
<td>95</td>
<td>95</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 6.5: Lajamanu Warlpiri narratives: % preverbal A arguments per independent variable, ages 7, 9, and 20.

only plays a role for the seven-year-olds, who position A arguments preverbally most often when they are not marked (p = 0.01).

Recall that the most natural kind of transitive construction is one in which the A argument is high in animacy and definiteness and O argument is lower in animacy and definiteness (Comrie 1989). The finding that across all age groups, there is
more AV order when A arguments are animate, or O arguments are inanimate, suggests that the unmarked word order for transitive clauses in this type of speech event in both languages is AVO. A arguments that are new to the discourse are also more likely to be preverbal, correlating with the same finding in Chapter 4 for Light Warlpiri spontaneous speech and in Chapter 5 for Warlpiri narratives.

The results for the children are interesting - they prefer AV order more than the adults do, so much so that they prefer As to be preverbal whether they are animate or inanimate. This suggests that children are regularizing the word order of both languages such that the unmarked order is becoming AVO. In addition, the youngest group, the seven-year-olds, show a correlation between word order and ergative marking that is not shown in this data set for the other age groups - they mark postverbal A arguments significantly more often than preverbal A arguments. This group of children seems to be spear-heading the regularizing of the relationship between word order and ergative marking. The correlation of word order patterns and ergative marking was also found in spontaneous Light Warlpiri speech (in Chapter 4), and in the set of Warlpiri-only narratives that included the older adults, ages 30 to 50, as well (in Chapter 5). The correlation is not as strong for the adult speech as for the children. The word order strategies used by adults in both Lajamanu Warlpiri and Light Warlpiri might be in flux - in Lajamanu Warlpiri because it is undergoing change under the influences of AE/Kriol and Light Warlpiri, and in Light Warlpiri because patterns in the language are still being formed. The children’s response to the lack of clarity in the patterning is to regularize the patterns.
6.2.2 Other strategies showing differentiation

I have shown that children show differences between the two languages in how they distribute ergative marking, but not in how they distribute word order patterns. Several of the children show differences between the two languages in ways other than the use of ergative marking - they show stylistic differences between the languages, in their choice of ergative allomorphs and in their pronunciation of some words for stylistic effects. I discuss each of the stylistic strategies in turn.

**Use of different ergative allomorphs.** As explained in Section 2.3 on page 45, two of the ergative allomorphs that occur in Lajamanu Warlpiri on words of three or more morae, the -rlu/-rli forms, are rarely used in Light Warlpiri, and are not obligatory in Lajamanu Warlpiri - it is acceptable to use the velar-initial forms (-ng, ngi/ngu, ngki/ngku on words of any length, so speakers could use the -ng form on any words in both languages. But some children use the -rlu/-rli forms in their Lajamanu Warlpiri, as in (134), but not in their Light Warlpiri.

(134) wirriya-rlu-ø-ø shut-i-ma-nu puluku
    boy-ERG-PST-3sg shoot-EPEN-CAUSE-PST cow
    The boy shot the cow. (C39:ERGstoryWC39)

The same child only uses the most common Light Warlpiri form, -ng, on words of similar length in her Light Warlpiri narratives, as in (135).

(135) wel i got boil na ngula karnta-pawu-ng
    well 3sg get:PST boil DIS ANAPH woman-DIM-ERG
    Well that woman has a boil now. (C39:ERGstoryLC39)

**Vowel properties.** In narratives told by adults in classic and Lajamanu Warlpiri, the final /u/ on verbs such as ya-nu (go-PST) can be lengthened, to indicate that
the action takes place over a long time, and, in the case of *ya-nu* (go-PST), increased distance, as in (136b).

(136) a. *ya-nu-lpa-ø kuja-par-da-wi-yi-ji-ki*
o-pst-imppf-3sg thus-dir-first-continue
   He continued to travel in the same direction.

   b. *ya-nu-u-u-ø*
go-pst-dis-dis-3sg
   He went on. (Rockman and Cataldi 1994, 2)

In (136b) the final vowel is lengthened. Some children use this strategy in their Lajamanu Warlpiri narratives, as in (137c), but none of them uses it in their Light Warlpiri narratives.

(137) a. *warna-ø ya-nu-rnu*
snake-3sg go-pst-hither
   A snake came towards him.

   b. *yalku-rnu-ø-ø wirliya-jarra-ngka jinta-ngka*
bite-pst-3sg-3sg leg-dl-loc one-loc
   It bit him on both legs.

   c. *ya-nu-u-u-ø*
go-pst-dis-dis-3sg
   It went far away. (C32:ERGstoryWC32)

Another discourse strategy used by older adults is to alter a word-final vowel, *a* or *u*, such that it becomes *awu*, for emphasis, or to show increased affect. In (138), the speaker is telling part of a story in which a horse is lying on the ground with an injury (138a). It is unclear from the stimulus picture whether the horse is alive or not, but in (138b), the horse stands up and is seen to still be alive. The adult speaker shows the increased affect in this part of the story by altering the

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Children’s ergative marking and word order: Light Warlpiri vs Lajamanu Warlpiri

pronunciation of *wankaru-lku* ‘alive-then’, to *wankaru-lkawu*. In (138c) she returns to the unmarked pronunciation of the same word.

(138)  
\[ \text{a. } nguna-mi \text{ ka-pala } kuja \]  
lie-NPST IMPF-3dl thus  
The two of them are lying down like that.

\[ \text{b. nya-ngka wankaru-lkawu} \]  
look-IMP alive-THEN  
Look! Now it’s alive!

\[ \text{c. wankaru-lku } ka-ø \text{ ya-ni-rra } wuju-ju \]  
alive-THEN IMPF-3sg go-NPST-THITHER horse-TOP  
Now the horse goes away, still alive. (A12:ERGstoryWA12.3)

Some of the children also use this pronunciation in their Lajamanu Warlpiri narratives, as in (139), but not in their Light Warlpiri narratives.

(139) \[ \text{oh wanti-ja-lpa-wu-ø} \]  
oh fall-PST-IMPF-DIS-3sg  
Oh it was falling!

Table 6.6 summarizes the distribution of these stylistic devices in the two languages.

<table>
<thead>
<tr>
<th>Stylistic device</th>
<th>Lajamanu Warlpiri</th>
<th>Light Warlpiri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ergative allomorphy</td>
<td>-rlu, -rli, -ng(k)u, -ng(k)i, -ng</td>
<td>-ng</td>
</tr>
<tr>
<td>Vowel lengthening</td>
<td>e.g. yanu-u-u</td>
<td>n.a.</td>
</tr>
<tr>
<td>Dipthongization</td>
<td>e.g. wanti-ja-lpa-wu</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Table 6.6: Stylistic devices in children’s Warlpiri narratives.
6.2.3 Properties showing lack of differentiation

While none of the children used Warlpiri verbs or auxiliary forms in their Light Warlpiri narratives, some children used Light Warlpiri forms in their Lajamanu Warlpiri narratives. There was also some code-switching between clauses, diagnosed by use of a Light Warlpiri verb and auxiliary in one clause and a Lajamanu Warlpiri verb and auxiliary in another. But code-switching is not the phenomenon I am referring to here.

Some children are more confident speakers of Lajamanu Warlpiri than others, and a few children did not have full control of the Warlpiri verb and auxiliary system. For example, one child, aged 7, used a Light Warlpiri auxiliary with a Warlpiri verb, as in (140).

(140) a. swing-jarrri ka-rna swing-swing-rla
    swing-INCHO IMPF-1sg swing-swing-LOC
    I am swinging on the swing.

b. i-m push-i-ma-ni
    3sg-NFUT push-EPEN-CAUSE-NPST
    She is pushing him. (C47:ERGstoryWC47)

In (140a), Child C47 uses the Warlpiri verb and auxiliary, but uses the first person form of the auxiliary (ka-rna) instead of the third person form, which is null (ka-o). Then, in (140b), he uses the Light Warlpiri auxiliary, i-m ‘3sg-NFUT’, with a Warlpiri verb. The Warlpiri verb he uses consists of a preverb from English, push, and a bound main verb from Warlpiri, ma-ni ‘CAUSE-NPST’, and this combination is a common process of Warlpiri verb formation (see Section 2.4). The use of the verb forms here is not problematic, but combining a Light Warlpiri auxiliary with a Warlpiri verb shows that the child does not have full control over the Warlpiri verb and auxiliary systems, although he uses them correctly at other times in the
same narratives.

In example (141), Child C10 uses a Warlpiri auxiliary with a Light Warlpiri verb form.

\[(141) \quad ka-pu-ø-ø \quad \text{help-im} \quad \text{jarntu} \]
\[
\text{IMPF-FUT-3sg-3sg help-TR dog}
\]

It will help the dog.

Example (141), from a six-year-old, shows that children sometimes mix a Warlpiri auxiliary with a Light Warlpiri verb form. The Warlpiri verb form that would typically have been used is help-i-ma-ni ‘help-EPEN-CAUSE-NPST’, a combination of an English or Kriol preverb and a Warlpiri main verb.

Another instance of less than full control of the Warlpiri verb system is shown in (142a) and (142b), in which one form has two possible interpretations. This example does not show lack of differentiation between the verb and auxiliary systems of the two languages, but shows that the child is still learning the Warlpiri system.

\[(142) \quad a. \quad paji-ka \]
\[
\text{cut-IMP} \quad \text{Cut it!}
\]

\[b. \quad paji-ka-ø-ø \]
\[
\text{cut-IMPF-3sg-3sg} \quad \text{It is cutting it. (C22:ERGstoryWC22)}
\]

There are two possible interpretations of \(paji + ka\): (1) as an imperative \(paji-ka \ ‘cut-IMP’\), as in (142a), or (2) as a verb stem with no inflection \(paji-ø \ ‘cut’\), plus the imperfective auxiliary form \(ka-ø-ø \ ‘IMPF’\), as in (142b). Neither of these interpretations represents adult-like use of the verb and auxiliary. It is common for speakers of Lajamanu Warlpiri to omit the inflection from some verbs, for example \(nyina \ ‘sit’\) and \(wanti \ ‘fall’\) are often heard without inflections. Example (143), from
a 50-year-old adult, shows the verb *wanti* ‘fall’ being used without an inflection.

