The Acquisition of Verb Inflection in Libyan Arabic: The Role of Input

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ABSTRACT

This thesis investigates the acquisition of verb inflection in Libyan Arabic (LA), and the role of input. It is a case study in which there is a single participant, a girl acquiring LA as a first language, and her parents are the main source of input. Data were collected by observation of naturalistic interactions over a period of thirteen months at home during play time, meal times, and story reading sessions. The thesis contributes to the theoretical debate about the question of whether young children have adult-like syntactic representations, and what role parental/carer input plays in the acquisition of inflectional verb morphology.The results confirm what has been reported in the literature, that very young children optionally use finite verb forms in finite contexts side-by-side with default verb forms. Agreement errors are few. The results also demonstrate that the parents studied do not regularly provide negative evidence, and if they do so, they do not provide it after every error the child makes. The results show that negative evidence has little effect on the acquisition of certain grammatical features from which the child does not recover, even after the error is corrected. This thesis contributes to our knowledge of first language acquisition by presenting data from a variety of the Arabic language family which has not been investigated before. Moreover, it adds new results to the few existing findings about the acquisition of the verbal domain in Arabic. Furthermore, it provides new results about the role of input in language acquisition in general and in the acquisition of Arabic in particular.

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DEDICATION

To the soul of my father and my nephew Abady

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ARABIC TRANSLITERATION

The system of transliteration used throughout this dissertation is that of the *Encyclopaedia of Arabic Language and Linguistics* (EALL).

A: Consonants

Arabic	EALL
أ	’
ب	b
ت	t
ث	t̲
ج	j
ح	ḥ
خ	X
د	d
ذ	d̲
ر	r
ز	z
س	s
ش	š
ص	ṣ
ض	ḍ
ط	ṭ
ظ	d̲
ع	‘
غ	ġ
ف	f
ق	q
ك	k
ل	l
م	m
ن	n
ه	h
و	w
ي	y

B: Short Vowels: a, i, u, o, e

C: Long Vowels: ä, ā, ī, ū, ō, ē

LIST of ABBREVIATIONS

1	First Person
2	Second Person
3	Third Person
ATOM	Agreement/Tense Omission Model
CA	Classical Arabic
CH	Child
FAT	Father
FEM	Feminine
IMP	Imperative
LA	Libyan Arabic
LLH	Lexical Learning Hypothesis
MASC	Masculine
MOR	Morphology
MOT	Mother
MSA	Modern Standard Arabic
OI	Optional Infinitive
PHO	Phonology
PL	Plural
PRS	Present
PST	Past
RI	Root Infinitive
SB	Structure-Building
SBH	Structure-Building Hypothesis
SG	Singular
UCC	Unique Checking Constrain
WO	Word Order

CHAPTER ONE

THE ROLE OF NATURE AND NURTURE IN THE ACQUISITION OF VERBAL INFLECTION

1.0 Introduction

This thesis focuses on the acquisition of verbal inflection in Libyan Arabic and the role that the input children are exposed to plays in the acquisition process. Previous studies of children's acquisition of inflections have typically focused on the earliest stages of grammatical development, when children start to combine words for the first time. There are fewer studies of development at later stages. Furthermore, existing studies have mainly focused on European languages, but there is a growing interest in the acquisition of Arabic and research exploring a small set of varieties has appeared. For example, Al-Houti (2013) looked at the development of finiteness in Kuwaiti Arabic and also investigated the source of input (i.e. parents, neighbours, etc.), and the frequency of the forms provided to children in the input (i.e. verbs, adjectives, etc.). However, Libyan Arabic has not yet been examined, either in terms of the development of verbal inflection or of the role that input plays in that development. This thesis will contribute to our understanding of language development in children by investigating the linguistic properties of verbal inflection in the speech of a child learner of Libyan Arabic at a later stage of development than in many prior studies (age 2;6 to 3;9) and the effects of maternal and paternal input on the child's developing grammatical knowledge.

1.1 Research on the First Language Acquisition of Finiteness and Verbal Inflections

Previous studies of children's acquisition of verbal inflections, since the work by Brown (1973), have found that at early stages their utterances appear to lack overt grammatical properties. Radford (1990) claims that at the single- or one-word stage the words used by children carry phonological and semantic properties only. At the two-word stage the picture is the same: in this phase, children manage to combine words but still lack the outward manifestation of functional categories; for example,

the morphological expression of tense (English, *-ed*), agreement (English *-s*), etc. Brown (1973) refers to this as the telegraphic stage, which is characterised by the presence of "pivot words" such as *all, no, more,* that combine with a wide range of "open class" words like *juice, apple, gone, book,* etc (Goodluck, 1991). Children start using overt inflections a few months later; however, this stage is characterised by the well-known phenomenon of optionality in the use of those inflections in finite contexts, as in (1a-b).

(1) a. Mary likes ice cream
b. Mary like ice cream

(Wexler, 1998:59)

The appropriate overt subject-verb agreement marker alternates with an uninflected (in English) form of the verb. Importantly, the inflected finite form rarely appears in a non-finite context, so that optionality is asymmetrical, occurring in finite but not non-finite contexts.

The phenomenon has been called the Optional Infinitive (OI) (Wexler, 1990, 1992, 1994, 1998) or the Root Infinitive (RI) stage (Rizzi, 1993/4): 'OI' because although in English the alternation is between inflected and uninflected verbs, in other languages like French and German the alternation is between inflected finite and inflected infinitive forms (e.g. in French *aime* 'likes' versus *aimer* 'like'). This period of optionality lasts until inflections are used systematically from around three years of age.

Results from different languages show that the OI stage is probably universal, although the rate of the use of non-finite forms varies among different languages. For example, English, French and German are considered to be clear examples of OI languages and children acquiring these languages have shown a high rate of use of non-finite forms in finite contexts (Bar-Shalom & Snyder, 1996), whereas in languages such as Italian, Spanish and Catalan, children show a much lower production rate of non-finite forms (Guasti, 2002: 130). One account of what gives rise to this difference is the contrast between null subject languages (Italian, Spanish and Catalan) and non-null subject languages (English, French and German) (Guasti, 2002: 137).

A number of theoretical approaches have tried to explain the phenomenon and, more generally, how children acquire morphological properties. In this chapter, I will discuss some of these approaches, starting with the logical problem of language acquisition, and how the OI stage falls out from this, in Section 1.2. Section 1.3 looks at generative approaches to explaining the development of morphological properties generally, focussing specifically on full competence and structure-building hypotheses, and section 1.4 deals with the usage-based approach. Section 1.5 outlines the objectives of the thesis and gives a first sketch of the research questions to be addressed.

1.2 The Logical Problem of Language Acquisition

The starting point for any discussion of how children acquire morphological properties must necessarily consider the respective contribution of nature and nurture and how to address the logical problem of language acquisition, i.e. the problem that the evidence available to children cannot fully explain the linguistic knowledge that they acquire (Lust, 2006; Eisenbeiss, 2015). Children are only exposed to a small random sample of the language for which they establish a mental grammar, but they develop the ability to produce and comprehend an infinite number of novel sentences and the ability to distinguish grammatical from ungrammatical novel sentences, referred to by Eisenbeiss (2015: 1) as the "quantitative under-determination" of knowledge by input. To do this, children must draw generalisations from input which does not provide any clues to those generalisations ("qualitative under-determination" of knowledge by input: see Eisenbeiss 2009a: 5 for discussion). For instance, children hear singular and plural forms, like *car* and *cars* or *dog* and *dogs*, but they are not taught a rule that adds *–s* to derive a plural form.

Researchers in language acquisition agree that children do indeed generalise. One of the best-known tasks used to demonstrate children's ability to generalise is the *wug* test (Berko, 1958). In the original *wug* study, Berko tested 51 monolingual English-speaking children (26 boys and 35 girls) aged between five and seven years old. Berko used nonsense words to test the children's knowledge of morphological rules: the plural as in (1a), the possessive as in (1b), and the third person singular as in (1c):

(1) a. “This is a wug /wʌg/. Now there is another one. There are two of them. There are two _____”

b. “This is a bik /bIk/ who owns a hat, Whose hat is it? It is the _____ hat.”

c. "This is a man who knows how to loodge /luwdž/. He is loodging. He does it every day. Every day he……”

(Berko, 1958:156-157)

Berko’s hypothesis was that if children provide the correct endings for the made-up words, they must have an internal working system of allomorphs in English that lets them generalise to new words. The results showed that the children provided the appropriate inflections in a high proportion of cases. For example, they supplied the correct plural endings for nonsense words like *“wug”* in 91% of all plural contexts. This indicates that the children had productively acquired the rules of English, applying them in contexts that are entirely novel for them (note that the children studied by Berko are well beyond the age at which children produce OIs).

However, children’s generalisations can deviate from the generalisations of the target they are exposed to in two different ways (Pinker, 1989). Firstly, a child’s generalisations might be a subset of those made in the target language. In other words, children’s generalisations may be more restrictive than those permitted by the target language. For example, Italian children exposed to input sentences with overt subject noun phrases, as in (2a), might conclude that all Italian sentences have an overt subject noun phrase and generalise according to such input.

(2) a. Luigi canta.
Luigi sing-3sg-prs
‘Luigi sings’

b. canta.
sing-3sg-prs
‘(He) sings.’

However, they must realise that it is grammatical to have a sentence with no overt subject noun phrase. They can recognise this fact as sentences like (2b) provide positive evidence for the option to drop the noun phrase subject. The OI stage of

development falls under the heading of "subset generalisation": children have acquired the verbal inflections appropriate to finite contexts (and know that they are finite forms), but do not always use them where they are required, instead allowing non-finite forms to alternate with them.

The other type of deviation from the target is that children's generalisations are not restrictive enough; that is, the set of sentences that children assume to be possible is a superset of the set of all the grammatical sentences in the target language (Pinker, 1989). They generalise over their input to such an extent that they go beyond it and the result produces ill-formed utterances. For example, German children encounter sentences with a dropped subject in the topic position, as in (3a) (Eisenbeiss, 2015:2). This could lead them to the assumption that a subject is dropped in all sentences, as is the case in Italian. They might then produce incorrect sentences like (3b); (3b) is ungrammatical because subjects in non-topic positions cannot be null:

(3) a. Hat Frank Durst? Nein, __ hat gerade Tee getrunken.
Has Frank thirst? No, __ has just tea drunk
'Is Frank thirsty? No, he has just drunk tea'

b. *Vorhin habe __ schon Tee getrunken
Earlier have __ already tea drunk
'I have already drunk tea'. (Eisenbeiss, 2015:2)

There is a difference between the Italian and German cases. Whereas in Italian positive evidence for null subjects is available to the child, in German positive evidence may be insufficient to allow the child to rule out subject drop when the subject is not a topic (Clahsen, Penke & Parodi, 1994; Eisenbeiss, 2015). In such cases, it might seem that children need negative evidence, i.e. corrections, to show them the difference between their grammar and that of the target. However, there is an ongoing debate about the role of negative evidence in language acquisition (Pinker, 1989; Marcus, 1993; Eisenbeiss, 2009a, 2015 - see chapter 5; section 5.4). Marcus (1993) argues that negative evidence in the form of explicit correction is not reliably available to all children at every stage of language acquisition (see also Brown & Hanlon, 1970; Demetras, Post and Snow, 1984; Pinker, 1989; Morgan & Travis,

1991; Marcus et al., 1992; Guasti, 2002; Lust, 2006; Eisenbeiss, 2009a, 2015). Parents normally pay attention to the content of what their children say, rather than how they say it. For example, when children ask questions with grammatical mistakes, parents usually answer without commenting on the grammaticality of the utterance, as in (4):

(4) a. Adam (2;5): Where penny go?
Mother: I don't know
b. Adam: Where penny go?
Mother: Didn't you drop your pennies on the floor?
(Guasti, 2002:12)

Brown and Hanlon (1970) investigated whether parents' speech to their children included any explicit approvals ("that's right" or "yes"), or disapprovals ("that's wrong" or "no"), and they found no evidence that parents provide such approvals or disapprovals.

On the other hand, some researchers have argued that children receive other types of negative evidence for grammatical errors, for instance reformulations, as in (5) below, that contrast the child's incorrect form (e.g. *baddest*) with the target form (e.g. *worst*) (Bohannon &Stanowicz, 1988; Morgan & Travis, 1989; Moerk, 1991; Farrar, 1992; Morgan, Bonamo & Travis, 1995; Saxton, 1995, 2000; Chouinard& Clark, 2003; Strapp, 1999).

(5) a. Child: He was the baddest one.
b. Adult: Yeah, he sounds like the worst. (Saxton, 2000:4)

This type of negative evidence will be discussed in chapters (5) and (6).

However, even where parents systematically reformulate or otherwise correct their children's grammatical errors, the negative evidence provided might not always clearly tell the child whether the error is phonological, morphological or syntactic (see Marcus, 1993; Eisenbeiss, 2009a for more discussion).

Thus, researchers have discussed a number of ways in which children might acquire the generalisations of the target language without systematic and reliable access to clear and targeted negative evidence. Some of these discussions have focused on overgeneralisation of the English regular past tense marker *-ed* to irregular verbs, e.g.: *goed* instead of *went*, and *breaked* instead of *broke*. Children have been found to produce such errors, although they do not hear them in their input (see e.g. Pinker, 1989; Marcus et al., 1992).

A number of researchers have proposed that such morphological overgeneralisation errors can be overcome by what is called the blocking principle (Aronoff, 1976; Kiparsky, 1982; Pinker, 1984). The blocking principle is a psychological mechanism that ensures that the child's experience of hearing the irregular past, such as *went*, blocks the application of the regular process to that verb, thus preventing the use of *goed* (Marcus et al., 1992). In other words, more specific forms, such as "irregulars", will block more general and "regular" forms. Hence, this principle has also been called the specificity principle (Eisenbeiss, 2009a:22). It is argued that as soon as children hear the two types of inflection (regular and irregular), the blocking principle is activated (Marcus et al., 1992).

The blocking or specificity principle cannot help children to avoid all the overgeneralisation errors they make. As mentioned above, it can work for overgeneralisation errors with the past tense *-ed*, because there is only one past tense form of the main verb, i.e. children can benefit from the competition between a general form and a more specific form for the same slot. However, that is not the case in terms of syntax, as the same sentence content can often be expressed by more than one syntactic structure. For example, the English active and passive voices can express essentially the same meaning:

(6) a. John drove the car
b. The car was driven by John

The discussion so far has shown that (i) children generalise beyond their input, (ii) that not all potential overgeneralisations can be overcome by positive evidence alone, and (iii) that children cannot rely on systematic explicit negative evidence to

overcome potential overgeneralisations. Moreover, language acquisition researchers must explain why some overgeneralisations seem not to occur, in contrast to the well-documented morphological overgeneralisations discussed above. For instance, children may hear sentences like (7a) and (7b), where *want to* is contracted to *wanna*:

(7) a. Who do you wanna invite?
b. Who do you wanna see?

However, they do not seem to generalise this contraction to sentences which are not contractible in the target grammar, such as the example given in (8):

(8) *Who do you wanna come? (Guasti, 2002:5)

As Guasti (2002) has pointed out, contraction of *want* and *to* is permissible in (7a) and (7b) because the questioned element is not the subject of the infinitival phrase. This can be seen in (9a) and (9b), where the noun phrase that corresponds to *who* occupies the post-verbal direct-object position:

(9) a. I want to invite *Sam*
b. I want to see *the lion*

However, when the questioned element is the subject of the infinitival phrase, as in (10b), the gap that corresponds to the questioned element, and which forms a chain with *who*, intervenes between *want* and *to*, hence blocking the *wanna*-contraction.

(10) a. I want *David* to come
b. *Who do you want __ to come

Thus, knowledge of a constraint against contracting across a gap which results from extraction will prevent children from overgeneralising *wanna*-contractions and producing sentences as in (8). Instead they produce sentences like (11):

(11) Who do you want to come

Note that the blocking principle, which works to restrict the overgeneralisation of English past tense *-ed*, does not work to restrict the overgeneralisation of *wanna*-contraction. This is because *wanna* and *want to* are in free variation in many contexts, depending on the formality and the speed of speech production.

The constraint against contraction across a gap left by extraction is one of the universal principles that has been proposed by work in generative linguistics (e.g. Chomsky, 1981, among many others) and that is discussed in the next section. For the present investigation into the development of verbal inflection in a child learner of Libyan Arabic, it will be important to consider any overgeneralisation patterns; whether the child can retreat from overgeneralisation through encounters with positive evidence or not; and what universal principles might be involved in constraining the child's developing knowledge.

1.3 Generative Approaches to Explaining Linguistic Development in Children

The claim that there is a logical problem of language acquisition is central to one theoretical approach to language acquisition: the generative approach (Chomsky, 1981: see Pinker, 1994; Guasti, 2002; Lust, 2006; and Eisenbeiss, 2009 for overviews). Proponents of the generative approach propose that the logical problem of language acquisition can be addressed if it is assumed that some aspects of children's linguistic knowledge are innate and are not acquired. This innate knowledge is universal grammar (UG). UG consists of a set of principles and a set of parameters of variation that underlie all languages and support their acquisition: "what we expect to find, then, is a highly structured theory of UG based on a number of fundamental principles that sharply restrict the class of attainable grammars and narrowly constrain their form, but with parameters that have to be fixed by experience" (Chomsky 1981:4). According to Chomsky, these universal principles (such as the Blocking Principle and the ban on contraction across extraction sites discussed earlier) (Baker, 2001; Fodor, 2004; Wunderlich, 2007) determine the form of any possible language spoken by human beings. They are not learned but rather are part of the genetic endowment that the child brings to language learning (Chomsky, 1981; Radford, 1990b). Cook and Newson (2007: 59) argue that "the resemblances between human

languages reflect their common basis in principles of the mind; Japanese incorporates locality, as do English and Arabic, because no other option is open to the child".

While children do not have to learn the principles that constrain sentence formation in the language they are acquiring, they do have to fix the values of relevant parameters, and they also have to learn the idiosyncratic properties of that language (lexical and functional categories and their phonological/phonetic exponents). Input is clearly crucial to this task. Parameter setting requires "triggers". Lightfoot (1991, 1994) has argued that these triggers are provided by frequently occurring simple utterances that involve unembedded clauses and "the top of an embedded clause and ... the highest inflectional position [in the embedded clause]" (Anderson & Lightfoot, 2002: 200). Learning is "cue-based", where a cue is "some kind of structure, an element of grammar, which is derived from the input" (2002: 204).

The principles and parameters approach is a theoretical framework that provides a general way of thinking about language, rather than looking to a particular model of syntactic description (Chomsky, 2000: 15). It is also not a theory of language acquisition. Proponents of a UG approach to language acquisition therefore need to hypothesise how UG is involved, and there have been two major lines of enquiry: the full competence hypothesis and the structure-building hypothesis.

1.3.1 The Full Competence Hypothesis

While advocates of UG may agree that child language learners have access to parameters of variation, there is a debate about the timing of parameter-setting. How early can a child fix parameters on the basis of cues provided in the input? One proposed answer is very early indeed. "Children's grammars include the same functional projections as adults' grammars, and the early clausal representation is couched in the same vocabulary as the adult one" (Guasti, 2002: 129). This is the full competence hypothesis about early child language: there is continuity between child grammars and adult grammars. In line with this hypothesis, some researchers have argued that children know most of the central grammatical properties of clause

structure at the earliest observed age and that they have even learned language-particular properties at the earliest observed age (Rice, 1986).

Demuth (1994) has argued that children's early knowledge of syntax is much richer and more developed than early child production, and deviation from the target in speech can be attributed to phonological rather than syntactic aspects of children's developing grammars. For example, the apparent absence of functional categories such as determiners, agreement morphemes, tense markers, etc. is considered part of a larger phenomenon that characterises unstressed extrametrical syllables in general (p131). Demuth provides data gathered from Sesotho-speaking children to support this view. She found that Sesotho-speaking children at the age 2;1 showed very early production of, and distinction between, present and past tense. They also showed very early production of person. For example, first and second person were produced with 80% of present indicative constructions.

Wexler (1998) also argues that parameters are correctly set at a very early age. The child understands the basic parameters even before she enters the two-word stage at the age of 18 months: "we know that the child has set parameters correctly before entering the two-word stage, thus the child has set parameters correctly before using them" (Wexler 1998: 31). The evidence for this can be found in the location of OIs in different languages, in V-to-I movement and in the proportion of null subjects in null subject and non-null subject languages. In the case of OIs, in German the non-finite verb always follows the object (OV) e.g. *Thorstn das haben* 'Thorstn that have' (Poeppel and Wexler, 1993), whereas in English the non-finite verb precedes the object (VO) e.g. *Eve sit floor* (Brown, 1973). This indicates that children have fixed this word order parameter very early, even though they have not yet determined that root clauses must have finite verb forms. Similarly, child learners of French locate finite lexical verb forms to the left of negation as in *veux pas lolo* 'want not the water' (Pierce, 1992), indicating that they have already established V-to-I movement. English-speaking children do not locate finite lexical verbs to the left of negation, indicating that they already know that V does not raise to I in English. Finally, although all children allow null subjects when they are in the two-word stage, the proportion of null subjects produced by children exposed to a null subject language is

considerably higher than that produced by children learning English or French (Guasti, 2002: 158), suggesting that the null subject parameter has already been fixed.

Wexler proposes that the "very early parameter setting" claim is a potential argument against the suggestion that children need negative evidence at least in some areas of linguistic knowledge: "… it is logically impossible for them to have used negative information as part of the evidence for setting parameters. The only way for adults to provide negative information to the children would be for the adult to read the minds of the children" (Wexler, 1998: 31). He adds that children at the same age can realise the grammatical and phonological properties of many important inflectional elements in their language, although not always consistently.

This view is potentially challenged by the OI stage of development discussed in section 1.1. If children allow OI constructions which are impossible in the mature adult grammar, how can their grammars be continuous with those of adults? How can they have full competence? Wexler argues that child and adult grammars both have tense and agreement features, so that in that sense they are continuous. However, child grammars additionally allow the tense category to be underspecified. When it is specified, finite verb forms result, as in adult speech. When it is underspecified, non-finite verb forms result. Adult grammars simply do not have this option. Root clauses must always have a finite verb.

An alternative account of the same phenomenon is Rizzi's (1993/94) truncation hypothesis. This also assumes that children have full competence in the properties of the target language from an early age but proposes that where in adult grammars root clauses are always CPs that dominate TP and VP projections, children's grammars allow root clauses to be CPs, TPs or VPs. Root clauses in children's grammars can be optionally truncated. Optional Infinitive root clauses are truncated at the VP level, so that only a non-finite verb form is licensed.

Both the tense underspecification and truncation hypotheses need to explain why child grammars allow possibilities that adult grammars do not if the full competence view of language acquisition is to be maintained. The position adopted by both hypotheses is that cognitive maturation is involved. Child grammars incorporate the relevant

properties of adult root clause structure (specified finite tense, CP structure in declarative clauses), as evidenced by the fact that children do produce finite verbs in root clause structures. However, their grammars allow these properties to compete with other possibilities: specified tense competes with underspecified tense, whilst the root CP structure competes with root TP and root VP structures. The constraints requiring obligatory specified tense/CP structure in root clauses have not yet become accessible to the child learner. They become available at a later point of development.

An alternative to maturation as an explanation for optionality in early child grammars within a full competence paradigm can be found in Yang's (2002) variation learning model. According to the variation learning model, children are equipped at birth with a set of possible grammatical representations to be found in human language. These representations compete to parse input sentences. The grammars that are successful in parsing the input are selected, while those that are not are punished.

This theory has been applied to the optional infinitive phenomenon by Legate and Yang (2007). They assume a tense parameter that distinguishes languages like English, French and Spanish, which are [+Tense], from languages like Chinese which are [-Tense]. At birth, both options are available to the child learner. According to the Variation Learning model, where a child encounters evidence of tense marking in input sentences, the [+Tense] value will be rewarded and the [-Tense] value punished. Chinese children will encounter no evidence of tense in the input, and so the [-Tense] value will be rewarded. Children exposed to Spanish and French will encounter verbs that are frequently marked for tense (with Spanish making more distinctions than French). Children exposed to English will encounter fewer examples of tense marking (all verbs are marked for past tense, but only the third person singular form of main verbs is marked overtly for present tense; bare verb forms in the other persons look like non-finite verbs). This will mean that the [-Tense] setting should be active longer in English than in Spanish or French. According to Legate and Yang (2007), this is borne out by the data in Table (3.1), where English, the language showing the fewest tokens of overt [+Tense] marking, shows the highest percentage of optional infinitives and the longest period of optional infinitive use, whereas Spanish, with the most tokens of [+Tense] marking, is characterised by a short optional infinitive stage with fewer optional infinitives.

Table 1.1: Predictions of the Variation Learning model for Spanish, French, and English

	Spanish	French	English
% Verb rewarding +TNS grammar	80%	70%	53%
% Verb rewarding -TNS grammar	20%	30%	47%
% Advantage for +TNS grammar	60%	40%	6%
Duration of Optional Infinitive stage	2;0	2;8	3;5
% OIs (from Freudenthal, Pine & Gobet, 2010) at MLU=2.0	20% (Juan)	32% (Tim)	87% (Anne)

(Legate and Yang, 2007)

As the preceding discussion has demonstrated, generative approaches agree about the assumption of innate, domain-specific predispositions for language learning (UG), but they differ with respect to their assumptions about (i) children's early syntactic representations, and (ii) the role of neural maturation in the acquisition process.

In the following section, I will discuss an alternative generative approach that assumes an innate language faculty (UG), but which claims that there is discontinuity between child grammars and adult grammars. In this view, children do not initially have full competence, but develop full competence as they mature.

1.3.2 The Structure-building Approach

Proponents of structure-building approaches assume that children build up syntactic representations over time and that their syntactic representations in the early two-word stage may not yet be adult-like.

A maturation-based version of structure-building has been put forward by Radford (1988, 1990). Radford views children's early deviations from the target, which are characterised by the absence of exponents of functional categories, as a direct result of the maturation process. "Grammatical categories emerge only at a later stage of development, perhaps as a result of maturation" (Radford, 1990:41).

Radford's key claim is that children pass through three maturationally-controlled stages of syntactic development: a pre-categorial stage, a lexical stage, and a functional stage. Children enter the pre-categorial stage aged between 12 and 18 months. This stage is characterised by one-word speech production, without any phrase structure. In the lexical stage they acquire a set of lexical categories (N, V, ADJ) and their phrasal projections. In the functional stage, children show further development by acquiring the functional categories Determiner (D), Complementiser (C), Tense (T), and their phrasal projections (Radford, 1990).

A non-maturational variant of the structure-building approach is the lexical learning approach (Clahsen, 1990; Clahsen, Eisenbeiss & Penke, 1994; Eisenbeiss, 2000, 2015). According to the lexical learning approach, all the principles and parametric options of UG are available to the child from birth, but in order to be instantiated in a grammar for a specific target language, they need to be triggered by input. Syntactic development is based on the learning of new lexical and morphological items and their features.

There are three essential features of lexical learning. Firstly, it assumes a weak continuity view of UG (child grammars are qualitatively different from those of adult speakers); secondly, the principles of head projection and structural economy are central and finally, the acquisition of syntactic structure is "bootstrapped" through the acquisition of morphology. The principles of head projection and structural economy state that head projections are not specified in advance by UG, but that phrase structure is gradually expanded as the result of acquiring new features (Clahsen, 1990). According to the morphological bootstrapping hypothesis, it is the child's role to learn the properties of the inflectional heads, which will then have consequences for phrase-structure representations (Clahsen et al., 1996).

One of the aims of the present study is to evaluate generative hypotheses about the OI stage as potential explanations for development in a child learner of Libyan Arabic. But there are also non-generative accounts of child language development in which experience with input plays a much greater role than in the generative model. These are briefly outlined in the next section.

1.4 Usage-based Approaches to Language Acquisition

According to usage-based models, knowledge of language structure arises from encounters with instances of language, or "the usage event" which represents the speaker's production and understanding of the language (Kemmer & Barlow, 2000). In other words, linguistic structure emerges from experience (Langacker, 1987; Bybee & Scheibmann, 1999; Croft, 2001; Lieven & Tomasello, 2008).

While most theories of language acquisition are likely to agree that the cognitive organisation of the language is the "grammar", usage-based accounts go further to consider that grammar is the cognitive organisation of one's experience with language (Bybee, 2006:711). Unlike the generativist account, the usage-based account assumes that the primary unit of grammar is the grammatical construction. According to Goldberg (1995), the formal definition of the term construction is a "form-meaning pair such that some aspects of the form or some aspects of the function are not strictly predictable from the construction's component parts or from other previous established constructions" (p4).

From the usage-based perspective, adults form sentences by the most abstract general rule, NOUN VERB NOUN, which is associated with the meaning A acts on B, causing B to be affected in some way (Ambridge & Lieven, 2011:125). For example, consider the sentence components KICK, BILL, and JOHN. No-one can predict who is the *kicker* and who is the *kickee* from such components, unless they are combined with the form-meaning formula N1 V N2; therefore, we end up with the meaningful construction *John kicked Bill*.

Proponents of the usage-based model propose that there are two types of skills that children can use to acquire and develop the constructions of their target language: pattern-finding and intention-reading. According to Tomasello (2003), pattern-finding is an important skill for language acquisition, since it enables children to identify patterns in language and schemas of ongoing patterns. Intention-reading, on the other hand, is an important skill that helps children to acquire linguistic symbols, and to interact and share attention with their caregivers.

Proponents of the usage-based model also emphasise the role of the frequency of instances as a prime factor in language development (Barlow & Kemmer, 2000; Ambridge & Lieven, 2011; Behrens, 2009; Tomasello, 2001, 2003). According to this approach, children's grammar is not based on innate principles, but on the use of the child's ability to read intention, their pattern-finding skills and the utterances they hear. "Utterances are the primary units of linguistic communication since they are used to express complete and coherent communicative intentions, and other smaller units of language are communicatively significant only by virtue of the role they play in utterances" (Tomasello, 2000: 65).

Children's constructions are different from their adult counterparts in a variety of ways. For example, children's constructions are either fully lexically specific, i.e. linked to particular verbs or nouns, or contain relatively low-scope slots (Tomasello, 2008). This is attributed to the fact that constructions are acquired incrementally (Goldberg, 1995). Children start by learning a number of frozen phrases (like 12a) from the input, and these are probably the most frequent ones, as frequency is considered one of the main factors that children depend upon (see Bybee, 1995, and chapter 5, section 5.3). For example, supposing that the most frequent utterances a child hears in their input are: *I am eating it, I am hitting it, I am painting it* etc., then the child will schematise across these utterances to form *I am ACTING ON it* patterns, where they will insert the lexical item that represents the action they are intending to perform in the slot (Ambridge & Lieven, 2011:135).

Later on, children will acquire item-based, lexically specific constructions (like 12b). Such constructions must have at least one of their components as a specific lexical item, such as a word or morpheme. For example, if the construction is based on the verb *kissed* (e.g. KISSER kissed KISSEE), then we could have a construction like *Sue kissed kissee* or *Kisser kissed Mike*, where the verb *kissed* is the specific lexical item and more than one utterance can be constructed around it. Finally, children can develop *abstract* or *general rules* or *schemas* (like 12c) by generalising further over their lexically specific constructions. They start using constructions with schematised slots, where a lexical item that matches the function of the slot can be placed, and later still they establish more complex strings, including abstract categories such as tense, agreement, subject, etc. The following diagram summarises the three types:

(12) a. John kissed Sue Frozen phrase (most substantive)
b. KISSER kissed KISSEE Item-based/lexically specific construction
c. SUBJ VERB OBJ Schema (most abstract)

(Ambridge &Lieven, 2011:127)

Lieven & Tomasello (2008) argue that learning a language within a usage-based model is based on three main factors. These factors are frequency, consistency and complexity. As will be discussed in more detail in chapter 5, children's language has been shown to be sensitive to frequency, and high-frequency morphemes, words, or constructions are more likely to be acquired earlier than comparably low-frequency items (Bybee, 1995; Paradis & Crago, 2001; Marchman, Martínez-Sussman & Dale, 2004; Theakston, Lieven, Pine & Rowland, 2004; Goodman, Dale & Li, 2008; Ambridge et. al., 2015; Edwards et al., 2015).

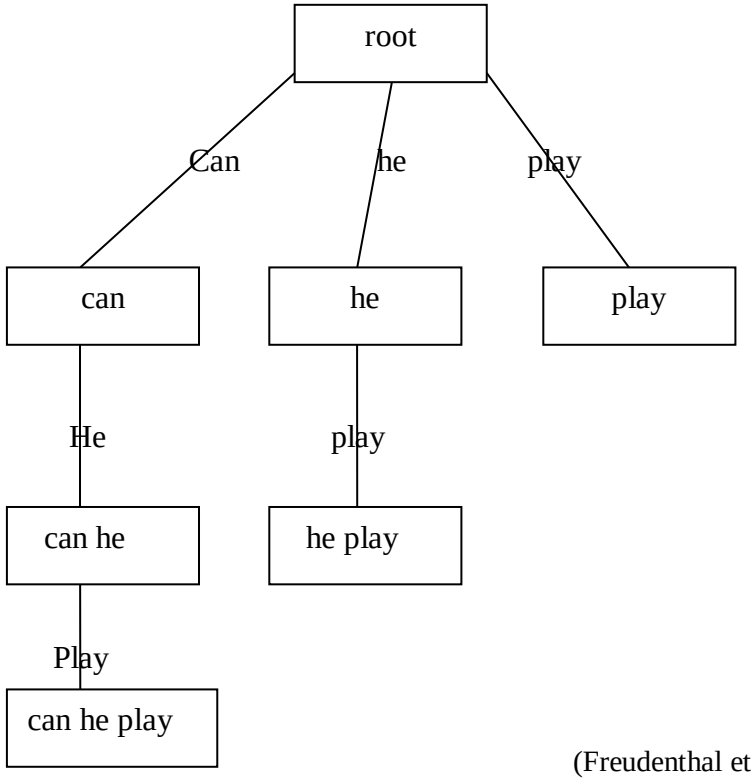
Moreover, it is argued that a child learns a word after mapping between a form and a function (Lieven & Tomasello, 2008). Therefore, there must be consistency between the form that an adult uses and the function that the form employs. Many studies have looked at the consistency of form-function mapping and how they are important to the language that children are hearing (MacWhinney, 1989; Maslen et al., 2004). The results showed that form-function mapping has a positive effect on children's acquisition of some forms and constructions; for example, the consistency of *word+ed* when the speaker intends to indicate past tense. The third factor is the complexity of the construction. A rote-learned construction with no analysed parts, for example, will be easier for a child than a schematic construction with slots (Lieven et al., 2003).

In the following discussion, I will briefly explore a usage-based explanation for the OI phenomenon and the initial lack of consistent target-like verb inflection. Evidence for or against these claims will be discussed in chapter 5.

One usage-based account of the OI phenomenon is offered by the Model of Syntax Acquisition in Children (MOSAIC). MOSAIC was first introduced by Freudenthal, Pine & Gobet (2006). According to Freudenthal et al., MOSAIC is a computational model of language learning used to investigate the rate of occurrence of OIs in child

language. The model takes transcribed data from child-directed speech and learns to produce longer utterances, which are compared later to the child utterances at a particular stage of development. The model is based on a discrimination network which has nodes connected by test links. The network is headed by a root node which has no content (see Fig.3.1), and the other nodes encode words or phrases. MOSAIC employs two learning mechanisms: the first is based on adding new nodes and tests to the network. For example, if the utterance *can he play?* is presented three times, after the first utterance the model may pick up the word *play*, because the network is empty, and creates a test link and a node. Then after the second time, the model will move to the next part of the input *he play*. Now the model will examine the test link and add the new word *he* under a new node, and finally, after the third time, the model will pick up *can he play?* and consult the test link for the new word, which will also be added under a new node (Ambridge & Lieven, 2011:153). Figure (3.1) shows what the network looks like at this point.

Figure 1.1: MOSAIC Model



(Freudenthal et al., 2006:282)

The model so far has the test link for the word *he* followed by *play*. Suppose the model now has the input utterance *he walks*. At the beginning it will do the same job

as it has been doing with *can he play*? Thus, the system will create a test link for both words. However, this time the system learns that the word *he* is followed by the word *walks*. Thus, the model now has two different test links for the word *he*, one is followed by the word *play* and the other followed by the word *walks* (Freudenthal et al., 2006).

The second mechanism is based on adding generative links between nodes that allow it to substitute words that have similar distribution to one another. For example, if *she* or *he* happened in a similar context, as in *he is happy, she is happy*, the model will substitute *she* in *can he play?* to get *can she play?* (Ambridge & Lieven, 2011:153). Following that process, all the utterances are compared to the real child utterances matched by MLU. Thus, the model simulates the percentage of non-finite and finite utterances across increasing MLU within a particular child (Freudenthal et al., 2006).

Freudenthal, Pine, Aguado-Orea and Gobet (2007) also used MOSAIC to compare development in four languages: English, Dutch, Spanish, and German. MOSAIC successfully showed the difference between pro-drop languages such as Spanish, where OI constructions are fewer, and obligatory subject languages such as English, where OI constructions are more frequent (Wexler, 1998).

1.5 Summary

The discussion in this chapter has focused on three questions. The first question concerns whether children are born with innate knowledge about the form that human language takes. Proponents of the generative approach have argued that children have a genetically based universal grammar (UG) (Chomsky, 1981). Proponents of usage-based approaches, on the other hand, claim that while the potential to acquire language is innate, children are not born with innate principles and parameters of grammar, but rather construct their grammar on the basis of the input to which they are exposed (Ambridge & Lieven, 2011).

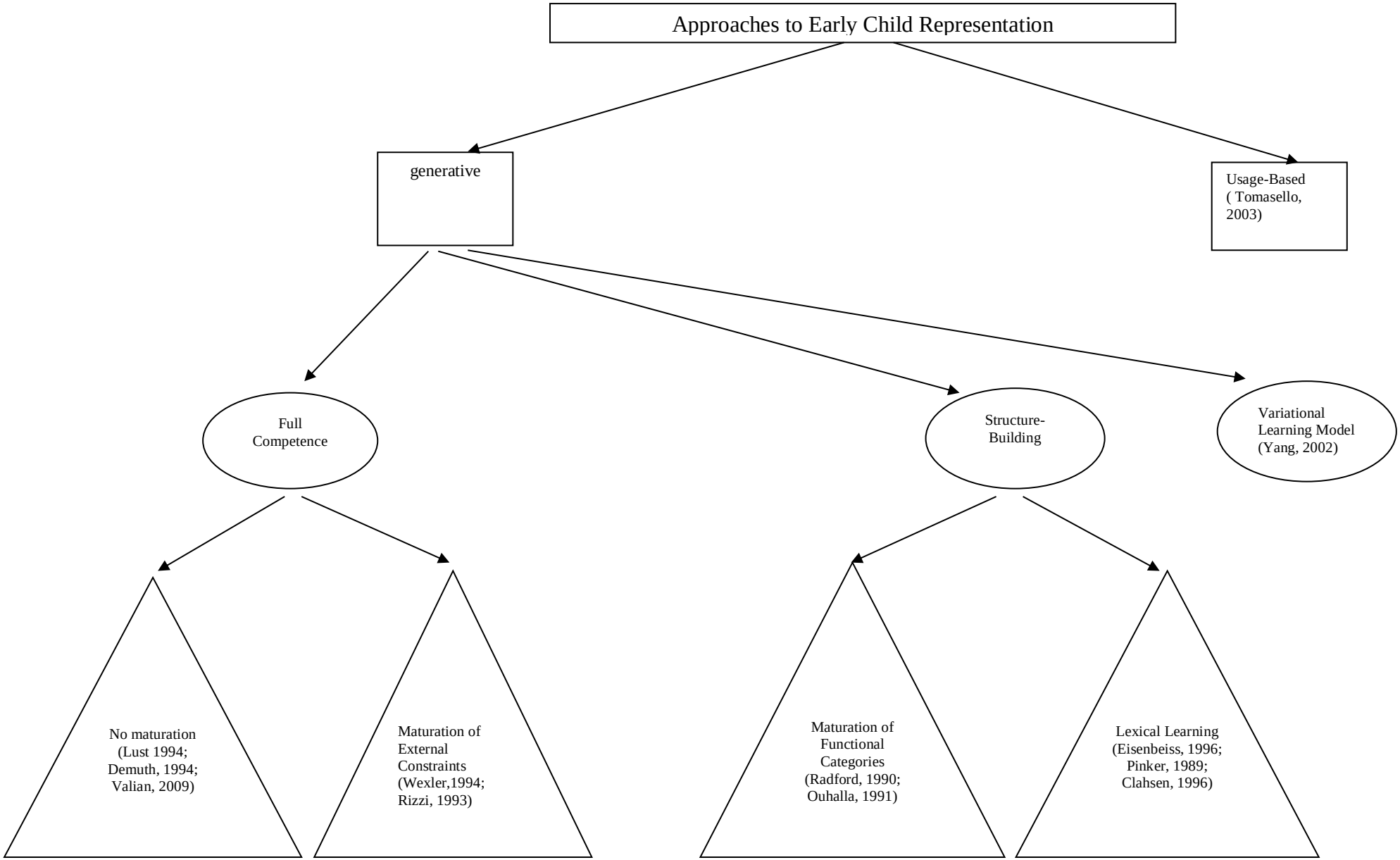
The second question relates to the nature of children's early grammatical representations. Proponents of the full competence approach argue that as soon as children start to combine words, they show adult-like representations. However, this

view is rejected by structure-building proponents, as well as proponents of the usage-based approach. The latter agree that children build up adult-like representations incrementally. However, they disagree about the precise course of development that children pass through; the structure-building account argues that children gradually build up their language and start to generalise over functional categorises as soon as they reach their second birthday (Clahsen & Penke, 1994; Radford, 1990; Clahsen, 1996; Eisenbeiss, 2000, 2015). On the other hand, supporters of the usage-based approach claim that children incrementally develop their grammar and their generalisations later than their second birthday and do so on the basis of pattern extraction from encountered samples of language (Behrens, 2009; Tomasello, 1992; Tomasello & Brooks, 1999).

The third question relates to the role of maturation in child language acquisition. All three approaches, full competence, structure-building and usage-based, assume that maturation affects language development. Proponents of full competence argue that the observed differences between child and adult speech, like the OI stage, either result from the phonological system not having been fully acquired or from children not fully obeying constraints that hold in mature grammars (like the requirement that tense be fully specified in finite contexts). For proponents of structure-building, development is initially based on purely lexical categories, and only includes functional categories once children have reached a maturational stage where they can incorporate them into their grammars. For proponents of the usage-based approach, language development goes hand in hand with the general maturation of cognitive capacities that allow children to generalise from patterns extracted from input.

Figure 3.2 gives an overview of the approaches that have been described, organised according to their respective answers to the three questions about children's early grammatical representations and the role of maturation.

Figure 1.2: Approaches to Early Child Representation



1.6 Objectives and Research Questions

For the purposes of the present study, the analysis of the linguistic properties of verbal inflection in the speech of a child learner of Libyan Arabic will be conducted from a generative perspective. In examining the effect of input on the child's development of knowledge of verb inflection, a broader approach will be taken, drawing not only on insights from generative studies but also on insights from usage-based approaches.

The research questions that will be addressed in relation to the linguistic properties of verb inflection are the following:

- Is there an order in which inflections come to be used in a target-like way in the speech of a child learner of Libyan Arabic? If so, what does this tell us about the development of tense/aspect and phi features in her grammar?
- Is there evidence for an OI stage in her development, given that Libyan Arabic is a null subject language (OIs are less prevalent in null subject languages) and that the child is somewhat older than children in studies that have found the presence of OIs in null subject languages (Table 3.1)? If so, what form does this take, given that Libyan Arabic does not have specific non-finite verb forms (see chapter 2, section2.3.1)?
- Given that there are both suffixal and prefixal verb inflections in Libyan Arabic, is this influential in determining the course of development?
- Does the child overgeneralise or undergeneralise inflected forms? If so, how does she arrive at target use?

The research questions that will be addressed in relation to the role of input are the following:

- How frequently does the child directly imitate her parents or repeat verb forms presented in the preceding parental utterance?
- Does the frequency of particular forms affect the use, correctness rates and overgeneralisation patterns of verb forms?

- How often do parents provide corrective feedback for non-target-like forms? And which forms of corrective feedback are more frequent – explicit corrections or reformulations?
- Does the child acknowledge corrective feedback or produce more correct forms as a result?
- Does the father differ from the mother with respect to the use of verb forms and the provision of corrective feedback?
- Does the child respond differently to maternal and paternal corrective feedback?

