The Acquisition of Subject and Object Clitics in Swahili

Kamil Deen

1. Introduction

Swahili is a Bantu language spoken in Eastern Africa (Kenya, Tanzania, Uganda, as well as parts of Central African Republic and northern Mozambique). Clitics in Swahili (and other Bantu languages) occur as prefixes on the verb, marking both subject reference and direct object reference. As with clitic forms in other languages, a debate exists as to whether these clitics are incorporated pronouns or grammatical agreement forms. In this chapter, we investigate this issue with respect to Swahili, drawing on a series of diagnostic tests established by Bresnan and Mchombo (1987). To anticipate, it is concluded that both subject clitics (SC) and object clitics (OC) are grammatical agreement morphemes, unlike other well-known Bantu languages such as Chichewa (Bresnan and Mchombo, 1987).

Besides the question of the status of clitics in Swahili, questions arise over what the developmental trajectories of these two clitics are. We first consider predictions made on the basis of well-known and well-regarded facts about child language more broadly. The four predictions all state that SC will be acquired before OC. The results presented in this chapter go counter to these predictions: The key finding is that Swahili speaking children acquire OC earlier than SC. The explanation put forward is that OC occurs reliably and consistently in obligatory contexts in the input to children, while SC is occasionally omitted. This variability in the input leads to a gradual, and somewhat slower development of SC relative to OC. The suggestion, therefore, is that rare structures in the input (such as OC, relative to SC) might nevertheless be acquired early and with little difficulty if the context in which they occur is predictable.

2. The Verbal Complex in Swahili

Swahili is an agglutinative language, with considerable verbal prefixing and suffixing. The unmarked word order is S-V-O, as shown in (1) below, in which
the subject (Juma) canonically occurs preverbally and the object (Mariam) occurs postverbally. The verb occurs in a verbal complex which consists of a subject clitic (\textit{a-}) on the left periphery, followed by tense (-\textit{na-}), an object clitic (syllabic \textit{m-}) and then the verb root itself (\textit{pend-}). The verb is followed by (in this case) one suffix which indicates mood (in this case indicative \textit{\textendash a}). Other suffixes are possible (always occurring between the verb root and the mood final vowel), including a passive suffix, causative suffix, applicative suffix, stative suffix, reciprocal suffix, etc., none of which are directly relevant to this current chapter (see Ashton, 1947; Myachina, 1981; Vitali, 1981, amongst others).

<table>
<thead>
<tr>
<th>Subject</th>
<th>Verbal Complex</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juma a-na-m-pend-a Mariam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juma \textit{SC}<em>{3s} - Pres - \textit{OC}</em>{3s} like - IND Mariam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Juma likes Mariam'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2) \textit{Ø} A-na-m-pend-a \textit{Ø} (null subject) \textit{SC}_{3s} - Pres - \textit{OC}_{3s} like - IND (null object) ‘(He) likes (her).’

Note that the argument associated with the clitic may occur overtly, as in example (1) - so called clitic-doubling - but may also be omitted. Thus null subject and/or null object sentences are possible (2).

2.1 Subject Clitic

The SC always occurs as the first morpheme in the verbal complex, except in certain negative paradigms, in which case it is the second morpheme. It agrees with the grammatical subject in person and number when the subject is [+human], as in (1–2), and in noun class otherwise (3). Noun class agreement consists of both lexical noun class, as well as number. Limiting ourselves to the case of human subjects, there are six different forms of SC, given in Table 1.

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1. Like grammatical gender in many European languages, Swahili classifies nouns into a series of 15 noun classes. These classes are marked with identifying prefixes which encode their class membership as well as number (singular/plural). Any nominal modifiers, like adjectives or demonstratives, typically carry agreement with this noun class, and more importantly for our purposes, the SC and OC also agree with this noun class. Here, we follow the standard practice of numbering these noun classes from 1–15. So in example (3a), \textit{kiti} is of noun class 7, indicated by the prefix \textit{ki-}.
(3) a. Ki – ti  
   7–chair 
   SC7  
   li –  
   past – 
   anguk  
   a  
   IND  
   ‘The chair fell.’

   a. Vi – ti  
   7pl–chair 
   SC7pl  
   li –  
   past – 
   anguk  
   a  
   IND  
   ‘The chairs fell.’