(143) \( \underline{\text{ka-pu}} \quad \underline{\text{wanti-} \varnothing} \)  
\text{IMPF-FUT fall}  
He might fall! (A05:C02.18)

The use of some verbs without inflections could provide a motivation for children
to omit inflections from other verbs while they are still learning the verb and
auxiliary system. These examples show that some children at age 7 still have
difficulty with the Warlpiri verb and auxiliary systems, and sometimes combine a
Warlpiri verb with a Light Warlpiri auxiliary, or a Warlpiri auxiliary with a Light
Warlpiri verb form.

6.2.4 Summary and discussion

In the previous sections, analyses of ergative marking and word order in children’s
and adults’ production of Light Warlpiri and Lajamanu Warlpiri were conducted.
The analyses examined two parameters at the same time - the extent to which
adults and children show differentiation between the languages, and the extent to
which the children are adult-like. Adults do distribute ergative marking differently
between the two languages (they use it more often in Lajamanu Warlpiri, less
often in Light Warlpiri), but their word order patterns are similar in both lan-
guages. The children are adult-like in that they also distribute ergative marking
differently in each language, but they show similar word order patterns in the two
languages. But the children differ from the adults in a systematic way - they show
a stronger correlation of ergative marking and word order in both languages than
the adults do in either language. This suggests that the different distributions of
ergative marking in each language are relatively easy for the children to detect.
The correlation of ergative marking and word order is also relatively easy to detect, especially as it occurs in both languages. The children see the word order similarities in adult speech in the two languages, and pick up on the patterns, but reproduce them even more often, so that the strategies used in each language are more similar for the children than for the adults.

All age groups use similar word order patterns in both languages to some extent - an A argument is more likely to be preverbal when it is animate, or new, or when the O argument is inanimate. But the seven-year-olds and nine-year-olds differ from each other and from the adults - seven-year-olds use even more AV order than the adults, and the nine-year-olds use less AV order. The nine-year-olds’ word order is more like that of adults in spontaneous speech, in both Light Warlpiri (see Section 4.4) and Warlpiri (see Section 3.1.2.2). The difference between the nine-year-old children and the other groups in the narratives might be one of register. The adults use less variable word order in the narratives than in their spontaneous speech, but the nine-year-old children use a similar amount of variation in their narratives as in adult spontaneous speech. The explanation might be that adults’ word order is not always as consistent as in the set of narratives, and the nine-year-olds are following the more common input pattern of spontaneous speech. We saw in Chapter 4, in the analysis of spontaneous Light Warlpiri speech, that when an O argument in a clause is animate, ergative marking is used to avoid potentially high ambiguity. The use of a consistent word order pattern in which A arguments are preverbal might be used in addition to ergative marking as a disambiguation strategy. In contexts of potentially high ambiguity, such as when there is an animate O argument in the clause, all age groups use ergative marking for disambiguation, but they do not also use word order for that function. Recall that Slobin (1982) (Section 3.2) suggests
that local marking (i.e. morphological marking) is easier to learn than non-local marking (i.e. word order). It may be that the functions of variable morphological patterns are easier to tune in to than those of variable word order patterns. The seven-year-olds prefer a more regular AV order than do the other groups. They also prefer to mark VA order with ergative marking more than the other groups - this might herald a more stable pattern of $A^{-}\sigma V$ and $VA^{+}\text{erg}$ in both languages in the future.

In sum, the children differentiate between the languages in several ways. They do this first by producing only one language until the age of 4 to 6 years. Then, when they are producing both languages, they distribute the ergative marker differently in the two languages, as do the adults, and some children use a wider range of ergative allomorphs in Lajamanu Warlpiri than in Light Warlpiri, as do the adults. Several children also use adult-like stylistic devices in Lajamanu Warlpiri but not in Light Warlpiri. Even in the learning environment of this study, in which the children receive complex and variable input, the children are able to pick up on subtle patterns of distributions of morphological marking in each language and reproduce them in their own speech. Their word order patterns are more complicated - in the main they follow the adults by not having significantly different patterns between languages, but they are regularizing the adult patterns even more than the adults are.
6.3 Children’s comprehension strategies in Light W arlpiri and Lajamanu W arlpiri

6.3.1 Rationale and methodology of comprehension study

In the previous section I examined the productive strategies of children and adults for indicating A arguments in Lajamanu W arlpiri and Light W arlpiri narratives. But productive strategies represent only part of the linguistic task. It would be interesting to know which comprehension strategies children and adults use to identify core arguments in each language. Do they use the cues of ergative marking and word order differently in comprehending sentences in the two languages?

In this section I use a comprehension task to examine children’s interpretation of ergative case-marking and word order in discrete declarative transitive sentences. Studies of sentence interpretation focusing on these cues have been conducted in other languages and in Warlpiri using an act-out task, as reported in Section 3.2 (Slobin 1982; Slobin and Bever 1982; Bavin and Shopen 1985). In a pilot act-out task in Lajamanu, following Bavin and Shopen (1985), I found that for my study site an act-out task was not the best methodology. Running the task twice, once in each language, would have taken more time than there was available. I was reluctant to read the sentences to the children myself, in case non-native pronunciation made the sentences difficult for them to understand, or ‘different’ from their usual input, yet piloting showed that when native speakers of Warlpiri read the sentences they often changed the word order of the sentences, a problem Bavin and Shopen also encountered when Warlpiri speakers performed the task. It was also difficult to find a native speaker of Warlpiri who could be available for all of the time needed to conduct the task for all of the children in a cross-
sectional study. Another problem was that statistical analysis would be difficult unless there were many exemplars of each combination of case and word order, making the study bigger and more difficult to implement.

To solve these problems an alternative task was developed, with a methodology similar to that used by Stoll (1998) in a study of young children’s comprehension of aspect. The children were presented with two simple animated scenes featuring cartoon-style humans and familiar animals. The scenes depict simple two-participant events which are typically encoded by transitive verbs. A pair of events shows the same two characters, and the same action is performed by one of the characters on the other, but in each pair of scenes the roles of the two characters are reversed, such that the agent in one scene is the patient in the other, and vice versa. The participants first saw each scene, separately, one on each side of the screen. Then they saw both scenes at the same time and heard a pre-recorded sentence. They pointed to the scene which represented the sentence heard. There was a series of warm-up scenes before the task, and an intransitive filler scene after every four or five test scenes. Each child and adult participated in the task twice, once when the pre-recorded sentences were in Warlpiri and once when they were in Light Warlpiri, with a two-week break between sessions. Half of the children and adults performed the task first in Warlpiri, then in LW, and the other half performed the task with the languages in the reverse order. The order of presentation of scenes and sentences within the task was randomized, then counter-balanced, so that a systematic interpretation (for example, an ergatively-marked NP is the A argument) was possible for an equal number of scenes appearing on each side of the screen. The scenes were presented in four different orders and each participant was presented with a different order of scenes in each language. For instance, if a
participant did the task first in Lajamanu Warlpiri and saw scenes in order A, then two weeks later the same participant did the task in Light Warlpiri and saw scenes in order B, C or D. Orders were counterbalanced so that different participants did the task with different combinations of orders.

Each sentence the children heard contained a lexical core argument, with or without ergative marking, an auxiliary and a transitive verb. All argument referents were animate. Each sentence had only one lexical argument for reasons of naturalness, since in spontaneous speech transitive sentences with only one lexical core argument are common (Swartz 1991). Song and Fisher (2005) have shown that pre-school children can interpret the referents of pronominal and lexical arguments equally well, so I expect that the children can also interpret null-arguments in a language in which arguments can be elided. In natural speech the omission of a core argument is contextualized, in that the argument can only be omitted when its referent can be retrieved through the linguistic or nonlinguistic context, and in the task the visual information in the scene the child was looking at provided a discourse context. The children had already seen the two participants before they heard the sentence in which only one of them was named. In each language there were two conditions, case-marking and word order, with two levels of each condition. In the case-marking condition the two levels were with and without ergative case-marking on the overt NP. In the word order condition the two levels were NV order and VN order. So that children could cue into the language they were about to hear in the task, they watched a short video in the language of the task. The videos were not the same as those used in the production task. Children were also given a sandwich to eat while they watched the video, in case being hungry caused them to lose concentration during the task, and they were given an ice-cup
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afterwards.

The Warlpiri examples here are given with English glosses which represent the classic Warlpiri interpretation of the sentences. From here on I will call the classic Warlpiri interpretation the ‘case-marking interpretation’. For the ‘with case’ condition the case-marking interpretation is that the character referred to by the overt NP with ergative case-marking is the A argument. For the ‘no case’ condition the case-marking interpretation is that the character referred to by the overt NP without case-marking is the O, and the other, unnamed character is the A argument. This is because in the case-marking interpretation only a case-marked NP is interpreted as A, and unmarked NPs are interpreted as S or O. I will call the other possible interpretation of the sentences the ‘word order interpretation’. The word order interpretation is that when the order is NV, the character referred to by the overt NP is the A, in other words, NV = SV, regardless of case-marking. When the order is VN, the character referred to by the overt NP is the O, in other words, VN = VO, regardless of case-marking. Table 6.7 summarizes the conditions and possible interpretations.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Strategy</th>
<th>NV strategy</th>
<th>VN strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘with case’ condition</td>
<td>case-marking strategy</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>word order strategy</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>‘no case’ condition</td>
<td>case-marking strategy</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>word order strategy</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>

Table 6.7: Labeling of possible strategies. Coding: A. Listener chooses referent of named NP. B. Listener chooses referent of unnamed NP.