1.7 The Structure of the Thesis

The rest of the thesis is structured as follows:

Chapter 2 describes the properties of verb-related morphology in Libyan Arabic that are directly relevant to the study of a child learner.

Chapter 3 reviews previous studies concerning the morphological development of child learners. The discussion will centre on (i) the emergence of grammar and inflection, (ii) the optional use of verb forms in finite contexts, (iii) a hypothesis about the default form of the verb that alternates with the target form in finite contexts that will be referred to as the OI-analogue hypothesis.

Chapter 4 will focus on the methodology used and the results of a study of verb tense and agreement inflection in the speech of a child learner of Libyan Arabic.

Chapter 5 will review previous studies of the role of input in child language acquisition. The focus will be on (i) the universal properties of child-directed speech, (ii) variation in child-directed speech, (iii) positive evidence: models provided in the input, with the focus being on type and token frequency, and the distribution of forms in the input to children, (iv) parental feedback to errors and corrective utterances, with the discussion focusing on the types of negative and positive feedback and repetition and reformulations.

Chapter 6 will discuss the methodology and results of a study of the input to the child learner of Libyan Arabic described in chapter four, and her response to that input. The focus will be on the token and type frequency of verb forms in the speech the child hears, the repetition, reformulation and correction of the child's speech by her interlocuters, and the child's uptake of forms from input.

Chapter 7 discusses the main findings of the study and concludes with recommendations for further research.

CHAPTER TWO

LIBYAN ARABIC

2.0 Introduction

Libyan Arabic (LA) is a language spoken by more than five million people in the north and middle of Libya. It can be classified as one of the regional varieties of Modern Standard Arabic (MSA), which has a high number of regional and social dialects (Watson, 2002). LA itself comprises three dialects: the Eastern dialect, the Western dialect and a transitional dialect which is spoken in the area between the two (Owen, 1983). Each of the three varieties merits the term 'dialect' because there are phonological, morphological, lexical and syntactic differences between them. For example, the negation suffix particle "*š*" is used in the area where the Western dialect is spoken (1a), but not in the area in the middle of the country where the transitional dialect is spoken (1b).

(1) a. manibbiš nimši
neg-want-1.SG.PRS-neg go.1.SG.PRS
I don't want to go.

b. manibbi nimši
neg-want-1.SG.PRS go.1.SG.PRS
I don't want (to) go.

Not many studies have been conducted on LA. Owen (1984) and Abdunnabi (2000) provide studies of the Eastern dialect. Elfituri (1976) and Owen (2003) offer studies of the Western dialect. My focus in this chapter will be on a Western variety spoken in the city of Zawia, 50km to the west of the capital Tripoli. This variety has been selected as the focus because it is the variety spoken by my wife and myself, and it is the primary source of Arabic that the child learner being studied is exposed to. Any analysis of the development of the child's linguistic knowledge, and the role that input plays in that development, must inevitably be conducted in relation to the properties of the Zawian variety of western LA.

The focus in this chapter is the description of the morphology of verbs and related categories (full subject DPs, subject pronouns, negation) that interact with verb morphology. Since LA is a richly inflected language whose verbs have consonantal prefixes and suffixes, and whose verb stems undergo vocalic changes depending on the intended meaning, it is appropriate to begin the description with a brief outline of the phonology of LA.

2.1 Phonology of Libyan Arabic (Zawian Variety of Western LA)

2.1.1 Consonant Phonemes

The existing studies of LA differ in their claims about how many consonant phonemes there are. Owen, (1983) reports that Eastern LA has 33 consonant phonemes, while Aboumdas, (1985) claims there are just 29. My own variety appears to make 29 consonant phoneme distinctions. These are listed in Table (2.1).

Table 2.1: Consonant Phonemes in the Zawian Variety of LA

	Labial	Labiodental	Interdental	Alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stops Voiced Voiceless	b			t ṭ d ḍ			g k	q	ʾ
Fricatives Voiced Voiceless		(v)* f	ḏ ṯ ḏ̣	z ṣ s	j š	x ġ		ḥ ʿ	h
Nasals Voiced	m		n						
Lateral Voiced				l					
Flaps Voiced				r					
Glides Voiced	w				y				

* rarely used and only in loan words such as Volvo or Vatican.

2.1.2 Vowel Phonemes

There is also disagreement among studies that have been carried out about the number of vowel phonemes in LA. Elfituri (1976) claims that there are eight vowels in Western LA, five long and three short. Aboumdas (1985) argues that there are ten vowels, six long and four short. My own analysis of the Zawian variety indicates that there are six long vowels and five short vowels. These are presented in Table (2.2):

Table 2.2: Vowel Phonemes in the Zawian Variety of LA

	Front		Back	
	Short	Long	Short	Long
High	i	ī	u	ū
Mid	e	ē	o	ō
Low		ä	a	ā

2.2 Verbs in Libyan Arabic

2.2.1 Types of Verb in LA

LA has both auxiliary and main verbs and distinguishes morphologically regular and irregular verb forms. Verb stems are formed by combining consonantal roots and vocalic vowel patterns. Generally, the root of verbs in Arabic is a skeletal structure. It consists of either three or four consonants or semi-consonants called *radicals* that carry the semantic meaning of the verb. Radicals determine the morphological classification of LA verbs. Irregular verbs, according to Haywood and Nahmad, (1990), are classified into three classes:

1- Hamzated verbs are verbs in which ‘hamza’ (a glottal stop) is one of the radicals (e.g. s’al).
2- Double verbs are verbs in which the second and the third radicals are the same (e.g. *šadd*, hold).
3- Weak verbs are verbs in which one of the radicals is a weak consonant. Such verbs are classified in to three types:

- Assimilated verbs, in Arabic “mitl”, are verbs whose first radical is *wāw* or *yā’* e.g *wgaf*, ‘stand’.
- Hollow verbs, in Arabic “ajwaf”, are verbs whose second radical is /w/ or /j/ e.g. *hawal*, ‘move’.
- Defective verbs, in Arabic “naqis”, are verbs whose final radical is /w/ or /j/ e.g *mšy* ‘go’.

2.2.2 Roots and Patterns

In LA, as in MSA, most nouns and verbs are a combination of two morphemes: a sequence of consonants or radicals referred to as the “root” and a significant “pattern” of vowels (Ryding, 2005). Roots and patterns cannot be separated from each other, since the root consonants carry the core meaning of a given word, while the patterns modify that meaning by making it more specific (Alhawary, 2011). They have to be connected in order to be pronounceable. Nevertheless, roots and patterns are independent morphemes. For example, the roots *k_t_b* and *s_r_g* can occur simultaneously with a number of vowel patterns to produce a variety of verbal and nominal constructions, as in (3a) and (3b).

(3)	a.	ktab	(write.3.SG.MASC.PST)	“he wrote”
		maktab	(office.SG.MASC)	“office”
		maktba	(library.SG.FEM)	“library”
		ktāb	(book.SG.MASC)	"book"
	b.	srag	(steal-3.SG.MASC.PST)	“he stole”
		sarig	(thief-SG.MASC)	“thief”
		sirga	(stealing-SG-FEM)	“stealing”
		masrūg	(stolen-SG-MASC)	“stolen”
		yisrig	(steal-3.SG.MASC.PRS)	“he steals”

As can be seen from Examples 3a and 3b, each root is associated with a broad semantic meaning, from which a set of words with more specific meanings can be derived through merger with particular vowel patterns: a general association with ‘writing’ in the case of *k_t_b* and ‘stealing’ in the case of *s_r_g*. In literary Arabic, the

derivation of words from roots is fairly predictable and extremely productive (Ryding, 2005). In LA, the productivity of root and pattern merger is more limited, and it is not possible to predict which processes will apply to any given root.

It should be emphasised that the underlying root forms in LA are not the same as those of MSA. Thus, verb forms which in MSA have the shape CVCVC(V) (with no long vowels) always appear in Libyan Arabic without the final short vowel. Another feature that distinguishes LA from MSA is that MSA disallows consonant clusters in onset, as well as in coda position, whereas LA allows initial consonant clusters, as shown in the examples (4a-d). (One exception to the restriction on codas in both MSA and LA is in the case of pause, where the word may end in a consonant cluster (4d) (Ryding, 2005)). Thus:

(4)	MSA	Libyan Arabic	Meaning
a.	kataba	ktab	write
b.	kasara	ksar	broke
c.	waqafa	wqaf	he stopped
d.	waqa*ft*	wqaft	he stopped

2.2.3 Derivation

Verb roots in LA are divided into triliteral (three-consonant) roots (e.g. *k_t_b* "write") and quadriliteral (four-consonant) roots (e.g. *t_r_j_m* "translate"). The triliteral root is the most common type. A set of verb stems or verb forms can be created around each of these verb roots. The majority of verbs are generated from a triliteral root.

a. Triliteral verbs

In total there are seven derived forms into which all the triliteral verb roots are able to fit. In other words, the lexical root of three consonants can interlock with seven different patterns to produce seven lexical variants from the same root. However, not all lexical roots occur in all of these seven forms. Some roots occur in five or six forms only. These derivational forms are identified by the morphological patterns that characterise them. The Arabic grammatical term for these verb forms is *awzān*,

meaning “weights” or “measures”, and it refers to them via the traditionally recognised modal root *f‘l*, to which any pattern can be referred or be expressed by fitting into it. For example, if we take the pattern *f’l* and apply it to a different verb root, we get different verbs that share the same *awzān* “weights” or “measures”, as in *ksar* “broke” and *ktab* “wrote” (Ryding, 2005). The lexical root *f‘l* has the base meaning “doing” or “making”. Table 2.3 shows the seven forms or patterns of LA that can be derived from the triliteral verb root.

Table 2.3: Verb Pattern in LA (Triliteral)

Form	Pattern	Syllable Structure	Example	Gloss
I	f‘al	ccvc	shrib	drunk
II	fa‘‘al	cvccvc	kassar	(made it) break
III	fā‘al	cvvcvc	shārak	participated
IV	tfa‘‘al	tcvccvc	twaqqa‘	expected
V	tfā‘al	tcvvcvc	t‘ādal	equal
VI	(i)nf‘al	vcccvc	entlag	(be) released
VII	staf‘al	stvccvc	stawrad	imported

As shown in the above table, Pattern I is the simplest pattern, and is considered to be the basic form from which all the other forms are derived. For example, Pattern II is derived from Pattern I by doubling the middle consonant. The third pattern is characterised by the occurrence of a long vowel /ā/ after the first consonant. Pattern IV is derived from Pattern II by adding the prefixing consonant /t-/. The fifth pattern is formed by prefixing /t-/ to Pattern I by adding the prefix /n-/ and inserting the short vowel /i/ to break the initial consonant cluster; this form of the verb is used to indicate the passive voice (Wright, 2007: 40). Pattern VII is derived from the basic form by

adding the prefix /st-/ plus a short vowel /a/. The /s-/ has a "causative meaning, while the /t-/ has a reflexive connotation" (Elgadi, 1986: 99).

As triliteral forms are more frequent than the quadrilateral in LA, I will give further analysis to trilateral forms, focusing mainly on Forms I, II, III, and IV.

Form I is the base form and is also called *Mojarrad*, stripped/bare. Form I has both the sound (Table 2.4), and the regular (Table 2.5) forms.

Table 2.4: LA Triliteral Sound Verbs of Form I

Past	Present	Future	Examples			Root
			Past	Present	Future	
CCaC	yaCCaC	byaCCaC	l'ab 'he played'	yal'ab 'he plays'	byal'ab 'he will play'	l-'-b
CCaC	yuCCiC	byuCCiC	Ġsal 'he washed'	yuġsil 'he washes'	'byuġsil' 'he will wash'	ġ-s-l
CCaC	yCCiC	byCCiC	ksar 'he broke'	yksir 'he breaks'	byksir 'he will break'	k-s-r

As can be seen from the table above, there is a change in the vowels between forms. For example, in the past template of the third person masculine singular sound verbs the vowel is always "a". The present and the future have a similar pattern, a combination of vowels "a", "u" and "i".

Table 2.5: LA Triliteral Verbs of Form I

Verb Type	Examples			Root
	Past	Present	Future	
Hamzated Verb	s'al 'he asked'	ys'al 'he asks'	bys'al 'he will ask'	s.'.l
Doubled Verb	šadd 'he hold'	yšidd 'he holds'	byšidd 'he will hold'	š.d.d
Assimilated Verb	wsal 'he arrived'	yusil 'he arrives'	byusil 'he will arrive'	w.s.l
Hollow Verb	gāl 'he said'	ygul 'he says'	bygul 'he will sau'	g.w.l
Defective Verb	kla 'he ate'	yakil 'he eats'	byakil 'he will eat'	k.l.y

Form II is derived from Form I by doubling the second consonant. In general, it is a transitive as in (5). To clarify, not all the types of verb appear in Form II (i.e doubled, hollow verb etc). Table 2.6 shows the verb forms of Form II in LA.

(5) *š*add ḥūta
Catch-3.MASC.SG.PST fish-SG
He caught a fish

Table 2.6: LA Triliteral Sound Verbs of Form II

Verb Type	Examples			Root
	Past	Present	Future	
Sound Verbs	xarrab he destroyed	yxarrib he destroys	byxarrib he will destroy	x-r-b
Hamzated Verb	’ajjar he rented	y’ajjir he rents	by’ajjir he will rent	’-j-r
Doubled Verb	maddad ‘he extended’	ymaddid ‘he extends’	bymaddid ‘he will extend’	m-d-d
Assimilated Verb	waddar ‘he lose’	ywaddir ‘he loses’	bywaddir ‘he will lose’	m-d-r
Hollow Verb	dawwar ‘he rotated’	ydawwir ‘he rotates’	bydawwir ‘he will rotate’	d-w.r
Defective Verb	‘arra he ‘uncovered’	y‘arri ‘he uncovers’	by‘arri ‘he will uncover’	‘-r-r

Form III is also derived from Form I by adding a long vowel “ā” after the first radical. In Form III, not all the verb forms are present. Table 2.7 shows the verb forms of Form III.

Table 2.7: LA Triliteral Sound Verbs of Form III

Verb Type	Examples			Root
	Past	Present	Future	
Sound Verbs	nāqaš ‘he discussed’	ynāqiš ‘he discusses’	bynāqiš ‘he will discuss’	n-q-š
Hamzated Verb	lā’am ‘he suited’	ylā’im ‘he suites’	bylā’im ‘he will suite’	l-’-m
Assimilated Verb	wāfag ‘he agreed’	ywāfig ‘he agrees’	bywāfig ‘he will agree’	w-f-g
Hollow Verb	hāwal ‘he moved’	yhāwil ‘he moves’	byhāwil ‘he will move’	h-w-l
Defective Verb	nāda ‘he called’	ynādi ‘he calls’	bynādi ‘he will call’	n-d.y

Form IV is derived from Form II by adding the prefix t-. Again, not all the types of verb exist in Form IV (i.e. hamzated verbs). Table 2.8 shows the the verb forms of Form IV.

Table 2.8: LA Triliteral Sound Verbs of Form IV

Verb Type	Examples			Root
	Past	Present	Future	
Sound Verbs	Tnaffas 'he was breathing'	Ytnaffis 'he is breathing'	Bytnaffis 'he will breath'	n-f-s
Double verb	Tmaddan 'he became civil'	ytmaddan 'he is civilising'	bytmaddan 'he will civilise'	m-d-n
Hollow Verb	thawwal 'he was moving'	ythawwil 'he is moving'	bythawwil 'he will move'	h-w-l
Defective Verb	tsalla 'he enjoyed'	ytsalla 'he is enjoying'	bytsalla 'he will enjoy'	s-l-y

b- Quadriliteral verbs

These are verbs with a root of four consonants and they occur in three different forms, as shown in Table (2.9):

Table 2.9: LA Quadriliteral Verbs of form I, II, and III

Form	**Pattern**	**Syllable structure**	**Example**	**Gloss**
I	fa'lal	*cvccvc*	tarjam	translate
II	tfa'lal	t*cvccvc*	tkassar	(was) broken
III	if'alal	v*ccvcvc*	išmaʾaz	disappointed

2.3 Verb Morphology in Libyan Arabic

2.3.1 Tense

LA does not have a grammaticalised distinction between the present and past tense. Instead, it has an aspectual contrast between imperfective and perfective forms of the verb. It does have a distinct tense form for the future, however. The temporal uses of

the imperfective and perfective will be illustrated once the forms for these aspects and the future tense have been described. They each differ in whether they involve suffixes, prefixes and/or alternations in vowel patterns to express phi (person, number and gender) features.

In the perfective, suffixes and vowel changes in the verb stem carry phi feature information, as illustrated in Table 2.10.

Table 2.10: Conjugation of the Perfective

Perfective stem –ktab- 'write'			
Person \ Number		Singular	Plural
First Person		ktab-it (at) " I wrote"	ktab-na "we wrote"
Second Person	M	ktab-at "you wrote"	ktab-tū "you wrote"
	F	ktab-tī "you wrote"	ktab-tū "you wrote"
Third Person	M	ktab "he wrote"	kitb-ū "they wrote"
	F	kitb-it "she wrote"	kitb-ū "they wrote"

Note that, while suffixes in the perfective distinguish first and second person, and number in all persons, absence of a suffix and a vowel change in the stem distinguish third from first/second person, and third person masculine from third person feminine in the singular. There is no gender distinction in plurals and in the first person singular. The third person masculine singular lacks an affix and is considered to be the citation form as well as the unmarked form.

The perfective is used in past tense contexts only. It is ungrammatical to have the perfective expressing current or future action, as in (6):

(6) ilbint kitbit ilwajib amis/ġudwa*
The-girl.SG write.3.FEM.SG.PST the-homework-SG yesterday/*tomorrow
The girl wrote the homework yesterday/*tomorrow

The imperfective uses both prefixes and suffixes to express phi-feature information. Prefixes carry information about person and gender. For example, the prefix y(i)- can signal third person masculine singular in contrast to the prefix t(i)-that signals third person feminine singular:

(7) a. y(i)-*ktib*
3.MASC.SG.write.PRS)
he writes

b. t(i)-*ktib*
3.FEM.SG.write.PRS
she writes

Suffixes on the other hand can contain information about person, number and gender. For example, adding the suffix –ū to the verb *y(i)ktb*ū (3.write.PL.PRS) "they write" carries the information that the verb is plural; in the plural the *y(i)*- prefix carries no information about gender. The suffix ī affixed to the verb in the singular carries the information that the verb is second person and feminine. The distribution of prefixes and suffixes and the information they carry in the imperfective is summarised in Table 2.11.

Table 2.11: Conjugation of the Imperfective

Imperfective stem –ktab- 'write'			
Person \ Number		Singular	Plural
First Person		n(i)-ktib "I write"	n(i)-ktb-ū "we write"
Second Person	M	t(i)-ktib "you write"	t(i)-ktb-ū "you write"
	F	t(i)-ktb-ī "you write"	t(i)-ktb-ū "you write"
Third Person	M	y(i)-ktib "he writes"	y(i)-ktb-ū "they write"
	F	t(i)-ktib "she writes"	y(i)-ktb-ū "they write"

The imperfective verb form has few restrictions in terms of expressing tense; it can be found in a variety of contexts. For example, it can describe habitual or progressive events in the present (8):

(8) yiktib
3.write.MASC.SG.PRS
He writes/He is writing

It can also be found in a future context (9):

(9) ilmadirsa tabda ġudwa
The-school-SG start.3.FEM.SG.PRS tomorrow
The school starts/is starting tomorrow

Finally, the imperfective verb is used as a non-finite form in embedded clauses (10):

(10) ḥawal inna yxuš
Try-3.MASC.SG.PST him.SG enter-3.MASC.SG.PRS
He tried to enter

The future tense in LA consists of the imperfective plus the future prefix *b-*, as shown in Table 2.12.

Table 2.12: Conjugation of the Future

Imperfective stem –ktab- 'write'			
Person \ Number		Singular	Plural
First Person		b-n-ktb "I will write"	b-n-ktb-ū "we will write"
Second Person	M	b-t-ktib "you will write"	b-t-ktb-ū "you will write"
	F	b-t-ktb-ī "you will write"	b-t-ktb-ū "you will write"
Third Person	M	b-y-ktib "he will write"	b-y-ktb-ū "they will write"
	F	b-t-ktib "she will write"	b-y-ktb-ū "they will write"

2.3.2 Auxiliary Verbs in LA

As in MSA and other varieties of Arabic, LA has two auxiliary verbs which are used with the main verbs to express syntactic (or viewpoint) aspect: *kān* and *qad*. Like lexical verbs, auxiliary *kān* has both imperfective and perfective forms as shown in Tables 2.13 and 2.14. In the imperfective, prefixes distinguish person (and gender in the third person singular) and suffixes distinguish number (and gender in the second person singular). In the perfective, phi features are entirely determined by suffixes.

Table 2.13: Auxiliary kān (Imperfective)

Auxiliary kān			
		Singular	Plural
First Person		inkūn “ I am”	inkūnū “we are”
Second Person	M	itkūn “you are”	itkūnū “you are”
	F	itkūni “you are”	
Third Person	M	ikūn “he is”	ikūnū “they are”
	F	itkūn “she is”	

Table 2.14: Auxiliary kān (Perfective)

Auxiliary kān			
		Singular	Plural
First Person		kunt “I was”	kunna “we were”
Second Person	M	kunt “you were”	kuntū “you were”
	F	kunti “you were”	
Third Person	M	kān “he was”	kanū “they were”
	F	kānit “she was”	

Perfective *kān* is used with a main verb in its imperfective form to express a habitual action in the past (11):

(11) kānit tal’ab filkūra
was-3.FEM.SG.PST play.3.FEM.SG.PRS in-the-football.FEM.SG
She was playing football

Imperfective *kān* used with a main verb in its perfective form, can express a completed action in the future (12):

(12) Bukra halwagit itkūn gṭa‘it nuṣ iṭṭrīg
Tomorrow this-the-time 2.be.MASC.SG.PRS cross.2.MASC.SG.PST half the-way.
‘By this time tomorrow, you will be halfway through’

2.4 Imperative Mood

Of relevance to the analysis that will be undertaken of the development of verbal inflection in a child learner of LA is the contrast between the indicative and imperative moods of the verb. Imperatives are, of course, used in giving commands. Imperative is not required for tense as the required action is always in the future (Palmer, 1986). However, imperatives in LA are distinguished for number, and for gender in the singular, as shown in Table 2.15.

Table 2.15: Imperative in LA

		Imperative “ktab” write	
		Singular	Plural
Second Person	M	iktib “(you) write”	Iktbū “(you) write”
	F	ikitbī “(you) write”	

Nearly all the imperative forms are formed from the imperfective stems of verbs. If the imperative has a strong root, as in (13a), or a final semi-consonant as in (13b), the prefix “i” is required to break the initial consonant cluster, and in this case the imperative is not homophonous with the imperfective bare stem, i.e. with the unmarked form of the verb. A short vowel is also required in the feminine singular as in (14).

If the prefix "*i*" is not required to form the imperative, then the imperative form is homophonous with the imperfective bare stem; this is found with double root imperatives as in (15) or weak root imperatives as in (16). There are many verb forms which are homophonous with the imperfective bare stem. This is important because, anticipating the findings in the child data, it is often not possible to determine whether the child is using an imperfective bare stem or an imperative form in finite contexts.

(13) a irsim šijra (strong root imperative: r-s-m)
Draw-2.MASC.SG.IMP tree-SG
'Draw a tree'

b is'ū kul yom (final semi-consonant: s-'-y)
try-2.PL.IMP evry day-SG
try every day

(14) irismi šijra (strong root imperative: r-s-m)
Draw-2.FEM.SG.IMP tree-SG
'Draw a tree'

(15) šid iṭṭasa (double root imperative: š-d-d)
Hold-2.MASC.SG.IMP the-cup-FEM.SG
Hold the cup

(16) lawiḥ ilknasa (weak root imperative: l-w-h)
Throw-2.MASC.SG.IMP the-rubbish
Throw the rubbish

Kān in its imperative form does not exist as an auxiliary verb. It always occurs as a main verb as in (17 a & b):

(17) a. kūn rajil bahi
be-2.MASC.SG.IMP man.SG good
'Be a good man'

b. kūni lawla ʻal majmūʻa
be-2.FEM.SG.IMP the-first-FEM.SG on the-group.SG
Be the first in the group

The following Table 2.16 shows the inflectional affixes of kān in its imperative form:

Table 2.16: Affixes of Auxiliary kān (Imperative)

		Auxiliary kān	
		Singular	Plural
Second Person	M	Kūn "be"	Kūnū "be"
	F	Kūni "be"	

2.5 Negation

Negation in LA is realised through the discontinuous morpheme *ma- ... –š*; *ma-* is a prefix to the verb, *–š* is the final affix of the verb, and is suffixed to the verb directly if there are no other affixes (18a), but follows other affixes if they are present (18b):

(18) a. ma-taftaḥ-š ilbab
neg-open.2.MASC.SG.IMP-neg the-door.SG
Don't open the door
b. ma-jibit-ha-l-kum-š
neg-bring.1.SG.PST-it-FEM.SG-to-you-PL-neg
'I did not bring it to you'

Negation in the future tense is formed by adding *ma- ... –š* to the auxiliary verb *ibb*. An epenthetic short vowel, "*i*", is also required to break the consonant cluster that arises between *ibb* and *–š*:

(19) manibb(i)-š nimši
neg-FUT.1.SG.PRS-neg go.1.SG.PRS
I will not go

The future can also be negated, in the first person only, by dropping the auxiliary verb *ibb*. This negation can be formed by the negation particle *ma*, followed by the first person particle *n* and the negation particle suffix *š*, as in (20):

(20) man(i)š maši lijjam‘a
neg-I-neg going-1.SG to-the-university.SG
I am not going to the university

Negative imperatives are formed by affixing *ma-* ... *–š* to the imperative form of the verb (21 a & b):

(21) a. imšū lissūg
go.2.PL.IMP to-the-market-SG.MASC
‘Go to the market!’

b. matimšūš lissūg
neg-go.2.PL.IMP-neg to-the-market-SG.MASC
‘Don’t go to the market!’

2.6 Pronouns

LA is a null subject language that in the unmarked pronominal case (where the subject is a continued topic) identifies subjects through its verbal inflections. However, as in similar null subject languages, there is also an independent set of subject pronouns, which are listed in Table 2.17. These, when used, typically have the function of shifting the topic reference.

Table 2.17: Independent Personal Pronouns

		Singular	Plural
First Person		`ani “I”	ḥna “we”
Second Person	M	inta “you”	intum “you”
	F	inti “you”	
Third Person	M	huwa “he”	humma “they”
	F	hiya “she”	

Object pronouns are suffixal and are affixed to the verb. They are listed in Table 2.18.

Table 2.18: Object Pronoun Suffixes

		Singular	Plural
First Person		-nī "me"	-na "us"
Second Person	M	-ak "you"	-kum "you"
	F	-ik "you"	
Third Person	M	-h "him"	-hum "them"
	F	-ha "her"	

2.7 Word Order and Interrogatives

A description of word order and interrogative formation is included in this review of the properties of LA since these will be of interest in Chapter 6, which deals with the influence of input on the child's developing grammar. Like most of the Arabic varieties, LA allows two word orders in main declarative clauses: SVO (the neutral, unmarked word order) and VSO. Unlike MSA, however, where number morphology is absent from the verb when the order is VSO, in LA word order has no effect on verb morphology (22 a & b). To illustrate:

(22) a. il'ummal rawḥū issa'a arib'a (SVO)
The-worker.MASC.PL left.3.PL.PST the-time.SG four
The workers left at four o'clock

b. rawḥū il'ummal issa'a arib'a (VSO)
left.3.PL.PST the-worker.MASC.PL the-time.SG four
The workers left at four o'clock

Yes/no questions in LA can be formed by applying rising intonation to a declarative structure (the most common means of expressing a yes/no question) (23), and through the use of a question tag (24):

(23) mšat lissūg [↗]?
Go.2.MASC.SG.PST to-the-market.SG?
‘(Did) you go to the market?’

(24) haḏi sayartak, walla?
This.FEM.SG car.SG-your-MASC.SG isn’t?
‘This is your car, isn’t it?’

A list of common information question words is given in Table 2.19.

Table 2.19: Question Words in LA

Question Word	Gloss
šin, šinī	What
‘laš	Why
kīf	How
min	Who
amta	When
wain	Where
aihum amā, `aī	Which
giddaš	How much
kam	How many

Each of the question words in Table 2.19, except for *`ai*, is used as an independent free form, and in either a pre- (25) or post-verbal (26) position:

(25) Kam šrat?
How many buy.2.SG.PST?
How many (did) you buy?

(26) šrat kam?
Buy.2.SG.PST how many?
‘How many (did) you buy?’

2.8 Concluding Remarks

This chapter has described a range of grammatical properties in LA that are the focus of an investigation into child language development and the role that input plays in that development that are reported in Chapters 4 and 6. The description covered verb morphology (relating to phi features and tense/aspect distinctions), auxiliary verbs, the imperative mood, negation, pronouns, word order and interrogatives. Particularly noteworthy features that distinguish LA from many of the languages studied by child language acquisition researchers are the presence of both verbal suffixes and prefixes signalling phi feature and tense/aspect distinctions and the absence of a specific infinitive form of the verb. The next chapter reviews previous studies of morphological development in order to establish the key questions that will be asked in investigating the language of the child learner of LA.

CHAPTER THREE

CROSS-LINGUISTIC STUDIES OF MORPHOLOGICAL DEVELOPMENT IN CHILD LEARNERS

3.0 Introduction

In this chapter, studies of the first language acquisition of verb forms in finite contexts and subject verb agreement marking will be reviewed. In Section 3.1, the emergence of inflection will briefly be examined, then in Section 3.2 I will discuss the optional use of verb forms in finite contexts and will present empirical evidence supporting the claim that children go through an optional infinitive (OI) stage, as proposed in Chapter 1. In Section 3.3, the frequency of agreement mismatches cross-linguistically will be presented. After that, in Section 3.4, I will consider the nature of default verb forms in child language and present a proposal that in some languages, imperative verb forms serve as defaults, which is known as the imperative analogue hypothesis (Salustri and Hyams, 2006). It will be considered whether there is evidence to support this hypothesis from the acquisition of Arabic varieties. In Section 3.5, I summarise the findings and their implications for the research questions to be addressed in Chapter 4.

3.1 The Emergence of Inflection

Cross-sectional studies of morphological development show that when children start to produce inflected verb forms, they do so optionally and in some cases overgeneralise those forms (Bybee & Slobin, 1982; Pinker & Prince, 1988). For example, English-speaking children typically realise the first inflectional features anywhere from 14 to 20 months (Bloom, 1973) and then they over-apply regular inflections to words that have irregular forms at the age of around 26 months (e.g. *thinked/knowed*) (Radford, 1990). Similar results have been found in early L1 German. Bitter (2000) looked at the early verb development of a German-speaking child, Anna, at the age of 1;8-2;1. She found that Anna started using verb inflection at the age of 1;8,10, especially the perfective suffixes-*t* and *–en* (for example, *gespielt* 'played', *gegessen* 'eaten'), but did so optionally: 9/15 uses of *–t* alternating with non-finite forms in intended past tense contexts, 13/23 uses of *–en* alternating with non-

finite forms in intended past tense contexts. The early occurrence of inflectional elements is not restricted to Germanic languages, as a growing number of studies have shown. For Korean, Choi and Gopnik (1995) studied nine children aged 1;2-1;10, and found that these children used verbs with appropriate inflection as early as 1;3. This can be seen in the following example, which contains the suffix "*ci"*. This is considered to be one of the most common suffixes produced by Korean children and it is used to express certain and shared information (Choi, 1991).

(1) verb stem: *mek-* 'eat' (Activity)

kwaca-lul mek-nun-ta/e/ci. ‘(Somebody) eats a cookie’

cookie-Obj. eat-Present-SE

(Choi & Gopnik, 1995:505)

Stephany (1997) showed that Greek-speaking children were able to produce the imperative mood by the age of 1;10. Toivainen (1997) looked at Finnish-speaking children and found that they produce third person forms and imperatives at 1;4, followed by the past tense at 1;8. Gathercole (1999) investigated Spanish-speaking children and found that by the age of 1;11 they start to use imperative and third person singular present tense.

Studies comparing the emergence of inflection across languages suggest that the early emergence of morphology is linked to morphological richness, i.e. the number of morphological categories and distinctions that a language grammaticalises (Slobin, 1985a; Dressler, 2010; Xanthos et al., 2011). However, the more complex the system is, the more time it takes for it to be fully acquired. Since varieties of Arabic, including LA, have morphologically complex verb forms (see Chapter 2), they should then appear early, but also take time to be fully acquired.

For Arabic, there are few studies that have investigated verb inflection at the early stages of language development. Omar (1973) investigated data from thirty-seven children aged between eight months and 15 years acquiring Egyptian Arabic and reported that the children started using inflection when they reached the multi-word utterance stage, at about two years and six months. This is considerably later than English-speaking children, who produce their first inflectional forms at about 18 months (Brown, 1973; Bloom, 1973; Radford, 1990). However, later studies looking

at very young children acquiring Kuwaiti Arabic have found early inflected forms. For example, Al-Jenaie (2009) observed early verb inflection at 1;8 for Kuwaiti Arabic-speaking children. Al-Houti (2013) found that young Kuwaiti children realise verb inflection at 2;4. However, in Al-Houti's study, the youngest child was 1;7, so inflections could have emerged even earlier than 2;4.

One question to be addressed in the present study is whether a child learner of LA, observed between the ages of 2;6 and 3;9, is producing verb inflections (the expectation is that she will be), and how her use of those inflections compares with their use in the target language (the input she is receiving from those around her).

3.2 The Optional Use of Verb Forms in Finite Contexts

As discussed in Chapter 1, the early emergence of inflectional forms does not signify that children always use inflections or other grammatical morphemes in a target-like way. Rather, children's early utterances frequently show omissions of these elements and young children often use alternate forms in finite contexts (e.g. *he goes* vs. *he go*; for overviews see Guasti, 2002; Ambridge & Lieven, 2011; de Villiers & Roeper, 2011; Eisenbeiss, 2015). In Chapter 1, the ongoing debate about the nature of early grammars that gives rise to such optionality was presented. In this chapter, I will present the results of empirical studies that focus on this phenomenon.

Studies of the early acquisition of English, German, Dutch and French have found evidence for a stage from about two to three years of age, during which children alternate between the use of non-finite and finite verbs in main (i.e. "root") clauses, where finite verbs are required (Clahsen, 1986; Behrens, 1993; Blom, 2003, 2007; Rasetti, 2000). As already discussed in Chapter 1, this stage has been labelled the optional infinitive (OI) (Wexler, 1994) or root infinitive (RI) (Rizzi, 1993/1994) stage. For consistency, the phenomenon will be referred to in this thesis as the OI stage, but without commitment to the theoretical explanation offered by Wexler. However, studies of null-subject languages, like Italian and Spanish, have reported low OI proportions or even no OIs in the case of individual children (e.g. Guasti, 1993/4; Grinstead, 1994; Leonini, 2002; Salustri & Hyams, 2006).

Wexler (1998) proposed an explanation for this phenomenon based on his assumption that children might initially leave finiteness features underspecified. In particular, in his ATOM (Agreement/Tense Omission Model), he argued that children's grammars in the OI stage are constrained by the Unique Checking Constraint (UCC), which is later overridden by neural maturation (see also Schütze & Wexler, 1996). This constraint allows children to check the subject noun phrase for either tense or agreement features, but not for both. This leads to non-finite forms being selected when tense features remain unchecked. Wexler's account of the absence of OIs in null subject languages like Italian and Spanish is that null subjects are licensed by an interpretable D feature of Tense that does not require checking, and therefore in these languages the UCC is never violated. The data in Table 3.1 are consistent with this proposal.

Table 3.1: Rates of OIs in Null and Non-null Subject Languages

Language		Child	Age	% RIs	Source
Non-null subject languages	German	S	2;1-2;2	43%	Weissenborn (1990)
		Simon	2;0-2;6	52%	Behrens (1993)
		Julia	2;2-2;5	55%	Clahsen (1986)
		Andreas	2;1	47%	Wagner (1985)
	Swedish	Tor	1;11-2;2	56%	Platzack (1992)
	Dutch	6 children	1;7-2;1	71%	Blom (2003, 2007)
	French	Nathalie	1;7-2;1	76%	Rasetti (2000)
	Icelandic	Eva	1;1-2;4	65%	Sigurjónsdóttir (2005)
Null subject languages	Italian	Gabriele	1;7-2;6	7%	Schaeffer (1990)
		Denis	2;0-2;7	3%	Leonini (2002)
		Martina	2;1-2;7	0%	Salustri & Hyams (2006)
		Diana	2;0-2;7	0%	Salustri & Hyams (2006)
		Viola	2;0-2;7	0.2%	Salustri & Hyams (2006)
	Spanish	Juan	1;7-2;10	3%	Liceras, Bel & Perales (2006)
		Damariz	2;6-2;8	5%	Grinstead (1994)

(Al-Houti, 2013, Table 4.3, p.143)

However, later studies of Spanish by Grinstead, De la Mora, Vega-Mendoza & Flores (2009) suggest that Spanish children do go through an OI stage. They looked at data from 38 monolingual Spanish-speaking children at the age of 3;5-6;5. Children were presented with pictures including puppet animals. The experiment began with one of the puppet animals saying a wrong sentence, which the children had to correct. As Table (3.2) shows, the children produced bare stems and progressive participles in finite contexts.

Table 3.2: The Percentage of Bare Stems and Progressive Participles in Finite Contexts

Verb Form	2nd/3rd Pl.Present Comen	Progressive Participle comiendo	Bare Stem come	2nd Sg. Present comes	1st Sg. Present Como	1st Sg. Past comí
% non-target forms	33% (13)	26% (10)	23% (9)	10% (4)	5% (2)	3% (1)

(Grinstead et al., 2009:39)

Further potentially problematic data for Wexler's claims about a connection between subject-drop and OIs seems to come from studies of Russian child data. Bar-Shalom and Snyder (1996) conducted a case study of a Russian girl, between the ages of 1;6 and 2;4. Six transcripts were coded for finiteness. The results showed that the child passed through an OI stage. The average percentage of OIs among the six transcripts was 10.9%; the study also showed that the peak of OI occurrence was when the child's MLU was 3.0 words. If Russian is a null-subject language, the occurrence of OIs seems to provide counter-evidence to Wexler's claims. However, Wexler (1998) argues that Russian is not a null-subject language where subject omissions are licensed by inflectional features. Rather, he claims that they are licensed by discourse. The fact that the proportions of OIs in Russian child speech are only around 10%, while in the non-null subject languages they are considerably higher, would support this claim. Since the proportion of OIs in the Grinstead et al. study of Spanish conflicts with that of the Liceras et al. study, which showed little evidence of OIs in the speech of a Spanish-speaking child, it is not clear either that the use of non-finite forms in finite contexts is evidence for an OI phase of development.

There is also evidence of the occurrence of OIs in Arabic, even though Arabic is a null-subject language. Aljenaie (2009) looked at the data from three Kuwaiti children aged between 1;10 and 3;1. She found that, for example, they produce sentences like:

(2) a. *sawi l- icˇ beet ba'ad?
do for you-F house too

instead of:
'a-sawi l- icˇ beet ba'ad?
1SIMP-do for-2FPR you house too
'Do you want me to build you a house too?'

b. a- sawi l- icˇ beet hada?
1SIMP do for you-F house this
'Can I build you a house?'

(Aljenaie, 2009:13)

In Example 2 above, the child used the non-inflected verb *sawi* "do" instead of a fully inflected verb form *'a-sawi* "I do". On another occasion, the same child used the finite form of the same verb correctly *a-sawi* as in (2b). Nevertheless, Aljenaie found that the proportion of the non-finite forms was low (2-12%).

3.3 The Frequency of Agreement Mismatches

The percentage of subject-verb inflection mismatches varies cross-linguistically. For English, Wexler (1994) analysed transcripts from the CHILDES database for 10 children (aged 1;6 to 4;1) and showed that although the third person singular present tense marker *–s-* was frequently omitted, it was not used with non-third person singular subjects. For Wexler, this suggests that children have adult-like representations for agreement inflections, although they are not always used in contexts in which they are required in the adult language. Given the limited set of verbal inflections in English, it is more revealing to consider studies that have looked

at the acquisition of subject-verb agreement in languages with richer inflectional systems.

The target-like, but low degree of, use of inflectional forms has also been reported among German-speaking children (Clahsen, Penke & Parodi, 1993/1994; Clahsen, Eisenbeiss & Penke 1996; Schütze & Wexler, 1996). For example, Clahsen et al. (1993/1994) analysed spontaneous speech data based on 72 recordings from seven monolingual children aged 1;8 to 2;9. They looked at the placement and inflection of the main verb and its relation to the appearance of the non-finite verb at the end of the clause and the finite verb in the first or second position. They found a relation between verb placement and verb inflections; non-finite verbs occurred in the clause-final position, whereas finite verb forms appeared in the first and second positions of the clause.

Poeppel and Wexler (1993) analysed data from the transcript of a monolingual German-speaking child, Andreas, aged 2;1. They looked at 282 multi-word utterances. The results showed that Andreas had target-like subject-verb agreement, with only seven errors out of 231 finite verb forms.

Greek verbs inflect for three persons and two numbers (Holton et al., 1997). Stephany (1995) studied the data of five Greek-speaking children aged between 1;8 and 2;11. These children produced singular verbs earlier than plural ones but showed mastery of person-number agreement forms at the age of two. In a more recent study, Doukas and Marinis (2012) investigated subject-verb agreement in two longitudinal datasets from a home setting (age range 1;7.15 to 2;11.11). They found that Greek children are productively producing first, second, and third person singular with a high accuracy rate at about the age of two. However, the third person singular was produced less in an obligatory context (18/21, 86%) compared to the first and second (12/12, 100%, and 3/3, 100%). Children also showed the same percentage of correct use in the obligatory context for the first and third person plural (100%) at the age of 2;0, but were less accurate with the second person, probably because the contexts for use of the second person plural are rare in input. Most of the mismatches were third person singular in first and second person singular contexts (85%). There were a few mismatches involving the use of the first person in a third person context (14.3%).

A study by Leonard et al. (2002) of present tense verb inflections in 60 Italian-speaking children aged two to seven years found that the third person singular was produced significantly more accurately than the third person plural, and the first person singular inflection was produced more accurately than the first person plural inflection. Leonard et al. also report some agreement mismatches: the third person singular was used for the first person singular, and the first person singular inflection was used in first person plural contexts.

Guasti (1994) looked at verb inflections produced by three Italian children aged between one year seven months and two years seven months. The results showed that all person singular inflections appeared earlier than plural inflections - children started using them at about the age of 1;8 - while plurals emerged at the age of two. Guasti suggests that the late acquisition of the plural is not due to the lack of knowledge of agreement, but as a result of the later development of the feature plurality. In addition to their late acquisition of the plural, Italian children also produced cases of mismatching agreement, with the thirrd person plural being used in first person contexts.

Taken together, the studies reviewed above suggest that singular forms appear before plural forms, and that mismatching agreement appears in the following direction: third person singular appears in first person singular and third person plural contexts, and first person singular appears in first person plural contexts.

Table 3.3 summarises percentage subject-verb agreement mismatches (as a proportion of the total number of inflected forms used) in German and the Romance languages. As the table shows, the percentage of subject-verb agreement mismatches is low (between 0.56% and 4%). This is considered to be low enough to represent ‘noise’ in the data rather than a significant divergence from target language norms (Hoekstra & Hyams, 1998:84).