SC in standard Swahili (so-called Kiswahili Sanifu) is obligatory in every indicative sentence of Swahili, except those which carry certain unusual tense markers (e.g., the habitual hu- marker). Furthermore, in the dialect of Swahili under investigation here (Nairobi Swahili), native speaker adults omit SC in approximately 5% of verbal utterances (see Deen, 2002; 2005 for details). However, such omission only occurs when the referent of the subject is clear from discourse. This will be discussed more in section 5.

All SC morphemes are syllabic and consist of either a vowel or a consonant and a vowel. Table 1 shows the [+human] morphemes in the paradigm – by far the most frequent SC clitics in child directed speech.

Table 1. [+human] SC clitics in Nairobi Swahili.

<table>
<thead>
<tr>
<th>SC Morpheme</th>
<th>Referent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ni –</td>
<td>1st person, singular</td>
</tr>
<tr>
<td>U –</td>
<td>2nd person, singular</td>
</tr>
<tr>
<td>A –</td>
<td>3rd person, singular</td>
</tr>
<tr>
<td>Tu –</td>
<td>1st person, plural</td>
</tr>
<tr>
<td>Mu –</td>
<td>2nd person, plural</td>
</tr>
<tr>
<td>Wa –</td>
<td>3rd person, plural</td>
</tr>
</tbody>
</table>

SC morphemes (and indeed OC morphemes, see below) occur in a fixed position with respect to the verb: all SC occur preverbally (without exception), preceding tense and OC. Thus unlike clitics in some European languages, clitics may not move in Swahili. However, like clitics in European languages, SC cannot be stressed nor topicalized, nor occur as the answer to a question. These are all typical properties of clitics, and so SC is often described as such.

2.2 Object Clitics

OCs, unlike SCs, do not occur in every indicative sentence in Swahili. Rather, OCs occur only when the direct object is specific. That is, when the direct object is specific, OC is obligatory, and when the direct object is non-specific,
OC is obligatorily absent. This is formalized in Deen (2006, p.231) as The Specificity Condition. A consequence of this is that when OC is present (4a), the interpretation of the object is obligatorily specific, while when OC is absent (4b), the interpretation of the object is obligatorily non-specific.

The Specificity Condition: If the object is specific, OC is obligatory, and if the object is non-specific, OC is obligatorily absent.

(4) a. Juma a– li– mw– on– a m– tu [+OC] Obligatorily Juma SC_{3s} past– OC_{3s} see– IND 1–person Specific ‘Juma saw the person / *a person.’


Thus OC and SC differ in that the former is subject to the Specificity Condition, and therefore does not arise in every utterance containing a verb, while the latter is not subject to the Specificity Condition, and occurs in all utterances containing a verb, unless omitted through discourse.

The morphological shape of OC is similar to SC in that all morphemes are syllabic, although the 3rd person singular OC has no vowel nucleus but is a syllabic nasal, as shown in table 2.

Table 2. [+human] OC clitics in Nairobi Swahili.

<table>
<thead>
<tr>
<th>OC Morpheme</th>
<th>Referent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ni –</td>
<td>1st person, singular</td>
</tr>
<tr>
<td>Ku –</td>
<td>2nd person, singular</td>
</tr>
<tr>
<td>M –</td>
<td>3rd person singular</td>
</tr>
<tr>
<td>Tu –</td>
<td>1st person, plural</td>
</tr>
<tr>
<td>Mu –</td>
<td>2nd person, plural</td>
</tr>
<tr>
<td>Wa –</td>
<td>3rd person, plural</td>
</tr>
</tbody>
</table>

3. Status of the Clitics

A typical problem that arises in the analysis of clitics (in many languages) is determining their status with respect to being pronominal versus agreement. That is, clitics are by their very nature similar to pronouns in familiar languages like
English, as well as verbal agreement. In Swahili, as in many other languages, there is a debate as to what the status of the clitics are in the language (see, for example, Keach, 1995; Seidl and Dimitriadis, 1997; Woolford, 1999; Deen, 2006).