The following examples show Warlpiri and Light Warlpiri sentences for the same
pair of scenes, with one example for each condition. Examples (144) and (145) are Warlpiri. Example (144) shows the ‘with case, NV order’ condition, and example (145) shows the ‘with case, VN order’ condition.

(144) *nantuwu-rlu ka-ø-ø panti-rni*
horse-ERG IMPF-3sg-3sg poke-NPST
‘The horse is poking it/him/her’.

(145) *parlupi-nyi ka-ø-ø wawirri-rli*
find-NPST IMPF-3sg-3sg kangaroo-ERG
‘The kangaroo finds it/him/her’.

The next two examples show Warlpiri sentences for the ‘no case’ condition, in both NV (146) and VN (147) orders. In (146) and (147), in which the overt NP does not have ergative case-marking, the case-marking interpretation is given in the gloss, which is that the unmarked core NP is the O argument.

(146) *prokprok ka-ø-ø marnpi-rni*
frog IMPF-3sg-3sg touch-NPST
‘It/he/she touches the frog’.

(147) *ma-ni ka-ø-ø jungunypa*
get-NPST IMPF-3sg-3sg mouse
‘It/he/she picks up the mouse’.

Examples (148) and (149) are Light Warlpiri, for the ‘with case, NV order’ and ‘with case, VN order’ conditions.

(148) *uuju-ng i-m puk-um*
horse-ERG 3sg-NFUT poke-TR
The horse is poking it/him/her.

(149) *i-m faind-im kengkaru-ng*
3sg-NFUT find-TR kangaroo-ERG
The kangaroo finds it/him/her.
In (150) and (151), both the case-marking interpretation and word order interpretations are given in the glosses. It was an empirical question as to how the Light Warlpiri speakers would interpret these sentences.

(150) prokprok i-m taj-im
tag frog 3sg-NFUT touch-TR

‘It/he/she touches the frog’. (case-marking interpretation) Or: ‘The frog touches him/her/it’. (word order interpretation)

(151) i-m ged-im jungunypa
3sg-NFUT get-TR mouse

‘It/he/she picks up the mouse’. (case-marking interpretation) Or: ‘The mouse picks him/her/it up’. (word order interpretation)

Figure 6.1 shows the final images that the children saw when they heard the sentence in example (151).

![Sample of screen, showing scene for example 151.](image)

The Figure shows that the children could point to a scene that shows a frog picking up a mouse (on the left-hand side), or a mouse picking up a frog (on the right-hand side).

I administered the task to each child individually, recording on paper the scene
the child pointed to during the task. The task was not video-taped because a pilot task showed that it was difficult to position the video camera such that the child’s hand movement could be seen to differentiate clearly between scenes. When I was not sure to which scene the child pointed I asked “nyarrpara? ‘where?’” and recorded the scene the child pointed to the second time. Some of the children’s results were not included in the final set of data because the children’s hand movements did not unambiguously indicate one or other of the scenes. For example, some children pointed to the same side of the screen for every sentence, including the intransitive filler items. If a child did not point to the correct scene in the filler items the task was abandoned for that child. Two children just waved their hands over the computer screen in a non-specific way, and one simply did not participate, perhaps because she did not know me very well. After each full set of items, whether successful or not, each child was given an ice-cup.

During the task I recorded whether the child chose the scene on the left-hand-side or right-hand-side of the screen, in the order that the scenes occurred for that child. Later these results were recoded so that every participant could be seen to have chosen the referent of either the named NP or the unnamed NP, with all cartoons listed in the same order (not the order in which they were seen by any of the participants).

6.3.2 Children’s comprehension strategies

The purpose of the statistical analysis is to see whether the children use different strategies for interpreting the A argument in each language, Light Warlpiri and
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Lajamanu Warlpiri\(^2\). The task pits two possible interpretive cues, ergative marking and word order patterns, against each other. Figures 6.2 and 6.3 show the percentage of choices of Named NP for each condition, per age group, for Light Warlpiri and Lajamanu Warlpiri, respectively.

![Figure 6.2: Light Warlpiri: percentage of choices of Named NP, per age group.](image)

![Figure 6.3: Lajamanu Warlpiri: percentage of choices of Named NP, per age group.](image)

I will discuss the Figures in relation to the results of the statistical analysis. The sentences used in the comprehension task could be categorized as either classic Warlpiri or Lajamanu Warlpiri, but to be consistent I will continue to use the term Lajamanu Warlpiri.

\(^2\)The sentences used in the comprehension task could be categorized as either classic Warlpiri or Lajamanu Warlpiri, but to be consistent I will continue to use the term Lajamanu Warlpiri.
dependent variable in the analysis is choice of NP, with two levels, ‘named NP’ and ‘not-named NP’. The independent variables are

- Language (Light Warlpiri or Lajamanu Warlpiri)
- +/- Ergative case-marker present
- Word order (NV or VN)
- Age group of listener (ages 5, 7, 9 or 20).

Participant and item are random effects.

The results show that children and adults use the same strategies in sentence interpretation in both languages, as seen in a comparison of Figures 6.2 and 6.3. Across all age groups, the referent of the named NP is chosen as the A argument more often when ergative marking is present than when it is not (p < 0.001) and more often when the word order is NV than when it is VN (p < 0.001). Overall the choices of the children aged 5 are significantly different from the other age groups (p = 0.001), and those of the children aged 7 are significantly different from the nine-year-olds and the adults (p = 0.01). Each group of children chooses the named NP more often when there is no ergative marking than do the adults (Ages 5 and 7: p < 0.001; age 9: p = 0.03), and each age group differs from each other group. As age increases, so does the likelihood of choosing the not-named NP when there is no ergative marking.

Table 6.8 gives the percentages of choices of referent of the named NP as A argument when the ergative marker is present. I will no longer show the figures for each language separately because language does not influence listener choices.³

³There is one less item in the condition ‘N+ergV’, because for one scene in that condition there were two possible interpretations, so the scene was not included in the analysis. In the nine-year-old age group there are two items for which there is no data.
Table 6.8: Condition: +/- ergative marking; Percentage of choices of referent of Named NP as A argument, per age group

<table>
<thead>
<tr>
<th>Age</th>
<th>With ergative</th>
<th>No ergative</th>
<th>Total items</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>82</td>
<td>33</td>
<td>270</td>
</tr>
<tr>
<td>7</td>
<td>88</td>
<td>34</td>
<td>300</td>
</tr>
<tr>
<td>9</td>
<td>96</td>
<td>15</td>
<td>268</td>
</tr>
<tr>
<td>20</td>
<td>99</td>
<td>5</td>
<td>180</td>
</tr>
</tbody>
</table>

Table 6.8 shows that the adults consistently use a case-marking strategy - when the ergative is present they choose the ergative-marked NP as the A argument, and when it is not present, they choose the unnamed NP as the A argument. The nine-year-olds make similar choices, but they are not as consistent as the adults. Especially in the ‘no ergative’ condition, they choose the named NP as A more often than the adults do. The seven-year-olds are quite different in their choices, sometimes choosing the referent of the NP which is not named even when ergative marking is present. Their choices for the ‘no ergative’ condition are also clearly different from the older groups - they choose the referent of the named NP quite often when there is no ergative marking. This group uses the case-marking strategy often, but also departs from it. The 5-year-old group differs from all of the other groups. Children in this group choose the referent of the NP which is not named quite often when ergative marking is present and, conversely, the referent of the named NP quite often when there is no ergative marking. They use the case-marking strategy much less than the other groups. There is a very clear developmental pattern in the results - the figures for each choice in each condition move slowly towards the adults’ figures. Presumably when they are younger the
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children are uncertain whether they should use a case-marking or a word-order strategy, so they use both. As they get older they increasingly use a case-marking strategy. This is interesting in comparison to the production data results, in which the children’s correlation of ergative marking and word order patterns might signal language change.

Word order also matters to a listener when choosing an A referent. Listeners are more likely to choose the referent of the NP which is not named when the order is VN. Table 6.9 gives the figures for when listeners choose the referent of the named NP as A argument for NV and VN word orders, for each age group. Table 6.9

<table>
<thead>
<tr>
<th>Age</th>
<th>NV order</th>
<th>VN order</th>
<th>Total items</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>60</td>
<td>50</td>
<td>270</td>
</tr>
<tr>
<td>7</td>
<td>68</td>
<td>54</td>
<td>300</td>
</tr>
<tr>
<td>9</td>
<td>59</td>
<td>52</td>
<td>268</td>
</tr>
<tr>
<td>20</td>
<td>53</td>
<td>51</td>
<td>180</td>
</tr>
</tbody>
</table>

Table 6.9: Condition: word order; Percentage of choices of referent of named NP, by age group.

shows that more referents of named NPs are chosen when the word order is NV. This means that listeners consider the N in NV order to be the A argument more often than not, and the N in VN order to be the O argument more often than not. This points toward use of a word order strategy, but recall that in two conditions (‘N+ergV’ and ‘VN−o’) the case-marking strategy and word order strategy lead to the same choice. Although there is no interaction between ergative marking and word order, looking at a breakdown of choices in Table 6.10 in both of these conditions helps to understand how VN order matters to listener choice.
Table 6.10: Conditions: +/- ergative marking and word order; percentages of choices of referent of named NP as Agent, per age group

The table shows the choices of referents which are named or not named, with and without ergative marking, when the word order is NV or VN. To help interpret the table, each combination of conditions and the strategy needed for each choice is given in another table, Table 6.11.