Table 3.3: Subject-Verb Agreement Mismatches in Various Languages

Child	Language	Age	N	% Mismatch	Source
Simone	German	1;7-2;8	1723	1%	Clahsen & Penke (1992)
Martina	Italian	1;8-2;7	478	1.6%	Guasti (1993/4)
Diana	Italian	1;10-2;6	610	1.5%	Guasti (1993/4)
Guglielmo	Italian	2;2-2;7	201	3.3%	Guasti (1993/4)
Claudia	Italian	1;4-2;4	1410	3%	Pizzuto & Caselli (1992)
Francesco	Italian	1;5-2;10	1264	2%	Pizzuto & Caselli (1992)
Marco	Italian	1;5-3;0	415	4%	Pizzuto & Caselli (1992)
Marti	Cat/Spanish	1;9-2;5	178	0.56%	Torrens (1992)
Josep	Cat/Spanish	1;9-2;6	136	3%	Torrens (1992)
Gisela	Catalan	1;10-2;6	81	1.2%	Torrens (1992)
Guillem	Catalan	1;9-2;6	129	2.3%	Torrens (1992)

(Hoekstra & Hyams, 1998:84)

In Arabic, few studies have looked at children's language acquisition, or focused on subject-verb agreement mismatches in detail. However, two recent studies that investigated Kuwaiti Arabic-speaking children (Al-Jenaie, 2009 and Al-Houti, 2013) have found a low percentage of such mismatches (see Table 3.4). These findings suggest that generally Kuwaiti-speaking children even as young as 1;7 are highly accurate in their use of subject-verb agreement inflections.

Table 3.4: Agreement Mismatches in Kuwaiti Arabic

Child	Language	Age	N	%Mismatch	Source
Mohammad	Arabic	1;8-2;2	57/513	11%	Al-Jenaie (2009)
Yasmeen	Arabic	1;10-2;4	34/961	3%	Al-Jenaie (2009)
Ruaa	Arabic	2;10-3;1	118/2468	5%	Al-Jenaie (2009)
9 children	Arabic	1;7-3;7	219/3366	6%	Al-Houti (2013)

3.4 Default Forms and the Imperative Analogue Hypothesis

The discussion so far has led to the conclusion that when child L1 learners begin to use verbal inflections that grammaticalise tense and agreement properties, mostly those inflections are restricted to just those contexts where the target language uses them. In some cases, however, they are under-used. That is, they compete with another form that is not allowed in the same context in the target language. The observations about the OI stage in French and German suggest that the verb form that children use as an alternant to the target finite form is indeed an infinitive, and not some other verb form. The forms in French and German are infinitive forms (e.g. *manger* 'eat', *haben* 'have'). More recently, however, Salustri & Hyams (2006) have suggested that in other languages, for example, the null subject languages – Italian and Spanish – children may be using a form that is analogous to the infinitives of French and German, but is not an infinitive. Specifically, they propose that the analogous form in Italian is the imperative. This idea implies that, rather than a specifically infinitive form alternating with a finite form in finite contexts, a *default* form alternates with the finite form. In some languages, this is an infinitive, in others it is an imperative, and in yet other languages it is possibly some other form. The prediction of Salustri & Hyams is that in inflectionally licensed null subject languages, like Italian, the default form will be the imperative and as a result imperative forms will appear more frequently in the acquisition of these languages than in the acquisition of non-null subject languages.

Salustri and Hyams (2006) tested their prediction by comparing imperative use in Italian child and adult language. They found imperatives occur more frequently in child-directed speech (15%) compared to adult-directed speech (5%); however, imperatives are even more frequent in children's speech (40%) at the age of 2;2. This percentage decreases when children get older, falling to (10%) at 2;7. They then compared this result with findings on German, which is a non-null subject language. The results showed that German-speaking children rarely used imperatives (10%) between the age of 1;6 and 2;7, compared to adult Germans who frequently use imperatives when speaking to these children (36%). Salustri and Hyams also examined the frequency of imperatives and infinitives in the speech of the bilingual Italian-German child *Leo* (2;0-2;7). *Leo* is a child of a German mother and an Italian

father. He was exposed equally to the two languages. The results showed that *Leo* used between 34%-56% imperatives in Italian and 1.5%-6.5% imperatives in German. These results reflect the cross-linguistic differences noted in the monolingual data. Thus, all the above results support the hypothesis that the imperative is the analogue in null-subject Italian to the infinitive in non-null subject German, with respect to the use of default forms in finite contexts by child learners.

3.5 Default Forms in OIs in the Arabic Varieties

The Arabic varieties are all inflectionally licensed null subject languages. If Salustri & Hyams (2006) are correct in their prediction, it should be the case that child learners of one of these varieties will use imperative forms of the verb as a default in OI contexts. Aljenaie (2009), in the study described in Section 3.2, found that all three children were using perfective and imperfective forms of the verb in finite contexts that were target-like in terms of tense/agreement properties in high proportions (between only 3% and 11% non-target forms in OCs). However, the non-target cases involved an uninflected form. Aljenaie claims that this was a bare imperfective, rather than an imperative, as illustrated in (3):

(3) *sawi hada?
do this-M

Instead of:

et-sawi-iin hada?
2FIMP do this-M
'Are you going to do thid??' (Aljenaie, 2009:853)

Some bare imperfective forms are homophonous with existing imperatives in Kuwaiti Arabic, while others are not, like *sawi* in (3) and are forms that the child would not encounter in input. Aljenaie argues that the appearance of the non-homophonous bare imperfective forms in OI contexts implies that when forms homophonous with imperatives appear in such contexts, they are in fact bare imperfectives rather than

imperatives. Thus, the default form in OIs in Kuwaiti Arabic is an imperfective rather than an imperative, as in Italian and Spanish.

Al-Houti (2013) studied the acquisition of verb agreement by 10 Kuwaiti Arabic-speaking children aged 1;7-3;7. The study used a combination of spontaneous speech sampling in home and day care settings, and elicited production from semi-structured games that focused on nominal and verbal agreement. Looking at the distribution of imperfective forms with present tense reference, perfective forms with past tense reference and imperatives, Al-Houti found that imperfective and perfective forms were largely used only in imperfective and perfective OC contexts respectively, and were highly target-like as shown in Table 4.5. Imperative forms were produced in 100% of imperative contexts but were also overgeneralised to non-imperative contexts, as is clear from Table 3.5.

Table 3.5: Tokens (%) and Target-like Use of Tokens in OCs by Child Learners of Kuwaiti Arabic

	Elicited samples		Spontaneous samples	
	Tokens in OCs	Target use in OCs	Tokens in OCs	Target use in OCs
Imperfective (present)	1604/1985 (82%)	1604/1606 (99%)	121/140 (86%)	121/121 (100%)
Perfective (past)	181/190 (95%)	181/187 (95%)	40/43 (93%)	40/40 (100%)
Imperative	462/462 (100%)	462/817 (57%)	81/81 (100%)	81/104 (78%)

Al-Houti also looked at whether the children being investigated in her study use a default form instead of fully inflected form in Kuwaiti Arabic. She looked at the use of imperfective bare stems and imperatives. She found that Kuwaiti children used an imperative as a default form rather than imperfective. This finding is in conflict with that of Aljenaie (2009), who claims that imperfective is the default form for the same variety of Arabic. Al-Jenaie stated that if the default is the imperative then children would produce a sentence like **ʾuhu ʾiktib* where an imperative verb is used instead of a third person masculine singular imperfective verb. Al-Houti provided evidence that this type of utterance and many similar utterances occurred in her data (n= 101).

3.6 Summary

In this chapter, I have looked at previous studies on morphological development in child learners and described a number of potential hypotheses about the development of verbal inflection. These studies showed that children speaking different languages start to produce verb inflectional properties between 1;2 and 1;8. For example, Korean-speaking children use verbs with appropriate inflection as early as 1;3. Similar results were found for Greek, Finnish, German, English and Arabic speaking children. However, one study on Arabic (Omar, 1973) showed that Arabic-speaking children realise verb inflection between 2;1 and 2;6. This is considered late compared to findings from other studies.

I also discussed the optionality in the use of verb forms in finite contexts and I presented evidence that children speaking English, German, Dutch, French, Spanish, Russian and Arabic pass through a stage between two and three years old at which they alternate between the use of non-finite and finite verbs in main clauses, where finite verbs are required.

The verb inflection error rate has also been discussed and it has been shown that the type and the rate of errors vary cross-linguistically. In general, the agreement error rate is very low among all the grammatical features across languages: for example, in German 1%, Italian 1.5%, Catalan 1.2%. In Arabic the only two studies on agreement errors among Kuwaiti-speaking 1children show a very low error rate (3-11% and 6%). In terms of the acquisition order of tense, person, number, and gender, there is no agreement on a single type of order. However, in some European languages, children start with person, number, gender and tense. In Arabic, gender is acquired earlier followed by number, person and finally tense (Aljenaie, 2009).

Different types of errors were reported across languages, mostly errors of commission rather than errors of omission. In the tense context, for example, non-finite forms are used instead of finite forms. In the person context, the third person is used in place of the first person. In the number context singular is used for plural. In the gender context, masculine forms were used in the feminine context. In Arabic, most of the

errors are number and gender errors. For example, Kuwaiti-speaking children used singular for plural and masculine instead of feminine forms.

It was also discussed that children use a default form which is not allowed in the same context in the target adult language. It was reported that this default in some languages is the infinitive, in others it is the imperative. However, there is disagreement between the only two studies that have investigated this phenomenon in Kuwaiti Arabic, Aljenaie (2009) claiming that the default form is the imperfective, Al-Houti (2013) claiming that it is the imperative. A further question is whether this default form in Arabic really represents an OI stage. As in the case of Russian and Spanish discussed above, the proportions of use of non-finite forms in finite contexts are considerably lower than in non-null subject languages like English, French, Dutch and German. Is the use of default forms by child learners of Arabic the effect of some aspect of development other than the ability to compute agreement and tense features, as Wexler (1998) suggests, or the capacity to truncate root clauses, as Rizzi (1993/94) suggests? Might the different proportions of the use of default forms in non-null subject and null subject languages be the result of different weightings of forms realising the plus and minus values of a [Tense] parameter, as Legate and Yang (2007) suggest?

These general questions can be broken down into several sub-questions, which will be addressed in relation to a child learner of Libyan Arabic in Chapter 4:

- Is there an order in which inflections come to be used in a target-like way in the speech of a child learner of Libyan Arabic? If so, what does this tell us about the development of tense/aspect and phi features in her grammar?
- Is there evidence for an OI stage in her development, given that Libyan Arabic is a null subject language (OIs are less prevalent in null subject languages) and that the child is somewhat older than children in studies that have found the presence of OIs? If so, what form does this take, given that Libyan Arabic does not have specific non-finite verb forms (see Chapter 2, Section 2.3.1)?
- Given that there are both suffixal and prefixal verb inflections in Libyan Arabic, is this influential in determining the course of development?
- Does the child overgeneralise or undergeneralise inflected forms? If so, how does she arrive at target use?

CHAPTER FOUR

A CASE STUDY OF THE L1-ACQUISITION OF LIBYAN ARABIC VERB TENSE AND AGREEMENT INFLECTIONS

4.0 Introduction

In the previous chapter, it was shown that children acquiring a broad range of languages pass through an OI stage where they optionally produce a non-finite form where a fully inflected verb form would have been required. Such non-target-like OI forms have been shown to depend on the nature and complexity of the inflectional system of the language that children acquire. Moreover, I have provided an introduction to the ongoing debate about the nature and frequency of OI-forms in different languages. In particular, there is a disagreement among previous studies of children acquiring Arabic about what the default form is. Against this background, I will now analyse the data of one child learner of Libyan Arabic and draw tentative conclusions about what this means for understanding the nature of children's early grammatical representations.

The chapter will be divided into two parts; in the first part, the methodology that was applied in the study will be presented (Section 4.1). In the second part, the results of my analysis of the child's morphological development will be discussed (Section 4.2), with a focus on emergence of inflections (Section 4.2.1), agreement mismatches (Section 4.2.2). Concluding remarks are made in Section 4.3.

4.1 Method

4.1.1 Participants

The participants in the study were a Libyan Arabic (LA) speaking girl and her parents. Both of the parents are educated native LA speakers - the mother is a graduate and the father has a master's degree. When the recording sessions started at the age of 2;6, the child had already started day nursery in an English-speaking community for about six weeks. She was attending for three hours, three times a week - a total of nine hours per week - and that is the only time when she was exposed to any substantial amounts

of English input. The main language spoken at home by the parents is the Libyan variety of Arabic. The interactions at home during the recording sessions were mostly between the child and the parents; no siblings were involved, because there is only one other child at home, and he is younger than the target child (1;6 years at the start of the study). Interactions between the target child and the younger brother at the time of the recordings were primarily one-way conversations, because the brother was too young to speak. The family moved to the UK in 2004 and since then they have not left the country for more than two weeks each year. The child had visited Libya twice before the start of the data collection. The first time was at the age of six months and the other visit was at 18 months.

As the family lived in the UK during the time of the recordings, the child was exposed to English at times from other children and adults in the playground and on some social occasions. It was also the case that the parents responded in English when the child was using or trying to use English. The English input had some effect on the child's output at home. In particular, during her interactions with the parents the child occasionally showed code-switching to English. The parents sometimes replied in English, but not always. The number of code-switching instances produced by the child during all the recording sessions was only six. The English words that the child produced were mostly nouns like *cat*, a few verbs like *go* and greetings like *hello*.

The interaction outside the recording sessions was different from the interaction during the recording sessions, because other adults and children were involved, and the child was also exposed to the Saudi Arabic variety. Speakers of Saudi Arabic interacted with the child at least twice a week during playtime and at home. However, if we compare the amount of input the child was exposed to in terms of English, LA, or Saudi Arabic, she received considerably more LA input as she spent most of her time at home with her parents. The effects of exposure to English and Saudi Arabic will therefore not be included in the analysis.

4.1.2 The Design of the Study

The main goal of the study is to contribute to the debate about how children acquire verb morphology in their L1. By studying the acquisition of a variety that has not been studied before, LA, a number of existing hypotheses can be tested.

This study was based on naturalistic speech recordings during free play (FP), responses to stories that were read to the child (RS), mealtimes (MT), and spontaneous non-play interactions (NS). The rationale for using these different situations for recordings was to create different types of interaction so that different types of verbs might be used. In addition, it was predicted that by changing the recording settings the child would always be kept active to encourage talking. The use of stories to elicit spontaneous speech from the child and observation during free play were the main techniques used to collect the data supplemented by the mealtime and non-play interactions. These are situations that are used widely by child language researchers to collect data from very young children. A major advantage of using them is that they enable the researcher to focus on the aspect being investigated when addressing the child. They also keep the child busy and encourage spontaneous talk. In addition, they are very helpful for investigating input and feedback that the child receives.

To achieve the research objectives of the present study, my priority was to yield the maximal type of information that provides the opportunity to cover all the aspects being investigated in the study. Potential task effects were minimised to ensure ecological validity.

The data were transcribed and coded using different types of software (see 4.1.4). Few problems were encountered during the study, the major difficulty being figuring out the child's intended meaning during the transcription process. However, going back to the previous utterance always helped to verify the intended meaning.

Doing naturalistic longitudinal research always has advantages and disadvantages. It allows development to be tracked over time, but it is also time-consuming, requiring long periods of recording to obtain sufficient tokens for analysis. Naturalistic data, for

many researchers, is an ideal way of investigating a certain phenomenon (i.e ideal for calculating general measures of linguistic development and for studying discourse coherence and social conventions for speakers) since data have a high ecological validity in the right recording situation, (Eisenbeiss 2010, Gallaway & Richards 1994). In addition, besides the target phenomena, other phenomena are present in the data for further investigation. Moreover, naturalistic data provide input samples as recordings always take place where learners interact with their regular conversation partners, and therefore we can investigate learners, input and the feedback they receive (Chouinard & Clark 2003, Cameron-Faulkner, Lieven & Tomasello 2003, Gallaway & Richards 1994).

However, as naturalistic samples are always taken from children in their routine activities interacting with parents or caretakers, it normally lacks any complex interactions and longer narratives (Eisenbeiss, 2010), therefore researchers looking at discourse and narrative development sometimes supplement their naturalistic sample by elicitation (Berman & Slobin 1994).

Working with a family member has many advantages. Firstly, the child was recorded in her natural environment with familiar interaction partners and where the input she received matched her daily activities. Secondly, recording in the nursery would have involved other children, which was not possible due to privacy concerns. Thirdly, recording could be tailored to times when the child was most likely to be talkative. If she was tired or unwilling to talk, the session could be postponed to a later time. In addition, given the young age of the child, transcription by a family member led to higher accuracy due to the transcriber being more familiar with the child.

However, there are some disadvantages of working with a family member. For example, because you are familiar to the child, the child feels very free to move and jump on you, as well as kick the recording equipment. I also had to stop recording at some points due to unexpected visits from family friends.

Being the researcher myself, interacting with the child in front of the camera, I was aware this might create an “observer effect” (Eisenbeiss, 2010). To minimise this, I

tried to keep the camcorder out of sight and made frequent recordings in an attempt to normalise the situation.

Also, there was a danger that, as both the researcher with knowledge of the topic being investigated and the interviewer, I might unintentionally bias the data collection towards providing evidence for hypotheses I favoured. To mitigate this potential bias and in order to ensure objectivity in the transcription and coding of results, an independent native speaker of LA was recruited as an inter-annotator to conduct reliability checks on a selected sample. To instruct the inter-annotator, lists of transcription and coding conventions were supplied containing all of the necessary guidelines. These lists were especially important, as the inter-annotator was not familiar with the conventions in L1 acquisition. Reliability checks were calculated and a sum of 94% agreement was attained for transcription and 96% for coding.

4.1.3 Data Collection

The main data for this project is the spontaneous speech of the child and both of her parents during naturalistic recording of everyday activities. The child was potentially exposed to linguistic material during eight hours each day (= 56 hours per week). Of this her exposure to English was on average about nine hours per week and her exposure to Saudi Arabic was on average about two hours per week. That is, proportionately: LA = 80%, English = 16%, Saudi Arabic = 4%. The likely effects of any differences between LA and Suadi Arabic were minimal. The data was collected over a period of 13 months. Recordings started at the age of two years six months and ended at the age of three years six months. During this period, more than 50 hours were recorded; an average of one hour per week. However, at some points the recordings stopped for a week as a result of unexpected events such as illness or urgent travel. The data were collected in four different settings: free play (FP), responses to stories that were read to the child (RS), mealtimes (MT), and spontaneous non-play interactions (NS). The total number of recordings for all the types of settings were 35 (see Table 4.2 below), for more details about the number of recordings for each setting see the log file in Appendix 4. The recording sessions took place at different times of the day, and the child's mood was always taken into account - no recording took place if the child was tired, unwilling to talk or not happy

with being recorded. Most of the recordings took place at home. However, a few recordings were made in other familiar locations, e.g. at a local park. The recordings were mainly carried out by the parents, who are both native LA speakers.

Before the recording session was started, the place was prepared for the respective type of activity. Then, the child's mood and readiness for the recording was established. The camera was put in a corner so that all the participants and the materials involved in the recordings, such as toys, books, etc., could be captured by the camera. Two types of recording equipment were used to collect the data: a mini tape *Panasonic* video camera and a high quality *Edirol* voice recorder. The voice recorder was used as a back- up to refer to in case of unclear sound from the video recording. A laptop was used for the purpose of digitizing, and an external hard disc for storing the data.

4.1.4 Transcription

Firstly, the recordings were put onto a tape, and they were then digitized using *Windows Movie Maker*. The capacity of each tape after digitizing came to approximately 10 GB. After that, the audio was copied from the video and saved in wav-format, using the programme Virtual Dub (http://www.virtualdub.org). The resulting media files were orthographically transcribed using the CHAT conventions of the CHILDES database (MacWhinney, 2000) and the linguistic annotation tool ELAN (Wittenburg et al., 2006).The multimedia annotator ELAN is software developed by the Max-Planck Institute for Psycholinguistics (http://www.lat-mpi.eu/tools/elan). It was chosen for transcription because it can link parts of a transcript to the corresponding segment of the recording. This makes it easy to move from one part of the transcript to the other by clicking on the transcribed segment wanted by the transcriber. In the ELAN files for this project, each speaker has four tiers as shown in Table 4.1. A detailed description of the structure of the ELAN file is provided in Appendix 5.

Table 4.1: The Organisation of Tiers for All Speakers

	Tier Name			
Participants	Transcription	Comments	Gloss	Linguistic
Child 1 (Case)	CH1	CH1-com	CH1-gol	CH1-lin
Father	FATH	FATH-com	FATH-glo	FATH-lin
Mother	MOT	MOT-com	MOT-glo	MOT-lin

Transcription conventions are based on the CHAT transcription conventions of the Child Language Data Exchange System (MacWhinney, 2000; CHILDES) and additional transcription guidelines provided by Eisenbeiss (2007). Everything related to the transcription of the utterances - such as spelling, punctuation, doubtful material, foreign words, etc. - can be found in Appendix 5.

The actual words in every utterance produced by each speaker were transcribed orthographically (not phonetically) in the transcription tier, which is the main tier for each speaker. Any non-target-like forms produced by the child were followed by an asterisk in square brackets and the correct form was added in square brackets with a colon after the first square bracket ([*] [:]).

The transcription resulted in three linked files for each recording. All the files that belong to the same recording had the same name with different extensions to the different file type (eg. *Wav* for audio files). All file names started with the initial AM, which indicated the initials of the researcher, followed by the year, month and day of recording and finally the file type which is either *avi* (video) (1), *wav* (audio) (2), or *eaf* (transcription) (3):

(1) AM20080910.avi (video)
(2) AM20080910.wav (audio)
(3) AM20080910.eaf (transcription)

Every utterance was transcribed as one annotation unless it was interrupted by another speaker. Although more than 50 hours were recorded, due to the time limitation of this project, not all recorded materials have been transcribed and only 35 hours were included. The following table (4.2) shows the overall amount of data that was transcribed and analysed for this dissertation. A more detailed table with information about the duration, date and type of situation is provided in Table 4.3. For the full table, see Appendix 4.

Table 4.2: Transcribed Utterances for all Speakers

Date of recordings	No of recordings	Age of the child in months	Child		Father		Mother	
			No of utterances	No of verbs	No of utterances	No of verbs	No of utterances	No of verbs
2008/10	3	31	109	86	----------	------	76	76
2008/11	3	32	253	231	331	331	60	60
2008/12	3	33	70	67	86	86	12	12
2009/02	3	35	38	36	----------	------	64	64
2009/03	2	36	102	93	93	93	99	99
2009/04	3	37	87	79	22	22	97	97
2009/05	3	38	173	165	----------	------	225	225
2009/06	4	39	184	174	192	192	52	52
2009/07	3	40	186	168	216	216	58	58
2009/08	4	41	99	93	89	89	93	93
2009/09	2	42	85	79	89	89	----------	------
2009/10	2	43	125	118	135	135	----------	------
Total	**35**		**1511**	**1389**	**1253**	**1253**	**836**	**836**

Table 4.3: Log File

Copy	Type	Session duration	Begins	Ends	Activity type	Folder	participants
AM2008-10-02	V	48min	2:20	3:08	FP&NS	Oct 1	F,M&Ch
AM2008-10-11	V	50min	1:15	2:05	NS	Oct 3	M&Ch
AM2008-10-23	V	55min	11:00	11:55	NS	Oct 4	F&Ch
AM2008-11-02	V	48min	3:10	3:58	NS	Nov 1	F&Ch
AM2008-11-13	V	57min	10:35	11:32	NS	Nov 2	F,M&Ch
AM2008-11-21	V	40min	9:15	9:55	NS,MT&FP	Nov 3	F,M&Ch
AM2008-12-07	V	50min	3:10	4:00	NS	Dec 2	F,M&Ch
AM2008-12-15	V	62min	5:10	6:12	FP	Dec 2	F,M&Ch
AM2008-12-30	V	62min	9:20	10:22	FT&RS	Dec 3	F,M&Ch
AM2009-02-02	V	45min	7:40	8:25	MT	Feb 1	M&Ch
AM2009-02-17	V	62min	7:40	8:42	MT&FP	Feb 2	M,F&Ch

FP: free play MT: meal time RS: reading story NS: natural speech Ch: child F: father M: mother V: video

4.1.5 Data Coding

The ELAN transcriptions were exported into CHAT files. In CHAT format, these files were further analysed using the CLAN (Computerized Language Analysis) tools provided by CHILDES (MacWhinney, 2000). First, the FREQ command was run to create a frequency list of all the words in the recordings. Verb forms were then identified in this list. The resulting list of verb forms was then used in a COMBO search to extract all utterances that contained one of these verb forms with three preceding and three following utterances. This was necessary to determine whether the child imitated the adults and how the parents responded to the child's target-like and non-target-like utterances. These procedures were followed separately for each speaker, resulting in one file for verb utterances for each speaker. These text files were then imported into three separate SPSS files, one for each speaker. The design of the SPSS files, values, labels and codes will be discussed in the next section.

4.1.5.1 Verb production.

As a first step, all the verbs produced by the child were coded for three variables:

1- Analysability.

Utterances were coded as analysable whenever the tense, person, number, and gender context for the target verb form could be unambiguously established and the form produced by the child was comprehensible and clearly identifiable. If the verb was not considered analysable, no further codes for other variables were added. However, some of these unclear forms still carry some grammatical features, such as gender (4) or number (5). In (4) the child produced the form *dalidi*. This form is phonologically unclear because the word does not exist in LA and morphologically unclear because it does not carry any tense markers. However, the form carries two grammatical features: gender and number (feminine and singular). These features are represented by the suffix *i*. It might not be very clear from first glance what the child means, as it might be either feminine or singular only. However, the transcriber is able to determine this by looking at the video and the previous utterance of the parents. In this case the child was talking to the mother. In Example 5, the form *itiklū* is also unclear phonologically and morphologically, but it still carries the number grammatical feature, plural, which is represented by the suffix *ū*. In this case the

grammatical feature is included in the analysis under number forms. Some forms do not carry any clear grammatical features and therefore, they are unanalysable and will not be included in the analysis, as in Example 6. Overall (n=1389) out of (n=1511) of the verbs produced by the child were analysable (92%), and only (n=122), were unanalysable (8%).

(4) mama dalidi [?] dodani [*] [: wd?ani]
Mama (UNCLEAR-FEM.SG) [*] [: ear-PL-my}
Mama (UNCLEAR) my ear

(5) 'alibit xx itiklū xxx 'alia
(UNCLEAR-FEM.SG) xx (UNCLEAR-PL) on-me

(6) etta [*] [: enta] yatha [?] dokan
[*] [: you-MASC.SG] (UNCLEAR) shop-SG
You (UNCLEAR) shop

2- Verb combinations.

If the utterance had one verb, then it was given the value *no* for this variable, and if there was more than one verb in the utterance, then the value *yes* was assigned. The first verb form was coded under FORM 1 as it was produced by the child (7), and the second form was coded under FORM 2.

(7) Galuli [FORM1] 0artnaiya [*] [: bnaiya] imti [*] [: ibtimši] [FORM2] 0prep 0art tika [*] [: qiṭar]
Say-3.PL-to-me (the) girl-SG [*] [: go-3.FEM.SG.FUT] (in) (the) [*] [: train-SG]
They said to me the girl went by train

4.1.5.2 Grammatical contexts and forms of verbs.

For each verb form that the child produced, codes were added to (a) describe the tense, person, number, and gender *contexts* in which the form was produced and (b) describe the tense, person, number, and gender *markers* of the verb forms that the child produced. These codes are described in more detail below.

a) Verb context.

1- Tense

All analysable verbs were coded according to the tense required in the respective context: present, past, future, or imperative. As mentioned earlier, most of the verbs were analysable and there was therefore no problem in identifying the tense of the verb. All the tenses were given a special code (for a detailed coding scheme see Appendix 5).

2 - Person

All verbs were coded for person, using the values first person, second person, or third person. There were a few cases when the subject referent, and hence the person context, was not immediately clear as a result of some phonological and/or morphological errors committed by the child. However, this problem was solved by looking back into the parent's preceding utterance or the video footage.

3- Number

All verbs were coded for use in singular versus plural context. No problems were found in identifying number contexts.

4- Gender

All verb contexts were coded as either masculine or feminine. There were some cases where the child used masculine in a context where feminine is required or vice versa. However, looking back to the preceding utterance, or to the video footage, made it easy to identify the correct gender required for a particular context.

b) Verb Form

Four variables were used to code the verbs produced by the child according to the forms that the child actually produced: each verb form was coded for tense, person, number and gender.

1-Tense

Verb forms have been classified as present/imperfective tense forms if the verb had the prefix markers *n, t* or *y*. If the child used any marker which differed from the context then it is coded according to the tense form. In some cases, the child omitted these markers and produced a non-existing form, as in (8), and in this case the tense of the verb was coded as "unanalysable".

(8) bobbyota' [?] tan[?]

As discussed previously (see Chapter 2, Section 2.1) the past/perfective is primarily indicated by the quality of the stem nucleus and suffixes that mark number, gender and tense. Where the child produces a verb with a stem nucleus that does not clearly mark the verb as past/perfective, the presence of an appropriate past/perfective suffix together with context is an idicator that it is an intended past tense form.

In (9) it is clear that the suffix ***it*** carries the features of past, fem, and singular. A few cases exist where the form of the verb has no clear markers and it seems non-target like and therefore it is coded as "unclear".

(9) aih mama mtit [*] [: mshit]
Yes mama [*] [: go-3.FEM.SG.PST]

The future tense is marked by prefixes such as *b-t* or *b-y* and, therefore, it is not as complicated as the past tense to classify. There are some cases where the child omits these prefixes producing a form like the adult imperative form (10), and they were therefore coded as imperative. In some other cases, the result is non-target like and not identical to any existing verb form, and therefore the verb is coded as "unclear".

(10) ani ḏīb [*] [: binji:b] had?i
I bring-2.MASC.SG.IMP [*] [: bring-1.SG.FUT] this.FEM.SG
I will bring this

The imperative is one of the most common verbs in child verb production. As was discussed earlier in Chapter 2, the imperative can either be homophonous to the bare stem of the imperfective verb form or not identical to the bare stem. Therefore, the imperative must have two types of coding. In the first, all the forms - whether they are homophonous or not - were coded as imperative, then these imperative forms were again coded, depending on whether they are homophonous with the bare stem of the verb or not.

2-Person

Verb forms are coded for first, second, and third person. The person classification markers are different according to the type of verb tense. In the present context, for example, the person is marked by *n* in the first, *t* in the second, *y* and *t* in the third person. If the verb is marked by one of the above markers, then it is coded for the corresponding value. However, there are cases where the prefixes have been either omitted (11) or used in the wrong context. In such cases, the verb form is coded according to what the child actually produced. In some cases, the form does not carry any markers and therefore it is non-target like and coded as "unclear".

(11) ani ḥibbik [*] [: nḥibbik] ya mama
I love-2.MASC.SG.IMP [*] [: love-1.SG.PRS] mama
I love you mum

In the past tense context, the person is marked by the suffix *t* in the second and by changes in the vowel stem in the third. If these markers are present, the verb is coded according to these markers. However, in cases of omission or use of the wrong marker (12), then the verb is coded according to those markers.

(12) 0art bnaiya raḥ [*] [: raḥit]?
(the) girl-SG go-3.MASC.SG.PST [*] [: go-3.FEM.SG.PST]
The girl went

In the future context, the person is marked by *b-n* in the first, *b-t* in the second and *b-y* in the third. The verb is coded according to these markers if it is correct. If not, then it is coded according to what the child actually produced (13). If the whole form does not exist, then it is coded as "unclear" (14).

(13) mama kalmik [*] [: binkalmik].
Mama talk-2.MASC.SG.IMP-to-you-FEM.SG [*] [: talk-1.SG.FUT-to-you-FEM.SG)
Mama, I will talk to you

(14) ani toh [*] [: binšūf] 0art tola [*] [: ṣura].
I (UNCLEAR) [*] [: see-1.SG.FUT] (the) photo-SG
I will see the photo

In the imperative context, it is only the second person who is marked for imperative. There are just a few cases where the person is coded as "unclear", and that is because the tense is already unclear and as a result the person is also unclear. However, sometimes the person can be recognised in the context by looking at the whole utterance, as in (15).

(15) Malik Maliktal [*] [: kallem] baba
Malik Malik (UNCLEAR) [*] [: talk-2.MASC.SG.IMP] baba
Malik talk (to) baba

3- Gender

Gender is coded as either masculine or feminine. In the present context, the gender is marked by *t* for the masculine and both prefix *t* and suffix *i* for the feminine. In the past context, the verb is marked by suffixes and a change in the vowel stem. In the future context, it is marked by prefixes and suffixes. The gender is coded according to the verb form actually produced by the child. There are some cases where the child used masculine for feminine or vice versa. If the gender markers are not recognised, then the verb form is given the code "unclear".

4.1.5.3 Non-target-like Verb Forms.

Generally, all non-target-like verb forms can either be classified as phonological or as morphological "errors". If the verb form had all the required inflectional markers, but there were some errors relating to certain phonemes such as *th*, or *z* to *s* etc., the verb form was assigned the code for a phonological error, (*pho), since it was appropriately morphologically marked for tense, person, number (16), or gender. However, there are some cases when it is difficult to classify the verb form either under morphological or phonological error type, therefore, in such cases the form is classified as an 'unclear' verb form.

(16) tšat (*pho) [*] [: mšat] London (0con) Brighton
go-1.SG.PST London (and) Brighton
I went to London and Brighton

In Example 16, the grammatical features (person and number) which are represented by the affix *at* were not affected by the phonological error that the child made, and it was only the part of the verb form not related to grammatical marking which was affected.

In contrast to the phonological errors observed, the morphological errors involved non-target-like grammatical marking. This can take different forms, as I will show in the following analysis, considering the different tenses separately.

1-Present/Imperfective Tense.

The present/imperfective verb forms that are coded as involving morphological errors were classified as follows:

a) error of omission

i- omission of the prefix person marker ***n***, and ***t***, such as in (17):

(17) abba [*] [: nibbi] abaḏa [*] [: xubza]
[*] [: want-1.SG.PRS] [*] [: bread-FEM.SG]
I want bread

ii- omitting the number marker ***ū***, as in (18):

(18) la‘bit [*] [: yali‘bū] lilbalūna [*] [: bilbalūna]
play-3.FEM.SG.PST [*] [: play-3.PL.PRS] for-the-balloon-FEM.SG [*] [: with-the-balloon-FEM.SG
They play with the balloon

iii- errors of commission

The verbs that have a non-target tense, person, gender, or number markers were classified under this category, such as in (19):

(19) m‘aš kalimni [*] [: itkalimni] m‘asdawilni [*] [: idawirni]
don’t talk-2.FEM.SG.IMP-me [*] [: talk-2.FEM.SG.PRS-me] don’t find-2.FEM.SG.IMP-me [*] [: find-2.FEM.SG.PRS-me]
Don’t talk to me, don’t ask about me

2- Past/Perfective Tense.

Past/perfective tense verbs with morphological errors were classified as follows:

a) errors of omission

i- omitting the suffix person marker ***it*** or ***at***, such as in (20):

(20) itšat [*] [: mšit] 0prep 0art mla [*] [: mraa]
go-1.SG.PST [*] [: go-3.FEM.SG.PST] 0perp (to) 0art (the) [*] [: moman]
I went to the woman

ii- omitting the number markers ***na***, ***tū***, or ***ū***, as in (21):

(21) tibi [*] [: binjībū] xxx xxxtibi [*] [: binjībū]
bring-2.FEM.SG.IMP [*] [: bring-1.PL.FUT] xxx xxx bring-2.FEM.SG.IMP [*] [: bring-1.PL.FUT]
We will bring; we will bring

iii- omitting the gender marker ***at***, ***ti***, or ***it***, such as in (22 a&b):

(22) a. galt [*] [: galit] mida [*] [: mriḍa]
[*] [: say-3.FEM.SG.PST] (pho) [*] [: ill-FEM.SG] (pho)
She said she is ill

b. tši [*] [: mšat] lalatšiti [*] [: mamšatiš] 0prep Libya
Go-2.SG.IMP [*] [: go-1.SG.PST] no-no-Go-1.SG.PST [*] [: not-go- 2.FEM.SG. PST-no]
You went? You did not go

b) errors of commission

All the past/perfective tense verbs that have identifiable, but not context-appropriate, suffixes were categorised as involving errors of commission, such as:

(23) Malik huwa dililli [*] [: darilli] 0art dinya
Malik he do-1.MASC.SG.IMP-me [*] [: do-3.MASC.SG.PST-me] (the) everything-FEM.SG
Malik, he did for me everything

3-Future tense marker.

Future tense verbs with morphological errors were classified as follows:

a) errors of omission

i- omitting the future tense marker ***b***, such as in (24):

(24) naḥḥa [*] [: binnaḥi]
remove-2.SG.IMP [*] [: remove-1.SG.FUT].
I will remove

b) errors of commission

All the future tense verb forms that have non-target-like suffixes, such as Example 25, were classified as involving errors of commission:

(25) mama ʻudi [*] [: btugʻid]?
mammy stay-2.FEM.SG.IMP [*] [: stay-2.FEM.SG.FUT]?
Mammy will you stay?

4- Imperative mood.

Imperative verb forms with morphological errors are classified as follows:

a) errors of omission

i- omitting the prefix person marker a, such as in (26):

(26) taḥli [*] [: aftḥili] haḏi
open-2.MASC.SG.IMP-for-me [*] [: open-2.MASC.SG.IMP-for-me] this-FEM
Open this for me.

ii- omitting the suffix gender marker ***i***, such as in (27):

(27) gūlla [*] [: gūlilha] habba [*] [: halba]
tell-2.MASC.SG.IMP-to-him [*] [: tell-2.FEM.SG.IMP-to-him] alot (pho)
Tell him a lot

b) errors of commission

All the imperative tense verbs that have non-target suffix markers, such as Example 28, were classified as involving errors of commission:

(28) xaliti [*] [: xallini] 0prep ḥali
leave-2.FEM.SG.PST [*] [: leave-2.FEM.SG.IMP-me] (in) alone-me
Leave me alone

To summarise, the study is based on a single child. A longitudinal design was chosen in order to provide a rich data sample from which to investigate the development of verb morphology. Data were collected during a period of 13 months, representing spontaneous speech based on interactions during free play, the reading of stories, mealtimes and non-play situations. Data were transcribed and coded. In the next section I will present the results to address the research questions related to inflectional and agreement properties.

4.2 Results

The research questions that were outlined in Chapter 1 are repeated here by way of introduction to the presentation of the results of the study. The aim in this section is to examine the evidence bearing on each.

- Is there an order in which inflections come to be used in a target-like way in the speech of a child learner of Libyan Arabic? If so, what does this tell us about the development of tense/aspect and phi features in her grammar?
- Is there evidence for an OI stage in her development, given that Libyan Arabic is a null subject language (OIs are less prevalent in null subject languages) and that the child is somewhat older than children in studies that have found the presence of OIs? If so, what form does this take, given that Libyan Arabic does not have specific non-finite verb forms (see Chapter 2, Section 2.3.1)?
- Given that there are both suffixal and prefixal verb inflections in Libyan Arabic, is this influential in determining the course of development?
- Does the child overgeneralise or undergeneralise inflected forms. If so, how does she arrive at target use?

The emergence of inflection will be presented in Section 4.2.1 and agreement mismatches in Section 4.2.2.

4.2.1 Emergence of Inflection

Table 4.4 presents the distribution of verb forms in the child's speech in what would, in the adult language, be obligatory contexts (OCs) for present, past and future tense (realised by the imperfective, perfective and future forms of the verb) and imperative mood. The rows represent the Ocs and the columns the forms actually used by the child in those contexts. For example, in the present/imperfective row the child produced 97 (29.7%) target forms, 30 (9.2%) past/perfective forms, no future forms and 200 (61.1%) forms that look like the imperative form. (The status of the latter will be considered shortly below). There were also 178 (35.2%) unanalysable forms (forms that do not correspond to existing verbs in LA). In considering the results, the decision was taken to count only those forms that were recognisably verbs in LA,

since with the unanalysable verbs it is not possible to determine what the child's intended meaning was. They are included in the table for information.

Table 4.4: Distribution of the child's verb forms in OCs

	Verb forms used					
	Present/ imperfective	**Past/ perfective**	**Future**	**Imperative**	**Total**	**Unclear**
Obligatory contexts						
Present/imperfective	97 (29.7%)	30 (9.2%)	0	200 (61.1%)	327	178
Past/perfective	1 (0.2%)	406 (97.8%)	0	8 (1.9%)	415	56
Future	9 (6%)	26 (17.1%)	3 (2%)	114 (75%)	152	42
Imperative	0	4 (2.1%)	0	180 (97.8%)	184	35
Total	107	466	3	502	1078	

One striking feature of the table is the near target-like use of past/perfective and imperative forms in OCs, both 97.8%. A second striking feature is the overgeneralisation of what look like imperative forms to present and future contexts. The imperative is used in 200/327 (61.1%) of present tense OCs and in 114/152 (75%) of future OCs. By contrast, past tense forms are only overgeneralised to 30/327 (9.2%) of present tense OCs and 26/152 (17.1%) of future OCs. Future forms, used in only 2% of future OCs, are not overgeneralised, and the present/imperfective forms are rarely overgeneralised to future contexts (9/152 or 6%).

The results suggest that the child has established grammatical representations for the use of the perfective form in past tense contexts and the imperative form in imperative contexts. However, what looks like the imperative form, in particular, appears to be underspecified in the sense that it is not restricted to imperative contexts but also appears in present and future tense contexts, optionally competing with the imperfective and future forms. This is also true of the perfective form, but to a much lesser extent. The child has also established grammatical representations for the imperfective and future forms in that, when they are used, they are used in a predominantly target-like way. However, according to my data, they are only used in a minority of OCs in the adult language.

Tables 4.5 to 4.7 show the overall target and non-target use of present, past and future forms by the child.

Table 4.5: Overall target and non-target use of present/Imperfective forms by the child

Tense/ Aspect Context	**Present/Imperfective**	
	Target	**Non-target**
present	97 (90.6%)	0
Past	0	1(1%)
Future	0	9 (8.4%)
Imperative	0	0
Total	**97**	**10**

Table 4.6: Overall target and non-target use of future forms by the child

Tense/ Aspect Context	**Future**	
	Target	**Non-target**
Present	0	0
Past	0	0
Future	3 (100%)	0
Imperative	0	0
Total	**3**	**0**

Table 4.7: Overall target and non-target use of past/Perfective forms by the child

Tense/ Aspect Context	**Past/Perfective**	
	Target	**Non-target**
Present	0	0
Past	30 (75%)	1(2.5%)
Future	0	9 (22.5%)
Imperative	0	0
Total	**30**	**10**

A word is in order here about the status of the forms that are being referred to as 'imperatives'. In Chapter 3, Section 3.5, two views of the default verb form used as an OI analogue by children speaking Arabic languages were discussed. Aljenaie (2008) claimed that the default form of the verb used by child learners of Kuwaiti Arabic during the OI stage is the imperfective, while Al-Houti (2013) argued that it is the imperative. If the child learner of Libyan Arabic under investigation in this thesis is still in an OI phase, which of these views is the most consistent with the facts? To consider this more closely, one can exploit the fact that while the majority of imperative forms in LA are homophonous with bare–stem imperfective forms, there are some that are phonologically distinct. If the forms used by the child are imperatives, we would expect the non-homophonous imperative forms to be the ones that predominantly appear in non-target contexts. If the forms used are imperfectives, we would expect the reverse. Table 4.8 illustrates the difference between homophonous and non-homophonous imperfective/imperative forms.

Table 4.8: Illustrative examples of homophonous and non-homophonous forms of the imperative and bare-stem imperfective

Imperfective	Imperfective bare stem	Imperative		English gloss
tKallim	Kallim	Kallim	homophonous	talk
t'allim	'allim	'allim	homophonous	learn
tešrū	*šra	išrū	non-homophonous	buy
temši	*mša	imši	non-homophonous	walk

As shown in Table 4.9 below, the child used 502 imperative forms. Of these, 415 (82.7%) were homophonous with the imperfective bare stem (see Examples 29a & b). However, 87 (17.3%) verb forms were unambiguously imperatives and not homophonous with the imperfective bare stem (see examples 30b-d).