One way of analyzing these clitics is to view them as pronominal in nature, and therefore arguments of the verb. On this view, the overt nominals that accompany the verb (what are referred to above as ‘subject’ and ‘object’) must then be viewed as topics or adjuncts of some kind, and not arguments of the verb. The alternative line of thinking is that the overt nominals that occur with the verb are in fact the true arguments of the verb (e.g., the preverbal DP is the subject of the sentence, and the postverbal DP is the object of the sentence). On this view, the clitics are then not pronominal, but must be viewed as agreement markers on the verb. These two approaches will henceforth be referred to as the Pronominal Analysis and the Agreement analysis, respectively.

Pronominal Analysis: A clitic is the overt manifestation of the grammatical argument, akin to he, she, they, etc. in English. Thus in a sentence like anampenda (1 above), ‘a-’ is the third person singular pronoun, in the grammatical subject position (and similarly, ‘-m-’ is the third person direct object incorporated pronoun). If this is the case, then the preverbal DP (in 1, Juma) is a topic, and not an argument of the verb. This last point is crucial to many of the tests put forward by Bresnan and Mchombo (1987) and discussed below.

Agreement Analysis: A clitic is a grammatical reflex on the verb, indicating verbal agreement with the true argument. So, in a sentence like (1) above, ‘a-’ is a verbal agreement prefix which agrees with the grammatical subject ‘Juma’ in person and number 9 and similarly, ‘-m-’ is grammatical agreement with the direct object, Mariam. Thus the preverbal DP (‘Juma’) is the true grammatical subject, and not a topic.

In the next two sections, we investigate these two analyses for each of the clitics.

3.1 Status of SC

In this section, we focus on whether SC is a subject pronoun or whether it is a verbal affix indicating agreement with the grammatical subject. Four arguments are provided that suggest that SC in Swahili is an agreement marker and not a pronoun. The first two of these arguments come from Keach’s (1995)
insightful application of Bresnan and Mchombo’s (1987) tests for the status of clitics, while the latter two arguments are independently motivated.

Bresnan and Mchombo (1987), in their seminal article on Chichewa, provide a series of tests that can be used to assess the status of clitics. They point out that one good way to determine the status of a clitic in a language like Chichewa (a Bantu language spoken in Malawi) and other related languages is to determine whether the preverbal DP is a topic or not. The logic of this is that if the preverbal DP can be established as a topic, this will in turn show that SC must be the grammatical subject. If, on the other hand, the preverbal DP is the grammatical subject, the SC must be an agreement marker. Bresnan and Mchombo (1987) put forward a series of properties of topics and focused elements that can be used to assess whether the preverbal DP is a topic or a subject, and thereby determine the status of the SC. These properties are given in (5):

(5) (i) Relative pronouns bear TOPIC function;
(ii) Questioned constituents bear FOCUS function;
(iii) An argument cannot bear both TOP and FOC function in the same clause.

Keach (1995) uses these properties and provides two tests as to whether SC is pronominal or agreement in nature. First, if the preverbal DP in Swahili is a topic then, by 5(ii) and 5(iii), subject wh-questions should not be possible. This is because subject wh-questions are by (5ii) focused elements, and if the preverbal DP is a topic, it would be both a focused element and a topic at the same time, thereby violating 5(iii). In Chichewa, as Bresnan and Mchombo point out, subject wh-questions are not possible, suggesting that in Chichewa (and other related Bantu languages like Sesotho, see Demuth, 1992, amongst others) the preverbal DP is indeed a topic, and that SC is a pronoun.

But in Swahili, as Keach points out, subject wh-questions are perfectly acceptable, showing that Swahili differs from Chichewa, and that SC in Swahili is not in fact pronominal, but more akin to agreement:

(6) nani a – me –end–a ?
    who SCprf-go-IND
    who has gone?