Table 6.11: Strategies listeners use when making a choice in each condition

Looking at both tables makes it easier to understand the strategies used. The
adults use the case-marking strategy in all conditions, so it is more interesting to examine the children’s choices. There are two conditions in which case-marking and word order strategies reinforce each other - in the ‘N+ergV’ condition both strategies lead to choosing the referent of the named NP as the A argument. In the ‘VN−ø’ condition both strategies lead to choosing the referent of the NP which is not named as the A argument (i.e. the postverbal N is the O argument). So children could be expected to choose the referent of the named NP as the A argument most often in the ‘N+ergV’ condition and to choose the referent of the NP which is not named most often in the ‘VN−ø’ condition. The children do behave as expected - they choose the referent of the named NP as A argument more often in the ‘N+ergV’ condition.

But there are two conditions in which neither a case-marking nor a word order strategy explains the choice the children make. In the ‘VN+erg’ condition, neither strategy explains choosing the referent of the NP which is not named as the A argument, yet 5-year-olds and 7-year-olds choose this referent a few times. In the ‘VN−ø’ condition, neither strategy explains choosing the referent of the named NP as the A argument, but 5-year-olds and 7-year-olds choose this referent fairly often. I suggest that in this combination of conditions the children choose the referent of the named NP simply because it is named. As they get older they use this strategy less. One might ask whether the children always use the strategy of choosing the referent of the named NP as A argument, regardless of case-marking and word order. If children were using a strategy of ‘choose the named NP’, they would choose the referent of the named NP as A argument in all conditions, but they do not. Even in the ‘N+ergV’ condition the younger children do not always choose the referent of the named NP as the A argument.
6.3.3 Summary and discussion

In their production, adults use ergative marking on between 30% and 80% of A arguments in Light Warlpiri (Section 4.3.1), and on most of them in Lajamanu Warlpiri (Section 5). So adults could be expected to always use the case-marking strategy in Lajamanu Warlpiri, and to use it when the ergative is present in Light Warlpiri. But there was no clear prediction for which strategy would be favored in the ‘no case’ condition in Light Warlpiri. If the participants were using the Warlpiri strategy they would use the case-marking strategy. But if they were orienting more to word order as indicating arguments, as in English and Kriol, they would use a word order strategy, and choose the referent of the named NP as the A argument in the NV condition, but not in the VN condition.

Results show that adults rely more on the case-marking strategy in both languages, in both the ‘with case’ and ‘no case’ conditions. They do not use different strategies in the two languages. But when they speak Light Warlpiri they do not always produce ergative marking on A arguments. This means that listeners in real-life conversations in Light Warlpiri hear speakers producing A arguments that are not morphologically marked, so they presumably use non-morphological, pragmatic cues to interpret them as A arguments. The discrepancy between comprehension and production can be explained by the use of pragmatic factors in real discourse. In the comprehension task in this study, each sentence is discrete and does not depend on previous discourse for its interpretation. In real discourse there is a wealth of pragmatic cues available. These are present in both Light Warlpiri and Lajamanu Warlpiri, but Light Warlpiri speakers make use of these more than is necessary in Lajamanu Warlpiri to interpret an NP as an A argument. The cues are word order, information about person and number in the auxiliary,
lexical semantics, event probability and information packaging. When these cues are informative enough the listeners are probably sensitive to them, and perhaps rely on the presence or absence of ergative case-marking less. When these cues are not informative, such as in the comprehension task, listeners are more sensitive to the presence or absence of ergative case-marking.

In comprehension studies by Bavin and Shopen (1985, 1989), child speakers of classic Warlpiri in another community reached scores of 67% correct in interpreting ergative case-marking only after age 4 (see page 94). The Lajamanu children show a similar rate of success at age 5: when ergative marking is present, they use the case-marking strategy in 67.4% of choices. Despite the mixed input to children in Lajamanu Community, there is no decrease in the children’s ability to use the case-marking strategy in Lajamanu Warlpiri compared to the relatively Warlpiri-heavy input situation in the Bavin and Shopen studies. But the success rate of Warlpiri and Light Warlpiri-speaking children is lower than that for children in the Slobin and Bever (1982) studies. In each language in those studies, the children reached 67% accuracy in sentence interpretation by the ages of 2;0 (for Turkish) to 3;0 (for Serbo-Croatian). In accounting for the relatively late attainment of accuracy by the Warlpiri-speaking children, Bavin and Shopen (1989) explain that the ergative marker in classic Warlpiri is difficult to learn because it is neither very available nor very reliable (see Section 3.2.1). In Lajamanu Warlpiri ergative marking is less available than in classic Warlpiri. Children in Lajamanu receive more mixed input than did the children in the Bavin and Shopen (1989) study, so we would expect that the ergative marker would be more difficult to detect for the children in Lajamanu. It is a little surprising then, that the Lajamanu children perform as well as the children in the earlier Warlpiri study.
In contrast to the children in the Bavin and Shopen (1989) study, for whom word order was the weakest cue in sentence interpretation, the Lajamanu children use a word order strategy as well as a case-marking strategy in both Light Warlpiri and Lajamanu Warlpiri. This is explained by strong word order preferences in both languages in the input and in the children’s own language production. In both languages, animate A arguments are in preverbal position more often than inanimates, and postverbal A arguments are more likely to be ergatively-marked than preverbal A arguments, so an unmarked preverbal N can often be correctly interpreted as the A argument. Children at ages 5 and 7 choose the named, unmarked preverbal N as A for approximately 20% of items (18.7% and 21.8% respectively). At age 9 children still make this choice, but less often (9% of choices), and rely mostly on a case-marking strategy (84% of choices). The different strategies used by the children in the classic Warlpiri study 15 years ago (Bavin and Shopen 1989) and the children in the current Lajamanu study, reflect the increasingly important role of word order in the languages spoken in Lajamanu, presumably due to contact with English and Kriol.

The children are not adult-like in their comprehension choices, but are steadily moving towards being adult-like. At age 9 they still make different choices from the adults, but they resemble the adults more than the younger age groups. At first they use both case-marking and word order strategies, then as they get older they increasingly use the case-marking strategy, approaching the pattern of choices made by adults. In their production, in contrast, the children are adult-like from age 7. From this age they produce ergative marking to different extents in the two languages, but use similar word order patterns.

In sum, in the complex and variable input situation in Lajamanu Community,
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in which the children learn two languages that have similar properties, children are adult-like in two ways - they differentiate between the two languages in their production of ergative case-marking, but not in their production of word order patterns. But their word order patterns are even more regular than those produced by the adults. In a reduced-context comprehension task, the children are like the adults in using the same strategies in both languages. This suggests that there is an increased reliance on pragmatic factors in sentence interpretation in Light Warlpiri in real discourse as compared to a decontextualized task. It also points to a reliance on case-marking as a strategy for argument disambiguation in both languages. The children are slowly approaching the adult use of a case-marking strategy in both languages.
Language contact and bilingual acquisition
Conclusions

In this thesis I have shown that a new Mixed Language, called Light Warlpiri, has emerged in Lajamanu Community, northern Australia, as a result of code-switching between Lajamanu Warlpiri and AE/Kriol. The cohort of speakers who conventionalized it are now between 25 and 30 years old, so I date the language as less than 30 years old. Until recently there was no empirical evidence of a Mixed Language arising from code-switching, but this thesis joins documentation of Gurindji Kriol (McConvell and Meakins 2005) in providing that evidence. Until now it has been thought that Mixed Languages could only emerge from insertional code-switching patterns (Auer 1999; Backus 2003), but Light Warlpiri has arisen from a pattern that looks more like alternational code-switching, so it
is the first evidence of a Mixed Language arising from alternational patterns of code-switching.

An interesting property of Light Warlpiri is that its source languages indicate core grammatical functions through different means, and these come into competition in the new language. Warlpiri uses case-marking in an ergative-absolutive system and AE/Kriol uses SVO word order. When these two systems come together in Light Warlpiri they compete for the task of indicating grammatical functions. The result of the competition is that both systems operate in Light Warlpiri to some extent. Ergative marking is variably applied to A arguments and word order is mostly SVO, but also varies. There are times when neither system operates, and speakers must rely more on pragmatic strategies than is necessary when speaking any of the source languages. In addition, there is a correlation of ergative marking and word order, such that postverbal A arguments are marked more often than preverbal A arguments.

Optional ergative marking and variable word order both present interesting questions for language acquisition: (1) how adult-like the children are in their use of ergative marking and word order, (2) which A arguments the children mark first, and (3) whether the children overextend ergative marking to S or O arguments. The children start to use ergative marking when they first start to speak, but not very often, and increase their use as they grow older. Their word order patterns are adult-like initially (SVO), but they vary their word order patterns considerably at ages 3 and 4. By age 4 their use of ergative marking is adult-like. Their initial use of ergative marking suggests that they mark highly prototypically transitive clauses before less transitive clauses, but there is only a small amount of marking in the data set from the youngest children so the evidence is inconclusive. There
are very few instances of ergative marking on S and O arguments, but it does occur on both. This shows that there is no inherent bias towards marking based on semantics - any kind of error of marking is possible.

Given the rapid language change in the community, the question arises of how much variation there is in ergative marking and word order within and between age groups when speaking each language. The question for language acquisition is whether the children use ergative marking and word order strategies differently in the two languages. The second question has been a major focus in the study of bilingual acquisition, but has not before been investigated in a multilingual setting as complex as the one studied here, where the input languages share much lexicon and grammar and there is considerable language mixing.

Differences between age groups are found in ergative marking in narratives in both languages. In Warlpiri, there are differences between groups of adults - for the oldest group of adults, ergative marking is obligatory, but for younger adults and children, it is not. Adults and children show clear differences in how often they use ergative marking in each language, using it significantly more often in Lajamanu Warlpiri than in Light Warlpiri. Even the youngest group of children, age 6-7, who are just starting to speak Warlpiri, show an adult-like differentiation between the two languages in their distribution of ergative case-marking.