(29) a. Kalmi Mahmūd
call-2.SG.FEM.IMP Maḥmūd
Call Maḥmūd

b. haiya ‘almū [*] [: nit‘almū] 0art alwan
let us learn-2.PL.IMP [*] [: learn-1.PL.PRS] (the) colour-PL
Let us learn the colours

(30) a. i‘tinitaiala [*] [: saiyara]
give-2.SG.IMP-me car-SG (pho*)
Give me car

b. itšrū [*] [: nišrū] batata
buy-2.PL.IMP [*] [: buy-1.PL.PRS]
We buy

c. aniitši [*] [: mšati] aniaiar [*] [: inġaiyr] 0prep waijī [*] [: ḥwaijī]
I go-2.SG.IMP [*] [: go-1.SG.PST] I change-2.SG.MASC.IMP [*] [: change-1.SG.PRS] (in) clothes.PL-my
I went, I (am) change (ing) my clothes

d. baba na [*] [: anī] itzil [*] [: bninzil]
baba I go-down-2.SG.MASC.IMP [*] [: go-down-1.SG.FUT]
Baba I will go down

Table 4.9: Overall target and non-target use of imperative (non-homophonous and homophonous imperative) forms by a child learner of Libyan Arabic

Tense/ Aspect Context	**Imperative**		**Imperative Homophonous with the Imperfective Bare Stem,**		**Total**
	Target	Non-target	Target	Non-target	
Present	0	37 (18.5%)	0	163 (81.5%)	200
Past	0	3 (37.5%)	0	5 (62.5%)	8
Future	0	20 (17.5%)	0	94 (82.5%)	114
Imperative	27 (15%)	0	153 (85%)	0	180
Total	**27 (5.3%)**	**60 (12%)**	**153 (30.5)**	**262 (52.2%)**	**502**

Table 4.9 shows that 60 of the 87 (69%) uses of the non-homophonous imperative are overgeneralised to non-imperative contexts. We know from Table 4.4 that only 10 of

the 107 (9.3%) clearly imperfective forms are overgeneralised to non-target contexts. Thus, if there is a default form in the child's grammar that functions as an OI analogue, it is more likely to be the imperative than the imperfective.

In terms of the order of emergence of verbal inflections in the child's grammar, one interpretation of the results is the following. Her grammar contains target-like grammatical representations of T or ASP for all the OCs required for LA (present/imperfective, past/perfective, future and imperative). The first *forms* to emerge in her speech are imperatives and past/perfectives. These are used almost categorically in imperative and past/perfective OCs. However, these forms are not fully specified for the imperative and past/perfective OCs and so can also be used in present/imperfective and future contexts. The imperative form appears to be radically underspecified, used as the default form across all three contexts: present/imperfective, future and imperative. Present/imperfective and future *forms* emerge later and when they do so are fully specified for their contexts of use. They are therefore almost never over-generalised. On this interpretation, with time, one might expect the use of present/imperfective and future *forms* to increase in their obligatory contexts, and the over-generalisation of imperative and past/perfective forms to decrease. To see whether this was the case over the 13-month period of observation, the distribution of target forms in OCs was broken down month-by-month, as shown in Table 4.10. The percentages in parentheses show what proportion of target forms out of all the forms were supplied in the OC.

Table 4.10: Tokens of target use of present/imperfective, past/perfective, future and imperative forms in OCs and percentage of target tokens out of all forms supplied in these OCs over time

Age in Month	Present/ imperfective	Past/ perfective	Future	Imperative	Total
31	2/13 (15.3%)	8/9 (88.8 %)	1/15 (6.6%)	8/8 (100%)	19/45
32	10/31 (32.2%)	92/93 (98.9%)	0/27	15/15 (100%)	117/166
33	11/17 (64.7%)	20/20 (100%)	0/19	2/2 (100%)	33/58
35	6/9 (66.6%)	6/6 (100%)	0/3	11/11 (100%)	23/29
36	7/15 (46.6%)	32/34 (94.1%)	0/10	7/8 (87.5%)	46/67
37	5/14 (35.7%)	20/20 (100%)	0/10	19/19 (100%)	44/63
38	9/44 (20.4%)	51/51 (100%)	0/10	25/27 (92.6%)	85/132
39	10/46 (21.7%)	53/53 (100%)	1/21 (4.7%)	14/14 (100%)	78/134
40	16/45 (35.5%)	47/47 (100%)	0/15	22/22 (100%)	85/129
41	5/27 (18.5%)	34/39 (87.1%)	0/8	3/3 (100%)	42/77
42	5/20 (25%)	19/19 (100%)	1/9 (11%)	19/20 (95%)	44/68
43	11/46 (23.9%)	24/24 (100%)	0/5	35/35 (100%)	70/110
TOTAL	**97/327 (29.7%)**	**406/415 (97.8%)**	**3/152 (2%)**	**180/184 (97.8%)**	**686/1078**

It appears that the prediction that the use of present/imperfective and future forms in OCs would increase over time is not met. The use of these forms fluctuates from one recording session to the next, with no discernible developmental pattern of present/imperfective and future forms replacing imperative and past/perfective forms.

A further analysis was undertaken to examine whether there was any change in the use of the overgeneralised imperative and past/perfective forms over the 13-month observation period. Results are presented in Table 4.11, which shows the distribution of the non-target forms used in present/imperfective and future OCs; non-target uses of forms in past/perfective and imperative OCs were not included because there were so few of them.

Table 4.11 The non-target forms used in the present/imperfective and future contexts

	Intended Present/ Imperfective Tense		Intended Future Tense	
Age in Months	Imperative	Past/Perfective	Imperative	Past/Perfective
31	6/13 (46%)	5/13 (38%)	9/15 (60%)	5/15 (33.3%)
32	20/31 (64.5%)	1/31 (3.2%)	16/27 (59.2%)	11/27 (40.7%)
33	5/17 (29.4%)	1/17 (5.8%)	19/19 (100%)	0/19 (0%)
35	3/9 (33.3%)	0/9 (0%)	3/3 (100%)	0/3 (0%)
36	7/15 (46.6%)	1/15 (6.6%)	6/10 (60%)	0/10 (0%)
37	8/14 (57%)	1/14 (7%)	7/10 (30%)	2/10 (20%)
38	34/44 (77%)	1/44 (2.3%)	8/10 (80%)	2/10 (20%)
39	33/46 (71.7%)	3/46 (6.5%)	17/21 (81%)	1/21 (4.8%)
40	25/45 (55.5%)	4/45 (8.8%)	10/15 (66.7%)	4/15 (26.7%)
41	19/27 (70.3%)	3/27 (11%)	8/8 (100%)	0/8 (0%)
42	14/20 (70%)	1/20 (5%)	7/9 (77.8%)	1/9 (11.1%)
43	26/46 (56.5%)	9/46 (19.5%)	4/5 (80%)	1/5 (20%)
TOTAL	**200/327 (61%)**	**30/327 (9%)**	**114/152 (75%)**	**26/152 (17%)**

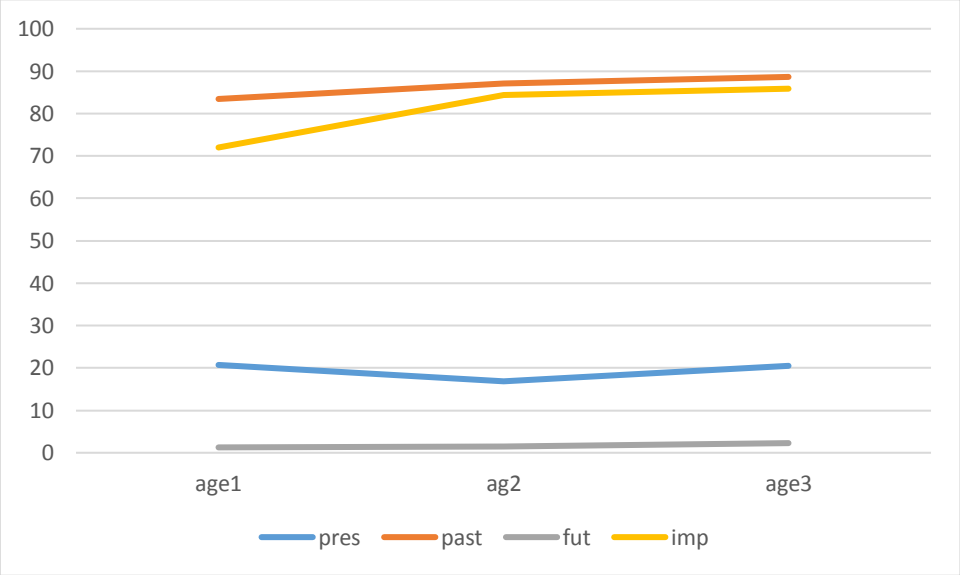
Again, the use of imperative and past/perfective forms in non-target OCs fluctuates from recording to recording, with no discernible pattern.

This apparent lack of development over time calls into question whether the child under investigation is still genuinely in an OI phase. Recall that observation started when she was 2;6, somewhat older than the children typically showing an OI phase. Is there an alternative explanation for the pattern of results obtained?

We ascribed these apparently random fluctuations to the fact that data collection was very dense, with small increments in time occurring between each collection moment (1 month) and relatively few instances of each tense occurring at each collection point. In order to get a clearer picture of overall developmental trends, we therefore created three larger time segments: Segment 1 (31 to 35 months), Segment 2 (36 to 39 months) and Segment 3 (40 to 43 months).

Overall accuracy (Figure 4.1), in the use of the required tense for all tense contexts improved significantly across these three age segments (Segment 1: percentage of tense form used correctly (44.4%), Segment 2: percentage of tense form used correctly (49.5%), Segment 3: percentage of tense form used correctly (52.8%), χ^2 (2) = 6.036, p <.05). When we divided the tenses according to required context, the only individual tense form for which a marginally significant development was found was the imperative (χ^2 (2) = 4.659, p = .097). For all other tenses, the χ^2 did not indicate a significant increase in accuracy over the three age segments.

Figure 4.1: Accuracy of Verb Tense across Three Age Bins



Pres: Present past: Past fut: Future imp: Imperative

Given the morphological structure of verb forms in LA (see Tables 2.7 and 2.8 in Chapter 2), a noteworthy feature that distinguishes the realisation of the present/imperfective and future from the imperative and past/perfective is that the former involves prefixes, while the latter do not. Imperative forms are typically uninflected stems, while past/perfective forms take suffixes. A second possible interpretation of the findings is that the child has established underlying representations for present/imperfective and future forms but has a production problem at the morphological level with prefixes. In production, she cannot always execute the rule that attaches prefixes to verbs and so many of her productions resemble the imperative form. This effect, failure to access forms that are part of a

learner's grammar in production, has been observed in second language learners, and has been called the Missing Surface Inflection Hypothesis (Prévost and White, 2000). If this were the case, then the child may already have gone beyond an OI stage, but not yet reached the stage where she can consistently access prefixes in production.

Closely related to this second interpretation is a third one: the child has acquired representations for the forms that realise the present/imperfective and future and does not have a problem with the execution of the morphological rule that prefixes inflections to verbs, but she has a phonological realisation problem. She has difficulty producing the word-initial consonant clusters that prefixes on verbs with an intended present/imperfective or future interpretation give rise to. If this were the case, then we should expect to see her having similar difficulties with initial consonant clusters in non-verb monomorphemes. An analysis of such cases produced over the 13 months of observation was conducted. While it turned out that there were few such non-verb monomorphemes in her speech (seven in total), nevertheless 45 tokens of these words were used. The proportions of target production of these clusters ('correct') and failure to produce the cluster ('incorrect') are shown in Table 4.12.

Table 4.12: Correct and Incorrect Initial Consonant Clusters in Non-verb Contexts

Correct	Incorrect
11/45 (24%)	34/45 (76%)

It can be seen that the child fails to produce the target cluster in around three-quarters of cases. Interestingly, if this is compared with the proportion of overgeneralisation of non-prefixed verb forms (imperative or past/perfective) in prefix-requiring contexts (present/imperfective and future), they are strikingly similar: imperative and past/perfective forms are overgeneralised to present/imperfective and future contexts in 77% of cases (the remaining 23% being target prefixed realisations).

If this interpretation is correct, then we are not dealing here with a case of OI, but with a case of the child having full grammatical representations both for OCs and the forms that realise them, but a phonological output problem which prevents her from realising word-initial consonant clusters. Alternatively, it is possible that the child has

both a phonological output problem and a problem accessing morphological forms from her mental lexicon.

To sum up, three hypotheses were proposed in this section. The first was that the child is in an OI phase of development where the default form is the imperative, an analogue of the infinitive in English child language, consistent with the predictions of Salustri and Hyams for OIs in inflectional null subject languages and also with the analysis of the OI stage in Kuwaiti Arabic by Al-Houti (2013). The second hypothesis was that the child is no longer in an OI phase, being older than the children who have figured in OI studies, but has a morphological output problem: she cannot consistently access the prefixes required to realise the present/imperfective and future and instead produces verb forms that are homophonous with the imperative. The third hypothesis was that the child is experiencing a phonological output problem. She has fully acquired the morphological realisation of present/imperfective and future forms, but has difficulty with word-initial consonant clusters. Looking at her performance producing morphologically simple forms with initial consonant clusters (monomorphemes), it was found that she reduced such clusters in the same proportion as in the case of prefixed verb forms, suggesting that the non-target productions were not specific to verb inflections but affected both verbal and non-verbal categories.

4.2.2 Agreement Mismatches

Section 4.2.1 dealt with the child's use of finite and non-finite verb forms. This section deals with her use of subject-verb agreement morphology and what it might tell us about the nature of her underlying grammatical representations for LA. Recall from Chapter 2, Section 2.3.1, that in terms of subject-verb agreement LA distinguishes first from second from third *person*, masculine from feminine *gender* in the second and third persons singular, and singular from plural *number*. The child's use of these features – person, gender and number – will be considered in turn.

4.2.2.1 Person.

Table 4.13 summarises the use of verb forms used by the child with intended first, second or third person subjects, both singular and plural.

Table 4.13: Distribution of Person Forms of Verbs with Intended First-, Second- or Third-person Subjects

	Person forms used				
	First	**Second**	**Third**	**Total**	**Unclear**
Intended subject					
First	83 (25.8%)	182 (56.6%)	56 (17.4%)	**321**	161
Second	4 (1.4%)	254 (92%)	18 (6.5%)	**276**	51
Third	11 (2.2%)	128 (26.5%)	343 (71.2%)	**482**	98
Total				**1079**	

In Table 4.13, the first column indicates the person of the intended subject with which a verb form is used. Each row indicates the number of tokens of verb forms actually used in those intended subject contexts. For example, the child used 83 (25.8%) target first person forms in an intended first-person subject context, 182 (56.6%) second person forms in that context, and 56 (17.4%) third person forms in that context. Forms that could not be categorised for analysis (unclear forms) are listed but are not included in subsequent discussion.

As can be seen from the table, when first-person forms are used, they are almost always used with an intended first-person subject. There are only 15/758 uses of first-person forms in second and third person contexts (2%). However, first-person forms are not always used where they are required by the target language. Second person forms dominate in this context (182/321 (56.7%)) and some third-person forms are also used (56/321 (17.4%)). Where the intended subject is second person, second-person forms predominate, with only 22/276 (8 %) first- or third-person forms being used in this context. With intended third-person subjects, the use of third-person forms is greater than chance, but it is noteworthy that second-person forms are used in 128/482 (26.5%) of such contexts.

These results suggest that for the child, first-person forms of verbs are specified for first person (they are typically used only in first person contexts), but they are not used as often as required by the target language. Second-person verb forms, by contrast, are underspecified for person and may be used with any type of subject.

Third-person forms also appear to be specified for third-person subjects, although they can also be used with subjects of a different person, particularly first person. Further analysis is required to determine why this might be.

Looking at the use of person over the period of observation of the child, the following pattern emerges. (To avoid a table that runs over two pages, results are presented in two sub-tables: those for months 31-37, and those for months 38-43).

Table 4.14a: Distribution of Person Forms of Verbs with Intended First-, Second- or Third-person Subjects over the Period of Observation (Months 31-37)

		Person forms used			
		First	**Second**	**Third**	**Total**
Age in months	Intended subject				
31	First	1	6	5	12
	Second	0	12	2	14
	Third	0	9	10	19
32	First	1	9	5	15
	Second	0	17	12	27
	Third	1	28	103	132
33	First	1	14	0	15
	Second	0	2	0	2
	Third	2	15	24	41
35	First	3	9	1	13
	Second	0	11	0	11
	Third	0	1	4	5
36	First	1	8	7	16
	Second	0	10	1	11
	Third	0	6	34	40
37	First	5	5	1	11
	Second	0	25	1	26
	Third	1	8	17	26

Table 4.14b: Distribution of Person Forms of Verbs with Intended First-, Second- or Third-person Subjects Over the Period of Observation (Months 38-43)

		Person forms used			
		First	**Second**	**Third**	**Total**
Age in months	Intended subject				
38	First	15	19	7	41
	Second	1	36	2	39
	Third	2	19	31	52
39	First	9	27	4	40
	Second	0	16	1	17
	Third	3	24	50	77
40	First	19	29	13	61
	Second	1	29	3	33
	Third	1	5	30	36
41	First	10	18	5	33
	Second	1	21	2	24
	Third	0	5	15	20
42	First	9	17	5	31
	Second	1	23	0	24
	Third	0	3	10	13
43	First	9	21	3	33
	Second	0	52	4	56
	Third	1	5	15	21

While there is frequent intended first-person reference throughout the period of observation, an interesting development occurs around the age of 37-38 months. Prior to this time, agreeing first-person forms of the verb are low in frequency, typically less than 10% in obligatory contexts (with the exception of month 35). But from month 37 onwards, first-person forms are present typically in over 25% of obligatory contexts. Forms of the second person in intended second-person contexts predominate right from the start of observation. Second-person forms are also frequently found in intended first- and third-person contexts. Third-person forms are typically supplied in

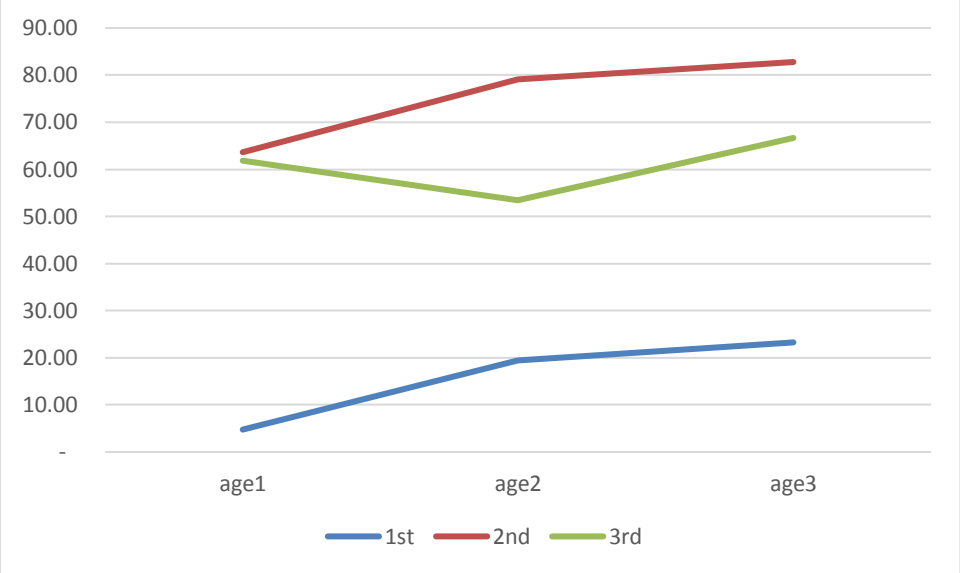
intended third-person contexts over 50% of the time from the start of observation, with their frequency increasing with length of exposure.

These findings are consistent with second-person forms acting as a default realisation of all three persons in the child's early grammatical representations, with the third-person forms emerging first to compete with the third-person forms and first-person forms coming on stream subsequently. However, throughout the observation period, second-person forms continue to be used in intended first- and third-person contexts.

As in the case of the development of tense and mood morphology, in the person context we ascribe these apparently random fluctuations to the fact that data collection was very dense, with small increments in time occurring between each collection moment (one month) and relatively few instances of each person occurring at each collection point. In order to get a clearer picture of overall developmental trends, we therefore created three larger time segments, the same as was done in the tense contexts: Segment 1 (31 to 35 months), Segment 2 (36 to 39 months) and Segment 3 (40 to 43 months).

Overall accuracy (Figure 4.2), in the use of the required person for all person contexts was marginally significant across these three age segments (Segment 1: percentage of person form used correctly [45%], Segment 2: 249 percentage of person forms used correctly [56.5%], Segment 3: percentage of person forms used correctly [52.8%], χ^2 (2) = 5.404, p <.06). When we divided the person according to required context, the person form for which significant development was found was first (χ^2 (2) = 19.453, p = .01), and third (χ^2 (2) = 6.470, p = .03), however, second was marginally significant (χ^2 (2) = 9.899, p = .07).

Figure 4.2: Accuracy of Verb Person across Three Age Bins



1st: First 2nd: Second 3rd: Third

In Section 4.2.1, it was argued that the child's use of default imperative form where a more specified form is required could be the result of an output problem, either with accessing morphological forms that have already been acquired, or in pronouncing those already-acquired morphological forms. It is therefore interesting to look at the distribution of person forms first by number (singular versus plural) and then by tense (present/imperfective versus past/perfective versus future) to determine whether prefixed versus suffixed affixes influence the suppliance of person forms, consistent with an output problem. Table 4.15 shows the distribution of forms by number.

Table 4.15: Distribution of Person Forms of Verbs with Intended First-, Second- or Third-person Subjects by Number of the Subject (Singular or Plural)

		Person forms used			
		First	**Second**	**Third**	**Total**
Intended subject					
First	Sing.	74 (28.9%)	131 (51%)	51 (20%)	256
	Plur.	9 (13.8%)	51 (78.4%)	5 (7.7%)	65
Second	Sing.	4 (1.5%)	239 (91.5%)	18 (7%)	261
	Plur.	0	15 (100%)	0	15
Third	Sing.	11 (2.5%)	96 (22.4%)	320 (74.9%)	427
	Plur.	0	32 (58.2%)	23 (41.8%)	55
Total					**1079**

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Table 4.15 shows that the use of second-person forms with intended second-person subjects is highly target-like (91.5% in the singular, 100% in the plural). By contrast, with intended first- and third-person subjects, target forms are more frequent in the singular (28.9% and 74.9% respectively) than in the plural (13.8% and 41.8% respectively). Recall from Chapter 2, Tables 2.6-2.8 that in the present/imperfective and future, person agreement marking involves the addition of a prefix to the stem in the singular (*n-* for 1st person, *t-* for 2nd person, *y-/t-* for 3rd person), and the further addition of the suffix *–u* in the plural. In the past/perfective, person agreement marking only involves the addition of a suffix, in both singular and plural.

It appears that the interaction of prefixed and suffixed forms with number has no effect on the use of second-person forms with intended second-person subjects, where performance is target-like. However, there is an effect of the interaction on the use of first- and third-person forms in obligatory contexts. Target forms are supplied more frequently in the singular than in the plural. These findings are consistent with the observation made in connection with Table 4.14 that second person subject-verb agreement is fully established in the child's grammar from the beginning of the observation period, and the child does not have a problem accessing or pronouncing these forms. However, the more recently acquired third- and first-person forms are less easily accessed/pronounced, particularly when processing demands are high, as

when both a prefix and a suffix need to be attached to a stem. The result is that proportionately more default second-person forms appear with intended first- and third-person subjects when those subjects are plural than when they are singular.

Table 4.16 presents the distribution of person agreement forms by tense.

Table 4.16: Distribution of Person Forms of Verbs with Intended First-, Second- or Third-person Subjects by Tense (Present/Imperfective, Past/Perfective, Future)

		Person forms used			
		First	**Second**	**Third**	**Total**
Intended subject					
First	Pres/Imperf	24 (15.9%)	112 (74.1%)	15 (10%)	151
	Past/Perf	55 (62.5%)	6 (6.8%)	27 (30.6%)	88
	Future	2 (2.5%)	64 (80%)	14 (17.5%)	80
Second	Pres/Imperf	1 (1.8%)	45 (84.9%)	7 (13.2%)	53
	Past/Perf	1 (3.6%)	20 (71.4%)	7 (25%)	28
	Future	0	11 (84.6%)	2 (15.3%)	13
Third	Pres/Imperf	0	77 (62%)	47 (37.9%)	124
	Past/Perf	11 (3.6%)	9 (3%)	279 (93.3%)	299
	Future	0	42 (71.2%)	17 (28.8%)	59
Total					**895**

Similar to the results where person was crossed with number, where person is crossed with tense there is little effect of prefixation/suffixation on the suppliance of second-

person forms with intended second-person subjects. However, there is a strong effect with first and third person. In both cases, target suffixed forms are supplied more frequently than target prefixed forms, with second-person forms predominantly being used instead. This suggests that the child has a problem accessing already-acquired forms in first and third person involving prefixes, rather than a problem with pronouncing them. The higher frequency of third-person forms overall compared with first-person forms is consistent with first-person forms emerging later in the child's grammar.

4.2.2.2 Gender. In LA, gender agreement is only marked on second- and third-person singular verb forms. It is marked suffixally in the case of the past/perfective and imperative, prefixally in the case of the third person present/imperfective and future, and both prefixally and suffixally in the case of the second person present/imperfective and future. In the first person, gender is unmarked (neutral), and differs from masculine and feminine forms through the absence of a suffix in the perfective (i.e. no *-at, -ti, -it*, see Table 2.10), and the absence of a prefix and suffix in the imperfective and future (i.e. no *y-*, *t-*, *-i*, see Table 2.11) Overall distribution of gender agreement forms with intended masculine, feminine or neutral (first person) subjects is presented in Table 4.17.

Table 4.17: Distribution of gender forms in obligatory contexts

Gender form required		**Gender form used**			
	Masculine	**Feminine**	**Neutral**	**Total**	**Unclear**
Masculine	300 (86.7%)	46 (13.2%)	0	346	76
Feminine	56 (19.1%)	231 (79.1%)	5 (1.7%)	292	175
Neutral	99 (28.2%)	42 (12%)	209 (59.7%)	350	22
Total	455	319	214	988	273

Table 4.17 suggests that the child is quite target-like in her use of gender agreement morphology in the case of masculine and feminine subjects, with the use of masculine forms with intended feminine subjects about the same as the use of feminine forms

with intended masculine subjects. Interestingly, where the subject is neutral for gender (i.e. in first person) morphologically complex forms (masculine or feminine) are used instead of simpler stem forms (99/350 (28.2%) masculine forms, 42/350 (12%) feminine forms). This cannot be explained as an output problem. If it were, we would expect more cases of neutral (stem) forms replacing masculine and feminine forms, and few cases of masculine/feminine forms replacing neutral forms. These results are more consistent with the child accessing default inflected forms, when a morphologically more specified stem form is involved. Pronunciation cannot be the problem in this case.

The distribution of gender forms by tense is presented in Table 4.18.

Table 4.18: Distribution of Gender Forms in Obligatory Contexts for Masculine and Feminine Subjects by Tense (past/perfective, present/imperfective, future, imperative)

				Gender form used			
			Masculine	**Feminine**	**Neutral**	**Total**	**Unclear**
Intended subject							
1st person	neutral	Perf/past	5 (5.6%)	22 (25%)	61 (69.3%)	88	2
		Imperf/pres	59 (38.5%)	6 (4%)	88 (57.5%)	153	19
		Future	34 (43%)	13 (16.4%)	32 (40.5%)	79	1
		Total	**98**	**41**	**181**	**320**	**143**
2nd person	Masc	Perf/past	6 (66.7%)	3 (33.3%)	-	9	0
		Imperf/pres	25 (86.2%)	4 (13.8%)	-	29	5
		Future	3 (75%)	1 (25%)	-	4	2
		imperative	66 (88%)	9 (12%)	-	75	22
		Total	**100**	**17**	**-**	**117**	**29**
	Fem	Perf/past	2 (11.1%)	16 (88.9%)	-	18	0
		Imperf/pres	3 (16.7%)	15 (83.3%)	-	18	8
		Future	0	5 (100%)	-	5	0
		imperative	16 (12.1%)	71 (78.9%)	3	90	11
		Total	**21**	**107**	**3**	**131**	**19**
3rd person	Masc	Perf/past	143 (88.3%)	19 (11.7%)	-	162	21
		Imperf/pres	35 (79.5%)	9 (20.5%)	-	44	20
		Future	22 (95.6%)	1 (4.4%)	-	23	6
		Total	**200**	**29**	**-**	**229**	**47**
	Fem	Perf/past	17 (14.7%)	99 (85.3%)	-	116	23
		Imperf/pres	10 (33.3%)	20 (66.7%)	-	30	7
		Future	8 (61.5%)	5 (38.5%)	-	13	5
		Total	**35**	**124**	**-**	**159**	**35**

Because of the relatively small number of tokens in some of the cells in Table 4.18, it is difficult to draw firm conclusions. Generally, gender agreement appears not to be affected by tense (i.e. whether the verb is marked by a prefix or a suffix), and this is to be expected given that the overall results in Table 4.17 indicate high frequency of target-like use of both masculine and feminine agreement. The one case where there is some effect is where the subject is first-person. Here the child appears to use more morphologically complex forms in the present/imperfective and future, suggesting that the instability in her grammar around prefixed verb forms extends to using them even in contexts where bare stems are the target forms.

In order to get a clearer picture of overall developmental trends in the use of gender, we again created three larger time segments: Segment 1 (31 to 35 months), Segment 2 (36 to 39 months) and Segment 3 (40 to 43 months).

Overall, accuracy in the use of the required gender for all gender contexts was not significant across these three age segments (Segment 1: 202 out of 270 gender forms correct (74.8%), Segment 2: 253 out of 348 gender forms used correctly (72%), Segment 3: 285 out of 370 gender forms used correctly (77%), χ^2 (2) = 1.794, p <.4). When we divided the gender according to required context, the development of each of the genders individually was significant, the masculine (χ^2 (2) = 13.800, p< = .01), the feminine (χ^2 (2) = 27585, p< = .01), and the neutral (χ^2 (2) = 20.210, p< = .01).

4.2.2.3 Number

Number is marked suffixally in LA, either through a change in the form of the suffix (in the past/perfective, see Table 2.10 in Chapter 2) or through the addition of a plural suffix (in the present/imperfective and future, see Tables 2.7 and 2.8 in Chapter 2). Table 4.19 shows the overall distribution of singular and plural verb forms used by the child in intended singular and plural contexts.

Table 4.19: Distribution of Singular and Plural Verb Forms with Intended Singular and Plural Subjects

	Number forms used			
	Singular	**Plural**	**Total**	Unclear
Intended subject				
Singular	1092 (95.6%)	50 (4.4%)	1142	83
Plural	19 (11.6%)	143 (87.2%)	162	2

In Table 4.19, the first column indicates the child's intended subject and the rows indicate the number of tokens of verb forms used in those intended contexts. For example, the child used 1,092 (95.6%) tokens of singular verb forms in an intended singular subject context and 50 (4.4%) plural forms. It is clear from the table that plural forms in the child's grammar are specified for agreement with a plural subject. There is less than 5% overuse of plural forms. There is some overgeneralisation of singular forms to plural contexts and this might suggest an earlier stage where singular forms were unspecified for number and could be used in both singular and plural contexts (a familiar pattern from other studies), but effectively the child has acquired the subject-verb number agreement properties of LA. To consider whether there was a change in the distribution of these forms over time, the results were broken down by each month of observation (Table 4.20).

Table 4.20: Distribution of Singular and Plural Verb Forms with Intended Singular and Plural Subjects by Month of Observation

		Number forms used		
		Singular	**Plural**	**Total**
Age in months	Intended subject			
31	Singular	66 (98.5%)	1 (1.5%)	67
	Plural	2 (28.6%)	5 (71.4%)	7
32	Singular	179 (91.8%)	16 (8.2%)	195
	Plural	6 (28.6%)	15 (71.4%)	21
33	Singular	58 (93.5%)	4 (6.5%)	62
	Plural	0	3 (100%)	3
35	Singular	28 (93.3%)	2 (6.5%)	30
	Plural	0	4 (100%)	4
36	Singular	78 (96.3%)	3 (3.7%)	81
	Plural	2 (66.7%)	1 (33.3%)	3
37	Singular	56 (86.2%)	9 (13.8%)	65
	Plural	1 (12.5%)	7 (87.5%)	8
38	Singular	123 (96.9%)	4 (3.1%)	127
	Plural	3 (10.36%)	26 (89.7%)	29
39	Singular	124 (96.1%)	5 (3.9%)	129
	Plural	3 (8.8%)	31 (91.2%)	34
40	Singular	140 (97.2%)	4 (2.8%)	144
	Plural	0	15 (100%)	15
41	Singular	79 (98.8%)	1 (1.2%)	80
	Plural	1 (12.5%)	7 (87.5%)	8
42	Singular	63 (98.4%)	1 (1.6%)	64
	Plural	0	11 (100%)	11
43	Singular	98 (100%)	0	98
	Plural	1 (5.3%)	18 (94.7%)	19

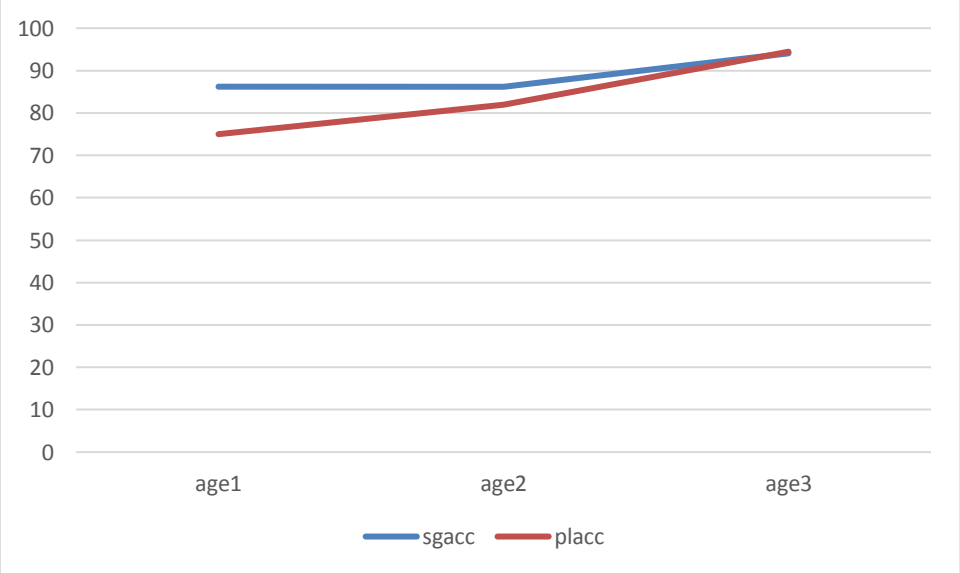
Use of singular forms of the verb with intended singular subjects is typically over 90% throughout the period of observation. While the frequency with which plural forms are supplied in intended plural contexts is slightly lower, there is no discernible

pattern of change in the use of singular forms in plural contexts over the 13 months. Number agreement is largely already acquired from the outset of the study.

Again, in the number context, we ascribed these apparently random fluctuations to the fact that data collection was very dense, with small increments in time occurring between each collection moment (one month) and relatively few instances of each number occurring at each collection point. In order to get a clearer picture of overall developmental trends, we again created three larger time segments similar to those in the previous contexts: Segment 1 (31 to 35 months), Segment 2 (36 to 39 months) and Segment 3 (40 to 43 months).

Overall accuracy (Figure 4.3), in the use of the required number for all number contexts was not significant across these three age segments (Segment 1: 358 out of 389 number forms correct (92%), Segment 2: 446 out of 476 number forms used correctly (93.6%), Segment 3: 431 out of 439 number forms used correctly (98%), χ^2 (2) = 21.704, p <.01). When we divided the number according to required context, the development of both over time were significant, the singular (χ^2 (2) = 16.403, p< = .001), the plural (χ^2 (2) = 27585, p< = .01), and the neutral (χ^2 (2) = 6.954, p< = .031).

Figure 4.3: Accuracy of Verb Number across Three Age Bins



sgacc: Singular accuracy placc: Plural accuracy

To sum up, this section examined the use of subject-verb agreement by the child under observation. It was reported that from the start of the observation period she

used first-person agreement forms with intended first-person subjects and rarely used them with other intended subjects. However, these forms were not always used when the subject was first-person. Rather, second-person forms (and to a lesser extent third-person forms) were used. A similar pattern emerged with third-person forms, although these were more frequently supplied with intended third-person subjects. Again, second-person forms were used with intended third-person subjects. On the basis of this it was argued that, prior to the start of the observation period, second-person forms were the default form for marking person agreement with the subject. Third-person forms then enter the child's grammar and compete with second-person forms where the intended subject is third-person (and to a lesser extent when the subject is first-person). Later still, first-person forms enter the grammar and compete with second- and third-person forms when the intended subject is first-person. This is consistent with Yang's (2002) Variation Learning Model, where forms in the child's grammar compete to realise specific morphosytactic representations that have only one realisation in the target language. Frequency of encounters with the target form in input eventually leads to its categorical selection at the expense of the competitors.

The problem identified in Section 4.2.1 that the child appears to have difficulty with prefixed verb forms realising tense (in contrast to suffixed or bare stem verb forms) also emerged in the case of person agreement with the subject; however, with a particular twist. Only agreement with intended first- and third-person subjects showed a notable contrast in the production of prefixed versus suffixed forms, with the former being less frequent than the latter. In the case of the second-person subjects, there was no effect. This is not consistent with the child having a generalised output problem; if she did have such a problem, it should also have affected the second person. Rather, the distribution of forms is consistent with the child knowing the appropriate prefixed forms for the first and third person but having difficulty accessing them from the lexicon.

A similar pattern emerged in the production of singular versus plural agreement forms. In the first and third persons, plural forms (requiring the addition of a suffix) were less frequent than subject forms (which do not require a suffix). However, in the case of second person, both singular and plural forms were used in a target-like way.

4.3 Concluding Remarks

The comparison of the results in Section 4.2.2 with those in Section 4.2.1 suggests that in the child's developing grammar two different processes are at work: in one case, a difficulty pronouncing target morphosyntactic forms generated by the grammar (in the case of tense forms); and in the other, a problem accessing forms from the lexicon for the morphosyntactic rules to work on (in the case of person agreement with the subject).

The results concerning gender agreement suggest a potential default status for inflected masculine/feminine forms over bare stems. This is an interesting case where the morphological status of forms overrides formal simplicity. That is, bare stems are formally simpler than forms with affixes, yet in terms of the child's grammatical organisation they are more marked than inflected forms. There is little evidence that either masculine or feminine is a default form. Both forms are used with the same frequency in target and non-target contexts.

Number agreement with the subject appears to have been more or less acquired by the time the observation of the child began.

In the next two chapters, the role that input plays in the child's acquisition of verb morphology in LA is considered.

CHAPTER FIVE

THE ROLE OF INPUT IN CHILD LANGUAGE ACQUISITION

5.0 Introduction

There has been considerable debate about the role of input in children's language (Newport, Gleitman & Gleitman, 1977; Gallaway & Richards, 1994; Lust, 2006, for overviews). All theories of language acquisition recognise that input is crucial, as children need to be exposed to samples of language to construct a mental grammar. Theories differ, however, on the weight given to input. On the one hand, proponents of nativist approaches like Wexler (1998), Pinker (1989), and Marcus (1993) argue that children's input provides triggers to activate particular values of innate linguistic knowledge, as well as providing information about all the idiosyncratic properties of the language in question (e.g. in the phonology, morphology and lexicon). On the other hand, non-nativist approaches assume that the input is more highly structured and informative than assumed by nativists, and can hence make a more important contribution to acquisition (see e.g. Saxton, Backley & Gallaway,2005; Chouinard & Clark, 2003; Farrar,1992; Saxton, 1997, 2000; Theakston et al., 2004; Lieven & Tomasello, 2008). In the following sections of this chapter, I will talk about the universal properties of child-directed speech (Section 5.1), variation in child-directed speech (Section 5.2), and the positive evidence or "models" of the target language that children can find in their input (Section 5.3). I will then discuss parental responses to errors and correct utterances and children's uptake for different forms of feedback (Section 5.4). Finally, the summary of this chapter and the input-related research questions for this dissertation will be presented in Section 5.5.

5.1 Universal Properties of Child-Directed Speech

Early research on child-directed speech typically used the term "motherese" and argued that it was specially tuned to the needs of young language learners (see; Newport, Gleitman & Gleitman, 1977; Gallaway & Richards, 1994; Lust, 2006, for overviews). Some of these early studies also used the term "baby talk" and highlighted the use of special vocabulary like "doggie" or "wee wee". Currently, the term "child-directed speech" is preferred, as it does not focus on specific "baby

words" and also considers input from speakers other than the mother (see e.g. Gallaway & Richards, 1994, for an overview). Researchers mostly agree that child-directed speech has some characteristics that are very beneficial for the language-learning child. These characteristics or properties of speech are associated with caregiver phonology, lexicon, and syntax. These properties of speech are often claimed to be universal and will be discussed in this section.

a- Complexity. Caregivers typically use shorter and less complicated sentences and more well-formed and intelligible utterances than adults talking to other adults (Bryant & Barrett, 2012; O'Grady, 2005; Olsen-Fulero, 1982; Snow, 1977; Cross, 1977, Soderstrom, 2007). One of the main earlier studies which investigated the correctness rate of mothers was by Newport et al. (1977). In their study, they investigated 15 mothers and their children (aged between 12-27m). The mothers' data was coded for well-formed sentences, sentence length and structural complexity. Children's data was coded for syntactic complexity, sentence length, mean noun phrase frequency, mean verb phrase frequency, inflection of NP and auxiliary structure. The results showed that mothers' speech to their children is simpler and shorter than their speech to adults, with the "Mean Length of Utterance" MLU (word-based) to children being 4.24, while the MLU to the experimenter was 11.94. It was also well-formed: only 9% of the speech was impossible to analyse because of mumbles and slurs. The results also showed that mothers used deletion and reduced syntactic complexity, for example "*wanna go out?*" instead of "*do you wanna go out?*" (p127) in about 6% of all utterances.

Philips (1973) looked at thirty mothers and their children (aged 8 to 28 months) and found that the number of verbs per utterance was 0.83 out of 10 to children and 1.53 to adults, suggesting simplifications in child-directed speech.

The results of the studies mentioned above show that mothers address their children differently to adults; they use more clear and correct language when they speak to their children as well as using less complicated constructions by limiting the number of verbs by utterance.

There is also an argument about the disfluencies in the parents' input to their young children. Child-directed speech has always been described as fluent speech (Clark, 2009:36). For example, Bjorkenstam et al. (2013) looked at data from four Swedish-speaking children; three boys and one girl aged between 0;6 to 2;9. They compared the input data provided to these children and the adult-directed speech used by the same speaker and found a significant difference between the adult-directed speech and its child counterpart in terms of disfluencies. Adults were more fluent (0.88 disfluencies per 100 words) when they talked to children than when they talked to adults (2.60 disfluencies per 100 words). The results also showed that as the child's age increases, the rate of disfluency is increased when comparing child-directed speech at 6 to 12 months to child-directed speech at 13 to 24 months, as shown in Table (5.1):

Table 5.1: Rate of Disfluency in Child-directed and Adult-Directed Speech

	Infant 6 to 12 months			Toddler 13 to 24 months		
Target	disf	words	Disf/100w	disf	words	Disf/100w
Adult	232	8991	2.58	395	15042	2.63
Child	64	11057	0.58	219	21271	1.03

Bjorkenstam et al. (2013:59)

In a different study, Huttenlocher et al., 2002 looked at the relation between syntactic development of American children and their parents. They studied 48 parent-child dyads, where the children's ages were between 47-59 months with mean age of 54 months. Children and parents were recorded at home during ordinary activities for two hours. Data were analysed for simple and complex utterances. The results showed that the mean production of the multi clause sentences for the parent was only 20%.

Brent and Siskend (2001) examined the nature of mother's speech. They looked at thirteen English-speaking mothers with their infants under nine months. Each mother-infant pair was visited at home every two weeks while the infant was between nine and 15 months old for a total of 14 recording sessions. Mothers were asked to do their normal daily activities. Mothers' data were transcribed and analysed to determine the frequency and diversity of isolated words. The results showed that an average of 9%

of mothers' utterances consisted of isolated words with no significant differences between subjects. Although the percentage was under 10%, however, the results showed that simple language regularly occurs in the experience of every infant in the population from which the study was taken.

b- Phonological Properties. Across cultures, when mothers talk to their children, they tend to slow their speech with longer pauses between utterances (Gallaway & Richards, 1994; O'Grady, 2005). Moreover, parents' speech to their children is characterised by a high pitch, a larger pitch range, and exaggerated intonation and stress (Broesch & Bryant, 2011; Fernald et al., 1989; Grieser & Kuhl, 1988; Küntay & Slobin, 1996). For example, Broesch & Bryant (2011) looked at the acoustic features in child-directed speech in two traditional cultures, "native Fijians and the Bukusu of Kenya", as well as samples from American English-speaking mothers. They found that child-directed speech had higher pitch than the adult-directed speech.