The children’s word order patterns also resemble those of adults by being similar in the two languages, but there is an interesting age difference. In both languages adults apply ergative marking more often to A arguments that are postverbal than to those that are preverbal. The children reproduce these patterns even more often than adults do, suggesting that they are regularizing the patterns in both languages. Further work is needed on ergative marking and discourse pragmatics,
to clarify the role of ergative marking in relation to arguments that are prominent in the discourse. In Light Warlpiri ergative marking occurs on postverbal A arguments, and also on some prominent A arguments. But analysis of word order shows that prominent A arguments are also often preverbal. Future work could tease out the emerging patterns as Light Warlpiri conventionalizes more. In classic Warlpiri, preverbal first and second person pronouns tend to lose ergative marking, but those in postverbal position do not. The robust pattern of marking postverbal A arguments more often in Lajamanu Warlpiri and Light Warlpiri could be an extension of an incipient pattern in classic Warlpiri. It would be interesting to see whether the pattern will become stronger in the next generations of speakers.

A study of sentence interpretation in Warlpiri and Light Warlpiri found that adults use a case-marking strategy to identify the A argument in both languages (i.e. $N^{+\text{erg}} = \text{A argument, } N^{-\text{a}} = \text{O argument}$). The children were not adult-like in using this strategy at age 5, when they also used a word order strategy, but they gradually moved towards being adult-like with increased age. Neither adults nor children show differentiation in the strategies they use in each language - they use the same strategies for both languages.

In sum, the thesis documents the emergence of a new Mixed Language in a northern Australian community, that has arisen as a result of code-switching between its source languages, AE/Kriol and Warlpiri. Children learn both the new language, Light Warlpiri, and the heritage language, Lajamanu Warlpiri. The two languages share lexical and grammatical properties, making distinctions between them quite subtle. Both adults and children distribute ergative marking differently in the two languages, but show similar word order patterns in both. However the children show a stronger correlation between ergative marking and word order pat-
terns than do the adults, suggesting that they may be spearheading processes of language change. Similar research should be undertaken in the same community in the future to determine whether the children’s patterns in both languages are the beginnings of change, or are developmental patterns that become more adult-like as the children grow older. Future research could also address the questions of how enduring Light Warlpiri will be as a language, and whether the current situation of first language bilingualism in Light Warlpiri and Lajamanu Warlpiri will continue.
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APPENDIX A

Abbreviations used in examples
### Abbreviations Part 1

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>sg</td>
<td>singular</td>
</tr>
<tr>
<td>dl</td>
<td>dual</td>
</tr>
<tr>
<td>pl</td>
<td>plural</td>
</tr>
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<td>1</td>
<td>First person</td>
</tr>
<tr>
<td>2</td>
<td>Second person</td>
</tr>
<tr>
<td>3</td>
<td>Third person</td>
</tr>
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<td>exclusive</td>
</tr>
<tr>
<td>incl</td>
<td>inclusive</td>
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<tr>
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<td>ergative case</td>
</tr>
<tr>
<td>dat</td>
<td>dative case</td>
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<tr>
<td>abs</td>
<td>absolutive case</td>
</tr>
<tr>
<td>all</td>
<td>allative case</td>
</tr>
<tr>
<td>perl</td>
<td>perative case</td>
</tr>
<tr>
<td>abl</td>
<td>ablative case</td>
</tr>
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<td>evit</td>
<td>evitative</td>
</tr>
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<td>poss</td>
<td>possessive case</td>
</tr>
<tr>
<td>loc</td>
<td>locative case</td>
</tr>
<tr>
<td>com</td>
<td>comitative case</td>
</tr>
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<td>imperfective aspect</td>
</tr>
<tr>
<td>perf</td>
<td>perfective aspect</td>
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<td>transitive marker</td>
</tr>
<tr>
<td>dis</td>
<td>discourse marker</td>
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</table>

Table A.1
Abbreviations used in examples

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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>fut</td>
<td>future</td>
</tr>
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<td>nfut</td>
<td>nonfuture</td>
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<td>reduplication</td>
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<td>obligatory mood</td>
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<td>imp</td>
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<td>subsection term</td>
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<td>interrogative</td>
</tr>
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<td>diminutive</td>
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<td>anaph</td>
<td>anaphoric reference</td>
</tr>
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<td>dem</td>
<td>demonstrative</td>
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<td>open</td>
<td>epenthesis</td>
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<td>conj</td>
<td>conjunction</td>
</tr>
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<td>causative</td>
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<td>topic marker</td>
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<td>rel</td>
<td>relative</td>
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<tr>
<td>incho</td>
<td>inchoative</td>
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Table A.2
Language contact and bilingual acquisition
APPENDIX B

Details of manipulative activities

Tables B.1 and B.2 show the use of transitive verbs by children in age group 3;11, with reference to Slobin’s (1985, 2000) prototypical manipulative scene. Table B.1 shows the verb use of children C02 and C03, and Table B.2 shows the verb use of children C04 and C41. The tables show that the children variably mark both manipulative and non-manipulative activity scenes.
<table>
<thead>
<tr>
<th>Child</th>
<th>Verb</th>
<th>A animate?</th>
<th>O animate?</th>
<th>Manipulative scene?</th>
<th>With ergative marking?</th>
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<td>C02</td>
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<td>x</td>
<td>✓</td>
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<td></td>
<td>got (meaning)</td>
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<td>x</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td></td>
<td>have</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>make</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
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<td></td>
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<td>x</td>
<td>✓</td>
<td>x</td>
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<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
</tr>
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<td></td>
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<td>✓</td>
<td>x</td>
<td>1/3</td>
</tr>
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<td>press</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
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<td>x</td>
<td>✓</td>
<td>x</td>
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<td></td>
<td>give</td>
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<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
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<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
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<td>hit (x2)</td>
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<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
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<td>✓</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
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<td>kick (x2)</td>
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<td>✓</td>
<td>✓</td>
<td>1/2</td>
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<td>✓</td>
<td>x</td>
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<td>kiss (x1)</td>
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<td>x</td>
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<td>squeeze</td>
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<td>x</td>
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Table B.1: Case-marking on children’s first overt A arguments, Age group 3:11, Children C02, C03

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Details of manipulative activities

<table>
<thead>
<tr>
<th>Child</th>
<th>Verb</th>
<th>A animate?</th>
<th>O animate?</th>
<th>Manipulative scene?</th>
<th>With ergative marking?</th>
</tr>
</thead>
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<td>Group C, age of group: 3;11</td>
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<td></td>
<td></td>
<td></td>
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<tr>
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<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
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<td></td>
<td>put (x2)</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>1/2</td>
</tr>
<tr>
<td></td>
<td>beat</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>bite</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>hit</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>leave</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>look (x2)</td>
<td>✓</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>look (x2)</td>
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<td>✓</td>
<td>x</td>
<td>x</td>
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<tr>
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<td>✓</td>
<td>x</td>
</tr>
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<td>✓</td>
<td>x</td>
<td>1/3</td>
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Table B.2: Case-marking on children’s first overt A arguments, Age group 3;11, Children C04, C41
Language contact and bilingual acquisition
Method of statistical analysis

All of the studies in this thesis share properties that make multilevel logistic regression modeling with a binomial link function appropriate\(^1\). Individual items and speakers are taken into account as random effects and possible explanatory factors such as subject animacy are fixed effects. The reasons for this choice follow.

In the production studies (in Chapters 4, 5 and 6) I am exploring quantitative distributions of factors that are binary in nature, for example, ergative marking either does or does not occur. The frequency of ergative marking occurring is the dependent variable. I am also exploring whether other factors, for example, the

\(^1\)I am indebted to Harald Baayen, Max Planck Institute for Psycholinguistics and Radboud University Nijmegen, The Netherlands, for the analyses and his teaching of statistics.
animacy of the A argument referent, affect the occurrence of ergative marking. These possibly explanatory factors, or independent variables, are also binary, for instance, an A argument referent either is coded as animate or not animate. In the comprehension study also (see Section 6.3), all of the variables are binary.

Many statistical procedures (eg. parametric procedures) assume that the data has a normal distribution, that is, that the distribution of the data points is such that a small number of points will be at each end of the measurement scale, and most points will cluster around the center. Measurements of human height are a good example: in any population a small proportion of people is relatively very small, a small proportion is relatively very tall, and most people are somewhere in the middle. But with binary data the data points can only be either one option or the other, and there is no possibility of them having a normal distribution. The same is often true for language acquisition data that is not binary, because at some point of maturation people will perform at the highest level possible, for instance, and adult who is a native speaker of the language in the task will almost always perform at a level of 100% accuracy in, say, a phonology task. It is not possible then for some adults to have scores at different points along the measurement scale because they will all be at the 100% accuracy point.

Most statistical procedures (parametric and nonparametric) require that the units being measured are independent of each other. But in two of my studies the same speakers conduct a task in two languages, so the design involves repeated measures, which is when a speaker is measured twice, under different conditions. In addition, the individual clauses under analysis in the production studies are not independent, rather, they are related by being from the same person. Speakers are free to say as much or as little as they like, even in the elicited production
Method of statistical analysis

tasks, so some speakers contribute more transitive clauses to the analysis than do others. If one person tends to speak in a certain style, say, favoring a particular word order, and that speaker also contributes more clauses than others, the result could be skewed. The clauses under analysis are not truly independent, they can be grouped into ‘clauses from speaker A’, ‘clauses from speaker B’ and so on. They could be grouped again by language - ‘clauses from speaker A in language A’ and so on.

The appropriate method for this data is one in which the units of analysis - in the production studies these are clauses - are nested within larger units incrementally, until they make up the whole data set. So ‘transitive clauses with overt A arguments’ are units on level 1, and these are nested within individual speakers, who are units on level 2. Speakers are nested within age groups, on level 3, which are nested within languages, on level 4. The reason for the nesting is that populations tend to be in groups (e.g. people live in houses within communities within geographical areas), and in general there are more similarities within groups than between groups (e.g. people living in a certain house will usually share some social characteristics). If the individual units of analysis are treated as independent and their relationships to each other are ignored the analysis results might be misleading or not as informative as they could be (Goldstein 2003). An analysis that takes into account that individual units share certain properties and can be grouped in some way and that the next level of groups can again be grouped provides a more accurate and informative picture. Multilevel analysis takes the grouping into account.

Just as the characteristics of individual people differ, the characteristics of items in a task differ also. Even when the number and type of items in a study are set
as part of the design, the items themselves might not be truly equivalent in that some might be easier to process or lead to a particular conclusion more easily than others for reasons that are not immediately obvious or transparent (Clark 1973). Assuming that the items are equivalent can cause misleading results. The solution to this problem is to treat the items and individuals performing the task as random effects (Raaijmakers et al. 1999).

Sankoff (1988) explains that when trying to distinguish between the effects of potentially explanatory factors on a particular linguistic choice, one needs to understand the combined effect of the factors, but statistical models that are simply additive make inaccurate predictions. The solution is to use a model with a link function. Multilevel logistic regression with a binomial link function and fixed and random effects (Pinheiro and Bates 2000) solves all of the problems outlined here in one procedure.

Results of the analyses are reported giving the probability or ‘p’ value. In the output tables a coefficient value, or ‘z’ value, is also given. A negative ‘z’ value means that the factor contributes to a negative outcome of the dependent variable. For example, a negative coefficient value for an independent variable of ‘newness’ when the dependent variable is ergative marking means that when the subject is new it is less likely to have ergative marking. The ‘p’ value shows the likelihood that the factor would contribute to the model just by chance. A ‘p’ value of less than 0.05 means that there is less than a 5% probability that the same distribution would occur by chance. For this reason a ‘p’ value of less than 0.05 is considered significant, that is, the distribution differs significantly from a chance distribution. In general I only report the findings which are significant. The detailed output of each analysis is given in the following section of the Appendix D.
APPENDIX D

Output of statistical analyses
D.1 Light Warlpiri: children under 6 and adults, spontaneous speech, ergative marking

In Section 4.3, page 116

<table>
<thead>
<tr>
<th>Groups</th>
<th>Name</th>
<th>Variance</th>
<th>Std.Dev.</th>
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</thead>
<tbody>
<tr>
<td>speaker</td>
<td>(Intercept)</td>
<td>0.24583</td>
<td>0.49582</td>
</tr>
<tr>
<td>text</td>
<td>(Intercept)</td>
<td>669.82</td>
<td>25.881</td>
</tr>
</tbody>
</table>

Number of observations: 493

Groups: speaker, 17

Estimated scale: 1.027452

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Estimate</th>
<th>Std. error</th>
<th>z value</th>
<th>Pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
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<td>0.24975</td>
<td>3.6378</td>
<td>0.0002750</td>
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<tr>
<td>Inanimate A</td>
<td>1.54892</td>
<td>0.50847</td>
<td>3.0462</td>
<td>0.0023173</td>
</tr>
<tr>
<td>Inanimate O</td>
<td>-0.45721</td>
<td>0.20324</td>
<td>-2.2496</td>
<td>0.0244730</td>
</tr>
<tr>
<td>Preverbal A</td>
<td>-0.71231</td>
<td>0.20273</td>
<td>-3.5135</td>
<td>0.0004422</td>
</tr>
</tbody>
</table>

Table D.1: Light Warlpiri: children under 6 and adults, spontaneous speech, ergative marking
D.2 Light Warlpiri: children under 6 and adults, spontaneous speech, word order

In Section 4.4 page 140

| Random effects: |
| Groups | Name | Variance | Std.Dev. |
| speaker | (Intercept) | 5e-10 | 2.2361e-05 |

Number of observations: 492
Groups: speaker, 17
Estimated scale: 1.051987

| Fixed effects: | Estimate | Std. error | z value | Pr |
| (Intercept) | 0.15271 | 0.14015 | 1.0896 | 0.2758920 |
| Inanimate A | -0.89724 | 0.35851 | -2.5027 | 0.0123256 |
| No ergative | 0.77332 | 0.19992 | 3.8681 | 0.0001097 |
| New A | 0.59676 | 0.24371 | 2.4486 | 0.0143403 |

Table D.2: Light Warlpiri: children under 6 and adults, spontaneous speech, word order
D.3 Lajamanu Warlpiri: narratives, ergative marking

In Section 5.3, page 170

<table>
<thead>
<tr>
<th>Groups</th>
<th>Name</th>
<th>Variance</th>
<th>Std.Dev.</th>
</tr>
</thead>
<tbody>
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<td>(Intercept)</td>
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<td>0.71221</td>
</tr>
<tr>
<td>text</td>
<td>(Intercept)</td>
<td>0.027367</td>
<td>0.16543</td>
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</tbody>
</table>

Number of observations: 348
Groups: speaker, 27; text, 3
Estimated scale: 0.9332806

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Estimate</th>
<th>Std. error</th>
<th>z value</th>
<th>Pr</th>
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<tbody>
<tr>
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<td>3.12017</td>
<td>0.66571</td>
<td>4.6870</td>
<td>2.773e-06</td>
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<tr>
<td>Preverbal A</td>
<td>-1.97682</td>
<td>0.66121</td>
<td>-2.9897</td>
<td>0.002793</td>
</tr>
<tr>
<td>Inanimate A</td>
<td>-0.72901</td>
<td>0.36683</td>
<td>-1.9873</td>
<td>0.046884</td>
</tr>
<tr>
<td>Adults</td>
<td>-1.20025</td>
<td>0.78848</td>
<td>-1.5222</td>
<td>0.127951</td>
</tr>
<tr>
<td>Preverbal A and adults</td>
<td>2.36584</td>
<td>0.82293</td>
<td>2.8749</td>
<td>0.004042</td>
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Table D.3: Lajamanu Warlpiri: narratives, ergative marking
Output of statistical analyses

D.4 Lajamanu Warlpiri: narratives, word order

In Section 5.3.2, page 172

<table>
<thead>
<tr>
<th>Section 5.3.2</th>
</tr>
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<tbody>
<tr>
<td>Multilevel logistic regression analysis</td>
</tr>
<tr>
<td>Data: Warlpiri narratives, ages 7, 9, 20, 30, 60</td>
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<tr>
<td>Dependent variable: Preverbal A</td>
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Random effects:

<table>
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<th>Name</th>
<th>Variance</th>
<th>Std.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>speaker</td>
<td>(Intercept)</td>
<td>44611.009</td>
<td>211.2132</td>
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<tr>
<td>text</td>
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Number of observations: 560

Groups: speaker, 34; text, 3

Estimated scale: 0.9532379

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<tr>
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<td>Adults</td>
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<td>0.36892</td>
<td>-0.2949</td>
<td>0.7680422</td>
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<tr>
<td>No ergative</td>
<td>2.52868</td>
<td>0.67092</td>
<td>3.7690</td>
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<tr>
<td>New A</td>
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<tr>
<td>Adults, no ergative</td>
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Table D.4: Lajamanu Warlpiri: narratives, word order
In Section 6.2.1.2, page 187

### Section 6.2.1.2

Multilevel logistic regression analysis

Data: Warlpiri and Light Warlpiri narratives, ages 7, 9, 20

Dependent variable: ergative marking

<table>
<thead>
<tr>
<th>Groups</th>
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<th>Std.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>speaker</td>
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<td>5.9074e-01</td>
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<tr>
<td>text</td>
<td>(Intercept)</td>
<td>5.0000e-10</td>
<td>2.2361e-05</td>
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Number of observations: 445

Groups: speaker, 26; text, 3

Estimated scale: 0.9503985

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<tr>
<td>( Intercept)</td>
<td>-0.10640</td>
<td>0.50574</td>
<td>-0.2104</td>
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<td>Language Warlpiri</td>
<td>1.38081</td>
<td>0.24684</td>
<td>5.5938</td>
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<td>Age 7</td>
<td>1.18136</td>
<td>0.65400</td>
<td>1.8064</td>
<td>0.0708601</td>
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<td>Age 9</td>
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<td>0.75114</td>
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<tr>
<td>Age 7, Preverbal A</td>
<td>-2.30100</td>
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<td>-1.30666</td>
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Table D.5: Light Warlpiri and Lajamanu Warlpiri narratives: ergative case-marking

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D.6 Light Warlpiri and Lajamanu Warlpiri narratives: word order

In Section 6.2.1.3, page 191
Language contact and bilingual acquisition

Section 6.2.1.3
Multilevel logistic regression analysis

Data: Warlpiri and Light Warlpiri narratives, ages 7, 9, 20

Dependent variable: Preverbal A

Random effects:

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<td>text</td>
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<td>5.0000e-10</td>
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Number of observations: 445
Groups: speaker, 26; text 3
Estimated scale: 0.9985225

Fixed effects:

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<tr>
<td>(Intercept)</td>
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<tr>
<td>Age 9</td>
<td>-1.82618</td>
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<td>0.0012180</td>
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<td>Inanimate A</td>
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<td>No ergative</td>
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<td>Inanimate O</td>
<td>0.86805</td>
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<td>Age 7, Inanimate A</td>
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Table D.6: Light Warlpiri and Lajamanu Warlpiri narratives: word order
D.7 Light Warlpiri and Lajamanu Warlpiri: sentence interpretation task