These features make child-directed speech recognisable and distinguishable from adult-directed speech. This has been demonstrated in experiments where adult listeners had to distinguish child-directed speech and adult-directed speech for a language they did not speak (see Fernald et al., 1989, for review and experimental evidence).

c- Restricted Vocabulary and Reference. Parents have been found to use a more restricted vocabulary and more paraphrasing when they address young children (O'Grady, 1997:251). In particular, parents tend to use present physical objects as a reference for the target word, or a physical action as a reference for the target verb. Pinker (1984) argues that it is a universal phenomenon that children's first nouns refer to physical objects; their first verbs refer to actions and their first (grammatical) objects to patients. Clark (2003) claims that "in conversation with young children, adults anchor their conversations to objects or events physically present on each occasion" (p29). This would appear to provide children with clear cues to form-meaning relationships.

d- High Proportion of Imperatives and Questions. Parents' speech to children also contains a high percentage of imperatives and questions. Newport et al. (1977)

reported that 62% of maternal utterances required an action from the listeners. These utterances included 18% imperatives; 15% wh- questions, 21% yes-no questions, and 8% deictic questions, compared to the speech directed at the experimenter by the mother, which only contained 11% of these utterances. Amongst the wh-words that parents use, *where* and *what* are typically most frequent. It is argued that around 80% of the wh- questions used by some parents contain *where* (O'Grady, 2005). Children's own productions also show the special status of *where* and *what*, as they typically appear first, as shown in the table below.

Table 5.2: The Developmental Order of wh-Words

Wh- word	Average Age/Month
Where & what	26
Who	28
How	33
Why	35
Which; whose; whom	After 36

(O'Grady, 2005:102)

In addition to wh-questions, imperatives are also frequent in child-directed speech:

(1) *Child: look there is the lid.*
Mother: put it on the basket.
Child: I have.
Mother: I don't think so. No, put it on it. (Wells, 1981:57)

Many studies looked at the rate of imperative and questions in child-directed speech. For example, Cameron-Faulkner et al. (2003) analysed data from 12 English-speaking children; six boys and six girls aged between 1;9.28 and 2;6.2. The mothers' data were first categorised according to general constructional categories such as fragments, questions, imperatives, copula, subject, and utterance complexity. In a second step, all the mothers' utterances within the above categories were further analysed according to the initial words that framed the utterances, such as: *I'll*, *It's, Let's,* etc.

The analysis showed that only 15% of maternal utterances contained SVO word order. Most were questions, imperative, copula, and fragments. Moreover, 51% of the utterances began with one of 52 item-based phrases such as *what, that, it, you,* etc. It was also found that children's use of these item-based phrases was highly correlated with their own mothers' frequency of use. A comparison of the use of questions and imperatives in two corpora provided by Cameron et al. (2003:850) is presented in Table 5.3.

Table 5.3: Rate of Questions and Imperatives in CDS

Construction Type	Study	
	Cameron et al., 2003	Wells, 1981
	Language: English,UK	Language: English,UK
	Age: 1;9.28 and 2;6.23	Age:1;3 and 3;6
Descriptions and Naming	39%	38%
Questions	32%	21%
Fragments	20%	27%
Imperatives	9%	14%

e- More Repetitions than in Adult-to-Adult Speech. Parents also use different types of strategies when addressing their children. Some parents frequently repeat statements when talking to their children, while others repeat or reformulate the utterances that are produced by their children (Bellinger, 1980). All these features and strategies are determined by the child's age and the communicative settings. In other words, parents normally pay more attention to their very young children than their older siblings (see Table 5.4). At the same time, the younger children are more likely to repeat the target form repaired in the adult's repetition (Clark & Bernicot, 2008; Cross, 1977, Newport, Gleitman & Gleitman, 1977; Bellinger, 1980; Halle & Shatz, 1994;).

Table 5.4: Repetition Distributed by Age

Age	No of dyads	Session (in min)	Mother's repeats	Child's repeats
2;3	24	16	464	195
3;6	17	10	246	73
Total	**41**	**26**	**710**	**268**

(Clark & Bernicot, 2008:357)

Newport et al. (1977) and Furrow et al. (1979) both looked at the mothers' use of *yes-no* questions addressing their very young children and they found that there is a positive correlation between mothers' use of *yes-no* questions and children's acquisition of auxiliary verbs. Hoff-Ginsberg (1985) investigated data from mothers and their children and found that there is a relationship between some categories in mothers' speech, such as self-repetition and expansion of utterances, and child growth in verb phrases per utterance. However, Scarbrough and Wyckoff (1986) reported no evidence for the relation between the occurrence of these features in mothers' speech and children's growth in noun and verb phrases per utterance.

5.2 Variation in Child-Directed Speech

Cross-cultural studies have shown cross-linguistic variation with respect to the amount of feedback provided, the time that children spend with adults vs. other children, and the role of fathers (Gallaway & Richards, 1994; Ochs & Schieffelin, 1984). In some cultures, mothers are very conservative with respect to the amount of feedback they provide to their very young children; they do not frequently interact with their children, such as in African-American 'Trackton' communities; in rural Nigerian villages; in Samoa; among others (Gallaway & Richards, 1994). In these communities, children have little or no exposure to child-directed speech by adults in infancy until they themselves start to talk. For example, in Samoa and Luo, mothers do not normally participate in conversation with their children, neither do they ask their children questions to which they know the answers; that only happens when children reach a certain age and after they acquire certain properties of their language (Duranti & Ochs, 1986). Similarly, Ochs and Schieffelin (1984:483) have reported that "Kaluli speaking mothers, given their belief that infants have no understanding,

never treat their infants as partners (speaker/addressee) in dyadic communicative interaction. Although they greet their infants by name and use expressive vocalizations, they rarely address other utterances to them".

These cultural differences have important consequences for the organisation of dyadic exchanges between caregiver and child. For example, in non-industrial cultures, it is argued that children spend a lot of time interacting with mothers and other siblings, older children and others acting as caregivers (Lieven, 1994). However, in many economically advanced countries this is not the case, as childcare is less dependent on mothers staying at home (Lieven, 1994). For example, Berman (1985) claims that Israeli children spend a lot of time with other children and caregivers, rather than with their mothers.

With regard to fathers' role in child-directed speech, it is unquestionable that they play an important role. However, many studies have suggested that this role is not primary when compared to the mother's. According to the Bridge Hypothesis (Gleason, 1975), fathers are less familiar with their young children's communicative devices than the mothers. Although fathers' speech to their young children is similar to its maternal counterpart in terms of structure (Leubecker & Bohannon, 1984), the nature of fathers' speech to their children seems to be different from mothers' (see Section 5.2.1). For example, many studies have shown that fathers tend to use more requests for clarifications such as (*What? you have a what?*) than mothers do (Tomasello et al., 1990; Rondal, 1980).

It is obvious that there is variation in child-directed speech. However, it is important to look at the nature of this variation, namely the parents' input. In the next section, I will talk about mothers' versus fathers' language input and whether there are any similarities or differences in the properties of their language input to their young children.

5.2.1 Mother and Father Language Input

Research on child language has focused on the nature of contribution of language input of parents to their young children and children later development. There is growing research into whether there are any gender differences in parents' input to their children (Demuth, 2013, Baker & Vernon-Feagans, 2015, Duursma et al., 2008, Rowe et al 2004). A considerable number of studies have argued that mothers and fathers engage in different types of interaction with their children, based on quantitative and qualitative similarities and differences.

Some studies have found that mothers talk more to their children (Gottman 1998, Rondal (1980), while others claim that fathers interact more with their children (Parke, 2002; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001, Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). However, much of the previous research has focused more on mothers, probably because they are the primary caregivers in most children's lives. Gottman (1998) found that mothers were more verbal and directing in their interactions with children, whereas fathers were more physical and arousing. Rondal (1980) studied five French speaking middle-class families in dyadic free play and story-telling situations and triadic meal situations when the children were 1;6 to 3 years of age. They found that during the five recording sessions, fathers spoke fewer words than mothers.

An earlier study by Killarney and McCluskey (1981) looked at data from parents talking to their children and found that fathers use shorter dialogues with their children compared to the mothers. Mannle and Tomasello (1987) examined data from parents of 24 white middle-class English children aged between 12-18 months. The number of males equalled the number of females. They looked at whether fathers were less likely to maintain a state of joint attention focus with their children and whether they were less likely to understand and respond appropriately to their children's utterances. The joint attention focus was determined by identifying episodes when the parents and child were both visually focused on the same object at the same time. The results showed that fathers are less tuned to their young children in their social and linguistic interaction; they spent less time than the mother in joint attention with their children $t(23) = 2.37$, $p<.01$

There is also evidence that the nature of the fathers' interaction with infants differs from that of the mothers'. For example, the fathers' frequent use of physical play has been observed in the literature comparing father–infant and mother–infant interactions (Rutherford & Przednowek, 2012).

However, very few, if any, studies have considered the possible contributions of father language input to child outcomes. It has been reported that fathers spend a greater proportion of their time interacting with their children in play activities, and that their play is more physical than that of mothers (Parke, 2002; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). Another study has also found that fathers' supportive parenting behaviour during parent–child interactions at 24 months was predictive of children's language development at 36 months (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004).

By contrast, other studies have not found significant differences between mothers and fathers on measures of the total of their output (McLaughlin, White, McDevitt, & Raskin, 1983; O'Brien & Nagle, 1987). Rowe, Coker, and Pan (2004) compared fathers' and mothers' talk to their children in families. They reported that mothers and fathers did not differ in the amount of child-directed language in dyadic interactions with their toddlers. Malone and Guy (1982) also found that in a sample of 10 families, fathers and mothers did not differ in total output during dyadic interactions with their three-year-old sons.

Pancsofar and Vernon-Fegans, (2006), looked at the difference between fathers' and mothers' language input to their 24-month-old children. They examined the language input for five categories; parental total verbal output, parental diversity of vocabulary, parental utterance complicity, parental use of questions, and parental pragmatic feature of discourse. 120 families participated in the study and were recorded for two hours interacting with their children in a free play session. The results showed that there is an overall significant difference between the father and the mother in their language input to their young children $F(13, 79) = 5.45$, $pb.0001$. For example, univariate tests showed that fathers produced significantly fewer total verbal utterances, $F(1, 91) = 17.36$, $\eta 2 = .16$, and fewer total words, $F(1, 91) = 16.91$, $\eta 2 = .16$, and fewer total wh-questions, $F(1, 91) = 9.28$, $\eta 2 = .09$, than did mothers. Fathers

also used fewer different word roots, $F(1, 91) = 39.75$, $\eta 2 = .30$, than did mothers. In addition, fathers took fewer total conversational turns than did mothers, $F(1, 91) = 16.60$, $\eta 2 = .15$, and their turns were significantly shorter, both in terms of utterances, $F(1, 91) = 13.93$, $\eta 2 = .13$, and words, $F(1, 91) = 14.60$, $\eta 2 = .14$. However, no significant differences were found between mothers and fathers in terms of MLU and questions.

Previous studies on father versus mother input to young children have not yielded consistent results, there were similarities and differences between parents. These discrepancies may be due to the limited sample size or might be related to the parents' education or social status. In this research we will examine the parents' input to their young child and look for any similarities or differences between them in terms of verbal utterances.

5.3 Positive Evidence: Models Provided in the Input

As the discussion so far has demonstrated, child-directed speech has some universal structural, phonological, lexical, and discourse properties, but also shows some variation between cultures and different types of adult speakers (e.g. mothers and fathers). In the following section, I will discuss how the way caretakers speak to their children can provide models and positive evidence for the forms and structures that are allowed in the target language.

5.3.1 Type and Token Frequency

Children acquiring their first language are faced with two tasks:

(i) Learning words and idiosyncratic properties of their target language

(ii) Acquiring the regular rule-based constructions of their target language

There is a wide consensus on the positive role of frequency in supporting children in these tasks (see Ambridge et al., 2015, for a recent review and further references). In a generative approach, the frequency of forms in the input has not generally been considered relevant. Input provides "triggers" to activate features, categories and operations that are given by Universal Grammar. One datum may be sufficient to act as such a trigger, while encounters with many tokens in input may fail to trigger a

property until the child's grammar has reached a stage of organisation where it is receptive to the trigger. However, more recently some generative researchers have argued that frequency in input may play a role in selecting one particular grammar over another where the input is consistent with several grammars (see Yang, 2004 for review). In a usage-based account, one of the most important factors determining productivity is frequency, especially type frequency. Children are considered to be sensitive to the frequency of constructions: the more frequently a word or word form is directed to a child, the earlier it is typically acquired or even overused in contexts for less frequent forms (see Bybee, 2006; Tomasello, 2003; Ambridge et al., 2015; Goodman, Dale & Li, 2008; Theakston et al., 2004; Lieven & Tomasello, 2008; Naigles & Hoff-Ginsberg, 1998). For example, in English, children hear the regular past *"ed"* more frequently than the irregular past, and as a result they tend to overgeneralise over the irregular, such as in *buyed*. This is also the case in constructions. For example, the rarity of the passive construction in child production could be a result of the low frequency of this construction in child-directed speech, since it typically only accounts for less than (0.5%) of all utterances (Deen, 2011).

For discussions about frequency effects, it is important to distinguish between type and token frequency (Lieven & Tomasello, 2008; Bybee, 1995). The term "type frequency" refers to the number of times a particular linguistic category or function is encountered in input, regardless of the number of individual forms that realise that category or function. The term "token frequency" refers to the frequency of the individual items. For example, in the sentence "He brushed, washed and polished yesterday" there are three tokens of the *–ed* form realising the type (category) "past tense". (It should be noted that the reference here is to the type "past tense". The lexical forms *brush, wash* and *polish* themselves represent three difference verb types.) Type frequency is important for Task ii (see above), as it helps children to learn rule-based regularities in their target language, such as that the past tense in English is regularly realised by the suffix *-ed*. Token frequency plays a crucial role for task (i) (see above), providing the child with the specific lexical and morphological forms that have to be acquired.

Thus, type frequency plays an important role in productivity in acquisition, while high token frequency leads to strong lexical strength or knowledge of individual word

forms (Bybee, 1995). For example, children's productivity in inflectional endings is sensitive to both type and token frequency as well as to semantic and phonological factors (Dabrowska & Szczerbin´ski, 2006; DaBrowska, 2004). It has also been argued that type and token frequency help children to avoid overgeneralisation of regular and irregular forms of the verb: "verbs that are highly frequent in the language children hear (e.g. come) will also be protected from overgeneralization because by the time that children learn them, they will have developed the abstraction that prevents such overgeneralizations" (Lieven & Tomasello, 2008:178). It has also been argued that type and token frequency have facilitatory effects on morphological processing (Balling & Baayen 2008; Kuperman, Bertram, & Baayen, 2008; Kuperman, Schreuder, Bertram, & Baayen, 2009)

Many empirical studies show that type and token frequencies play a primary role in the acquisition of the grammatical structure of the target language (Nicoladis et al., 2007; Bybee, 1995; Lieven & Tomasello, 2008). Nicoladis et al. (2007), for example, examined whether token frequency of verbs was necessary for English and French monolingual and bilingual children to master the past tense morphology in their language. The participants of the study were 10 French-English bilingual children, 10 English monolingual children, and 10 French monolingual children, aged between four to six years. The study took place in Canada, where children watched two short Pink Panther cartoons for six minutes. After watching the cartoon, a speaker of each language, English and French asked the children to tell what they saw in the cartoon. There were no differences between the English monolinguals and the bilinguals in English in terms of the number of word types and tokens used by language group, as shown in Table 5.5:

Table 5.5: Frequency Differences for Verb Forms between English Monolinguals and Bilinguals

	Past Regular		Past Irregular	
	Type	Token	Type	Token
English Monolingual	4.5	6	9.2	21
English Bilingual	4.2	6	9.2	22

(Nicoladis et al., 2007)

In French, the monolinguals used significantly more word types than the bilinguals, but did not differ significantly in terms of word tokens, especially in the past irregular, as shown in Table 5.6:

Table 5.6: Frequency Differences for Verb Forms between French Monolinguals and Bilinguals

	Past Regular		Past Irregular	
	Type	Token	Type	Token
French Monolingual	10	14	8	9
French Bilingual	9	14	5	9

(Nicoladis et al., 2007)

There was no difference in the number of types or tokens used by the bilingual children in French and English. Generally, this study showed that French-English bilingual children were less accurate in producing past tense morphology than English monolingual children (for both regular and irregular verbs) and French monolingual children (for irregular verbs). According to the authors, this difference is due to the frequency of type and token of the verbs that children learn as, for example, the regular is more frequent than the irregular in English.

Dabrowska and Szczerbin´ski (2006) investigated the contributions of type and token frequency to the productivity of different inflectional patterns by correlating Polish-born children's use of different inflectional patterns with the type frequency of these patterns in Polish.

The participants were 57 Polish-speaking children (29 boys and 28 girls) aged from 2;4 to 4;8 and 16 adult controls, They participated in a nonce-word inflection experiment testing their ability to use the genitive, dative and accusative inflections productively. They found a strong correlation between the type frequency of the patterns and their productivity. However, they also reported that the type frequency of the patterns was strongly correlated with their token frequency, which raises a question about the possible contributions of type and token frequencies.

Abbot-Smith et al. (2004) examined data from 24 English-speaking two-year-olds. They looked at the role of frequency on the production of transitive constructions, as in Example 2.

(2) The dog's meeking the car. (Abbot-Smith et al., 2004:48)

The children participated in a two novel verbs test condition: shared syntactic distribution; at which one novel verb, "the 'shared distribution' novel", was modelled by the experimenter in the non-transitive syntactic construction on which the child had been trained, i.e. passive for children who were trained on passive constructions; and the other novel verb, "the 'non-shared distribution' novel", was modelled in non-shared syntactic distribution by the experimenter in a syntactic construction on which the child had not been trained, i.e. the intransitive for children who were trained on passive. The idea was to see whether a shared syntactic condition between the training verb and the novel verb helped children to generalise the transitive construction to the novel verb.

The children participated in four sessions over a two- to three-week period at which each child played eight training games twice. For each training game each child heard a total of 16 uses of the transitive construction and 16 uses of the other training construction. In Sessions 1 and 2, each child played five training games at which they heard 16 of the transitive constructions and 16 of the other training constructions. Then the examiner asked elicitation questions such as "what happens now?", "what is the actor gonna do?" (Abbot-Smith et al., 2004:51). If the child answered one of these questions, then no further questions were asked.

In Sessions 3 and 4 each child played three training games and two test novel games. For each child one of the novel verbs was modelled in the intransitive construction; eg. "the undergoer is taming", and the other novel verb was modelled in the passive construction eg; "the undergoer got mugged" (Abbot-Smith et al., 2004:51). Then each child heard 12 models for each verb either with intransitive or passive construction.

The results showed that children aged 2;6 produced transitive constructions after they had heard more than (n=100) transitive utterances in which (n=16) different verbs were used, whereas the control group who did not hear such constructions did not show any productivity. This suggests that frequency played a major role in the acquisition of transitive constructions.

However, some researchers argue that frequency does not have any effect on the acquisition of some grammatical structures and children are selective in their choice of the construction, whether that construction is frequent or infrequent. For example, Marcus et al. (1992) and Marcus (1995) found that the overgeneralisation errors in children's speech were not predicted from the increase in the number of regular words in the parental input. Marcus et al. (1995) have also found that German-speaking children show the affix-*s* as a default in German noun plural, although it is of low frequency.

The above studies on the one hand provided evidence for the role of type and token frequency in the acquisition of patterns. On the other hand, there is also evidence that frequency of a certain form has little effect on the acquisition of that form. This phenomenon will be tested in this research to see the type and token frequency effect on the acquisition of verb morphology in LA.

5.4. Parental Feedback on Errors and Correct Utterances

As the discussion in the previous section has shown, a growing number of studies on types of positive evidence in children's input have suggested that the frequency of forms and constructions in children's input can support and affect children when they acquire the generalisations of their target language. However, it is still debated whether these effects can be reliably replicated in studies involving different types of languages, societies and social groups. In this section, I will focus on the potential effects of caretaker feedback on children's utterances.

5.4.1 Types of Negative and Positive Feedback

In Chapter 3, Section 3.2, I pointed out that one of the biggest challenges that theories of language acquisition face is to explain how children at early stages in their course of language acquisition recover from grammatical "errors". As will be discussed in this section, there is a general agreement that negative feedback in the form of explicit corrections is not reliably available to all children at all times, but there is an ongoing debate about the frequency and potential role of other types of (negative) feedback (see Marcus, 1993 for a review). The term "negative evidence" is a very general term that covers all the types of information that parents provide to their children about sentences which do not exist in the target language.

According to Marcus (1993:59), there are three types of negative evidence:

a- *complete feedback.* Any information provided for all sentences that are ungrammatical. According to Marcus, children almost certainly do not receive this type of feedback, simply because no one has provided any evidence to show that caregivers provide feedback on every single ungrammatical sentence. Thus, this type of feedback is not available to children.

b- *partial feedback.* Any information provided for some ungrammatical sentences. Again, Marcus argues that this type of feedback does not seem to exist; however, Morgan et al. (1995:181) provided evidence that parents do correct some of their children's errors, providing implicit negative evidence by showing the target-like version of the child's utterance as in (10).

(10) (a) *child: what that can do?*
parent: what can that do?
(b) *child: he turned the light on.*
parent: yes, he turned the light on.

c- *noisy feedback.* Any information provided after some errors and after some grammatical mistakes. Marcus claims that this type of feedback is inconsistent across parents and is probably not provided for all types of errors. Therefore, it is unavailable for much of language acquisition.

In addition to being complete, partial or noisy, parents' negative feedback can be classified as being either explicit or implicit. It is explicit if it contains any expression of approval, disapproval or correction to the previous child utterances. For example, explicit approval words and formulas such as *yes* and *that's right* can be used to confirm that a child utterance was appropriate, while words and formulas such as *no*, *that's not right* show explicit disapproval (Demetras et al., 1986:279). However, this type of explicit correction, such as *You can't say that*, does not provide a clue to the child about the nature of the errors, because parents do not say whether they are correcting a phonological, morphological, or syntactic error (Eisenbeiss, 2009: 2). Even if this type of feedback is provided to children, an earlier study by Brown and Hanlon (1970) concluded that approval and disapproval is not contingent on syntactic correctness:

> "While there are several bases for approval and disapproval, they are almost always semantic or phonological. Explicit approval or disapproval of either syntax or morphology is extremely rare in our records and so seems not to be the force propelling the child from immature to mature forms". (p.48)

Implicit or indirect feedback, on the other hand, represents those utterances that parents provide to their children by repeating their ungrammatical utterances, minus the error, or by requesting clarification (Bohannon & Stanowicz, 1988).

Even when explicit corrections are provided to children, and children understand that they are being corrected, the lack of systematic uptake sometimes leads to children making incorrect generalisations, as in (11):

(11) Child: Nobody don't like me.
Mother: No. Say "no body likes me."
Child: No body don't like me.
[Eight repetitions of this dialogue follow.]
Mother: No, now listen carefully, say "NO BODY LIKES ME."
Child: Oh! No body don't likes me.

(McNeill,1966: 69)

In the following section, I will discuss two types of feedback that can provide implicit/indirect positive and negative evidence: repetitions and recasts/reformulations.

5.4.2 Repetition and Recasts/Reformulations

Numerous studies in first language acquisition have shown that parents respond to their children's errors by using different types of responses, such as repetitions or recasts to the child's error with the correct form (see e.g. Demetras, Post & Snow, 1986; Farrar, 1992). Repetition refers to "either mimicking the child's intonation or using a more pronounced, falling intonation, indicating confirmation" (Demetras et al., 1986:279). Repetition of a preceding speaker's utterance can be used for a variety of discourse functions, including confirmation and request for clarification. These functions can typically be distinguished by intonation (Demetras et al., 1986). In addition, Bohannon and Stanowicz (1988) have argued that children whose parents repeat phrases after them often develop language more quickly than those with less repetitious parents. They looked at data from 16 parents and 13 non-parent adults talking to children and examined their conversation for evidence of an adult differentially responding to children's syntactic, phonological, and semantic errors.

The results showed that adults responding differentially to children's well- and ill-formed utterances were more likely to repeat with changes all the utterances containing syntactic, phonological, or semantic errors. The results also revealed that parents showed greater sensitivity to children's mistakes than the adults who are not parents. For example, parents respond to children's ill-formed sentences twice as often as non-parents (30% vs. 16%). Bohannon and Stanowicz (1988) have also concluded that children may indeed be sensitive to the differential adult behaviours that follow children's errors.

Repetition can be classified into different types (Bohannon & Stanowicz, 1988): exact repetition (verbatim reproduction of the child's entire preceding utterance) and contracted or expanded repetitions (reproduction of a reduced or expanded set of elements from the child's preceding utterance (e.g. Child: "That is a cat"; Adult: "A

cat"). Contracted and expanded repetition can provide a syntactic or morphological correction. Contracted repetitions are always shorter than the child's initial production, and expanded repetitions are longer than what the child actually produced and characterised by reproducing major elements of the child's utterance and adding new information, as in Example 12:

(12) *Child: "Monkey climbing"*
Adult: "The monkey is climbing to the top of the tree".
(Bohannon & Stanowicz, 1988: 685)

Howe (1993) suggested that corrective repetitions provide opportunities for children to recognise instances of misunderstanding between their intention and an adult's interpretation. For example, consider the following (13) from Howe (1993:21):

(13) *Child: Play that*
Mother: You're going to play with that, eh?
Child: Mummy, you play that

In the above example, the mother repeats her child by expanding the utterance and adding some major parts of speech. In addition to the child utterance, “play that”, the mother added a verb phrase (Auxiliary and Main verb) as well as a preposition. Thus, the child could realise that the main verb can be preceded by an auxiliary and followed by a preposition.

Similarly, Chouinard and Clark (2003) have argued that a reformulation “contains conventional forms in lieu of any child errors, and so offers children adult versions of how to say what they intended to say” (642). The definition, therefore, makes it clear that reformulation has to be associated with an error or errors. Whenever parents reformulate their children’s speech, then they show children that they have deviated from the target and the alternative form of a word or that the whole utterance is the one that should be used, instead of their own. Thus, parental reformulation of erroneous child utterances provides children with information about the error, the locus of that error, and the form needed to correct it (Chouinard & Clark, 2003). For instance, in the example below (14), the mother’s repetition can show the child the

place of the errors (article and possessive marker omission), and the forms required by adult language:

(14) *Child: Brush pony hair*
Mother: Brush the pony's hair (Post,1995:139)

While proponents of usage-based approaches have argued that repetitions and reformulations could support language acquisition, by highlighting children's errors and helping them to overcome incorrect generalisations, generative researchers have criticised the studies that emphasise the role of parental repetition in child language growth and tried to refute the importance of indirect negative evidence. For instance, Pinker (1989) postulated four conditions which must be met before corrective repetitions are considered relevant to syntactic development, including that (a) negative evidence must be presented to children, (b) it must be useful to the child, (c) it must be used by the child, and (d) negative evidence must be necessary for syntax acquisition.

With respect to (a), several studies with American or European children have demonstrated that different types of repetitions and reformulations are available to children. For example, Newport et al. (1977) found that 23% of maternal utterances involved 'self-repetitions', in the form of partial repetitions, whole repetitions or the restructuring of previous utterances. In a more recent study, Chouinard and Clark (2003) have demonstrated that parents provide reformulation to children at different stages during the course of language acquisition. They also showed that reformulations occurred in reaction to more than two-thirds of children's errors with respect to phonology, morphology, syntax and word choice. In their study of five children - three acquiring English and two acquiring French, and aged (2;6-3;11) -they found that the parents' reformulation for Philippe's errors reached 67% at the age of (2;6-2;11) and 53% at (3;6-3;11). This percentage was lower for Naomi, with 48% reformulations of errors at the age of (2;6-2;11) and only 20% at (3;6-3;11). This suggests that reformulations are available to children at different ages, and that they decrease as children are getting older and produce more adult-like utterances.

However, in order to address Pinker's criticism, in particular points (b) and (c), researchers need to demonstrate that children benefit from reformulations. According to Chouinard and Clark (2003), the children in their study made use of information in adult reformulations between 10% and 50% of the time, showing explicit evidence of attention in both languages: English (15) and French (16). For example:

(15) Abe (2;5.10): I want butter mine.
Father: OK give it here and I'll put butter on it.
Abe: I need butter on it. [Kuczaj, Abe 4: 66]

(16) Philippe (2;1.26): une petit de lait.
'a little of milk'
Mère: une petite boîte de lait.
'a little carton of milk'
Philippe: petite boîte de lait.
'a little carton of milk' [Léveillé Phil 2: 116]
(Chouinard and Clark, 2003: 356)

To see if children have attended to such reformulations, Chouinard and Clark (2003: 637) suggested four measures to be considered in the children's responses: (a) their explicit repeats of corrected elements in their next turn; (b) their acknowledgements (yeah or uh-huh) as a preface to their next turn; (c) repeats of any new information included in the reformulation; and (d) their explicit rejection of reformulations where the adult has misunderstood. Although Chouinard and Clark looked at reformulation in two different languages and used these four measures to determine to what extent children can attend to such reformulation, they neither show the impact of this reformulation nor test their measures on the acquisition of certain lexical items, namely verbs. Therefore, it is crucial in the current research to test Chouinard and Clark's measures to see whether a child acquiring Libyan Arabic attends to her parents' reformulations on the acquisition of verb morphology in her target language.

In another study, Farrar (1992) looked at adult recasts of morphological errors in 12 English-speaking mothers and their children (22-24 months). The children spend most of the time at home with their parents. The results found some evidence that children

tried to repair their utterances after a recast more than they did after other kinds of reformulation by mothers. For the mother, the percentages were calculated as the ratio of the number of maternal responses for each discourse category to the total number of maternal responses. For the child, the percentage was calculated as the ratio of the frequency of a particular category of child response. For example, the mean percentage of maternal recasts in auxiliaries were 21.1% and the child responses were 9.0%, whereas in past tense the parents' recasts were 3.1% and the child responses were 0.0%. It is obvious that the percentage of the child responses for the auxiliaries were higher than those of the past tense. According to Farrar, that is because the child was imitating the mothers' corrections because of the negative evidence provided by corrective recasts. However, in this study Farrar found that corrective recasts occur in only 11% of parental replies. It might be the parents' intention to keep the corrective recast to the minimum, as previous research has shown that children are less likely to make multiple changes (e.g. Nelson et al., 1984).

In addition to such corpus studies, experimental studies have shown that learners can benefit from recasts/reformulations (Saxton, 1997; Saxton et al., 1998, 2005; Valian & Casey, 2003; Clark 1990, 1993; Farrar, 1992). For example, Saxton (1998) looked at data from twenty-six children: 14 girls and 12 boys acquiring British English aged between 3;8 and 4;6. In this experimental study, Saxton compared the effects of negative evidence versus positive evidence input on the acquisition of English irregular past tense verb forms.

Children were tested individually over a period of five weeks. Initially, they were taught two irregular nonsense verbs, *pell/pold* and *streep/strept*. They were exposed to the correct irregular form of one of the verbs via positive evidence, as in (17), while for the other verb, a mixture of positive and negative evidence was provided, as in Example 18.

(17) *did you see? The spider pold the grasshopper*

(18) *Experimenter: what happened?*
Child: he streeped/streep the tortoise
Experimenter: that's right, he strept the tortoise

In the week after the final testing session, 12 of the children participated in a grammaticality judgement task. The results showed improvement of the grammaticality of children's speech. It was greater in the case where negative evidence was provided, with 357 correct responses out of a possible 520 (68.7%), whereas children who received positive evidence only show 172/520 correct responses (33%). Thus, these results suggest that children are sensitive to the correct information provided in the input, and therefore it supports the other studies that argue for the importance of the role of negative evidence in language acquisition.

The discussion so far has focussed on the parents' repetition and reformulation of their children's ill-formed utterances and whether the children make use of reformulations and repair their incorrect utterances after their parents' feedback. The results of the above studies showed that parents do reformulate their children's incorrect errors; however, different percentages were reported by different studies. The results also showed that children were more likely to repair their ill-formed utterances after parents' recasts or reformulations to those utterances, rather than those utterances where no parental reformulation was provided.

5.5 Summary and Open Questions

The discussion in this chapter has highlighted some properties of child-directed speech that seem to be universal, e.g. exaggerated intonation, correctness and complexity, amount of use of imperatives and questions, etc. However, I have also discussed studies that show cross-cultural variation with respect to the amount of feedback provided, the time that children spend with adults vs. other children. The similarities and differences between fathers and mothers were also discussed.

In addition, I have discussed empirical studies that suggest that type frequency plays a positive role in helping children to avoid or recover from overgeneralisations, and that token frequency helps children to learn lexical as well as grammatical constructions. Finally, I have discussed parental feedback to errors and correct utterances, in particular the potentially positive role of parents' repetition and reformulation of their children's utterances.

The above discussion raises many research questions about the role of input in language acquisition. These questions are crucial for my study and will be addressed in the next chapter:

- How frequently does the child directly imitate her parents or repeat verb forms presented in the previous parental utterance?
- Does the frequency of particular forms affect the use, correctness rates and overgeneralisation patterns of verb forms?
- How often do parents provide corrective feedback for non-target-like forms? and which forms of corrective feedback are more frequent - explicit corrections or reformulations?
- Does the father differ from the mother with respect to the use of verb forms and the provision of corrective feedback?
- Does the child acknowledge corrective feedback or produce more correct forms as a result?
- Does the child respond differently to maternal and paternal corrective feedback?

CHAPTER SIX

A CASE STUDY OF THE ROLE OF INPUT IN THE L1-ACQUISITION OF LIBYAN ARABIC

6.0 Introduction

This chapter discusses the role that input plays in the acquisition of Libyan Arabic verb tense and agreement inflection by a child learner. The following questions will be addressed:

- How frequently does the child directly imitate her parents or repeat verb forms presented in the previous parental utterance?
- Does the frequency of particular forms in input affect the use, correctness rates and overgeneralisation patterns of verb forms used by the child?
- How often do the parents provide corrective feedback for non-target-like forms? and which forms of corrective feedback are more frequent - explicit corrections or reformulations?
- Does the child acknowledge corrective feedback or produce more correct forms as a result?
- Does the father differ from the mother with respect to the use of verb forms and the provision of corrective feedback?
- Does the child respond differently to maternal and paternal corrective feedback?

This chapter is organised as follows. Section 6.1 will talk about the method used in the second part of this study. The results from the child and the parents will be reported in Section 6.2, beginning with the child's imitations of the parental utterances in Section 6.2.1. Potential type and token input frequency effects for the use of individual verbs will be discussed in Section 6.2.2. Father and mother input data will be presented in Section 6.2.3. The following sections focus on the frequency of particular grammatical features in the input and its effects, as well as a comparison between the father and the mother in terms of input data. I will focus on tense/aspect forms in Section 6.2.4, on person forms in Section 6.2.5, on number in Section 6.2.6, and on gender in Section 6.2.7. A separate section, 6.2.8, will be devoted to the

frequency of the imperative forms. The analysis and comparison of the corrective feedback provided by the parents will be presented in Section 6.2.9. The uptake of this feedback by the child is discussed in Section 6.2.10, and the summary of this chapter follows in Section 6.3.

6.1 Method

The method used in this chapter has already been discussed in Chapter 4, Section (4.1), where the participants' profile (4.1.1), the data collection (4.1.2), and the data transcription (4.1.3) were discussed in detail. The parents' data used in this chapter was transcribed, coded and extracted in the same way as the child's data. However, two separate files were created for each parent; these were used for frequency analyses only. In each of these files, only utterances with a verb were coded, and verb forms and their contexts were coded in the same way as in the child's own data (see Chapter 4, Section 4.1). All the analyses for imitations, feedback and uptake were coded in the child's file.

6.1.1 Imitation

Although, like all children, the child in this study initiates conversations, the focus in this chapter will be the child's responses to parental utterances. The reason is that in this section of the study the focus of interest is specifically on the direct effects of parental speech on child speech. Properties of the child's speech in general, whether responding to parental utterances or initiating her own productions were discussed in Chapter 4. These are classified into three types of responses: imitation of declarative/descriptive parental utterances; answering the parent's questions; and the child's answer to parental imperatives. All these responses were further classified according to the variables outlined in Table 6.1.

Table 6.1: Child's Response to Adult Models

Variable	Type of Child's Response						
Imitation of declarative/ descriptive parental utterances	No imitation, completely different utterance, no content word overlap with parental utterance for verb or other components (F: *They are swimming in the lake*; C: *There is a fish*)	Identical imitation (F: *They are swimming in the lake*; C: *They are swimming in the lake*)	Attempt at full imitation, but incorrect verb form (F: *They are swimming in the lake*; C: *They is swimming in the lake*)	Partial imitation with copy of correct parental form (F: *They are swimming in the lake*; C: *They are swimming*)	Partial imitation with problems in imitating the correct form (F: *They are swimming in the lake*; C: *They is swimming*)	Partial imitation without the verb (F: *They are swimming in the lake*; C: *in the lake*)	No response
Answer to parental questions	Not copying the verb, using a different verb or no verb (F: *Are they swimming in the lake?* C: *Yes* or *F: Are they swimming in the lake?* C: *There is a fish)*	Using the verb correctly and in the same form (F: *Are they swimming in the lake?* C: *Yes. They are swimming (in the lake)*)	Using the verb incorrectly despite the verb appearing in the same context (F: *Are they swimming in the lake?* C: *Yes. They is swimming (in the lake)*)	Using the verb correctly despite the verb appearing in a different context (F: *Are you swimming in the lake?* C: *Yes. I am swimming (in the lake)*)	Using the verb incorrectly, with the verb appearing in a different context (F: *Are you swimming in the lake?* C: *Yes. They I are swimming (in the lake)*). Note: here the child SHOULD use a different form from the adult.	No response	
Answer to parental imperatives	Not copying the verb, using a different verb or no verb (F: *Pick that up, please* C: *Yes/no/I don't want to/here you go)*	Using the verb correctly and in the same form (F: *Pick that up, please* C: *No, not me. Pick that up)*	Using the verb incorrectly despite the verb appearing in the same context (F: *Pick that up, please* C: *No, not me. Picks that up)*	Using the verb correctly despite the verb appearing in a different context (F: *Pick that up, please* C: *I am not picking that up)*	Using the verb incorrectly, with the verb appearing in a different context (F: *Pick that up, please* C: *I * pick (imperative form) that up)*	No response	

6.1.2 Corrective Feedback

Corrective feedback refers to the parents' responses to the child's utterances and can be divided into three types of responses: reformulation of incorrect utterances; replay of correct utterances; and explicit corrections. Each of these types of response were further classified for more accurate results, as shown in Table 6.2.

Table 6.2: Parent's Response to Child Utterance

	Type of the Parents' Response					
Reformulation or repetition of incorrect utterances	None	Only incorrect verb form changed (C: *They is swimming in the lake.* F: *Oh, they are swimming in the lake.*)	With changed verb form and other changes (C: *They is swimming in the lake.* F: *Oh, they are swimming (over there).*)	No change of verb form, but other changes (so the parent is actually repeating the incorrect form) (C: *They is swimming in the lake.* F: H*mm? They is swimming (over there).*)	No change of verb form, no other changes (so the parent is actually repeating the incorrect form while imitating the child) (C: *They is swimming in the lake.* F: *so, they is swimming in the lake right now*)	No response
Replay of correct utterances	No replay of utterance	Replay with changed verb (C: *I am swimming in the lake.* F: *Oh, you* are *swimming in the lake.*)	Replay with changed verb form and other changes (C: *I am swimming in the lake.* F: *Oh, you* are *swimming (over there).*)	Replay with changes, but identical verb form (C: *They are swimming in the lake.* F: *Oh, they are swimming (over there).*)	Replay without changes (imitating the child) (C: *They are swimming in the lake.* F: *Oh, they are swimming in the lake*)	No response
Explicit correction	None	Yes				

6.1.3 The Uptake of Feedback

This refers to the child's responses to the parents' feedback: the child's correction or non-correction of her non-target forms and the child's response to parental reformulations, replays or explicit corrections. These two types of responses from the child were further classified as shown in Table 6.3.

Table 6.3: Child's Response to Parents' Reformulations, Replays or Explicit Correction

Variable	Type of Child's Response				
Child's correction of error (only relevant for error utterances with reformulations or explicit corrections of errors).	No self-correction, other forms, continued conversation, tacitly accepted	No self-correction, use of the old incorrect form (C: *They is swimming in the lake* F: *Are they really swimming in the lake? C: Yes. They is swimming in the lake*)	Self-correction, use of the correct form that was presented by the adult (C: *They is swimming in the lake* F: *Are they really swimming in the lake? C: Yes. They are swimming in the lake*)	No response	
Child's response to parental responses to correct forms	No use of the relevant forms	Another use of the same correct form (C: *They are swimming in the lake.* F: *They are swimming in the lake, are they? C: Yes. They are swimming in the lake*)	Use of an incorrect form, despite the same context (C: *They are swimming in the lake.* F: *They are swimming in the lake, are they? C: Yes. They is swimming in the lake*)	Use of another correct form of the same verb, in a different context (C: *They are swimming in the lake.* F: *They are swimming in the lake, are they? C: Yes. And I am swimming in the lake*)	No response

6.2 Results

In this section, the input data results will be discussed. All child utterances with verbs were coded as either correct or incorrect. The data discussed in Section 6.1.1 was coded according to the child's response to the previous adult's model as shown in Table 6.1; the data discussed in Section 6.1.2 was coded according to the parent's response to the child's utterances as in Table 6.2, and the data discussed in section 6.1.3 was coded according to the child's responses to the parent's reformulations, replays and corrections set out in Table 6.3.

In Section 6.2.1, the results of the child's imitation of the parent's utterances are presented. The input frequency of the verb form type and token will be discussed in Sections 6.2.2 and 6.2.3. Sections 6.2.4-7 will focus on the frequencies of the different tense/aspect, person, number, and gender features. The frequency of the imperative and its effects will be studied in 6.2.8. In Section 6.2.9, the parents' corrective feedback will be reported. In Section 6.2.10, the child's uptake of the parents' feedback will be discussed.

6.2.1 Imitation

In this section, the child's responses to the parents' utterances will be presented. The child's utterance is analysed on the basis of comparison with the previous parental utterance. In order to further investigate the child responses to the parental utterances, three types of child responses are considered: imitation of declarative/descriptive parental utterances; answering the parents' questions; and answering parental imperatives.

6.2.1.1 Imitation of Declarative/Descriptive Parental Utterances.

Table 6.4 shows the number and percentage of the child's responses to previous utterances by the parents. Five types of child responses are described. The findings suggest that the child mostly does not imitate her parents. It was observed that in 595 out of 679 utterances (87.6 %), the child did not follow the previous parents' utterance as in Example 1, and there were only five times when the child provided an identical

imitation of the previous parental utterance, with the child producing the verb as it was produced by the parents as in Example 2 below.

(1) Mot: haḏa amta xallatik ma'umriš xallatik ya Wala oskti 'ad.
This-MASC when leave-1.SG.PST-you.FEM.SG I never leave-1.SG.PST- you.FEM.SG Wala stoptaking-2.FEM.SG.IMP
When I left you? I never left you, don't say it Wala

Ch: ani itši [*] [: mšati] 'lak [*] [: 'laia] ani aiar [*] [: inġair] 0prep ḥwaiji [*] [: ḥwaiji]
I go-2.SG.IMP [*] [: go-1.SG.PST] without-you-Fem.SG [*] [: without-me] I change-2.MASC.SG.IMP [*] [: change-1.SG.PRS] 0prep clothes-PL.(*pho)
You went when I was changing my clothes

(2) Mot: ba'dain jit nannit
After that come-3.FEM.SG.PST sleep-3.FEM.SG.PST
After that she came and slept

Ch: ḏit [*] [: nannit]
Sleep-3.FEM.SG.PST
She slept

In (3), the child attempted full imitation, but only managed to do so in 2.7% of cases; instead she produced an incorrect verb form. This happened 18 times across the data.