In Section 6.3.2, page 209

<table>
<thead>
<tr>
<th>Groups</th>
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<tr>
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<td>sentence</td>
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Number of observations: 1020
Groups: speaker, 36; sentence, 15
Estimated scale: 0.949991

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<td>2.62798</td>
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</table>

Table D.7: Light Warlpiri and Lajamanu Warlpiri: sentence interpretation task
Language contact and bilingual acquisition
APPENDIX E

Samples of texts

E.1 Lajamanu Warlpiri narratives

E.1.1 Adult text

ERGStoryWA31.1 Lajamanu Warlpiri The Monster Story, speaker aged 26 (also speaks Light Warlpiri)

(152) a. karnta-wita ka-ø manyu-karri jarntu-kurlu
   girl-SMALL IMPF-3sg play-stand-NPST dog-COM
   swingswing-wana
   swingswing-PERL
   A little girl is playing with a dog by the swing.
b. kuuku ka-ø-rla jangkardu ya-ni-rni
   monster IMPF-3sg-DAT against go-NPST-hither
   A monster is coming with malicious intent.

c. karnta-ngu ka-ø-ø wirriya-pardu swingswing-rla
   girl-ERG IMPF-3sg-3sg boy-DIM swing-LOC
   puji-ma-ni
   push-CAUSE-NPST
   The girl is pushing a little boy on the swing.

d. jarntu ka-ø-rla jurnta-karri-mi wurnturu watiya-wana
   dog IMPF-3sg-DAT away-take-NPST far tree-PERL
   The dog is standing away from the swing, near the tree.

e. wirriya ka-ø swingswing-rla www wita-pawu www
   boy IMPF-3sg swing-DAT www small-DIM www
   SOME PARTS OF CLAUSE UNCLEAR

f. kuuku-ngu ka-ø-ø wuruly-ma-ni jarntu-pawu
   monster-ERG IMPF-3sg-3sg hide-CAUSE-NPST dog-DIM
   The monster is hiding the little dog.

g. kuuku ka-ø wurnturu ya-ni-nja-ni
   monster IMPF-3sg far go-NPST-infin-NPST
   The monster is going away.

h. kankarlu ka-ø-ø ka-nja-ya-ni jarntu-pardu wita-pardu
   high IMPF-3sg carry-INFIN-go-NPST dog-DIM small-DIM
   It goes carrying the little dog up high.

i. ngati-ngki karnta-ngku an wirriya-pardu-rlu lawa-nya-nyi
   mother-ERG girl-ERG CONJ boy-DIM-ERG NEG-see-NPST
   ka-lu-ø jarntu-ku swingswing-wana
   IMPF-3pl-3sg dog-DAT swing-PERL
   The mother, the girl and the little boy see that the dog is not by the
   swing,

j. kuja inya-ju kuuku parnka-ja jarntu-pardu-kurlu
   thus DEM-TOP monster run-PST dog-DIM-COM
   because the monster has run away with the little dog.
k. *wuruly-ka-ngu*
   hide-carry-PST
   It has taken it away and hidden it.

l. *karnta-wita-pardu-rlu manu karnta-wiri-ngi wajlipi-nyi*
   girl-small-DIM-ERG CONJ girl-big-ERG fast-NPST
   *ka-pala-ø kuuku-ju jarntu-kurlu*
   IMPF-3DL-3SG monster-TOP dog-COM
   The little girl and the big girl chase after the monster with the dog.

m. *kuuku-ju nguna-mi ka-ø munga-ngka watiya-wana*
   monster-TOP sleep-NPST IMPF-3sg night-LOC tree-Perl
   The monster is sleeping by a tree during the night.

n. *jarntu ka-ø nyina shat-im-ap yardi-ngka jarntu-ju*
   dog IMPF-3sg sit shut-TR-up yard-LOC dog-TOP
   The dog sits, locked up, in a yard.

o. *yula-mi ka-ø*
   cry-NPST IMPF-3sg
   It is crying.

p. *kuuku ka-ø nyina-mi watiya-wana*
   monster IMPF-3sg sit-NPST tree-Perl
   The monster is by the tree.

q. *jarntu shat-im-ap-ma-nu yardi-ngka*
   dog shut-TR-up-CAUSE-PST yard-LOC
   It locked the dog up in the yard.

r. *ngati-nyanu-ngu ka-ø-ø jarntu ma-ni*
   mother-refl-ERG IMPF-3sg-3sg dog get-NPST
   The mother is taking the dog.

s. *kuja ka-ø kuuku walpa nguna-mi wurdungu-nyayirni*
   thus IMPF-3sg monster dizzy sleep-NPST quiet-very
   while the monster is lying down, dizzy and very quiet.

t. *wardinyi-lk ka-lu nyina-mi jarntu-kurlu ngati-nyanu kurdu-jarra*
   happy-then IMPF-3pl sit-NPST dog-COM mother-refl child-dl
Language contact and bilingual acquisition

manu kirda-nyanu warlu-wana swingswing-wana
CONJ father-refl fire-Perl swing-Perl
Now the mother, two children and father are very happy, sitting by the
fire near the tree.

E.1.2 Child text

ERGStoryWC10.1 Lajamanu Warlpiri The Monster Story, speaker C10, aged 6

(153) a. karnta-pawu ka-ø nyina-mi jarntu-kurlu
girl-DIM IMPF-3SG be-NPST dog-COM
A little girl is with a dog.

b. kurdu-wita ka-ø nyina-mi jarntu-kurlu
child-small IMPF-3SG be-NPST dog-COM
A small child is with a dog.

c. kurdu ka-ø
child IMPF-3SG
The child- (false start)

d. kurdu kapu-ø ya-ni juwingjuwing-kurra
child FUT-3SG go-NPST swing-ALL
The child will go to the swing.

e. kapu-ø help-im jarntu
FUT-3SG help-TR dog
It will help the dog.

f. jarntu ka-ø nyina-mi jinta
dog IMPF-3SG be-NPST one
The dog is alone.

g. ma-nu-ø-ø na yapa-ngu
get-PST-3sg-3sg DIS man-ERG
Then a monster got it.¹

¹The word for ‘man’ yapa, is also used to mean ‘monster’.

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Samples of texts

h. ka-nyiŋ kā-ø-ø jurtu yapa-ng
   carry-NPST IMPF-3SG-3SG dog man-ERG
   The monster is carrying the dog.

i. parnka-mi kā-ø yapa jurtu-kurlu
   run-NPST IMPF-3SG man dog-COM
   The monster is running with the dog.

j. ka-nyi-ø-ø wuruntu yapa-ngu jurtu
   carry-NPST-3sg-3sg far man-ERG dog
   The monster is taking the dog far away.

k. nguna-mi kā-ø yapa
   sleep-NPST IMPF-3SG man
   The monster is sleeping.

l. jurtu kā-ø nyina-mi geit-rla
   dog IMPF-3SG be-NPST yard-LOC
   The dog is in the yard.

m. ma-nu-ø-ø na kurdu-ngu-ju jurtu
   get-PST-3sg-3sg DIS child-ERG-TOP dog
   Then the child took the dog.

n. hepi-jarru-ja-liku-ø na inya-rra kurdu warlu ngurrju-ngu
   happy-INCHO-PST-THEN-3sg DIS DEM-PL child fire good-ERG
   Then the child was happy there by the good fire.²

E.2 Light Warlpiri narratives

E.2.1 Adult text

ERGstoryLA21.1 Light Warlpiri The Monster story, speaker aged 22

²The use of the ergative marker on ngurrju ‘good’, is confusing, since the clause is intransitive.
The construction would be appropriate for a transitive clause. It is possible that this represents
another example of the ergative marker being used in an emphatic sense.
Language contact and bilingual acquisition

(154)  

a. *karnta-pawu* i-m sid-ing *jarntu-kurl* swing-wana
    girl-DIM 3sg-NFUT sit-PROG dog-COM swing-PERL
    A girl is sitting with a dog by the swing.

b. *karnta-pawu* i-m get-ap
    girl-DIM 3sg-NFUT get-up
    The girl gets up

c. *ged-im* *jarntu kuuku-kujaku*
    get-TR dog monster-EVIT
    and gets the dog, in case a monster gets it.

d. *karnta-pawu* i-m *ged-im kuuku* na *kurdu*, *jarntu*
    girl-DIM 3sg-NFUT get-TR monster DIS child dog monster-EVIT
    *kuuku-kujaku*
    The girl gets the monster, no the child, the dog in case the monster
    gets it.

e. **COS:** *kuuku-kujaku yuwayi** CONJ *kuuku* wat i-m do
    COS: monster-EVIT yes an monster what 3sg-NFUT do
    In case of the monster, yes, and the monster, what is it doing?

f. i-m kam-ing
    3sg-NFUT come-PROG
    It’s coming.

g. *karnta-pawu-ERG* i-m *pud-um* baby *juwing-rla*
    girl-DIM-ERG 3sg-NFUT put-TR baby swing-LOC
    *juwingjuwing-rla*
    swing-LOC
    The girl puts the baby on the swing, on the swing.

h. *kuuku-ng* i-m *ged-im* *jarntu*
    monster-ERG 3sg-NFUT get-TR dog
    The monster gets the dog.

i. trai-in to *ged-im-jala*
    try-PROG to get-TR-DIS
    It tries to get it, I mean.
Samples of texts

j. *kuuku-ng* i-m teik-im *jarntu*
   monster-ERG 3sg-NFUT take-TR dog
   The monster takes the dog.

k. CONJ *jarntu* i-m krai
   an dog 3sg-NFUT cry
   The dog cries.

l. de-m luk
   3pl-NFUT look
   They look.

m. weya *jarntu*
   where dog
   “Where is the dog?”

n. *kuuku-ng* i-m teik-im *jarntu*
   monster-ERG 3sg-NFUT take-TR dog
   “A monster is taking the dog!”

o. *karnta-pawu-ng* an *baby-pawu-ng* de-m jeis-im
   girl-DIM-ERG CONJ baby-DIM-ERG 3pl-NFUT chase-TR
   The little girl and the little baby chase it.

p. *kuuku* i-m pud-um *jarntu* geit-*ra*
   monster 3sg-NFUT put-TR dog gate-LOC
   The monster puts the dog in a yard.

q. na CONJ im *kuuku* bin go slip
   DIS CONJ 3sg monster PST go sleep
   Then it went to sleep.

r. kuja na
   thus DIS
   Like that.

s. an *karnta-pawu* i-m kam geit-*kirra*
   CONJ girl-DIM 3sg-NFUT come gate-ALL
   And the little girl comes to the yard.
Language contact and bilingual acquisition

t. get-im *jarntu*  
get-TR dog  
She gets the dog.

u. an *karnta-pawu* an *kardu-pardu* an *jarntu* de-m plei  
CONJ girl-DIM CONJ child-DIM CONJ dog 3pl-NFUT play  
raun hepi-nyayirni-lk juwing-wana warlu-rlangu  
round happy-very-then juwing-WANA warlu-rlangu  
And then the little girl and the little child and the dog play around  
very happily by the fire and the swing.