(3) Mot: taw biruddū aḥmar.
now return-3.PL.FUT red-MASC.SG
Now they will return the red

Ch: aih uddū [*] [: biruddū] aḥama [*] [: aḥmar]
yes return-2.PL.IMP [*] [: return-3.PL.FUT] red (*pho)
Yes return the red

Table 6.4: Child Utterances with Verbs: Imitation of Declarative Parental Utterances

Type of Child's Response	Frequency and Percentage
No imitation	595/679 87.6 %
Identical imitation	5/679 0.7%
Attempt at full imitation, but incorrect verb	18/679 2.7 %
Partial imitation with copy of correct parental form	2/679 0.3%
Partial imitation with problems in imitating the correct form	53/679 7.8 %
Partial imitation without the verb	3/679 0.4 %
Partial imitation adding the verb	3/679 0.4 %

The child has also shown frequent attempts to provide a partial imitation of the parents' utterances, while failing to imitate the correct verb form, 53 times out of 679, representing 7.8%. This can be either morphological, as in Example 4, or phonological, as in Example 5:

(4) Fat: hati indīarhalik ani
Bring-1.FEM.SG.IMP do-1.SG.PRS-it.FEM.SG-for-you-1.FEM.SG
Bring, I do it for you

Ch: ani dilak [*] [: indīrlak]
Ido-2.MASC.SG.IMP-for-you1.MASC.SG [*][:do-1.SG.SG.PRS-for- you1.MASC.SG]
I do it for you

(5) Fat: mama tnanni Wakar io bitji
Mama sleep-3.FEM.SG.PRS Wakar and come-3.FEM.SG.FUT
Your mama will make Wakar sleep and come back

Ch: aha tnanni Wakar bidḏi [*] [: bitjī]

aha sleep-3.FEM.SG.PRSWakar and come-3.FEM.SG.FUT (*pho)
Aha she will make Wakar sleep and come back

There were only two cases where the child managed to partially imitate the parents' utterance, keeping the correct verb form as in Example 5. There were also other cases where the child tried partial imitation but dropped the verb form (3/679, 0.4%) or added a verb (3/679, 0.4%).

The above results show that the child does not imitate her parents most of the time; however, if imitation was attempted, the child nearly always struggled to produce the correct form, producing instead an incorrect form or no form. Perfect imitation of a parent's utterance occurred in 0.7% of cases.

6.2.1.2 Answering the Parents' Questions.

The second category of the child's responses is her reactions to the parents' questions. The child's answers were based mainly on the previous parental question. Table 6.5 shows five types of child's responses, including their frequencies and percentages.

Table 6.5: Child's Utterances with Verbs: Responses to the Parents' Questions

Type of Child's Response	Frequency and Percentage
Not copying the verb, using a different verb or no verb	259/666 38.8%
Using the verb correctly and in the same form	12/666 1.8%
Using the verb incorrectly despite the verb appearing in the same context	370/666 55.5%
Using the verb correctly despite the verb appearing in a different context	3/666 0.4%
Using the verb incorrectly, with the verb appearing in a different context	23/666 3.4%

We can see in Table 6.5 (above) that the most dominant type of response used by the child was when she was trying to answer the parents' questions, but using the verb incorrectly, even though the verb appeared in the same context (370/666, 55.6%). The incorrect use of the verb can either be morphological, if any of the agreement markers are omitted or substituted by another agreement or tense marker as in Example 6; or

phonological, if the child articulated the sounds incorrectly but produced the correct agreement markers as in Example 7.

(6) Mot: ah Malik yagra filQuran huwa?
what, Malik read-3.MASC.SG.PRS in the-Quran he.
What, Malik is reading Quran?

Ch: iqala [*] [: yagra] Quran hadi.
Read-2.MASC.SG.IMP [*] [: read.3.MASC.SG.PRS] Quran this-FEM.SG
He is reading this Quran

Note that, although in the above example the child said *you read Quran*, it is clear from the context that the third person singular was intended.

(7) Mot: mama mšat?
Mama leave-3.FEM.SG.PST?
Did mama leave?

Ch: aih mama mtit [*] [: mšit].
yes, mama leave-3.FEM.SG.PST.
Yes, mama left

There were also cases in which the child ignored the verb form in the question and used a completely different verb form, as in Example 8. The total number of such cases was (259/666, 38.8%).

(8) Mot: xairha oxtik? šin tibbi?
What-she sister-your-FFEM what want-3.FEM.SG.PRS
What is the matter with your sister? What does she want?

Ch: aʿatata [*] [: ʿṭaṭhalha]
Give-1.SG.PST-He [*] [: give-1.SG.PST-it.FEM-to-her
I gave it to her

The child has also provided some answers where she used the verb form incorrectly and in a completely different context, as in Example 9. Not many cases of this have been spotted, however; only 23/666 (3.5%) were observed. Finally, there are only 15 cases when the child used the verb correctly; in 12 cases the child used the verb in the same form that appeared in the parental utterances, as in Example 10.

(9) Mot: Zuhra btuḍurbik?
Zuhra hit-3.FEM.SG.FUT-you.FEM
(Will) Zuhra hit you?

Ch: baba uwa [*] [: huwa] attatona [?] (h)uwadji [*] [: biji] dubni [*] [: yiḍrubni]
Baba he (*pho) … [?] he [*] [: come-2.SG.PRS] hit-1.MASC.SG.IMP [*] [: hit-3.MASC.SG.FUT-me
Baba will come and hit me

(10) Fat: šin takil ilbnaiya?
What eat-3.FEM.SG.PST the-girl
What does the girl eat?

Ch: 0art (b) naiya takil 0prep 0art ilū [*] [: ḥilū] ada [*] [: haḍa]
0art girl-SG eat-3.FEM.SG.PST 0prep (in) 0art (the) sweet MAS.SG (*pho) this-MASC
The girl (is) eat(ing) this sweet

The results show that the child responds to the parents' questions but mostly fails to imitate the correct verb form. She either produces the incorrect verb form or uses a different form from the one provided by her parents.

6.2.1.3 Answering Parental Imperatives.

The third category of the child's answers to the parents' utterances are responses to imperatives. Table 6.6 indicates five types of child responses focusing on the use of verbs, their frequencies and percentages.

Table 6.6: Child's Utterances with Verbs: Responses to the Parents' Imperative

Type of Child's Response	Frequency and Percentage
Not copying the verb, using a different verb or no verb	19/44 44.2%
Using the verb correctly and in the same form	3/44 7%
Using the verb incorrectly despite the verb appearing in the same context	9/44 20.9%
Using the verb correctly despite the verb appearing in a different context	1/44 2.3%
Using the verb incorrectly, with the verb appearing in a different context	11/44 25.6%

In everyday interactions, people do not usually respond to an imperative with another imperative, hence the high proportion of the child's responses of the first type, as in Example 11.

(11) Mot: bahi kamlaha ukilha ibsur‘ ahai.
Ok, finish-2.FEM.SG.IMP-you.FEM.SG-it.FEM.SG all-it.FEM.SG quickly
Ok, finish it all quickly

Ch: ani gulha [*] [: bingulha] hikka
I say-2.MASC.SG.IMP-to-her [*] [: say-1.SG.FUT-to-her] like that
I will tell her like that

In three cases, the child replied to her parents' utterances using the correct verb form as it appeared in the parents' previous utterance, as in Example 12.

(12) Mot: t‘ali hna sheddi elktab t‘ali.
come-2.FEM.SG.IMP. here hold-2.FEM.SG.IMP Come-2.FEM.SG.IMP
Come here, hold the book, come

Ch: sheddi tab [*] [: ktab]
hold-2.FEM.SG.IMP 0pre book-SG. (*pho)
hold the book

The child has used the verb incorrectly in the same context in nine cases (20.9%) and used the verb incorrectly in a different context in 11 cases (25%). The incorrect use of the verb can either be phonological or morphological, as in Example 13, where the child's response is a declarative.

(13) Mot: t'ali iḥkili qiṣṣa Wala iḥkili.
come-1.FEM.SG.IMP tell-2.SG.IMP-for-me story-FEM.SG Wala tell-2.SG.IMP-for-me
Come tell me a story Wala, tell me

Ch: iḥtikki [*] [: niḥkilik] qitta [*] [: qiṣṣa]
Tell-2.SG.IMP [*] [: tell-1.SG.PRS-for-you.FEM.SG story-FEM.SG
I will tell you a story

Generally, the above results show that when the child uses the same verb in a response as the adult, the utterance typically contains an incorrect form (20/44 cases).

6.2.2 Verb Frequency

In this section I will discuss verb frequency for all three speakers, namely verb type frequency (the number of different verbs that are used, regardless of how often a form of that verb occurs) and verb token frequency (the total number of verb forms that are used). Each verb type may be represented by multiple tokens, and therefore, there are more verb tokens than verb types. It is important in this study to look at both type and token frequency of verbs that the child is exposed to because they are probably not independent variables in the acquisition process (Nicoladis et al, 2007). Looking at type and token frequency of verbs will help us find evidence as to whether the occurrence of the forms plays any role in the development of the child's knowledge of verbs and her overgeneralisation or undergeneralisation of inflected forms.

Firstly, before analysing the verb type and token frequency, it is important to see whether there is any relation between the three speakers in terms of the occurrence of the verb form per month.

In general, there are significant correlations between all participant pairs ($p<.001$) with respect to the number of verb occurrences per month (see appendix 6C). This means that verbs with a high occurrence per month in the input tend to have higher verb form occurrence in the child's data. The child's number of verb occurrences per month is strongly correlated with the number of verb occurrences per month produced by the father for the same verb ($r=.656$, $p<.001$). It is less strongly correlated with the number of verb occurrences per month produced by the mother for the same verb ($r=.375$, $p<.001$). The correlation is even slightly stronger for the two parents ($r=.399$, $p<.001$).

6.2.2.1 Verb Type Frequency.

The total number of verb types produced by the three speakers is 160, with the mother producing 123/160 (76.8%), the child 91/160 (65.8%) and the father 83/160 (51.8%). The higher number of verb types produced by the mother may be attributable to the fact that she spent more time with the child. The following, Table 6.7, shows some examples of these verbs.

Table 6.7: Verb Types

Verb	Verb Types	Gloss
bna	bna	build-3.MASC.SG.PST (he builds)
	ibni	build-2.SG.IMP (you build)
	Ibnū [*] [: nibnū]	build-2.PL.PRS (we build)
naggaz	bagiz [*] [: binagiz]	jump-3.MASC.SG.FUT (he will jump)
	igidū [*] [: nagzū]	jump-3.PL.PST (they jump)
	ingid [*] [: innagiz]	jump-1.SG.PRS (I am jumping)
	nagged [*] [: naggiz]	jump-2.MASC.SG.IMP (you jump)
gaṣṣ	gattila [*] [: gaṣṣilla]	cut-3.MASC.SG.PST-for-him (he cut for him)
	gattita [*] [: gaṣṣitha]	cut-3.FEM.SG.PST-it (she cut it)
	guttak [*] [: inguṣṣillak]	cut-1.SG.PRS-for-you (I cut for you)
	kattitak [*] [: gaṣṣatillak]	cut-1.SG.PST-for-you (I cut for you)
	otteni [*] [: guṣṣili]	cut-2.FEM.SG.IMP-for-me (cut for me)

If we look in more detail at the full list of these verbs, we can observe the following four classes of verbs:

a) Verbs produced by the parents but not by the child
b) Verbs produced by the child but not by the parents
c) Verbs produced by the parents and by the child
d) Verbs produced by one of the parents and by the child

The following table (6.8) shows these four classes of verbs and the relationship between the three speakers in terms of verb type production:

Table 6.8: Verb Types Used by Child, Mother and Father

Speaker	Number of verb types	Percentage
Child only	11	6.9%
Mother only	51	31.9%
Father only	9	5.6%
Child & Mother	15	9.4%
Child & Father	17	10.6%
Child, Mother & Father	48	30%
Mother & Father	9	5.6%
Total	160	100%

The table shows that only n=48, 30%, of the verb types were shared by all the speakers. If we have a close look at these forms (see Appendix 6A), we can see that the frequency of use of the forms shared between the parents and the child look similar. However, there are a few forms showing variation in frequency between the parents and the child.

For the non-shared verbs, most forms were produced by the mother with 51/160 (31.9%). This result was expected because the mother talked more around the child than any other speaker and referred to different topics, depending on the activity they were involved in. For example, during a single recording session the child might eat, play and read stories, and as a result the mother talked using different verb forms. The father used only 9/160 or 5.6% of the non-shared verb types. Tokens of these types were not frequent in the father's production (see Appendix 6A); only two forms were used twice and the other seven forms were used just once. This means that the mother's language is considerably richer lexically in verb forms than the father's.

Of the 11 verb types used only by the child, one – *dawwar,* "rotate" – was used five times; another verb – *naggaz,* "jump" – was used four times. Another three verbs were used three times each, one verb used twice and three verbs used just once. These verbs are not just made-up words, but sometimes also words that might come from other sources such as English (i.e. go), or Saudi (i.e. *rah*) "go", in (14):

(14) ita [*] [: inta] luḥ (*pho) [*] [: ruḥ] 0prep 0art tika [*] [: qiṭar]
you-2.MASC.SG. [*] [: go-2.MASC.SG.IMP] 0prep 0art train-SG
you go (by) (the) train

For the shared verb forms by two speakers, the above table shows that the percentage is very close between the child/father at 17/160 (10.6%) and the child/mother at 15/160 (9.4). Three of the verbs are frequent in the input and the output: *šayy',* "carry"; *gaṣ,* "cut*" lawwaḥ,* "get rid" and *ṭāb,* "cook". One verb is frequent in the input but not in the output – *'raf,* "know" – and one verb is frequent in the output but not in the input – *šas, "see"*. The other 11 verb forms are not frequent, neither in the input nor in the output (see appendix 6A).

In general, there are significant correlations between the verb types that appear in the child's speech and those that appear in the parents' speech. There is a strong correlation between the child and the father (r=.689, p<.001), and a weaker one with the mother (r=.371, p<.001). This is specifically because the mother uses many more verb types and fewer tokens than the father. The correlation is even slightly weaker for the two parents (r=.357, p<.001). This is probably because parents are rarely in the same recording, although it might also be due to differences in context: the father produced more past tense forms and the mother produced more present tense forms (see Section 6.2.4).

6.2.2.2 Verb Token Frequency.

The total number of verb tokens for the 91 verb types produced by the child is 1078. The father produced 1253 verb tokens for 83 verb types, and the mother produced 836 verb tokens for 123 verb types. The following table (6.9) compares the verb tokens for the first verb forms for all the speakers. For a detailed table containing all the verbs see Appendix 6A.

The table shows the Arabic verb form in the second column and the gloss in the third column, followed by the verb token produced by every speaker. The numbers show the frequency of the token. For example, the verb *'aḍḍ,* "bite", was produced (n=17)

times by the child, (n=4) times by the father and (n=2) times by the mother. The cells with "0" mean the speaker does not produce the corresponding verb.

Table 6.9: Number of Verb Tokens for each Verb for all Speakers

No	Verb	Gloss	Child	Father	Mother
1	ʿabba	fill	0	1	0
2	ʿadd	count	1	2	5
3	ʿaḍḍ	bite	17	4	2
4	ʿaddal	balance	0	0	1
5	ʿayyt	cry	7	10	0
6	ʿallam	learn	2	3	5
… continued in appendix 6A					

On average, the child has a mean of 8.68 verb form tokens per verb (*SD. 20.8*), a higher mean than for the father (6.83, *SD.23.1*) and the mother (5.22, *SD.12.6*). Differences between the three participants are likely to be due to the size of the samples (highest for the child, slightly fewer verbs for the father, a lot fewer for the mother).

A closer look at the 91 verbs that the child uses shows that, for the child, many of these verbs had one verb form token (n=17), or two verb tokens (n=12). For the father, the picture is similar to the child: many verbs had one verb token (n=19) or two verb tokens (n=10). The mother shows different results, with more forms for one verb token (n=47) or two verb tokens (n=19).

There are significant correlations between all participant pairs ($p<.001$) with respect to the number of verb token forms (see Appendix 6A). This means that verbs with high numbers of verb form tokens in the input tend to have higher numbers of verb form tokens in the child's data. The child's number of form tokens for a verb is strongly correlated with the number of verb form tokens produced by the father for the same verb ($r=.805$, $p<.001$). It is slightly less strongly correlated with the number of verb form tokens produced by the mother for the same verb ($r=.771$, $p<.001$). The correlation for the two parents is the same as the correlation between the mother and the child ($r=.771$, $p<.001$).

6.2.3 Father and Mother Input Data

This section will present an overview of the parents' use of tense, person, number and gender marking, with more detailed analysis being provided in Sections 6.2.4 – 6.2.8.

Table 6.10 shows the proportions of the parents' productions in tense and imperative mood contexts. A total of 2089 verb forms were produced in these contexts, 60% by the father and 40% by the mother. The father produced more forms than the mother in present, past, and future. However, the mother produced more imperatives than the father. In general, the highest number of forms produced by the parents were in the past tense (n=775), whereas the future scored the lowest number of occurrences of the forms (n=268).

Table 6.10: Tense Context for the Parents

Speaker	Present	Past	Future	Imperative	Total
Mother	344(41.1%)	260 (31.1%)	69 (8.2%)	163 (19.5%)	**836**
Father	414 (33%)	515 (41.1%)	199 (15.8%)	125 (10%)	**1253**
Total	**758**	**775**	**268**	**288**	**2089**

The person context in Table 6.11 demonstrates that the highest person form produced by the parents is the second (n=886), followed by the third person (n=871), then the first (n=330). What is striking about the results is that the occurrence of the third person was twice as frequent as the first person.

Table 6.11: Person Context for the Parents

Speaker	First Person	Second Person	Third Person	Total
Mother	147 (17.6%)	424 (50.7%)	263 (31.5%)	**836**
Father	183 (14.6%)	462 (36.8%)	608 (48.5%)	**1253**
Total	**330**	**886**	**871**	**2089**

In the number context (Table 6.12) more singular forms were produced than the plural forms by both parents. It also the case for each parent. There is a remarkable

frequency difference between the singular and the plural for each parent. The mother produced 90.8% singular forms, but only 9.2% plural. Similarly, the father produced 86.8% singular forms and 13.2% plural.

Table 6.12: Number Context for the Parents

Speaker	Singular	Plural	Total
Mother	759 (90.8%)	77 (9.2%)	**836**
Father	1087 (86.8%)	166 (13.2%)	**1253**
Total	**1846**	**243**	**2089**

In the gender context (Table 6.13), more feminine than masculine forms were produced by the parents. However, the father produced more forms than the mother in each context. For example, the father produced four times (n=432) more than the amount the mother produced (n=102) in the masculine context.

Table 6.13: Gender Context for the Parents

Speaker	Masculine	Feminine	Total
Mother	102 (17.1%)	492 (82.9%)	**594**
Father	432 (39.7%)	657 (60.3%)	**1089**
Total	**534**	**1149**	**1683**

The above results showed a clear difference between the father and the mother in all contexts. Therefore, a further analysis has been carried out to show the direction of these differences.

The proportion of each tense, gender, person and number found in the speech from both parents at each observation moment was examined. All variables were normally distributed (Shapiro-Wilk >.9, $p < .05$, except for gender where $p=.048$). Independent samples t-tests showed that the distribution of the grammatical features did not differ between father and mother for most of the features. The exceptions were the future tense, which the father used about twice as much overall as the mother (15.8% vs. 8.3%, $t(17)=2.441$, $p<.05$), and the third person singular (father: 48.5%, mother: 31.5%). The use of the gender feature also differed, with the father using the

masculine three times as often as the mother (39.7% vs. 17.2%) and the mother using the feminine more (82.8% vs. 60.3%, t(11.2)=8.391, p<.001). The latter finding is unsurprising, as each speaker would have used their own gender feature in all verbs referring to themselves. On the whole, it thus seems that the distribution of grammatical features across speech from both parents was largely consistent.

6.2.4 The Frequency of the Different Tense/Aspect Forms

In the next sections, the parents' tense/aspect input data will be presented and compared to the child's tense/aspect output data.

As discussed in Chapter 4, the highest number of correct verb forms produced by the child in the obligatory context (Table 6.14) was in the past and the imperative (97.8%), and the most overgeneralised tense was the imperative (322/502, 64.2%, Table 6.15).

Table 6.14: Overall Correctness of Use of Tense/Aspect for the Child

Percent Correct	Category
97/107 (90.6%)	Present
406/466 (87.1%)	Past
180/502 (35.8%)	Imperative
3/3 (100%)	Future
686/1078 (63.6%)	**Total**

Table 6.15: Overall Correct Use of Tense/Aspect in Obligatory Context for the child

Percent correct	Category
97/327 (29.7%)	Present
406/415 (97.8%)	Past
180/184 (97.8%)	Imperative
3/152 (2%)	Future
686/1078 (63.6%)	**Total**

In the case of the mother, the total number of verb tokens used is 836. The distribution of these tokens over the period of observation of the child is shown in Table 6.16. The

most frequent verb form produced by the mother is the present (n= 344, 41.1%), followed by the past (n=260, 31.1%). This does not reflect the most correct verb forms produced by the child in obligatory contexts, the past and the imperative. Thus, the most frequent forms in the mother's paradigm do not appear to be the most overgeneralised form by the child, the imperative.

Table 6.16: Tense Context for the Mother

Age of the Child in Months	Present	Past	Future	Imperative	**Total**
31	38 (52%)	15 (23.8%)	7 (4.7%)	16 (19%)	**76**
32	26 (43.3%)	14 (23.3%)	10 (16.7%)	10 (16.7%)	**60**
33	7 (58.3%)	4 (33.3%)	----------	1 (8.3%)	**12**
35	29 (45.3%)	17 (26.6%)	4 (6.3%)	14 (21.9%)	**64**
36	30 (30.3%)	33 (33.3%)	8 (8.1%)	28 (28.3%)	**99**
37	30 (30.9%)	44 (45.4%)	3 (3.1%)	20 (20.6%)	**97**
38	96 (42.7%)	83 (36.9%)	15 (6.7%)	31 (13.8%)	**225**
39	18 (34.6%)	15 (28.8%)	10 (19.2%)	9 (17.3%)	**52**
40	30 (51.7%)	11 (19%)	1 (1.7%)	16 (27.6%)	**58**
41	40 (43%)	24 (25.8%)	11 (11.8%)	18 (19.4%)	**93**
Total	**344 (41.1%)**	**260 (31.1%)**	**69 (8.3%)**	**163(19.5%)**	**836**

In the case of the father, the total number of all the tokens of verbs is 1253, as shown in Table 6.17. The most frequent type of tense produced by the father was the past (n=515, 41.1%) followed by the present (n=414, 33.1%). The least frequent tokens produced by the father were forms of the imperative (n=125, 10%).

The low frequency of the future tense in the parents' speech was reflected in the fact that the child hardly uses any future forms herself. The father's most frequent tense (past) was also the child's most frequent tense (past). Again, this relation might not be due to the input frequency, because the present was also frequent in the input but not in the child's output. However, it may be due to the fact that the child-parent interactions analysed were parent-initiated and therefore the child's responses were primed by the utterances the parents make.

It seems that the father used fewer commands and requests than the mother; instead, he mostly talked about past events. Although there is a difference in the frequency ranking between the father and the mother, the percentage of use for each tense does

not show a clear difference. For example, the percentage of the past tense produced by the mother is 41.1% and the percentage scored by the father for the same tense is 33.1%; likewise, the future tense does not show a noticeable difference in percentage between the father and the mother (15.8 % vs. 8.3%).

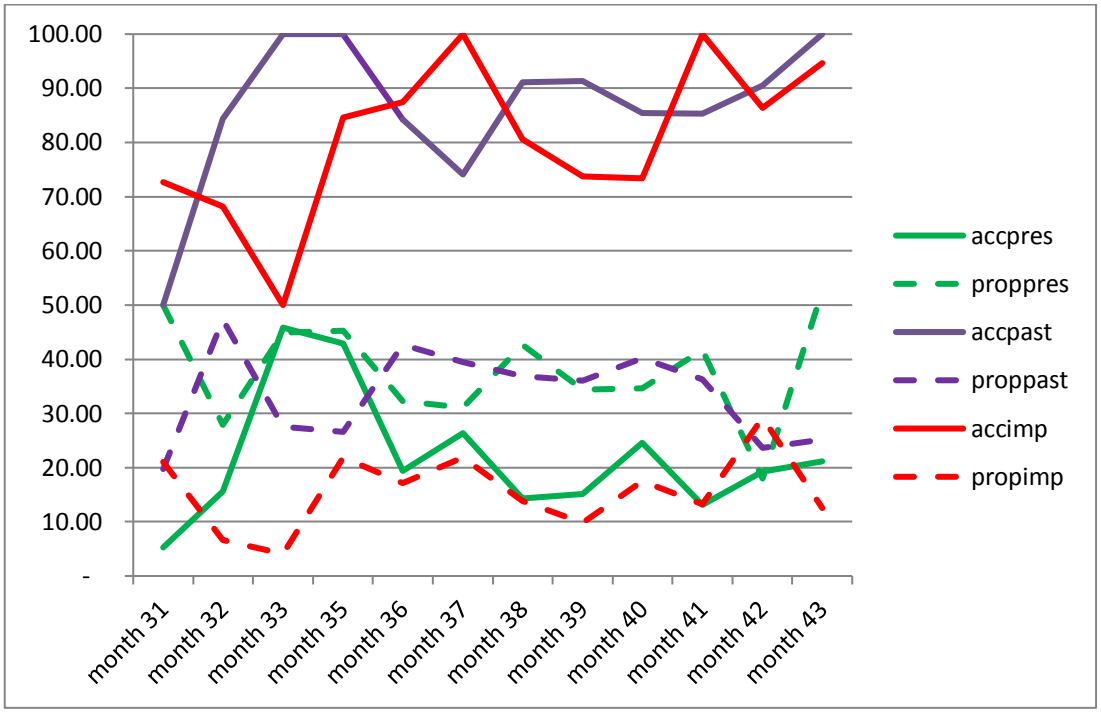
Table 6.17: Tense Contexts for the Father

Age of the Child in Months	Present	Past	Future	Imperative	**Total**
32	84 (25.4%)	171 (51.7%)	61 (18.4%)	15 (4.5%)	**331**
33	37 (43%)	23 (26.7%)	23 (26.7%)	3 (3.5%)	**86**
36	32 (34.4%)	49 (52.7%)	7 (7.5%)	5 (5.4%)	**93**
37	7 (31.8%)	3 (13.6%)	6 (27.3%)	6 (27.3%)	**22**
39	66 (34.4%)	73 (38%)	38 (19.8%)	15 (7.8%)	**192**
40	65 (30.1%)	99 (45.8%)	20 (9.3%)	32 (14.8%)	**216**
41	36 (40.4%)	42 (47.2%)	5 (5.6%)	6 (6.7%)	**89**
42	16 (18%)	21 (23.6%)	26 (29.2%)	26 (29.2%)	**89**
43	71 (52.6%)	34 (25.2%)	13 (9.6%)	17 (12.6%)	**135**
Total	**414 (33.1%)**	**515 (41.1%)**	**199 (15.8%)**	**125 (10%)**	**1253**

Further analysis is required to see whether there is any relation between the input the child receives from her parents and her own production of the different types of tense and the imperative mood.

In general, as we can see from Figure 6.1, over the period of observation the parents' use of the present is about equal in frequency with the past, but the child's use of the past is a lot more accurate than her use of the present. The parents use the imperative least, but the imperative is highly accurate overall in the child's data. Past and imperative both become more accurate over time, whereas present does not become more accurate over time. Therefore, it appears that there is only an indirect relation between the amount of input that parents provide and the child's own productions.

Figure 6.1: Development of Accuracy (Child) and Use (Parents) of Tense Forms Over Time



accpres: accuracy of present accpast: accuracy of past accimp: accuracy of imperative
proppres: proportion of present proppast: proportion of past propimp: proportion of imperative

The level of accurate uses of the present tense by the child and the proportion of tense forms in the present used by the parents did not correlate over the observation period of months 31 - 43 (Pearson's r=.119, p=.714). The same is true for the past, where the proportion of tense forms used by the parents did not correlate with the child's accurate use of the past over the observation period (Pearson's r = .053, p = .870), and neither was there a significant correlation between accuracy in the child data and parental use of the imperative (Pearson's r = .521, p = .082), although in this case the correlation approached significance.

In summary, the past and the imperative are the forms with the highest correctness rates in obligatory contexts in the child's data. However, the imperative is the most overgeneralised form. In the child's input, the past is the most frequent form in the father's data, and the present in the mother's data. The imperative form is not frequent in the child's input. It is the least frequent form in the father's data and even in the data of the mother, who gives more commands than the father. Thus, the

performances for imperatives and their overgeneralisation cannot be attributed to input frequency.

6.2.5 The Frequency of the Different Person Forms

As discussed in Chapter 4, the percentage of the second person for the child was the highest with respect to the correctness of use in the obligatory context (Table 6.18, 92%), followed by the third person (71.2%). The first person came last with 25.8%. The most overgeneralised person form produced by the child was the second person (Table 6.19).

Table 6.18: Overall Correct Use of Person in Obligatory Context for the child

Category	Percent Correct
1st Person	83/321 (25.8%)
2nd Person	254/276 (92%)
3rd Person	342/482 (71%)
Total	**679/1079**

Table 6.19: Overall Incorrect Use of Person in Obligatory Context for the child

Category	Percent incorrect
1st Person	15/98 (15.3%)
2nd Person	310/564 (55%)
3rd Person	74/417 (17.7%)
Total	**399/1079**

The total number of person forms produced by the mother during all the recording sessions was 834. Table 6.20 indicates that the second person, illustrated in (16), is the most dominant (n=424, 50.8%) when compared to the first (n=147, 17.6%) and the third (n=263, 31.5%) person. This can be attributed to the fact that the mother directly addresses her child by giving commands and making requests:

(16) Mot: btimši fissaiyara?
Go-2.SG.IMP in-the-car-FEM.SG
Are you going in the car?

Table 6.20: Person Context for the Mother

Age of the Child in Months	1st Person	2nd Person	3rd Person	Total
31	15	28	23	**76**
32	13	33	14	**60**
33	---	6	6	**12**
35	20	30	14	**64**
36	7	69	23	**99**
37	16	37	44	**97**
38	31	105	89	**225**
39	7	31	12	**50**
40	14	33	11	**58**
41	14	52	27	**93**
Total	**147 (17.6%)**	**424 (50.8%)**	**263 (31.5%)**	**834**

The frequency of use of the second person by the mother reflects the highest correct use of the person in the obligatory context by the child. It also reflects the most overgeneralised person form produced by the child (second).

In the father context (Table 6.21), the total number of persons produced by the father during all the recording sessions was 1253. The third person, as in Example 17, is the most frequent form (n=608, 48.5%); followed by the second (462, 36.8%) and the least frequent is the first person (n=183, 14.6%).

(17) Fat: minū ftaḥ ilbab?
Who open-3.MASC.SG.PST the-door-MASC.SG
Who opened the door?

Table 6.21: Person Context for the Father

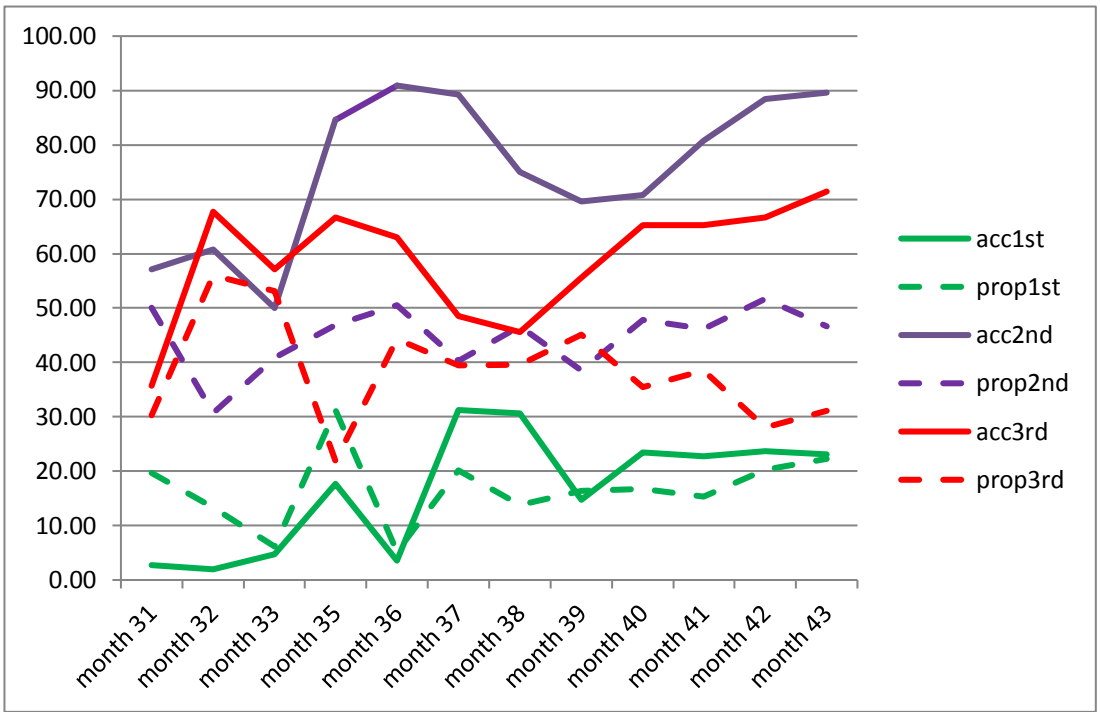
Age of the Child in Months	1st Person	2nd Person	3rd Person	Total
32	39	87	205	**331**
33	6	34	46	**86**
36	3	28	62	**93**
37	8	11	3	**22**
39	33	63	96	**192**
40	32	98	86	**216**
41	14	32	43	**89**
42	18	46	25	**89**
43	30	63	42	**135**
Total	**183 (14.6%)**	**462 (36.8%)**	**608 (48.5%)**	**1253**

The father's most frequent person form does not correspond to the child's highest correctness rate in obligatory context (second person). In addition, the findings clearly demonstrate that the most frequent person form produced by the father is not the most overgeneralised person form produced by the child, which is the second person (310/564, 55%) as shown in Table 6.19.

Further analysis is required to see if the parents' use of the person context reflects the child's use of person.

As can be seen from Figure 6.2, the development visualised here clearly indicates that there is no clear influence of parental usage on the accuracy of the person forms used by the child, although, the second person is the most frequently used form by the parents throughout and is also the most accurate form used by the child.

Figure 6.2: Development of Accuracy (Child) and Use (Parents) of Person Forms Over Time



acc1st: accuracy of first person acc2nd: accuracy of second person acc3rd: accuracy of third person

prop1st: proportion of first person prop2nd: proportion of second person prop3rd: proportion of third person

Bivariate Pearson correlations do not find a linear relationship between accuracy of correct forms and proportion of use over time. The accuracy and proportion of use of the first person do not correlate (Pearson's r = .429, p = .164).

The accuracy and proportion of use of the second person do not correlate significantly (Pearson's r = .433, p = .160). In addition, there is no correlation for third person (Pearson's r = -.021, p = .949), which is probably due to the relatively low number of observation points.

In summary, the second person is the form with the highest correctness rates in obligatory contexts in the child's data and is the form that the child overgeneralises. In the child's input, the second person form is the most frequent form in the mother's data; however, the third person is the most frequent in the father's data. Thus, the performances for second person forms and their overgeneralisation cannot be attributed to input frequency.

6.2.6 The Frequency of the Different Number Forms

As discussed in Chapter 4, the number agreement for the child is largely already acquired from the outset of the study with high correct use in OCs for both singular (1092/1142, 95.6%) and plural (143/162, 88.2%) (Table 6.22).

Table 6.22: Overall Correct Use of Number in Obligatory Context for the Child

Category	Percent Correct
Singular	1092/1142 95.6%
Plural	143/162 88.2%
Total	**1235/1304**

In the mother context (Table 6.23), the total count of number forms produced by the mother during all the recording sessions was (n=836) with more singular than plural forms (n=759 vs. n=77) as in (18) & (19). The table shows that there is a considerable difference in percentage between the production of the singular (90.7%) and the plural (9.3%).

(18) Mot: t‘ali hina inkallim fīk.
Come-2.FEM.SG.IMP here talk-1.SG.PRS in-you-FEM.SG.
Come here, I am talking to you

(19) Mot: hadū binannū tawa.
They.PL sleep-3.PL.FUT now.
They will sleep now

Table 6.23: Number Context for the Mother

Age of the Child in Months	Singular	Plural	Total
31	66	10	**76**
32	57	3	**60**
33	12	-	**12**
35	54	10	**64**
36	98	1	**99**
37	94	3	**97**
38	187	38	**225**
39	50	2	**52**
40	54	4	**58**
41	87	6	**93**
Total	**759 (90.8%)**	**77 (9.2%)**	**836**

The findings also indicated that the most frequent number form used by the mother is the one most often correctly used by the child in obligatory context (singular). In addition, the mother's use of the singular reflects the child's most overgeneralised form.

In the father context (Table 6.24), the total of number forms produced by the father during all the recording sessions was (n=1253). It is clear that the father like the mother; he used more singular (n=1087, 86.7%) than plural (n=166, 13.2%), as exemplified in (20&21).

(20) Fat: Wala kisrit iṭasa?
` Wala break-3.FEM.SG.PST the-cup-FEM.SG
Wala broke the cup

(21) Fat: ah wain irruḥū?
What! Where go-1.PL.PRS?
What! Where (are) we going?

Table 6.24: Number Context for the Father

Age of the child in Months	Singular	Plural	Total
32	298	33	**331**
33	83	3	**86**
36	86	7	**93**
37	20	2	**22**
39	152	40	**192**
40	196	20	**216**
41	77	12	**89**
42	69	20	**89**
43	106	29	**135**
Total	**1087 (86.7%)**	**166 (13.2%)**	**1253**

Again, the number forms used most frequently in the father's data seem to be the most often correctly used by the child in obligatory context; as well as the child's most overgeneralised forms.

In summary, the results show that the singular is the form with the highest correctness rates in obligatory contexts in the child's data, as well as the child's most overgeneralised form. In the child's input data, the singular is also the most frequent form for both parents' data. Thus, the performances for singular can be attributed to the input frequency.

6.2.7 The Frequency of the Different Gender Forms

In Chapter 4, it was revealed that the child's most correctly used gender in the obligatory context was the masculine 300/346 (86.7%) (Table 6.25) and it is also the most overgeneralised form 155/455 (34%) (Table 6.26).

Table 6.25: Overall Correct Use of Gender in Obligatory Context for the Child

Category	Percent Correct
Masculine	300/346 (86.7%)
Feminine	231/292 (79%)
Neutral	209/350 (59.7%)
Total	**740/988**

Table 6.26: Overall Incorrect Use of Gender in Obligatory Context for the Child

Category	Percent incorrect
Masculine	155/455 (34%)
Feminine	88/319 (27.5%)
Neutral	5/214 (2.3%)
Total	**248/988**

In the mother context, Table 6.27 shows that the total number of gender forms produced during all the recording sessions was 594, with more feminine (n=492, 82.8%) than masculine (n=102, 17.1%), as exemplified in (22&23). This high percentage of feminine forms can be attributed to the fact that the mother was mostly addressing her daughter during the recording sessions. It might be also because both are females.

(22) Mot: ilbariḍ šralik baba kulšai
Last night buy-3.MASC.SG-to-you.FEM.SG daddy everything
Last night daddy bought everything for you

(23) Mot: t'ali jai insakkirhūlik.
Come-2.FEM.SGIMP here close-1.SG.PRS-it-to-you.FEM.SG
Come here, I close it to you

Table 6.27: Gender Context for the Mother

Age of the child in Months	Masculine	Feminine	Total
31	9	57	**66**
32	10	47	**57**
33	1	11	**12**
35	4	50	**54**
36	14	84	**98**
37	19	75	**94**
38	25	162	**187**
39	6	44	**50**
40	5	49	**54**
41	9	78	**87**
Total	**102(17.2%)**	**492(82.8%)**	**594**

The findings also indicate that the most frequent form used by the mother, the feminine, reflects neither the child's highest correct use of gender in obligatory context nor the most frequent gender form (masculine).

In the father context, Table 6.28 reveals that the total number of gender forms produced during all the recording sessions was n=1089. He used more feminine (n=657, 60.3%) than masculine (n=432, 39.7%), as exemplified in (23 & 24).

Table 6.28: Gender Context for the Father

Age of the child in Months	Masculine	Feminine	Total
32	154	146	**300**
33	28	55	**83**
36	26	60	**86**
37	10	10	**20**
39	62	90	**152**
40	54	142	**196**
41	33	44	**77**
42	22	47	**69**
43	43	63	**106**
Total	**432 (39.7%)**	**657 (60.3%)**	**1089**

(23) Fat: mama mšit?
Mammy leave-3.FEM.SG.PST.
Mammy has left

(24) Fat: šin idīr Maḥmūd?
What do-3.MASC.SG.PRS Maḥmūd
What is Maḥmūd doing?

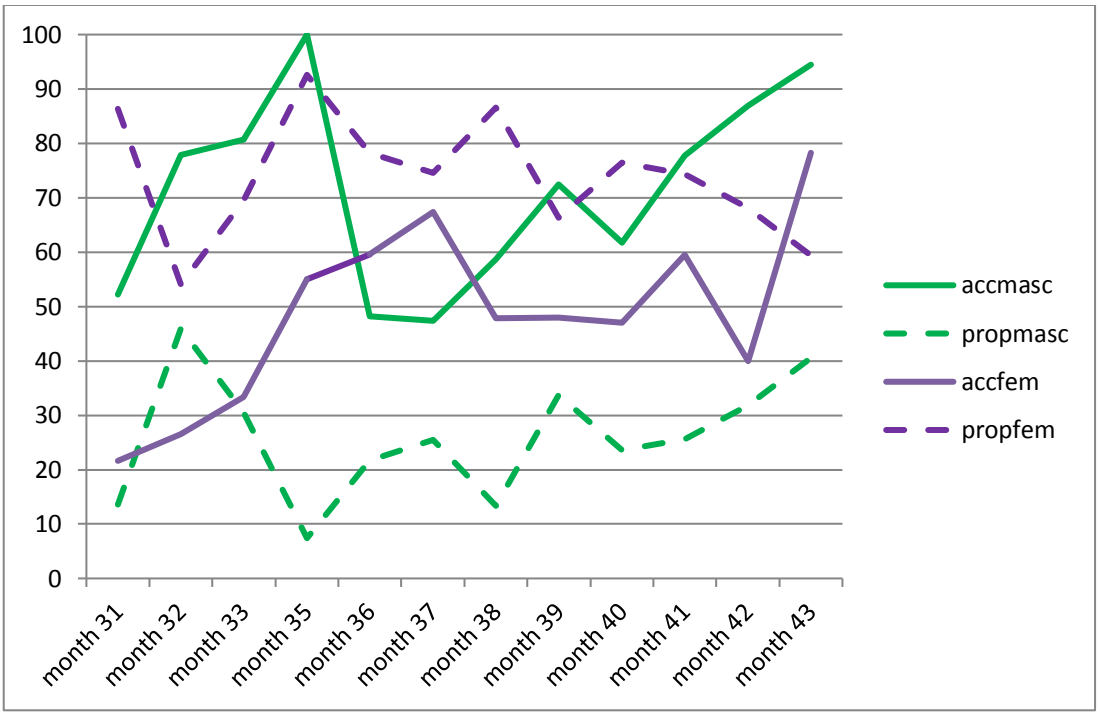
The findings of the father are similar to the mother's, as the most frequent form used by the father (feminine) seems not to be the most correct gender form used by the child or the most overgeneralised (masculine).

Further analysis is required to see whether there is any relation between the form and the use between the parents and the child.

Figure 6.3 shows that the proportions of use and levels of accuracy at the different observation points visualised in this chart do seem to suggest that there is very little

impact of parental language use and child accuracy: at those moments where one gender is used more frequently - notably, the masculine - the child's use of this gender appears to be more accurate, and vice versa.

Figure 6.3: Development of Accuracy (Child) and Use (Parents) of Gender Forms Over Time



accmacs: accuracy of masculine accfem: accuracy of feminine
propmasc: proportion of masculine propfem: proportion of feminine

Bivariate Pearson correlations do not find a linear relationship between accuracy of correct forms and proportion of use over time, no significant correlation between the accuracy and proportion of use of the masculine forms (Pearson's r = .273, p = .390) and no significant correlation between accuracy and proportion of feminine forms (Pearson's r = -.016, p = .961).

In summary, the results of the gender forms showed that both masculine and feminine have a high correctness rate in the obligatory contexts for the child. In the child's input data, feminine is the most frequent form for both parents, with masculine the least frequent. Thus, the performances for masculine cannot be attributed to input frequency.