E.2.2 Child text

**ERGStoryLC48.1** Light Warlpiri The Monster Story, speaker C48, aged 7

(155) a. *ngula* de-m plei-ing *jarntu* an *kardu-jarra*  
ANAPH 3pl-NFUT play-PROG dog CONJ child-dl  
These, a dog and two children are playing.

b. *ngula* *kuuku* i-m kam  
ANAPH monster 3sg-NFUT come  
This monster comes.

c. de-m plei *kardu-jarra*  
3pl-NFUT play child-dl  
The two children play.

d. *kuuku* i-m kam  
monster 3sg-NFUT come  
The monster comes.

e. *karnta* i-m go swin-swing-*kurra*  
girl 3sg-NFUT go swing-ALL  
A girl goes to the swing.

f. i-m plei  
3sg-NFUT play  
She plays.
g. *kuuku-ng*  i-m  get-im  *jarntu*
   monster-ERG  3sg-NFUT  get-TR  dog
   The monster gets the dog.

h. *jarntu*  i-m  krai
   dog  3sg-NFUT  cry
   The dog cries.

i. *kuuku*  i-m  teik-im
   mosnter  3sg-NFUT  take-TR
   The monster takes it.

j. *kurdu-kurdu*  de-m  krai  *jarntu-k*
   child-redup  3pl-NFUT  cry  dog-DAT
   The children cry about the dog.

k. de-m  ran  fo  det  *jarntu*
   3pl-NFUT  run  for  that  dog
   They run after the dog.

l. wen  *kuuku-ng*  i-m  teik-im
   when  monsterERG  3sg-NFUT  take-TR
   when the monster takes it.

m. *kuuku*  i-m  slip
   monster  3sg-NFUT  sleep
   The monster sleeps.

n. *jarntu*  i-m  krai  geit-rla
   dog  3sg-NFUT  cry  gate-LOC
   The dog cries in the yard.

o. *ngula*  i-m  get-im  *jarntu*  geit-jangka
   ANAPH  3sg-NFUT  get-TR  dog  gate-ABL
   This one gets the dog out of the yard.

p. de-m  meik-im  *warlu*
   3pl-NFUT  make-TR  fire
   They make a fire.
E.3 Light Warlpiri Spontaneous speech, children

ERGStoryWA31.1 Light Warlpiri spontaneous speech, speakers C03 (age 5), C41 (age 4) and COS (researcher). The children are sitting on the verandah of the researcher’s house, eating ice-creams and chatting. In lines (156a) to (156g) they are talking about the video camera and how it makes a video. Then, in lines (156h) to (156l) they talk about a character they’ve seen on television. From line (156m) to the end of the excerpt they talk about who saw me first when I arrived in Lajamanu. While they’re talking about this I walk out to check on them, and they include me in the conversation. I chose this excerpt because it contains a range of representative properties of Light Warlpiri, such as several different auxiliary forms, ergative case-marking on some A arguments, noun phrases drawn from both Warlpiri and AE/Kriol, and some discourse devices.

(156)  
a. c03: milpapurlu-ngku luk i-m si-ing mi milpapurlu  
C03: wide:eye-ERG look 3sg-NFUT see-prog 1sg wide:eye  
Look, she’s looking at me with big eyes, big eyes.

b. c41: i-rra kam-at kuja-ju angka  
C41: 3sg-FUT come-out thus-TOP DIS  
It’ll come out like this, won’t it?

c. c03: walku anis dey kam-at ngaju-nyang aus-kurra www  
C03: -NEG DIS 3pl comeout 1sg-POSS house-ALL UNCLEAR  
No, not at all, they come to my house UNCLEAR

d. c03: www an ol da muvi  
C03: UNCLEAR CONJ all the movie
UNCLEAR and all the movies.

e. c41: yangka
c41: as:we:know
Like the previous ones.

f. c41: dey Mimi an nyanungu
c41: 3pl name CONJ 3sg
They are Mimi and that one.

g. c03: hei a-ll tok na Mimi-k
C03: DIS 1sg-FUT talk DIS name-DAT
Hey, I’ll talk now to Mimi.

h. c41: na det men yangka
c41: DIS that man you:know
Now that man, you know.

i. c03: na a-rra tok na tu leit na
C03: NEG 1sg-FUT talk DIS too late DIS
No, I’ll talk, now, too late now.

j. c41: det jarntu-piya-ng
c41: that dog-like-ERG
That one who is like a dog.

k. c41: det men ana bidyo-nga i-m wok kuja-nga na
C41: that man DIS video-LOC 3sg-NFUT walk thus-LOC DIS
That man, you know, on the video, walks like this now,

l. meik-im nyurrpala-piya
make-TR urine-like
like he’s going to urinate.

m. c41: wi-m kam Nungarrayi aus wi-m kam
C41: 1pl-NFUT come subsect house 1pl-NFUT come
We came to Nungarrayi’s house. We came.

n. c03: yu luk iya
C03: 2sg look here
You look here.
Language contact and bilingual acquisition

o. C03: *nyampu a-m do-im*
   C03: DEM 1sg-NFUT do-TR
   I’m doing this one.

p. C41: *Nungarrayi i do-n know nganayi Meik-ping angka*
   C41: subsect 3sg do-NEG know you:know name-ASSOC DIS
   Nungarrayi doesn’t know, you know, Mike’s group, does she?

q. C03: yeh
   C03: yes
   Yes (meaning “that’s true, she doesn’t know them”).

r. C41: only hap-*kari angka*
   C41: only half-other DIS
   Only the other half of the group, doesn’t she?

s. C03: *Nungarrayi wen yu-m kam an Mina i-m firs*
   C03: subsect when 2sg-NFUT come CONJ name 3sg-NFUT first
   Nungarrayi, when you came, Mina was the first [to see you].

t. C03: *i-m kam angka*
   C03: 3sg-NFUT come DIS
   She came, didn’t she?

u. COS: *mm yuwayi jalangu*
   COS: DIS yes today
   Mm, yes, today.

v. C03: an *ngaju-nyang matha-lku angka*
   C03: CONJ 1sg-POSS mother-then DIS
   And then my mother [came], didn’t she?

w. C41: *Nungarrayi wen yu-m kam inya det*
   C41: skin when 2sg-NFUT come-DEM that country-ABL
   kantri-janga

   Nungarrayi when you came from there from that place,

x. C41: *ngaju-ng a-m si yu fers wan angka*
   C41: 1sg-ERG 1sg-NFUT see 2sg first one DIS
I was the first one to see you, wasn’t I?

y. COS: yeh
   COS: yes
   Yes.

z. C41: a-na mub ap
   C41: 1sg-want move up
   I want to move up.
Language contact and bilingual acquisition
Permission form

Lajamanu 2003-2005 I, (name) ................. of Lajamanu Community, NT 0852, give permission for Carmel OShannessy Nungarrayi to video-record (name) ................. when he/she is talking. This can be when he/she is playing with other children in the community or taking part in a language activity.

Carmel can write down what my child is saying, and then write articles or a book about what she finds out. I understand that my childs name will not be used.

I understand that the Lajamanu Community Government Council and Warlpiri
staff and Principal of Lajamanu CEC have also given permission for this recording and research to happen.

I can stop my child being recorded at any time and I don't have to give a reason. If I send a message to Carmel she will not record my child after that time.

I understand that the purpose of this research is to learn about how children are learning to speak Warlpiri and English in Lajamanu.

The cassette tapes will be stored at the Max Planck Institute of Psycholinguistics, Nijmegen (Carmel's university), at AIATSIS in Canberra and Carmel will keep a copy. Other people can: - listen to or watch the tapes in the future - only read the words the child says, not watch the video (choose one).

This has been explained to me by ....................

Parent / primary carer: Signed: .................... Date: ...... Print name: ....................

Researcher: Signed: .................... Date: ...... Print name: ....................

______________________________________________________
Permission form

Permission form MPI research project. Warlpiri version


Nungarrayirli ka pinarri-jarrimi nyarrpa kurdu-kurdu kalu jaru wangkanja Warlpiri manu English Lajamanu-rla.


Wangkajaju nyampu-kurlu .................. (ngana) Warlpirirla.

Parent / primary carer: ......................... Date: ..... Researcher: ......................... Date: ..........
Language contact and bilingual acquisition
Stimulus picture books

G.1  Picture stimulus book 1: The Monster Story
Figure G.1: The Monster Story

G.2  Picture stimulus book 2: The horse and cow story
Figure G.2: The Horse and Cow Story

G.3  Picture stimulus 3: The bush coconut story
Figure G.3: The Bush Coconut Story