6.2.8 The Frequency of the Different Types of Imperative Forms

As discussed in Chapter 4 (Section 4.2.1), the child used 502 imperative forms. 415 of these forms were homophonous with the imperfective bare stem (correct and incorrect). 87 verb forms were unambiguously imperatives and not homophonous with the imperfective bare stem (correct and incorrect). It was also found that the child used imperative as a default form.

The question is, therefore, does the child's input provide her with the non-homophonous imperatives that would allow her to distinguish imperatives from imperfective bare stems? To answer this question, further analysis of the child's input must be carried out.

As discussed above in Section 4.3.4, the number of imperative forms used by the father was 125 (10%) and the number used by the mother was 163 (19.5%).This number includes all the imperative forms; the pure imperative forms and the imperative forms that are homophonous with the imperfective bare stem (Tables 6.29 & 6.30). The tables include all the verb tenses (past, present, future) and the imperative mood for the father (n=1253) and the mother (n=836). In the tables, all the verbs which are not imperative are under (no), meaning not imperative (past, present, and future).

Table 6.29: Father's Use of Imperative Contexts

		Imperative Homophonous with the Imperfective Bare Stem		Total
		no	yes	
Imperative	no	1128	0	1128 (90%)
	yes	35	90	125 (10%)
Total		**1162**	**90**	**1253**

Table 6.30: Mother's Use of Imperative Contexts

		Imperative Homophonous with the Imperfective Bare Stem		Total
		no	yes	
Imperative	no	673	0	673 (80.5%)
	yes	44	119	163 (19.5%)
Total		**717**	**119**	**836**

The father uses unambiguous imperative forms, as well as imperatives that are homophonous with imperfective bare stems. The father used more imperative forms that are homophonous with the imperfective bare stem (n=90, 72%) than he used forms that are unambiguously imperative forms (n=35, 28%).

The same was found for the mother. She used more imperative forms which are homophonous with the imperfective bare stem (n=119, 73%) than the forms which are imperatives only (n=44, 27%). Although the mother produced more imperative forms than the father (163 vs. 125), the percentages of use of both forms are very close. There were no imperative forms spotted in other contexts for either of the parents.

Thus, the total number of imperative forms provided in the child's input (n=288, 13.8%); of this figure, (n=209, 72.6%) are homophonous with imperfective bare stem and (n=79, 27.4%) forms are pure imperatives.

6.2.9 Corrective Feedback

In this section, the parents' responses to the child's utterances will be presented. They are mainly based on comparing the child's utterances and the subsequent parental utterance, as coded in the child's SPSS file. The parents' feedback will not be treated separately here as, statistically, the parents' results showed that the distribution of the grammatical features across the speech from both parents was largely consistent. The parents' responses are classified into three types of answer: (i) reformulation (for incorrect utterances), (ii) re-play (for correct utterances), and (iii) explicit correction.

Notice that the total number of correct forms produced by the child was 143 and the total number of incorrect verb forms was 1246. This number encompasses all the types of errors, which are phonological and morphological.

No type of explicit corrections of non-target-like forms was found either in the father's data or in the mother's data. This is in line with earlier studies that also found explicit corrections for morphosyntactic errors to be rare or absent (Hanlon, 1970).

6.2.9.1 Reformulation (for incorrect utterances)

Reformulation is the type of parental response in which parents rephrase the preceding incorrect utterance produced by the child. The following table demonstrates the frequency and the percentage of the parents' reformulation of the incorrect child's utterances. As shown in Table 6.31, the parents used five types of responses to reformulate the utterances. The total number of incorrect forms in the table is n=1246.

Table 6.31: Parents' Reformulation of the Child's Utterances with Incorrect Verbs

	Type of Parents' Response	Frequency and Percentage
1	No reformulation (talking about different topic)	653/1246 (52.4%)
2	Only incorrect verb form changed	153/1246 (12.3%)
3	With changed verb form and other changes	307/1246 (24.6 %)
4	No change of verb form, but other changes	21/1246 (1.7%)
5	No change of verb form, no other changes	5/1246 (0.4%)
6	No responses (no communication with child)	107/1246 (8.6%)

The table above shows that parents reformulated the child's incorrect utterances in 37% of cases. This percentage is equivalent to what was claimed by Chouinard and Clark (2003) about the amount of reformulation children receive. The parents also reformulated a total of 460 of the child's incorrect verb forms.

However, in 153 cases, the parents corrected just the verb form and ignored the other parts of speech in the utterance, as in Example 25, and in 307 cases the parents reformulated the verb form as well as the other parts of speech in the same utterance, as in Example 26. In cases like these, parents do not necessarily need to change all the other parts of speech in the utterance; they only change them if they have to. In 52% of all the incorrect utterances, the results showed that the parents did not reformulate the child's deviated verb forms, but talked about a different topic, as in Example 27.

(25) Ch: mama dilū [*] [: indirū] waḥda tania
Mama do-2.PL.IMP [*] [: do-1.PL.PRS] one-FEM.SG another-FEM.SG
Mama, we do another one

Mot: indrū waḥda tania xalaṣ m‘aš indirilkom ‘idmilad?
do-1.PL.PRS one-FEM.SG another-FEM.SG that’s it don’t do-1.SG.PRS-for-you-PL day-SG birth-SG
We will do another one, that’s it I will not do birthday for you

(26) Ch: dawil [*] [: bindawir] 0art waiḏ [*] [: ḥwaij] ta [*] [: imta‘] Basma
Look for-2.MASC.SG.IMP [*] [: look for-1.SG.FUT] 0art cloths (*pho) for Basma
I will look for Basma’s clothes

Mot: indirū ilḥwaij mta‘it Basma
do-1.PL.PRS the-clothes for Basma
We do Basma’s clothes

(27) Ch: tini [*] [: a‘tini] ḏudi [*] [: jrudi]
Give-2.SG.IMP-me.SG (*pho) clothes-my (*pho)
Give me my clothes

Mot: bah ga‘imzi m‘a baba baš illabislik šuzik iu narif‘ik .
Ok, sit-2.FEM.SG.IMP-you.FEM.SG with daddy wear-1.SG.PRS-you-FEM.SG shoes-your-FEM.SG and take-1.SG.PRS-you.FEM.SG
Ok, sit with daddy, I will put on your shoes and take you.

There are also cases where the parents do reformulate the child’s utterance, but do not change the verb form; instead, they only change the other parts of speech. This happens 21 times (1.7%) and there are only five cases (0.4%) where the parents change neither the verb nor the other parts of speech in the utterance, as in (28). This normally happens when the mother is concentrating on something else and, in order not to cut the conversation, she repeated what the child said exactly. In only 107 cases (8.6%), the parents give no response to the child’s utterances because they are either talking to another child or concentrating on something else.

(28) Ch: atalab [*] [: ašrab] ‘atil [*] [: ‘aṣi:r]
drink-2.MASC.SG (*pho) juice.MASC.SG
Drink juice

Fat: atalab [*] [: ašrab] ‘atil [*] [: ‘aṣir]
drink-2.MASC.SG (*pho) juice.MASC.SG
Drink juice

6.2.9.2 Re-play (for correct utterances)

The total number of correct verb forms produced by the child was 143, as presented in the following table:

Table 6.32: Parents’ Replay for the Child’s Correct Utterances

Type of Parents’ Response	Frequency and Percentage
No replay of utterance	68/143 (47.6%)
Replay with Changed verb	8/143 (5.6%)
Replay with Changed verb form and other changes	32/143 (22.4%)
Replay with Changes, but identical verb form	16/143 (11.2%)
Replay without Changes (imitating the child)	7/143 (4.9%)
No response (no communication with child)	12/143 (8.4%)

The results in the table above demonstrate that the parents did not replay all of the correct utterances. For example, in almost half of the correct utterances (47.6%) the parents just moved on or talked about a different topic. It is expected in naturalistic speech that the parents normally do not repeat their children utterances if they are correct. In 40 cases out of 143 (28%), the parents replayed the child’s correct utterances either by changing the verb only (no=8, 5.6%) or changing verbs and other parts of speech (no=32, 22.4%); it is obvious that the parents replay with changes even if the child’s utterance is correct. This might happen for many reasons: for example, to make the utterance more explicit (29), to introduce new vocabulary (30) or maybe just to expand the utterance (31). The results also show that the parents replay by imitating the whole child utterance without any changes in seven cases (4.9%), and do not respond at all to the child in 12 cases (8.4%).

(29) Ch: kalmi Maḥmūd
Call-2.FEM.SG.IMP Maḥmūd
Call Mahmūd
Mot: šebetgulila enti Maḥmūd?
What say-2.FEM.SG.FUT you-FEM.SG Maḥmūd
What you are going to tell Maḥmūd

(30) Ch: raḥ 0prep tiala [*] [: taiara]
Go-3.MASC.PST 0prep aeroplane-SG
(he) went (by) aeroplane.
Mot: mša lessūg fettaiyara?
Go-3.MASC.PST to the market.SG in the aeroplane-SG
(he) went to the market in the aeroplane?

(31) Ch: taḥit
Fall-3.FEM.SG.PST
(she) fallen
Fat: t'ali nale'bū indīrū lu'ba .
Come-2.FEM.SG play-1.PL.PRS make-1.PL.PRS toy-SG
Come we play, make a toy

6.2.10 The Uptake of Feedback

In this section, the results of the child's uptake of the corrections provided by the parents will be discussed. Section 6.2.10.1 will focus on the child's acceptance of the parents' corrections of the errors, and in 6.2.10.2 the child's acceptance of the parents' responses to the correct forms will be presented.

6.2.10.1 Child’s Responses to the Parents’ Correction of Errors.

Table 6.33 shows the child's uptake of parental reformulations for incorrect utterances. It provides information about both parental corrections and the child's responses and demonstrates how they are linked. The columns show the child’s responses and the rows show the parents’ responses to the child’s incorrect utterances. Each cell has two percentages: the upper is for the child’s responses and the lower for the parents’ responses.

Table 6.33: The Child's Response to Parents' (non) Correction of Errors

		Type of the Child's Response								Total	
		No self-correction, other forms, continued conversation, tacitly accept		No self-correction, use of the old incorrect form		Self-correction, use of the correct form that was presented by the adult		No response			
Parents' Responses to Incorrect Utterances	No reformulations	648	99.2% 67.7%	1	0.1% 0.8%	0	0.0% 0.0 %	4	0.6% 2.7%	**653**	**100%** **52.4%**
	Only incorrect verb form changed	78	51% 8.2%	38	24.8% 29.0%	4	2.6% 36.4%	33	21.6% 22.4%	**153**	**100%** **12.3%**
	With changed verb form and other changes	124	40.4% 13%	86	28% 65.6%	5	1.6% 45.5%	92	30% 62.2%	**307**	**100%** **24.6%**
	No change of verb form, but other changes	12	57.1% 1.3%	5	23.8% 3.8%	0	0.0 % 0.0 %	4	19% 2.7%	**21**	**100%** **1.7%**
	No change of the verb form, no other changes	2	40% 0.2%	1	20% 0.8%	2	40% 18.2%	0	0.0 % 0.0 %	**5**	**100%** **0.4%**
	No response	93	86.9% 9.7%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	14	13.1% 9.5%	**107**	**100%** **8.6%**
	Total	**957**	**76.8%** **100%**	**131**	**10.5%** **100%**	**11**	**0.9%** **100%**	**147**	**11.8%** **100%**	**1246**	**100%** **100%**

As discussed in Chapter 5, and as shown by the results in Table 6.31, the parents do not display any evidence of explicit correction at all. Even reformulations are not consistently provided, in (63%) of incorrect utterances.

Table 6.33 shows the child's responses to the parents' reformulation of the incorrect utterances. Generally, the total percentage in each column will give a clear picture of whether the child accepts or rejects the correction provided by the parents. For example, in only 0.9% of all incorrect forms did the child use the correct form in response to the following parental utterance, as in Example 32. This is considered a very low percentage compared to the amount of feedback provided by the parents (28%). However, the findings also suggest that the child did not make immediate use of the correct forms provided by the parents in 76.8% of cases; instead she continued the conversation using completely different forms, as exemplified in Example 33. In (10.5%) of all incorrect utterances the child kept the old incorrect form as in Example 34. It is obvious that these are the cases where the child normally overgeneralised the imperative forms.

The results also show that the child did not provide any response to the parents' utterances in 147 incidents (11.8%), as shown in Example 35. In these cases, the child was busy with something in her hands and either did not respond to the parents at all or just said *yes* or *no*.

Most of the comparatively rare self-corrections occurred after reformulations that involved a presentation of the correct word form, as in Example 32. When the verb form was not part of the reformulation (no reformulation, no response) no self-corrections occurred. This is an expected result, simply because no interactions have occurred between the parents and the child. In the five instances where the parent kept the child's incorrect verb form, the child produced two self-corrections. The parents' repetitions normally focused on the incorrect form by using a rising intonation, which indicates that a question is being asked (see Chapter 2, Section 2.9.1.2). Thus, the repetition of the incorrect form could actually have been used to alert the child to the ungrammaticality of the utterance.

(32) Ch: takil [*] [: yakil] 0prep sandwiš
Eat-3.FEM.SG.PRS [*] [: Eat-3.MASC.SG.PRS] 0prep (in) sandwich-SG
He (is) eating a sandwich

Fat: šin yakil?
What Eat-3.MASC.SG.PRS?
What (does) he eat?

Ch: yakil tandwiš [*] [: sandwiš]
Eat-3.MASC.SG.PRSsandwich-SG.
(He is) eating a sandwich

(33) Ch: itrū [*] [: nišrū] batata
Buy-2.PL.IMP [*] [: buy-1.PL.PRS] botato-FEM.PL
We buy botato

Mot: nimšū nišrū baṭaṭa?
Go-1.PL.PRS buy-1.PL.PRSbotato-FEM.PL
We (will) go (to) buy botato

Ch: ani (n)ibbiibtši [*] [: nimši]
I want-1.SG.PRS go-2.SG.IMP [*] [: Go-1.SG.PRS]
I want (to) go

(34) Ch: ibtū [*] [: nimshū] xalaʿaiša
Go-1.PL.IMP [*] [: go-1.PL.PRS] aunt-SG `aisha
We go (to) aunt ʿaiša

Mot: lī wain ibnimšū?
To where go-1.PL.FUT.
To where we will go?

Ch: ibtū [*] [: nimšū] xalaʿaiša.

Go.2.PL.IMP [*] [: go-1.PL.PRS] aunt-SG ʻaiša
We go (to) aunt ʻaiša

(35) Ch: aih uḥū [*] [: nruḥū] aka
Yes, go-2.PL.IMP [*] [: go-1.PL.PRS] there
Yes, we go there

Fat: irruḥū tani?
Go-1.PL.PRS again
(Shall) we go again

Ch: aih .
Yes

The results in Table 6.33 above do not explain the individual responses of each of the parents to the child's errors or the child's correction of the errors after each of the parents' feedback. Thus, further analysis of the results will be carried out to see if there are any differences in terms of providing corrective feedback and whether the child's responses differed from one parent to the other.

Table 6.34 shows the father's responses to the child's errors and the child's uptake of the father's corrections. The columns show the child's responses and the rows show the father's responses to the child's incorrect utterances. Each cell has two percentages; the upper is for the child's responses and the lower for the father's responses.

Table 6.34: The Child's Response to the Father's (non) Correction of Errors

		Type of the Child's Response								Total	
		No self-correction, other forms, continued conversation, tacitly accept		No self-correction, use of the old incorrect form		Self-correction, use of the correct form that was presented by the adult		No response			
Fathers' Responses to Incorrect Utterances	No reformulations	424	98.8% 72.5%	1	0.2% 1.2%	0	0.0% 0.0 %	4	0.9 % 5 %	**429**	**100%** **56.6%**
	Only incorrect verb form changed	52	54.2% 8.9%	27	28.1% 32.5%	4	4.2% 40%	13	13.5% 16.3%	**96**	**100%** **2.7%**
	With changed verb form and other changes	56	33.5% 9.6%	51	30.5% 61.4%	4	4.2% 40%	56	33.5% 70%	**167**	**100%** **22%**
	No change of verb form, but other changes	6	54.5% 1%	4	36.4% 4.8%	0	0.0 % 0.0 %	1	9.1% 1.3%	**11**	**100%** **1.5%**
	No change of the verb form, no other changes	0	0.0% 0.0%	0	0.0 % 0.0 %	2	100% 20%	0	0.0 % 0.0 %	**2**	**100%** **0.3%**
	No response	47	88.7% 8%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	6	11.3% 7.5%	**53**	**100%** **7%**
	Total	**585**	**77.2%** **100%**	**83**	**10.9%** **100%**	**10**	**1.3%** **100%**	**80**	**10.6%** **100%**	**758**	**100%** **100%**

The total number of the child's incorrect utterances where only the father was involved is 758. More than half (56.6%) of all the child's incorrect utterances were not reformulated by the father. He provided reformulation of the child's incorrect utterances in only 22.7%. In 2.7% of these utterances the father reformulated the child's incorrect utterance, providing the correct verb form only, and in 22% of cases he corrected the verb as well as the other parts of speech in the utterance. In very few instances, the father corrected the other parts of speech and kept the incorrect verb form as it was produced by the child: this happened in 1.5% of all cases.

The child, on the other hand, did not show a remarkable interest in the father's few case of error corrections. In 1.3% of the instances, she produced the correct verb form provided by the father: however, in 77.2% of all 758 errors the child did not show any type of self-correction. Instead, she continued conversation on completely different topics. The general picture did not show a strong relation between the father's reformulation and the child's uptake of these corrections. However, if we take a close look at the results in the table, we can see that out of the 10 self-corrections, eight appeared after a reformulation. This suggests that reformulations might not always lead to self-corrections, but they might make such self-corrections more likely to occur.

If we look at the mother's responses to the child's errors and the child's uptake of the mother's corrections of the errors, as presented in Table 6.35, we can see that the total number of incorrect utterances by the child where only the mother was involved is 488. The results revealed that the mother did not reformulate 45.9% of the child's incorrect utterances. In 40.4% of the child's errors, the mother reformulated the child's incorrect utterances, providing the correct verb form as well as correcting other parts of speech.

The child provided the correct verb form after it was provided by the mother in only 0.2% of cases, and in 9.8% of instances she re-used the incorrect verb form. In 76.2% of the cases, the child continued the conversation, talking about completely different topics and not responding to the mothers' reformulation of the incorrect forms provided.

To sum up, the results in Tables 6.34 & 6.35 show no remarkable difference in terms of providing corrective feedback between the parents. The percentage is comparatively close between the father and the mother in terms of providing the correct form of the verb only (2.7% vs. 11.7%), or in providing the correct verb form as well as correcting the other parts of speech (22% vs. 28.7%).

The figures also revealed no noticeable difference in the child's responses to the parents' corrections of errors. For example, the percentage of the child's responses to the father and the mother's incorrect utterances is very close in terms of the use of the correct forms provided by the father and the mother (1.3% vs. 0.2%) or when the child is not responding to the correction and reuse of the old form (10.9% vs. 9.8%).

Table 6.35: The Child's Response to the Mother's (Non-) Correction of Errors

		Type of the Child's Response								Total	
		No self-correction, other forms, continued conversation, tacitly accept		No self-correction, use of the old incorrect form		Self-correction, use of the correct form that was presented by the adult		No response			
Mothers' Responses to Incorrect	No reformulations	424	100% 60.2%	0	0.0% 0.0 %	0	0.0% 0.0 %	0	0.0 % 0.0 %	**224**	**100%** **45.9%**
	Only incorrect verb form changed	26	45.6% 7%	11	19.3% 22.9%	0	0.0% 0.0 %	20	35.1% 29.9%	**57**	**100%** **11.7%**
	With changed verb form and other changes	68	48.6% 18.3.1%	35	25% 72.9%	1	0.7% 100%	36	25.7% 53.7%	**140**	**100%** **28.7%**
	No change of verb form, but other changes	6	60% 1.6%	1	10% 2.1%	0	0.0 % 0.0 %	3	30% 4.5%	**10**	**100%** **2%**
	No change of the verb form, no other changes	2	66.7% 0.5%	1	33.3 % 2.1 %	0	0.0% 0.0 %	0	0.0 % 0.0 %	**3**	**100%** **0.6%**
	No response	46	85.2% 12.4%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	8	14.8% 11.9%	**54**	**100%** **11.1%**
	Total	**372**	**76.2%** **100%**	**48**	**9.8%** **100%**	**1**	**0.2%** **100%**	**67**	**13.7%** **100%**	**488**	**100%** **100%**

6.2.10.2 The Child's Uptake of Parental Replay for Correct Utterances.

Table 6.36 demonstrates the child's uptake of the parents' responses to the child's correct forms. It provides information about both parental responses to the child's correct forms and shows how they are linked. The columns show the child's responses and the rows show the parents' responses to the child's correct utterances. Each cell has two percentages; the upper is for the child responses and the lower for the parents' responses.

Table 6.36: The Child's Response to Parents' Replay of Correct Utterance

		Type of the Child's Response										Total	
		No use of the relevant forms		Another use of the same correct form		Use of an incorrect form, despite the same context		Use of another correct form of the same verb, in a different context		No response			
Parents' Response to the Child Correct Utterances	No replay of utterance	61	89.7% 61.6%	1	1.5% 5.9%	0	0.0 % 0.0 %	0	0.0% 0.0%	6	8.8% 33.3%	**68**	**100%** **47.6%**
	Replay with changed verb	7	87.5% 7.1%	0	0.0 % 0.0 %	1	12.5% 11.1%	0	0.0% 0.0%	0	0.0% 0.0%	**8**	**100%** **5.6%**
	Replay with changed verb form and other changes	17	53.1% 17.2%	9	28.1% 52.9%	6	18.8% 66.7%	0	0.0%	0	0.0% 0.0%	**32**	**100%** **22.4%**
	Replay with changes, but identical verb form	9	56.3% 9.1%	5	31.3% 29.4%	2	12.5 % 22.2%	0	0.0% 0.0 %	0	0.0% 0.0%	**16**	**100%** **11.2%**
	Replay without changes (imitating the child)	5	71.4% 5.1%	2	28.6% 11.8%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	0	0.0% 0.0%	**7**	**100%** **4.9%**
	No response	0	0.0 % 0.0 %	0	0.0 % 0.0 %	0	0.0 % 0.0 %	0	0.0 % 0.0 %	12	100% 66.7%	**12**	**100%** **8.4%**
	Total	**99**	**69.2%** **100%**	**17**	**11.9%** **100%**	**9**	**6.3%** **100%**	**0**	**0.0%** **100%**	**18**	**12.6%** **100%**	**143**	**100%** **100%**

The table shows that the total number of correct utterances by the child was 143. The parents did not replay almost half of the child's correct forms, (68/143, 47.6%). In cases like these, the parents were normally involved in something else or changed the conversation. However, in 44.1%, the parents replayed the child's correct utterances; they provided a new verb form only in 5.6% and changed the verb and made other changes in 22.4%. The parents also replayed by imitating the correct verb form as it was produced by the child, but also providing other changes, in 11.2% of the cases, and by imitating the whole child utterance in 4.9%.

The table also indicates that the child did not use any of the forms provided by the parents in 114 out of 143 instances (79.9%). The child seemed to continue the conversation by talking about a completely different topic, making no use of the correct form provided by the parents, as in Example 36. In about 11.9% of all the forms provided, the child uses the same correct form, as in Example 37. However, despite the provision of the correct form, the child used the form incorrectly in nine cases (6.3%).

If we look more closely at the relationship between the parents' responses to the child's correct forms, and the child's uptake of these forms, it is clear that the child did not follow the parents' utterances. This can clearly be seen from the difference in percentages between the parents' responses and the child's uptake, as shown in the table. For example, when the parents replayed with changed verb forms and other changes, in 22.4% of the correct child utterances, the child responded by another use of the same correct form in 28.1% of cases, and the use of an incorrect form in 18.8%. This indicates the optionality of the use of correct as well as incorrect forms by the child. It has been discussed in Chapter 4 that the child optionally uses the imperative as a default form instead of a fully inflected form, as in Example 38 (for theoretical discussion and evidence, see Chapters 1 and 4).

(36) Ch: galūli (b)naiya] imti [*] [: ibtimši] qiṭar maḥaṭṭa ḏaiya
Tell-3.PL.PST-to-me girl.SG go-FEM.3.SG.PST [*] [: go-FEM.3.SG.FUT] train.SG next
They told me (the) girl will go (by) train (to)(the) next station

Mot: galūlik ilbnaiya ibtimši ilqiṭar ilmaḥaṭṭa ijjaiya .
Tell-3.PL.PST-to-you-FEM.SG the-girl-SG go-FEM.3.SG.FUT the-train.SG the-station.SG the-next
They told you the girl will go (in) the train (to) the next station

Ch: (b)naiya ʿattiti [*] [: ʿṭitni]
Girl-SG give-FEM.3.SG.PST-to-me (pho)
Girl gave me

(37) Ch: had nannū nannū nannū ḏoːḏ [*] [: zoːz] nannū
This-MASC sleep-3.PL.PST sleep-3.PL.PST sleep-3.PL.PST both sleep-3.PL.PST
This slept, both slept

Mot: šini igulūlha haḏiWala?
What call-3.PL.PRS-to-her this-FEM Wala
What (do) they call this, Wala?

Ch: nannū nannū nannū.
sleep-3.PL.PST sleep-3.PL.PST sleep-3.PL.PST
They slept, they slept, they slept

(38) Ch: xalaʿaiša mšana (wo)
Aunt-SG ʿaiša go-1.PL.PST
We went (to) aunt ʿaiša

Fat: timši mʿai fissaiyara? Wain bnimšū bah?
Go-2.SG.PRS with me in-the-car-SG? Where go-1.PL.FUT then?
(Will) you go with me in the car? Where shall we go then?

Ch: itšū [*] [: nimšū] xxx
Go-2.PL.IMP [*] [: go-1.PL.PRS]
We (will) go

Table 6.36 above provides data regarding the parental replay to the child's correct forms and the child's responses to both parents' replay to the correct forms. The table does not illustrate the individual responses of each parent to the child's correct forms, or the child's responses to each parent feedback. Therefore, further analysis of the results in Table 6.36 is required to see whether there are any differences between father and mother in terms of their responses to the child's correct utterances and if the child's responses differ from one parent to the other.

Table 6.37 demonstrates the father's replay of the child's correct utterances and the child's responses to the father. In total, in 89/143 (62%) of the child's correct utterances the father alone was involved in the interaction with the child. The results showed that the father did not respond to almost half of the child's correct utterances (44.9%). However, in 43.8%, the father replayed to the child's correct utterances. In 22.5% of all 89 of the child's correct utterances, the father replayed with a changed verb form as well as other parts of speech, and in 5.6% he changed the verb form only. The father replayed the child utterance, keeping the same verb form as produced by the child but with changes to the rest of the utterance, in 13.5% of occasions, and in 2.2% the father just imitated the child's utterance without any change.

The child, on the other hand, responded to the father using the same correct form in 14.6% of all the utterances produced, and in 5.6% the child produced incorrect forms despite the same context. In 64% of the father's 89 utterances, the child did not make use of the form provided by the father and talked about a different topic.

Table 6.38 reveals the mother's replay to the child's correct utterances and the child's uptake of the mother's responses. As can be seen from the table, the total number of correct utterances involved in the interaction between the mother and the child is 54 out of the child's 143 correct utterances (37.8%). The table shows that the mother did not replay to more than half of the child's correct utterances, 28 out of 54 (51.9%). However, she replayed to 24 out of 54 (44.5%) of the child's correct utterances. Mostly, the mother's replay included new verb forms 27.8%. In a few cases, she simply imitated the child's old correct form (7.4%).

Generally, the child did not respond to the mother's utterances. In 77.8%, the child used irrelevant verb form. The child provided the correct form after the mothers' replay in only 7.4%: however, she used the incorrect form despite the mother's replay to the correct form in 7.4%.

To sum up, the results in Tables 6.37 and 6.38 demonstrate no clear difference in terms of parental replay to the child's correct utterances. For example, the percentage was very close between the father and the mother when they responded to the child's correct utterance using the same correct verb form (13.5% vs. 7.4%) or different verb forms (22.5% vs. 22.2%). The results also showed a closer figure when the parents did not replay the child correct forms (44.9% vs 51.9%)

The figures also revealed that there was no noticeable difference in the child's responses to the parents. For example, the percentage of the child's responses to the father's and the mother's responses to her correct utterances was very close in terms of the use of incorrect forms (5.6% vs. 7.4%) or the use of irrelevant forms (64% vs. 77.8).

Table 6.37: The Child's Response to the Father's Replay of Correct Utterance

		Type of the Child's Response										Total	
		No use of the relevant forms		Another use of the same correct form		Use of an incorrect form, despite the same context		Use of another correct form of the same verb, in a different context	No response				
Fathers'Response to the Child correct Utterances	No replay of utterance	36	90% 63.2%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	----	4	10% 28.6%		**40**	**100%** **44.9%**
	Replay with changed verb	4	80% 7%	0	0.0 % 0.0 %	1	20% 20%	----	0	0.0% 0.0%		**5**	**100%** **5.6%**
	Replay with changed verb form and other changes	9	45% 15.8%	8	40% 61.5%	3	15% 60%	----	0	0.0%		**20**	**100%** **22.5%**
	Replay with changes, but identical verb form	6	50% 10.5%	5	41.7% 38.5%	1	8.3 % 20 %	----	0	0.0% 0.0 %		**12**	**100%** **13.5%**
	Replay without changes (imitating the child)	2	100% 3.5%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	----	0	0.0 % 0.0 %		**2**	**100%** **2.2%**
	No response	0	0.0 % 0.0 %	0	0.0 % 0.0 %	0	0.0 % 0.0 %	----	10	100 % 71.4 %		**10**	**100%** **11.2%**
	Total	**57**	**64%** **100%**	**13**	**14.6%** **100%**	**5**	**5.6%** **100%**	**----**	**14**	**15.7%** **100%**		**89**	**100%** **100%**

Table 6.38: The Child's Response to the Mother's Replay of Correct Utterance

		Type of the Child's Response								Total	
		No use of the relevant forms		Another use of the same correct form		Use of an incorrect form, despite the same context		Use of another correct form of the same verb, in a different context	No response		
Mothers' Response to the Child Correct Utterances	No replay of utterance	25	89.3% 59.5%	1	6.3% 25%	0	0.0 % 0.0 %	----	2	7.1% 50%	**28**	**100%** **51.9%**
	Replay with changed verb	3	100% 7.1%	0	0.0 % 0.0 %	0	0.0 % 0.0 %	----	0	0.0% 0.0 %	**3**	**100%** **5.6%**
	Replay with changed verb form and other changes	8	66.7% 19%	1	8.3% 25%	3	25% 75%	----	0	0.0 % 0.0 %	**12**	**100%** **22.2%**
	Replay with changes, but identical verb form	3	75% 7.1%	0	0.0% 0.0 %	1	25 % 25%	----	0	0.0 % 0.0 %	**4**	**100%** **7.4%**
	Replay without changes (imitating the child)	3	60% 7.1%	2	40% 50%	0	0.0 % 0.0 %	----	0	0.0 % 0.0 %	**5**	**100%** **9.3%**
	No response	0	0.0 % 0.0 %	0	0.0 % 0.0 %	0	0.0 % 0.0 %	----	2	100% 50%	**2**	**100%** **3.7%**
	Total	**42**	**77.8%** **100%**	**4**	**7.4%** **100%**	**4**	**7.4%** **100%**	**----**	**4**	**7.4%** **100%**	**54**	**100%** **100%**

6.3 Summary

In this chapter, I presented those results that are related to the role of input in the acquisition of Libyan Arabic verb tense and agreement inflection.

Firstly, I looked at whether the child directly imitated the verb forms provided by her parents or used different forms from those provided in the input. The results suggest little evidence of the child repeating the utterances that the parents directed at her in terms of the declarative utterances. In addition, the child did not answer most of the parents' questions when they tried to clarify or focus on the incorrect form produced by the child; even if the child answered these questions, she still frequently repeated the same incorrect verb forms.

The results also demonstrated that the frequency of particular verb forms does not have a systematic effect on their use, correctness rate or overgeneralisation of these forms. Simply because the parents' use of the present is about with the same as the past, however, the child became more accurate in using the past, but not the present. In addition, the child was very accurate in the imperative, which was less frequent in the parents' data. The only tense which reflects the use between the parents and the child is the future: however, it only occurred in a few instances, therefore we cannot draw a conclusion based on so few cases. In the person context, there is consistency in the frequency of the first person between the parents and the child, since it was the least frequently used by both.

However, the second person forms showed similarities and differences. It was the most frequent for the mother and the child, but not for the father, for whom third person is the most frequent. Again, we cannot talk about frequency effect in the person context because the child was exposed to a similar amount of input in the third person yet ended up overgeneralising the second person only.

There are similarities between the parents and the child in terms of the frequency of the forms in the number contexts. The singular forms are the most frequent and the most overgeneralised in the child's data. In the gender context, the parents used the feminine more than the masculine, whereas in the child's OCs, masculine was used more than feminine and masculine was also the most overgeneralised form. Again, there is no evidence of the frequency effect in the gender context.

It has also been reported that the parents did not systematically provide corrective feedback for non-target-like forms; that only happened in about 37% of instances. This corrective feedback was provided as a type of reformulation to the non-target-like forms, but there was no evidence that the parents provided their feedback as explicit corrections.

The child's acknowledgment of the parents' feedback was also discussed, and the results revealed that the child used the correct form provided by the parents in only 0.9% of all the corrections provided, and in all other cases she either continued the conversation using the incorrect old form or other forms, or did not respond to the parent's previous utterance. The results were further analysed for each parent/child to see whether there was any difference between the parents' corrections of the errors and the child's acknowledgment of the correction provided by each parent. It was demonstrated that there is a slight difference between the mother and the father in terms of reformulation of the child's incorrect utterances (40.4% vs 24.7%). However, the child's acceptance of the parents' corrections did not remarkably differ between the mother and the father (0.2% vs 1.3%).

CHAPTER SEVEN

DISCUSSION AND CONCLUSION

7.0 Introduction

This chapter will consider answers to the research questions that were outlined at the end of Chapter 1 and Chapter 5. These relate to the development of verb morphology in a child learner of Libyan Arabic (LA) between the ages of 2;6 and 3;7 and the role that parental input might play in shaping that development. Each question will be considered in turn in the light of the results reported in Chapters 4 and 6. Section 7.1 deals with patterns of use of verb morphology by the child and Section 7.2 with parental input and child responses. Section 7.3 considers some of the limitations of the study and makes some recommendations for further research.

7.1 Verb Inflections

7.1.1 Order of Acquisition and the Development of Tense, Aspect and Phi Features

Over the period of observation of the child, it was found that she supplied imperative and past/perfective forms in obligatory contexts in a target-like way (97.8% suppliance for each property). At the same time, she supplied forms of the present/imperfective and future much less often in contexts where target LA requires these forms: 29.7% (97/327) in present/imperfective obligatory contexts and 2% (3/152) in future obligatory contexts. Strikingly, though, when present/imperfective and future forms were used, they were used appropriately, with little overgeneralisation. By contrast the imperative, and to a lesser extent the past/perfective, were overgeneralised to present/imperfective and future contexts.

This is consistent with imperative and past/perfective forms emerging earlier in the child's mental grammar than present/imperfective, and present imperfective forms emerging earlier than future forms. Does this mean that [non-finite] (underlying the imperative) and [perfective] (underlying the past/perfective) features are assigned to the Tense/Aspect category before [imperfective] and [future] features in the child's grammar? Not necessarily.

Recall from discussion in Chapter 1 that Demuth (1994) has argued that children's early knowledge of syntax is much richer and more developed than early child production would suggest, and that Wexler (1998) has suggested that young children may have established the abstract grammatical features of the target language but lack the ability to integrate them fully in production. Given that the child under study was producing present/imperfective forms in appropriate contexts, she may have established an abstract [imperfective] feature and an abstract [future] feature on the Tense/Aspect category, but was affected by a constraint on output that means she did not always produce a present/imperfective or future form where they are required. This will be taken up in response to the second question in section 7.1.2.

In the person context, the results revealed that the child used the second person in a target-like way (92%). The child has also supplied first- and third-person forms, but much less so in contexts where target LA requires these forms: 25.8% (83/321) in first-person obligatory contexts and 17.2% (343/482) in third-person obligatory contexts. First person was used appropriately by the child with less overgeneralisation (3.6%). This means that first-person forms of verbs are specified for first person (they are typically used only in first-person contexts), but as they are not used as often as required by the target language, they occurred less frequently than the other person forms. The results also showed first-person forms emerging later in the child's grammar. Third-person forms also appeared to be specified for third person subjects, although they can also be used with subjects of a different person, particularly first person (17.4%).

In the gender context, the results showed that from early observation the child is quite target-like in her use of gender agreement morphology in the case of masculine and feminine subjects, with the use of masculine forms with intended feminine subjects about the same as the use of feminine forms with intended masculine subjects. The results do not show any order of gender development, as the child might already have established a grammatical representation for gender forms before the observation started at two years six months.

In the number context, the results show that the child used both the singular and the plural in a target-like way, with 95.6% for the singular and 87.2% for the plural. Both forms were used appropriately by the child with less overgeneralisation in the plural context 4.4% and 11.6% in the singular context. This might suggest an earlier stage where singular forms were

unspecified for number and could be used in both singular and plural contexts. Similar results were reported in other studies.

7.1.2 Evidence for an OI Stage

Existing research on first language acquisition has found that children frequently, but not always, omit verbal inflections. This happens optionally where children alternate between using non-finite and finite verbs in main clauses. It has been argued that functional projections are available from the start but, during the OI stage, children optionally omit tense and/or agreement in finite contexts (Schütze & Wexler, 1996).

This phenomenon was examined in this research; however, the results did not provide clear evidence for an OI stage in her development. Rather three possible interpretations emerged. The first one is that the child is still in the OI stage and the evidence is that she uses an imperative as a default form. If this is the case, then the results are consistent with the predictions of Salustri and Hyams for OIs in inflectional null subject languages and also with the analysis of the OI stage in Kuwaiti Arabic by Al-Houti (2013). It also provides evidence for Wexler's OI account as well as Rizzi's Truncation Hypothesis. The second interpretation is that the child is no longer in an OI phase, being older than the children who have figured in OI studies, but has a morphological output problem: she cannot consistently access the prefixes required to realise the present/imperfective and future, so instead produces verb forms that are homophonous with the imperative.

The third interpretation is that the child had full grammatical representations both for OCs and the forms that realise them, thus we are not dealing here with a case of OI, but with a case of a phonological output problem which prevents her from realising word-initial consonant clusters. This supports the full competence account. Given the child's age and the finding that she displayed a problem producing initial consonant clusters across verbal and non-verbal categories, it is most likely that the results obtained are consistent with full competence accompanied by an output constraint, possibly at both the morphological level (difficulty in accessing forms in production and the consequent use of default forms) and the phonological level (difficulty in pronouncing retrieved prefixes that give rise to initial consonant clusters).

At any rate, the result is that the child was producing verb forms that resemble the imperative in the adult language. This happens frequently where fully inflected present forms (61%) or future forms (75%) are required. In the person context, the second person was used as a default form for all other person contexts. In the gender context, the child was quite target-like in her use of gender agreement: however, masculine was slightly overgeneralized in other context and it might be used as a default. In the number context, the child is quite target-like in her use of gender agreement and therefore the results do not show any noticeable use of forms in the wrong contexts.

7.1.3 Role of Suffixes and Prefixes in Development

It has been claimed that children learn suffixes more quickly than prefixes (Slobin, 1973; Clark, 2007). In addition, it is believed that inflectional systems in suffix-only languages are learned earlier than in prefix-only languages (Slobin, 1973; Mithum, 1989).

To answer this question, I had to look at the child's use of tense and agreement features. For example, the tense affixation differed depending on the type of tense. The past tense had only suffixes and the other tenses had both prefixes and suffixes.

The results revealed that she was more productive with forms that are bare or with suffixes only. For example, she used imperative, which does not inflect for tense and past/perfective forms in OCs, productively both 97.8%. However, forms with prefixes and suffixes (present and future) were less productive (29.7% vs. 2%). I also argued that the child might have a phonological output problem and consequently she could not consistently access the prefixes required. In this case we expect the child to produce more forms with suffixes only as it was the case in the past/perfective.

In the person context, the results revealed that interaction of prefixed and suffixed forms with number had no effect on the use of second-person forms with intended second person subjects, where performance is target-like. However, there is an effect of the interaction on the use of first- and third-person forms in obligatory contexts. In the first and third persons, plural forms (requiring the addition of a suffix) were less frequent than subject forms (which do not require a suffix).

Thus, it is clear that forms with suffixes only are more likely to be overgeneralised than forms with prefixes and suffixes because they are specified for agreement earlier than other forms. For example, the imperative was the most overgeneralised form (64.1%). These findings support earlier studies which demonstrated that children learn suffixes quicker than prefixes (Slobin, 1973; Mithum, 1989; Clark, 2007).

7.1.4 Overgeneralisation in Child Speech

Recent studies on Arabic show that children prefer certain forms over others, and they can therefore end up with overgeneralisation of these forms. Al-Houti (2013) found that Kuwaiti-speaking children overgeneralise the masculine singular imperative to other tenses. Abdalla and Cargo (2008) reported that masculine forms were overgeneralised for feminine forms.

My results showed that the child did indeed pass through a stage where she overgeneralised some forms over others. For example, the imperative forms were the most preferred forms by the child. She overgeneralised the imperative form 200/327 times (62.1%) in present OCs and 114/152 times (75%) in the future OCs. Past tense forms were only overgeneralised to 30/327 (9.2%) of present tense OCs and 26/152 (17.1%) of future OCs. Present forms were rarely overgeneralised to future contexts (9/152 or 6%). Future forms were not generalised because they were used in only 2% of future OCs.

The child has also displayed overgeneralisation in terms of the agreement features. For example, in the person context the child mostly overgeneralises the second person over the first person 182/321 times (56.6%), and the third person 128/482 times (26.5%). The third person was also overgeneralised in the first 56/321 times (17.4%) and in the second 18/276 times (6.5%). First person was rarely overgeneralised in the second and the third person (3.6%).

The phenomenon has also been reported in the gender context. The child's most overgeneralised form was the masculine. She overgeneralised the masculine form 56/292 times (19.1%) over the feminine forms. She also overgeneralised the masculine forms where the gender is neutral in the first person 99/350 times (28.2%). In the number context, the singular was the most overgeneralised form over the plural 19/162 times (11.6%). The plural

also was overgeneralised over singular but only 50/1142 times (4.4%). Thus, the overgeneralisation in tense context or agreement feature might be due to different reasons as discussed in Chapter 4 and earlier in this chapter. It might also be due to cognitive maturation issues. If this is the case, then this supports the 'full competence' view of language acquisition.

The results are consistent with other Arabic studies claiming that Arabic-speaking children overgeneralise forms (Abdalla and Cargo, 2008, Aljenaie, 2009, Al-Houti, 2013).

7.2 The Role of Input

In the second part of the results, I looked at the role of input in the acquisition of LA. I sought to answer the following questions:

- How frequently does the child directly imitate her parents or repeat verb forms presented in the previous parental utterance? (Section 8.2.1)
- Does the frequency of particular forms affect the use, correctness rates and overgeneralisation patterns of verb forms? (Section 8.2.2)
- How often do parents provide corrective feedback for non-target-like forms? and which forms of corrective feedback are more frequent - explicit corrections or reformulations? (Section 8.2.3)
- Does the father differ from the mother with respect to the use of verb forms and the provision of corrective feedback? (Section 8.2.4)
- Does the child acknowledge corrective feedback or produce more correct forms as a result? (Section 8.2.5)
- Does the child respond differently to maternal and paternal corrective feedback? (Section 8.2.6)

7.2.1 How Frequently does the Child Directly Imitate her Parents?

The child's imitations of the parents' previous utterances, which contained verbs, were classified into three types: (i) child's imitation of parents' declarative utterances; (ii) child's imitation of the parents' question; and (iii) child's imitation of the parents' imperative. For

the declarative utterances, the results show that the child did not usually repeat the parents; she only responded to 12.3% of the parental declarative utterances. However, the child was keen to imitate the form provided in her parents' questions; she imitated 61.2% of the verb forms provided in her parents' questions. This figure includes all of the imitated verbs, whether repeated correctly or incorrectly. The results also show that the child was eager to imitate the parents' utterances in the imperative. She imitated 55.8% of the parents' imperative utterances. There is a remarkable difference in percentage between the child's imitation of parents' questions and declarative utterances 61.2% vs 12.3%; this can be attributed to the fact that the child was often answering the questions with the same verb.

7.2.2 The Role of Frequency in the Use of Verb Forms

In a usage-based account, children are considered to be sensitive to the frequency of constructions. The more frequently a word or word form is directed to a child, the earlier it is typically acquired or even overused in contexts for less frequent forms (see Bybee, 2006; Tomasello, 2003; Ambridge et al., 2015; Goodman, Dale, and Li, 2008; Theakston et al., 2004; Lieven & Tomasello, 2008; Naigles & Hoff-Ginsberg, 1998; Brooks et al., 1999).

Many empirical studies show that type and token frequencies play a primary role in the acquisition of the grammatical structure of the target language (Nicoladis et al., 2007; Bybee, 1995; Lieven & Tomasello, 2008). For the results of these studies see Chapter 5, Section 5.4.1.

By examining the frequency of the forms used by the parents, and its effect on the child's correctness rate and overgeneralisations of the forms, we found that for the tense context, over the period of observation the parents' use of present equalled with that of past, but the child's use of past was a lot more accurate than the present. Parents use imperative least, but imperative is highly accurate overall in the child's data. Past and imperative both become more accurate over time, whereas present does not become more accurate over time. This means that the frequency of forms in the parents' input does not have a clear impact on the child's production of forms. In the literature it has been argued that type and token frequency interact with other factors (i.e. complexity & maturation) in order for children to learn the language. As my data provides no evidence for the effect of type and token frequency in the

acquisition of tense forms, complexity might be playing a role in determining the child's development. The least target-like verb forms in the child's speech (present & future) are more complicated than past/perfective and imperative forms because they involve both prefixes and suffixes. However, maturation appears not to be playing a role at this stage of development because, as argued extensively, the child appears to have established underlying target grammatical representations for the features involved. At any rate, it is obvious that the amount of input in which parents use one tense form does not play a big role on the child's output. These results provide evidence against the usage-based account. Rather, it appears that grammar-internal processes, for example the linguistic complexity of the properties being acquired, determine the order in which those properties can be realised in speech by the child.

There was substantial overlap in the sets of verbs used by the three participants (see Table 6.9 in Chapter 6, Section 6.2.1). There was a correlation for type and token frequencies of verb forms. These observations suggest that there are frequency effects at the lexical level. This is compatible with both generative and usage-based approaches, as both assume that learning individual words depends on the amount of input evidence for these words. The other possible explanation is that parents and children use the same sets of verbs, as they are in the same situation, and talk about different things.

There was no consistent evidence for frequency effects where grammatical features are concerned. The person context shows no relation to the frequency of use of the forms between the parents and the child in the third person. However, there is a relation between the mother and the child, as the most frequent form for the mother is the second person and that is the highest correct form used by the child in the obligatory context. In addition, statistical analysis indicates that there is an influence of parental usage on the accuracy of the person forms used by the child: for example, the second person is the most frequently used form by the parents throughout, and the child is also most accurate in using this form, while the first person is the least frequently used by the parents and the least accurate by the child.

The number context shows an effect between the parents and the child. The singular forms were the most frequent form for the parents and also the most often correctly used in obligatory context for the child. The child used the number forms appropriately, therefore, the overgeneralisation of forms was very low – in the singular 11.6% and in the plural 4.4%.

In the gender context, the findings demonstrate that there is no effect between the parents' frequency of use and the child's highest correctness rate of use of the gender forms in the obligatory context. The parents' most frequent form is the feminine, whereas the most correctly used form for the child is the masculine. There is also no effect with respect to the child's overgeneralisation of the form, as masculine was the most overgeneralised form by the child. This contradicts with usage-based approaches that argued that frequency of forms can support language acquisition and helping children to overcome incorrect generalisations.

7.2.3 How Often Do Parents Provide Corrective Feedback?

Marcus (1993), argues that corrective feedback is not systematically provided to children, and negative evidence in the form of explicit correction is not reliably available to all children at every stage in languages acquisition.

Explicit corrections are a type of corrective feedback that contains expressions such as "*you can't say that"*. It is rare in the input and, even if it is provided to children, it does not give a clue to the child about the nature of the errors, because parents do not explain whether they are correcting a phonological, a morphological, or a syntactic error (Eisenbeiss, 2009: 2). Even when explicit corrections are provided to children, and children understand that they are being corrected, the lack of systematic uptake sometimes results in incorrect generalisation (McNeill, 1966). Reformulation, on the other hand, contains forms based on any child errors and provides information to children about how to say what they are intending to say (Chouinard & Clark, 2003). Previous studies demonstrated that reformulations occurred between 20% and 50% of the time in reaction to child's errors with respect to phonology, morphology and syntax.

Our findings indicate that the parents did not provide any type of explicit correction following the child's non-target-like forms. In addition, our figures revealed that the parents did not systematically provide corrective feedback to every child's non-target-like forms. They only provided corrective feedback in form of reformulations to 36.9% of the child's non-target-like verb forms. In 63.1% of the child's incorrect utterances, the parents did not provide any corrective feedback instead they carry on conversation or changing the topic. Our results are in line with the findings of previous studies, which obtained similar percentages

(Chouinard & Clark, 2003; Saxton 1997; Saxton et al., 1998, 2005; Valian & Casey, 2003; Clark, 1990, 1993; Farrar, 1992).

7.2.4 Does the Father Differ from the Mother with Respect to the Use of Verb Forms and the Provision of Corrective Feedback?

The total number of verb types produced by all the speakers was 160. The results in Chapter 6 show that the use of these verbs was different for each of the parents. The mother used more verb types than the father. She used 123/160 (76.8%) compared with the father's 83/160 (51.8%). Although the mother used more verb types than the father, the token frequency of these forms was higher in the father's production in comparison to the mother (1253 vs. 836). Taking a closer look at these numbers, we find that the most frequent verb form produced by the mother is the present (n= 344, 41.1%), followed by the past (n=260, 31.1%), and the imperative (n=163, 19.5%), with the less frequent tense verb form produced by the mother being the future (n=69, 8.3%). By contrast, the most frequent verb form produced by the father is the past (n=515, 41.1%), followed by the present (n=414, 33.1%) and the future (n=199, 15.8%). The least frequent tense produced by the father is the imperative (n=125, 10%).

Although there is a clear difference between the father and the mother in the frequency and the use of the tenses, there is a closer relation between them in terms of the percentages of use of these tenses. For example, the present tense frequency use for the father and the mother was (414 vs. 344) and in percentage terms this represents (33.1% v.s 41.1%). The percentage of the past tense also showed a close relation in use between the father and the mother (41.1% vs. 31.1%). The relation was also close between the father and the mother in the imperative (10% vs. 19.4%) and the future contexts (15.8% vs. 8.5%).

Regarding the other grammatical features - person, number, gender - the father always produces more verb tokens than the mother. This difference can be attributed to the different types of interactions each parent had with the child.

There is also a slight difference between the father and the mother with respect to the frequency of corrective feedback. The percentage is comparatively close between the father

and the mother in terms of providing the correct form of the verb (28.1% vs. 18.3%), or in providing the correct verb form as well as the other parts of speech (30.5% vs. 25%).

In general, there is no remarkable difference between the father and the mother regarding the use of tense and the other grammatical features. This may not be in line with earlier findings, which demonstrated that fathers are less tuned in to their young children in terms of their social and linguistic interaction (Mannle & Tomasello, 1987; Rutherford & Przednowek, 2012).

These findings support some earlier research with smaller sample sizes that found that fathers produced less talk and took fewer conversational turns than did mothers (Golinkoff & Ames, 1979; Rondal, 1980. These results support Gottman's (1998) findings that mothers were more verbal than fathers during interaction with their young children.

7.2.5 Does the Child Acknowledge Corrective Feedback and Produce More Correct Forms as a Result?

It was argued that parents do not give corrective feedback to every error that children make, and even if they intend to do so, they do not tell the child about the type and the locus of the error (Marcus, 1993; Eisenbeiss, 2009). Bohannon and Stanowicz, (1988) provided evidence that parents correct only 35.9% of their children's syntactic errors.

Our findings demonstrated that the parents only provided corrective feedback to 36.9% of the child's incorrect utterances; in 12.3% of the cases they reformulated only the incorrect verb form but not the other parts of speech, and in 24.6% they reformulated the incorrect verb form as well as the other parts of speech. The findings also indicate that the child did not acknowledge the parental corrective feedback, as she only benefited from the correct use of the forms presented by the adult in 0.9% of instances. However, in the rest of the cases, she either used the old incorrect form (10.5%), or talked about completely different topics (76.8%), with no response at all in 11.8%.

The results support earlier findings with respect to the amount of corrective feedback parents provided to their children, as well as in terms of children's acknowledgement of corrective feedback.

7.2.6 Does the Child Respond Differently to Maternal and Parental Corrective Feedback?

In terms of the parental reformulation of the child's incorrect errors, the percentage is very close between the father and the mother (30.5% vs. 25%). The child showed a slight preference in her response to the parents' corrections of the errors. She did not respond to 77.2% of the corrections provided by the father and 45.9% of the corrections provided by the mother.

In terms of the parents' replay of the child's correct forms, the percentage again is very close between the father and the mother in cases where they imitate the child's correct verb form (15.7% vs. 16.7%) or provide a different verb form (28.1% vs. 27.8%). However, the child responded to the mother using the correct verb form provided in 41.7% of cases and to the father in only 14.6% of cases. Thus, the child showed more interest in the mother's feedback than the father's, but it was not a remarkable difference.

7.3 Limitations of the Study and Further Research

In a study of this nature there will inevitably be some limitations. It is acknowledged that the thesis has been completed with the following controls and constraints.

First, the research was based on only one child for a limited period of time. Although case studies are considered as an important and useful method of data collection, one of the main criticisms is that the findings obtained cannot necessarily be generalised to the wider population.

Second, the techniques used to collect the sample were very limited; only a spontaneous production data technique was used. The research does not include any type of production experiment or semi-structured elicitation techniques, which are designed to enrich the sample by encouraging children to produce the structure being investigated. Thus, children were not encouraged to use a wider range of forms or produce inflected forms of novel words. Moreover, comprehension was not tested.

Third, the amount of sample used is rather small: only 35 hours were included. This is considered a small amount of data compared to other longitudinal studies. More than 40 hours have been recorded, but it has been concluded that, due to limitations of time, 35 hours is the optimum amount of data possible for inclusion in this thesis.

Fourth, no information about input from other sources was included. As discussed in the methodology in Chapter 5, the parents provide the only source of input measured in this study and no other sources have been recorded, although the child receives input from different sources (e.g. siblings, peers, etc.).

Recommendations for future research. The thesis has addressed many core issues in acquisition research: i) the acquisition of verb inflection, and ii) the role of input on the acquisition of these properties. While the data analysis and the ensuing discussion has provided answers to all the research questions, new questions arose and could not be answered without more samples of data and further investigation, as outlined below.

Firstly, data is needed from more children, rather than a single case study, in order to draw a more general conclusion about the acquisition of verb inflection among children speaking Libyan Arabic.

Secondly, in addition to the parents as a source of input, the inclusion of other sources is required in the sample to determine the effect of all the varying samples of input that children are exposed to.

Thirdly, the results obtained in this research were based on a data sample collected at the age of 30 months. This is not considered to be an appropriate age for certain inflectional properties to be investigated; therefore, it is necessary to investigate children at an earlier age to determine the onset of some inflectional properties.

Finally, last but not least, this research looked at verbs only; thus, it is recommended that nouns and adjectives should also be investigated, in order to ascertain the effects of input on their acquisition.

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APPENDIXES

APPENDIX 1: ETHICAL APPROVAL FORM

Application for Ethical Approval of Research Involving Human Participants

This application form should be completed for any research involving human participants conducted in or by the University. 'Human participants' are defined as including living human beings, human beings who have recently died (cadavers, human remains and body parts), embryos and foetuses, human tissue and bodily fluids, and human data and records (such as, but not restricted to medical, genetic, financial, personnel, criminal or administrative records and test results including scholastic achievements). Research should not commence until written approval has been received (from Departmental Research Director, Faculty Ethics Committee (FEC) or the University's Ethics Committee). This should be borne in mind when setting a start date for the project.

Applications should be made on this form, and submitted electronically, to your Departmental Research Director. A signed copy of the form should also be submitted. Applications will be assessed by the Research Director in the first instance, and may then passed to the FEC, and then to the University's Ethics Committee. A copy of your research proposal and any necessary supporting documentation (e.g. consent form, recruiting materials, etc) should also be attached to this form.

A full copy of the signed application will be retained by the department/school. The signed application form cover sheet will be sent to the Research Governance and Planning Manager in the REO as Secretary of the University's Ethics Committee.

1. Title of project:

   Sequential Acquisition in Infancy of Arabic and English: The Role of Input

2. The title of your project will be published in the minutes of the University Ethics Committee. If you object, then a reference number will be used in place of the title. Do you object to the title of your project being published? Yes No√

3. This Project is: ☐ Staff Research Project

☐√ Student Project

4. Principal Investigator(s) (students should also include the name of their supervisor):

Name:	Department:
Student: AlbashirMussa	Language and Linguistics
Supervisors: 1- Sonja Eisenbeiss	Language and Linguistics
2- Roger Hawkins	Language and Linguistics

5. If external approval for this research has been given, then only this cover sheet needs to be submitted

External ethics approval obtained Yes ☐ No

Declaration of Principal Investigator:

The information contained in this application, including any accompanying information, is, to the best of my knowledge, complete and correct. I/we have read the University's *Guidelines for Ethical Approval of Research Involving Human Participants* and accept responsibility for the conduct of the procedures set out in this application in accordance with the guidelines, the University's *Statement on Safeguarding Good Scientific Practice* and any other conditions laid down by the University's Ethics Committee. I/we have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my/our obligations and the rights of the participants.

Signature(s):.....

……..

Name(s) in block capitals: ALBASHIR MUSSA

Date: 01-07-2009

Supervisor's recommendation (Student Projects only):

I support this student's application for ethical approval.

Supervisors' signature:

1- Roger Hawkins……. 2- Sonja Eisenbeiss……

The Departmental Director of Research (DoR) has reviewed this project and considers the methodological/technical aspects of the proposal to be appropriate to the tasks proposed. The DoR considers that the investigator(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in this application, and to deal with any emergencies and contingencies that may arise.

This application falls under Annex B and is approved on behalf of the FEC

☐

This application is referred to the FEC

☐

Signature(s):

.....

Name(s) in block capitals:

.....

Department:

……..……..…

Date: ……

The application has been approved by the FEC ☐

The application has not been approved by the FEC ☐

The application is referred to the University Ethics Committee ☐

Signature(s):

.....

Name(s) in block capitals:..... ……..….

Faculty: ……..……...……

Date: ……..…….……

Details of Funding

1. Will this project be externally funded?

Yes √ No ☐

If Yes,

2.	What is the source of the funding?
	PhD Scholarship from Libyan Government

Details of the Project

3.	Proposed start date: January 2008
4.	Probable duration: 3 years
5.	Brief outline of project (This should include the purpose or objectives of the research, brief justification, and a summary of methods. It should be approx. 150 words in everyday language that is free from jargon).
	It is a PhD project investigating the role of input in morpho-sytnactic development in Arabic. The study is based on a longitudinal corpus of data. The data will be collected from a girl acquiring Libyan Arabic. This corpus records not only the linguistic production of the child, but also the language of her interlocutors. The data will be Video, and audio recorded between 4-5 hours a week, over an 13 month period. The researcher has already some recordings from his own family which might be used in this project. The expected results of the study will contribute to research on first language acquisition and to the ongoing debate about the role of input in children's language.

Participant Details

6. Will the research involve human participants? (indicate as appropriate)

Yes√ No☐

7. Who are they and how will they be recruited? (If any recruiting materials are to be used, e.g. advertisement or letter of invitation, please provide copies).

The main participant in this project is my daughter who is 2;6.

As the data will be collected in two different places; home stay and daycare centre, thus, other people will be participated in these places:

a-Home stay:

The participants at the home stay are: My self, my daughter, my wife and my son.

b-Daycare centre

The participants at day care centre will be my daughter, other children at her group, and her daycare teachers. The participants will be recruited by the Manager of the centre and by the consent form for the parents.

Will participants be paid or reimbursed? No

8. Could participants be considered?

(a) Yes typically developing child (and other typically developing children) √ ☐

(b) To feel obliged to take part in the research? NO ☐

If the answer to either of these is yes, please explain.

Informed Consent

9. Will the participant's consent be obtained for involvement in the research, orally or in writing? (Please attach an example of written consent for approval):

Yes ☐ √ No ☐

How will consent be obtained? If not possible, explain why

N/A

Please attach a participant information sheet where appropriate.

Confidentiality / Anonymity

10. If the research generates personal data, describe the arrangements for maintaining anonymity and confidentiality or the reasons for not doing so.

The data collected at home will be anonymized and a mixed of the initials of the participants will be marked the transcripts.

For the daycare centre, the data also will be anonymized; and transcripts will be identified by combinations of letters and numbers. Children's ages and language background only will be identified. No other personal information about the children will be passed on to people outside the research project.

Data Access, Storage and Security

11. Describe the arrangements for storing and maintaining the security of any personal data collected as part of the project. Please provide details of those who will have access to the data.

- My supervisors will have access to all my data; video, audio and transcripts.
- Transcripts only might be available for other researchers working in the same field.
- It might be made available via the webpage of Child Language Data Exchange System.

It is a requirement of the Data Protection Act 1998 to ensure individuals are aware of how information about them will be managed. Please tick the box to confirm that participants will be informed of the data access, storage and security arrangements described above. If relevant, it is appropriate for this to be done via the participant information sheet.√☐

Further guidance about the collection of personal data for research purposes and compliance with the Data Protection Act can be accessed at the following weblink. Please tick the box to confirm that you have read this guidance (http://www2.essex.ac.uk/rm/dp/research.shtm).√ ☐

Risk and Risk Management

12. Are there any potential risks (e.g. physical, psychological, social, legal or economic) to participants or subjects associated with the proposed research?

Yes ☐ No √

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:
N/A

13. Are there any potential risks to researchers as a consequence of undertaking this proposal that are greater than those encountered in normal day-to-day life?

Yes ☐ No √

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:
N/A

14. Are there any other ethical issues that have not been addressed which you would wish to bring to the attention of the Faculty and/or University Ethics Committees

N/A

APPENDIX 2: CONSENT FORM

UNIVERSITY OF ESSEX

FORM OF CONSENT TO TAKE PART IN A RESEARCH PROJECT

CONFIDENTIAL

Investigator personal details

Name: Albashir Surname: Mussa Age: 35

Department: Language and Linguistics Degree: PhD

Supervisors: 1- Sonja Eisenbeiss seisen@essex.ac.uk

2- Roger Hawkins roghawk@essex.ac.uk

Address:

Email address: amussa@essex.ac.uk Contact Number: 07867967611

Title of project / investigation:

Sequential Acquisition in Infancy of Arabic and English

Brief outline of project, including an outline of the procedures to be used:

It is a PhD project investigating the role of input in morpho-sytnactic development in Arabic. The study is based on a longitudinal corpus of data. The data will be collected from a girl acquiring Libyan Arabic. The data will be video, and audio recorded, it will be collected from the child, her parents, teachers and children at daycare centre.

Children will be recorded just two hours per week at day care centre during this term and might be the next term, mainly at meal time and free play sessions. Children will not be given any questions to answer or any game to play; only their ordinary speech will be recorded. The main focus will be the child who the project is based on.

The data will be confidential and will be used for language research only. The data will also be anonymized; and transcripts will be identified by combinations of letters and numbers. Children's ages and language background only will be identified. No other personal information about the children will be passed on to people outside this research project. The anonymized

I, ... *(participant's full name) agree to take part in the above-named project / investigation, the details of which have been fully explained to me and described in writing.

Signed..... Date.....

(Participant)

I, AlbashirMussa *(Investigator's full name) certify that the details of this project / investigation have been fully explained and described in writing to the subject named above and have been understood by him / her.

Signed..... Date.....

(Investigator)

*Please type or print in block capitals

APPENDIX 3: CONSENT GURDIAN FORM

UNIVERSITY OF ESSEX

FORM OF CONSENT, ON BEHALF OF PARTICIPANT, TO TAKE PART IN A RESEARCH PROJECT

CONFIDENTIAL

Investigator personal details

Name: Albashir Surname: Mussa Age: 35

Department: Language and Linguistics Degree: PhD

Supervisors: 1- Sonja Eisenbeiss seisen@essex.ac.uk

2- Roger Hawkins roghawk@essex.ac.uk

Address:

Email address: amussa@essex.ac.uk Contact Number: 07867967611

Title of project / investigation:

The Acquisition of Verb Inflection in Libyan Arabic: The Role of Input

Brief outline of project, including an outline of the procedures to be used:
It is a PhD project investigating the role of input in morpho-sytnactic development in Arabic. The study is based on a longitudinal corpus of data. The data will be collected from a girl acquiring Libyan Arabic. The data will be video and audio recorded, it will be collected from the child, and her parents.

The data will be confidential and will be used for language research only. The data will also be anonymized; and transcripts will be identified by combinations of letters and numbers. The anonymized transcript only without video might be made available to other researchers working at the same field. It might be made available via the webpage of Child Language Data Exchange System

I, ... *(carer/parent/guardian's full name) the undersigned being the carer / parent / guardian** for

..... *(participant's full name) having read and understood the protocol presented to me hereby give consent for the participant named above to take part in the above-named project / investigation as described in the protocol.

Signed..... Date.....
(Carer / Parent / Guardian**)

I, AlbashirMussa *(Investigator's full name) certify that the details of this project / investigation have been fully explained and described in writing to the carer / parent / guardian ** named above and have been understood by him / her.

Signed..... Date.....
(Investigator)

* Please type or print in block capitals
**Delete as appropriate

APPENDIX 4: LOG FILE

Copy	Type	Session duration	Begins	Ends	Activity type	Folder	participants
AM2008-10-02	V	48min	1:17	2:05	FP&NS	Oct 1	F,M&ch1
AM2008-10-11	V	50min	01:15	2:10	NS	Oct 3	M&Ch1
AM2008-10-23	V	55min	11:00	11:55	NS	Oct 4	F&Ch1
AM2008-11-02	V	48min	3:10	3:58	NS	Nov 1	F&Ch1
AM2008-11-13	V	57min	10:35	11:32	NS	Nov 2	F,M&Ch1
AM2008-11-21	V	40min	9:15	9:55	NS,MT&FP	Nov 3	F,M&Ch1
AM2008-12-07	V	50min	3:10	4:00	NS	Dec 2	F,M&Ch1
AM2008-12-15	V	62min	5:10	6:12	FP	Dec 2	F,M&ch1
AM2008-12-30	V	62min	9:20	10:22	FT&RS	Dec 3	F,M&ch1
AM2009-02-02	V	45min	7:40	8:25	MT	Feb 1	M&Ch1
AM2009-02-17	V	62min	7:40	8:42	MT&FP	Feb 2	M,F&Ch1
AM2009-02-26	V	60min	01:15	2:15	RS&NS	Feb 4	F,M&Ch1
AM2009-03-01	V	55min	8:20	9:15	NS&FP	Mar 1	F,&Ch1
AM2009-03-12	V	41min	11:00	11:41	RS&NS	Mar 3	M&Ch1
AM2009-03-14	V	46min	3:10	3:56	NS&FP	Mar 3	M&Ch1
AM2009-04-04	V	42min	5:05	5:52	NS&RS	Apr 1	M,F,Ch1&ch2
AM2009-04-12	V	45min	4:35	5:20	RS	Apr 3	M&Ch1
AM2009-04-29	V	50min	12:15	1:05	RS&FP	Apr 8	M&Ch1
AM2009-05-04	V	39min	4:35	5:14	FP&RS	May 2	M&Ch1
AM2009-05-06	V	48min	7:12	8:00	NS&RS	May 3	M&Ch1
AM2009-05-25	V	44min	1:40	2:24	FP&RS	May 9	F,M&Ch1
AM2009-06-07	V	54min	12:45	1:39	FP,RS&NS	June 2	F,M&Ch1
AM2009-06-12	V	60min	1:40	2:40	FP&NS	Jun 3	M&Ch1
AM2009-06-21	V	62min	6: 15	7:17	FP&NS	Jun 4	F,M&Ch1
AM2009-06-25	V	62min	4:45	5:47	NS	June 5	F,M&ch1
AM2009-07-10	V	52min	12:10	1:02	FP	July 2	F,M&Ch1
AM2009-07-19	V	46min	2:20	3:06	NS&FP	July 3	F,M&Ch1
AM2009-07-27	V	60min	3:20	4:20	NS&FP	July 5	F,M&Ch1
AM2009-08-01	V	55min	5:10	6:05	NS&FP	Aug 3	M&ch1
AM2009-08-11	V	47min	4:10	5:57	NS&FP	Aug 4	M&ch1
AM2009-08-30	V	62min	8:20	9:22	FP	Aug 5	F&Ch1
AM2009-09-07	V	61min	11:10	12:11	NS&FP	Sept 1	M&ch1
AM2009-09-18	V	62min	3:20	4:22	FP	Sept 2	F&Ch1
AM2009-10-04	V	44min	6:55	7:39	FP	Oct 1	F&Ch1
AM2009-10-10	V	53min	9:20	10:13	NS&FP	Oct 2	F&ch1

FP: free play MT: meal time RS: reading story NS: natural speech
Ch1: child1 Ch2: child 2 F: father M: mother V: video

APPENDIX 5: The structure of the ELAN

The structure of the ELAN file

Each speaker has four tiers:

1-Transcription tier (main tier).

This is the main tier for each speaker. In this tier the actual words that are produced by the speaker are transcribed here. For example, CH1 are the expressions of the child.

2-Comments tier

(referring to transcription tier) and explaining any ambiguous or unclear utterances in the transcription tier. It is sometimes unclear as to how to interpret the speaker's intention from the main tier. Therefore, it is important to explain that in the comments tier in order to get a correct linguistic analysis (Stephany and Bast, 1999).

(1)*ch1: deri [*] [: bendi:r] bruhi
%com: she drops the future prefix (ben)

These comments are not associated with all annotations, but only when the transcriber believes that they are necessary. At some points if the comments are very short they are placed in the main tier, such as:

(2)*ch1: Malik uttu: [*] [: bneshru:] (WO) kulaṭa [*] [: shuklaṭa]

File name conventions

The Size of Annotations

Every utterance has been transcribed as one annotation unless it was interrupted by another speaker.

Deviant Forms

Ungrammatical forms are always followed by an asterisk in square brackets and the correct form is added in square brackets with a colon after the first square bracket:

(3) ([*] [:]).
*ch1: takli [*] [: ibnakel] bad^{h}ena [*] [: bazin]
Eat-2.FEM.SG.PRS [*] [: eat-1.SG.FUT] [*] [: ugali-MASC.SG] (pho)

I will eat ugali

Capitals

Capital letters appear at the beginning of proper nouns (people, places).

(4) *mot: shendarellik Malik?
What do-3.MASC.SG-for-you Malik
What did Malik do for you?

The Spelling of Stems and Bases

Arabic is a language where changes in the stem vowels can work as grammatical markers (Ryding, 2005). Therefore, the non-target forms of the stem will be transcribed as they are produced, and will be marked by an asterisk in square brackets. The target form will then be set out in square brackets, after a colon and a blank, e.g:

Production [*] [: Target}

(5) kolha [*] [: kolaha]
eat-2.MASC.SG.IMP eat-2.FEM.SG.IMP
eat it.

The spelling of the grammatical markers

Grammatical markers will be transcribed as they are produced. In case of deviation from the target they will then be marked by an asterisk in square brackets, and the target form will be provided in square brackets, after a colon, (Stephany and Bast 1999): e.g:

Production Target

(6) akul [*] [: yakel]
Eat-2.MASC.SG.IMP Eat-3.MASC.SG.PRS
You eat *he is eating*

Doubtful material

If the child's language is not understandable, then that word or group of words will be marked by [?]

(7) *ch1: delatilata [?]
Do-2.MASC.SG.IMP tilata [?]

You do .....

Foreign Words

Words that do not belong to the participant's native language are marked by "@" at the beginning of the word or the group of words if more than one.

(8) yakil tandwich @e [*] [: sandwich]

The letter "*e*" in the example above denotes that the word belongs to the English language.

If a word or group of words are loaned, they are written as they are without any sign,

Unintelligible speech

If the child's words or utterance are unintelligible, then this sign 'xxx' will be put instead.

(9) *ch1: dʰebl [*] [: benji:b] 'xxx' 'xxx' mahal.

Bring-2.MASC.SG.IMP [*] [: bring-1.SG.FUT] 'xxx' 'xxx' shop-MASC.SG

I will bring 'xxx' 'xxx' shop

Omission of parts of words

If part of a word is missing, then the missing part will be added in parentheses "( )", if the target form is clear. But if the target form is not clear then the word should be treated as a deviant form.

(10) *ch1: baba adi(m)ta' baba (m)ta' baba (m)ta' baba

Daddy this-FEM.SG for daddy for daddy for daddy

This is for daddy

Omitted words and Constituents

A combination of zero plus the abbreviation of the omitted word in the transcription tier will be adapted here, for example:

0art: for article omissions.

(11)*ch1: mt [*] [: bnemshi] 0prep 0art yada [*] [: 'eyada] meda [*] [: mreḍʰa].

Go-2.SG.IMP [*] [: go-1.SG.FUT] 0prep(to) 0art(the) [*] [: clinic-FEM.SG] [*] [: ill-FEM.SG]

I am going to the clinic, I am ill.

0prep: for preposition omission.

(12)*ch1: aniikku: [*] [: ibnimshi] 0prepsa'udiya.
I go-2.PL.IMP [*][: go-1.SG.FUT] 0prep(to) Saudia-FEM.SG
I will go to Saudi Arabia

0verb: for verb omission.

(13)*ch1: bihi [*] [: manibbish] waiyawaiya [*] [: shwaiya] waiya [*] [: shwaiya] 0verb aba aba [*] [: halbahalba].
[*] [: not-want-1.SG.PRS-not] [*] [: little] (pho) [*][: little] (pho) 0verb (want) [*][: alot] (pho).
I don't want little, I want a lot

0noun: for noun omission.

(14)*ch1: talata [*] [: shratla] 0nounlo:napikky @e [*] [: pink].
Buy-1.SG.PST-it-MASC.SG [*] [: buy-1.SG.PST-to-him] 0noun clour-MASC.SG-its pink
I bought him a.....in pink

0conj: for conjunction omission.

(15)*ch1: hadihadiani0conjtala [*] [: Sara].
This-FEM.SG this-FEM.SG I 0conj(and) [*] [: Sarah] (pho)
This is me and Sarha

Pauses

If we have pauses within the utterance which last for more than two seconds, we have marked it with '#'. It is duplicated if the pause is longer than eight seconds (Stephany and Bast 1999).

Retracing

This sign '[/]'will be used if the child repeats the word without correction. If the child repeats the word with self correction, then the sign will be duplicated '[//]'.

Unclear speech

A question mark in a square bracket [?] will be used if the child's speech is not clear or is doubtful.

(16)*ch1: tadi [?] atto [?] dokan

Interruption

If the speaker in interrupted by another speaker, this sign "+/" will be added at the end of the utterance.

Punctuation

These punctuation characters can be used: . ; ! ? [ ] . Each has a special function, for example at the end of the utterance a full stop, question mark or an exclamation mark will be used. A colon and semicolon are used within the utterance (Stephany and Bast, 1999).

(17)*ch1: Talaḥibba [*] [: inḥibha] aniTalaḥiba [*] [: inḥibha].
Sarah love-2.MASC.SG.IMP-him [*] [: love-1.SG.PRS-her] I Sarah Sarah love-2.MASC.SG.IMP-him [*] [: love-1.SG.PRS-her]
I love Sarah.

*mot: inti thibbi Sara?
You-FEM.SG love-2.FEM.SGPRS Sarah?
Do you Love Sara

APPENDIX: 6A: Number of Verb Token for each Verb Form for all Speakers

No	Verb	Gloss	Child	Father	Mother
1	'abba	fill	10	1	0
2	'add	count	1	2	5
3	'aḍḍ	bite	17	4	2
4	'addal	balance	0	0	1
5	'ayyt	cry	7	10	0
6	'allam	learn	2	3	5
7	are	*	0	0	5
8	'arra	uncover	0	0	1
9	b'id	Get away	2	1	0
10	bān	appear	0	0	2
11	bazza'	pour	6	1	6
12	bda	start	0	0	3
13	bka	cry	5	13	1
14	bna	build	2	3	0
15	ḍam	tidy	0	1	3
16	daff	push	0	0	1
17	dār	do	116	144	58
18	dawwar	search	6	0	0
19	das	hide	2	1	2
20	dhik	laugh	4	3	0
21	drab	hit	57	64	15
22	intbah	focus	0	0	2
23	fekker	think	0	0	1
24	ferrej	see	0	1	0
25	'fas	step	0	0	1
26	fāt	pass	0	0	1
27	finish	*	0	0	3
28	fṭer	eat	0	0	2
29	ftaḥ	open	16	8	8
30	ġayyar	Change	1	1	1
31	ġanna	Sing	0	0	1
32	ġeṭṭe	Cover	0	0	1
33	ġsal	Wash	4	3	2
34	g'ad	Stay	11	6	4
35	gāl	Say	77	59	108
36	ga'maz	Sit	10	12	21
37	gaṣ	cut	6	5	0
38	gaṭṭar	drop	1	0	0
39	gdar	Can	0	1	1
40	give	*	0	0	1
41	go	*	1	0	0
42	grē	Study	5	6	4

43	ḥab	love	36	27	27
44	ḥem	eat	0	0	1
45	ḥērab	fight	0	0	1
46	ḥerrek	stair	0	0	1
47	ḥerreš	report	1	0	1
48	ḥeṭ	put	12	26	10
49	ḥewwal	Move	3	3	4
50	ḥawwas	Mix	0	0	1
51	hdaff	through	1	4	0
52	ḥka	tell	9	12	15
53	ḥlim	dream	1	0	3
54	ḥrag	burn	1	0	2
55	hrij	sulk	2	2	0
56	ḥṣil	trap	0	0	1
57	hadraz	chat	0	0	1
58	indār	do	0	0	1
59	itasal	call	0	0	1
60	jā	come	46	12	15
61	jāb	bring	48	86	27
62	jrā	run	4	2	0
63	kaḥ	cough	0	0	1
64	kallam	talk	21	10	14
65	kammal	finish	3	1	3
66	kān	is	0	0	1
67	kassar	break	0	1	2
68	klā	eat	39	38	10
69	ksar	break	13	26	2
70	ktab	write	0	3	0
71	labbas	wear	0	0	1
72	lammad	gather	0	1	0
73	lawwaḥ	get rid	17	15	0
74	lbas	wear	15	8	16
75	l'ib	play	29	20	13
76	lge	find	0	0	1
77	lḥag	follow	2	0	0
78	mad	stretch	0	0	2
79	mamma	eat	0	0	5
80	mass	touch	5	0	2
81	māt	die	5	6	0
82	msaḥ	erase	0	0	1
83	mša	go	88	198	69
84	mšaṭ	comb	0	0	2
85	naḍ	awake	3	2	3
86	naggaz	jump	5	1	0
87	naḥḥa	remove	13	5	4
88	nanna	Sleep	9	5	4
89	nfax	blow	0	2	0
90	njaḥ	Success	2	0	4

91	nzal	Came down	1	0	1
92	rad	Return	1	0	1
93	'raf	Know	0	16	10
94	rāḥ	Go	110	29	10
95	rajja'	Return	0	0	1
96	rakkab	collect	0	1	0
97	ras	insert	1	0	0
98	rawwaḥ	Come back	1	0	2
99	rbaṭ	knot	0	1	1
100	rfa'	Take	0	9	4
101	rgad	Sleep	3	2	1
102	rgas	dance	5	0	0
103	rja'	Come back	1	0	4
104	rkab	ride	21	13	7
105	rmē	Put	2	5	1
106	rsam	Draw	0	1	4
107	ṣab	Pour	4	1	2
108	ṣawwar	Take photo	21	12	14
109	ṣgaṭ	Fail	0	0	1
110	sa'ad	help	2	0	4
111	saggam	can	0	0	4
112	sayyb	leave	0	0	1
113	sakkar	close	10	5	6
114	ṣalla	pray	4	3	0
115	sallam	Greet	0	0	1
116	samah	forgive	3	0	0
117	sawwa	do	2	0	0
118	sga	water	0	0	1
119	šad	catch	5	5	3
120	šaf	see	46	4	20
121	šayy’	carry	16	8	0
122	šbi'	fill up	0	0	1
123	šra	buy	46	59	31
124	šrab	drink	1	2	1
125	skat	stop talking*	0	0	2
126	skan	live	0	4	0
127	sleep	*	0	0	2
128	sme'	hear	0	6	12
129	sna'	make	0	0	1
130	stanna	wait	0	0	4
131	'ṭē	give	30	47	16
132	ṭāb	cook	11	10	0
133	ṭār	fly	1	3	0
134	tell	*	1	0	0
135	ṭāḥ	fall	55	41	4
136	ṭla’	leave	0	1	0
137	ṭawwl	lengthen	0	0	1
138	tabba'	follow	0	0	1

139	tam	finish	2	0	3
140	tfarraj	watch	1	2	1
141	tġadda	eat	0	0	1
142	twaḍḍa	clean	8	2	0
143	t’allam	learn	7	3	0
144	wakkal	feed	0	0	1
145	walla	come back	3	2	2
146	warra	show	0	1	0
147	waxxar	reverse	0	0	1
148	wgaf	Stand	0	4	1
149	wja'	hurt	0	1	0
150	xabbaṭ	knock	0	0	3
151	xalla	leave	11	9	25
152	xḍa	take	3	0	3
153	xnag	strangle	0	0	2
154	xraṭ	comb	3	0	0
155	yebbi	want	132	72	55
156	yedri	know	0	0	3
157	yešbeḥ	like	0	0	2
158	zad	add	11	0	4
159	z'al	upset	2	0	4
160	zawad	come	0	0	1
Total			1389	1253	836

*No gloss if the child uses English

APPENDIX: 6B: Number of Months the Verb Type appeared in for All Speakers

No	Verb	Gloss	Child	Father	Mother
1	'abba	fill	0	1	0
2	'add	count	1	1	3
3	'aḍḍ	bite	5	2	2
4	'addal	balance	0	0	1
5	'ayyt	cry	1	3	0
6	'allam	learn	2	3	1
7	are	*	0	0	1
8	'arra	uncover	0	0	1
9	b'id	Get away	1	1	0
10	bān	appear	1	0	1
11	bazza'	pour	3	1	2
12	bda	start	0	0	2
13	bka	cry	1	4	1
14	bna	build	2	1	0
15	ḍam	tidy	0	1	1
16	daff	push	0	0	2
17	dār	do	11	8	9
18	dawwar	search	3	0	0
19	das	hide	2	1	1
20	dhik	laugh	2	2	0
21	drab	hit	8	6	5
22	intbah	focus	0	0	1
23	fekker	think	0	0	1
24	ferrej	see	0	1	0
25	'fas	step	0	0	1
26	fāt	pass	0	0	1
27	finish	*	0	0	1
28	fṭer	eat	0	0	1
29	ftaḥ	open	7	4	3
30	ġayyar	Change	1	1	1
31	ġanna	Sing	0	0	1
32	ġeṭṭe	Cover	0	0	1
33	ġsal	Wash	2	1	1
34	g'ad	Stay	2	2	4
35	gāl	Say	10	8	9
36	ga'maz	Sit	5	5	8
37	gaṣ	cut	2	1	0
38	gaṭṭar	drop	1	0	0
39	gdar	Can	0	1	1
40	give	*	0	0	1
41	go	*	1	0	0
42	grē	Study	3	3	2

43	ḥab	love	7	5	6
44	ḥem	eat	0	0	1
45	ḥērab	fight	0	0	1
46	ḥerrek	stair	0	0	1
47	ḥerreš	report	1	0	1
48	ḥeṭ	put	5	18	5
49	ḥewwal	Move	1	3	3
50	ḥawwas	Mix	0	0	1
51	hdaff	through	1	1	0
52	ḥka	tell	3	5	2
53	ḥlim	dream	1	0	1
54	ḥrag	burn	1	0	2
55	hrij	sulk	1	1	0
56	ḥṣil	trap	0	0	1
57	hadraz	chat	0	0	1
58	indār	do	0	0	1
59	itasal	call	0	0	1
60	jā	come	11	5	6
61	jāb	bring	12	8	8
62	jrā	run	2	1	0
63	kaḥ	cough	0	0	1
64	kallam	talk	7	4	7
65	kammal	finish	1	1	1
66	kān	is	0	0	1
67	kassar	break	0	1	1
68	klā	Eat	9	7	6
69	ksar	break	5	4	1
70	ktab	write	0	2	0
71	labbas	wear	0	0	1
72	lammad	gather	0	1	0
73	lawwaḥ	get rid	3	3	0
74	lbas	wear	5	3	4
75	l'ib	play	11	6	4
76	lge	find	0	0	1
77	lḥag	follow	1	0	0
78	mad	stretch	0	0	1
79	mamma	eat	0	0	2
80	mass	touch	3	0	1
81	māt	die	3	1	0
82	msaḥ	Erase	0	0	1
83	mša	go	10	9	8
84	mšaṭ	comb	0	0	1
85	naḍ	awake	2	2	2
86	naggaz	jump	5	0	0
87	naḥḥa	remove	5	3	4
88	nanna	sleep	3	5	2
89	nfax	blow	0	1	0
90	njaḥ	success	2	0	2

91	nzal	came down	1	0	1
92	rad	return	1	0	1
93	'raf	know	0	5	3
94	rāḥ	go	11	4	4
95	rajja'	return	0	0	1
96	rakkab	collect	0	1	0
97	ras	insert	1	0	0
98	rawwaḥ	come back	1	0	1
99	rbaṭ	knot	0	1	1
100	rfa'	take	0	3	2
101	rgad	sleep	2	2	1
102	rgas	dance	2	0	0
103	rja'	come back	2	0	3
104	rkab	get in	6	4	3
105	rmē	put	1	2	1
106	rsam	draw	0	1	2
107	ṣab	pour	2	1	1
108	ṣawwar	take photo	7	4	8
109	ṣgaṭ	fail	0	0	1
110	sa'ad	help	1	0	2
111	saggam	can	0	0	1
112	sayyb	leave	0	0	1
113	sakkar	close	4	1	5
114	ṣalla	pray	2	1	0
115	sallam	greet	0	0	1
116	samah	forgive	2	0	0
117	sawwa	do	1	0	0
118	sga	water	0	0	1
119	šad	catch	3	2	2
120	šaf	See	9	3	9
121	šayy’	carry	4	2	0
122	šbi'	fill up	0	0	1
123	šra	buy	9	8	4
124	šrab	drink	1	2	1
125	skat	stop talking*	0	0	1
126	skan	live	0	1	0
127	sleep	*	0	0	1
128	sme'	hear	0	4	7
129	sna'	make	0	0	1
130	stanna	wait	0	0	2
131	'ṭē	give	8	9	6
132	ṭāb	cook	2	2	0
133	ṭār	fly	1	1	0
134	tell	*	1	0	0
135	ṭāḥ	fall	9	6	2
136	ṭla’	leave	1	1	0
137	ṭawwl	lengthen	0	0	1
138	tabba'	follow	0	0	1

139	tam	finish	1	0	2
140	tfarraj	watch	1	1	1
141	tġadda	eat	0	0	1
142	twaḍḍa	clean	2	1	0
143	t’allam	learn	4	2	0
144	wakkal	feed	0	0	1
145	walla	come back	1	1	2
146	warra	show	0	1	0
147	waxxar	reverse	0	0	1
148	wgaf	Stand	0	2	1
149	wja'	hurt	0	1	0
150	xabbaṭ	knock	0	0	1
151	xalla	leave	6	6	9
152	xḍa	take	3	0	1
153	xnag	strangle	0	0	1
154	xraṭ	comb	1	0	0
155	yebbi	want	12	9	9
156	yedri	know	0	0	2
157	yešbeḥ	like	0	0	1
158	zad	add	4	0	2
159	z'al	upset	2	0	2
160	zawad	come	0	0	1
Total			330	257	287

*No gloss if the child uses English