Keach’s second test involves idiomatic expressions. As Bresnan and Mchombo point out, it is well known that the subjects of idioms resist topicalization. For example, the idiom *the cat is out of the bag* loses its idiomatic meaning when
the subject is topicalized \textit{(As for the cat, it is out of the bag)}. Likewise, as Keach points out, topicalizing the preverbal DP from within an idiom causes the loss of the idiomatic meaning in Swahili:

(7)  
\begin{itemize}
  \item[a.] \text{ni – li – fikir – i kuwa Mtindi u - me – va - a Asha}  
  \text{SC\textsubscript{1s} – past – think– IND that brew SC\textsubscript{3} – pr.prf.– wear- IND Asha} 
  \text{‘I thought that Asha was drunk.’}  
  \text{(lit: I thought that the brew has covered Asha)}  
  
  \item[b.] \text{*Mtindi ni – li – fikir – i kuwa [t] u - me – va - a Asha}  
  \text{Brew SC\textsubscript{1s} – past- think– IND that SC\textsubscript{3} – pr.prf.-wear-IND Asha}  
  \text{(lit: (As for) the brew, I thought that it has covered Asha)}  
\end{itemize}

This suggests that the preverbal DP (in this case, \textit{Mtindi}, ‘brew’) is not a topic, but a grammatical subject, because were it a topic to begin with, further topicalization should not have an effect on the idiomatic meaning of the expression. In turn, this suggests that the SC is an agreement marker and not a pronoun.

In addition to these two arguments put forward by Keach, a third argument comes from what kinds of elements may occur in the preverbal position. It is well known that quantifiers may not occur in topic positions, as quantifiers are inherently focus-type elements (see Lasnik and Stowell, 1991; Rizzi, 1992). In Swahili, this restriction also holds. In (8a), the object \textit{(kila kitabu)} is in object position, and is ungrammatical when topicalized, as in (8b). This shows that quantified elements cannot occur in topic position in Swahili – a fact that will now be used as a diagnostic for the status of SC in Swahili.

(8)  
\begin{itemize}
  \item[a.] \text{a – li – nunu – a kila kitabu}  
  \text{SC\textsubscript{3}s – past – buy – IND every book}  
  \text{She bought every book.}  
  
  \item[b.] \text{* kila kitabu, a – li – (ki) – nunu– a [t]}  
  \text{every thing SC\textsubscript{3}s – past – (OA7) – buy – IND [t]}  
  \text{Every book, she bought.}  
\end{itemize}

Given the facts in (8) in which topics cannot be quantified, if the preverbal DP is a topic, it should be ungrammatical as a quantifier. This is in fact not true, as shown in (9). Once again, this suggests that the preverbal DP is not a topic, but a true subject. This in turn suggests that SC is an agreement morpheme, not a pronoun.
(9) a. kila mtoto a–li–nunu–a ki–tabu
    every child SC3s–past–IND buy 7–book
    Every child bought a book..

   b. kila ki–tabu ki–li–nunuli–w–a na mtoto
    Every book was bought by a child..

A fourth argument also comes from the tests put forward by Bresnan and Mchombo (1987), who point out that topics cannot be the answer to a wh-question:

(10) a. Question: Who arrived late?

   b. Answer: ??As for John, he arrived late.

   c. Answer: John arrived late.

As (10b) shows, a topic as an answer to a wh-question is ungrammatical or dispreferred, while a sentence containing a regular grammatical subject (10c) is acceptable. In Swahili, if the preverbal DP is a topic, it should not be possible for it to occur as an answer to a wh-question, but rather the only possibility should be one in which the SC occurs, but the preverbal DP does not (i.e., clitic doubling should be disallowed). However, this is not the case, as (11) shows.

(11) a. Question: nani a–li–fik–a mapema
    who SC3s–past–IND arrive early
    ‘Who arrived early?’

   b. Answer: Juma a–li–fik–a mapema
    Juma SC3s–past–IND arrive early
    ‘Juma arrived early.’

(11b) shows that a sentence containing both the preverbal DP and SC is an acceptable answer to a wh-question, suggesting that the preverbal DP is not a topic, but a true grammatical subject.2

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2. As pointed out by an editor, the postverbal position in Swahili is a focus position, in which the preverbal nominal may occur postverbally with a focused interpretation, as in alifika Juma mapema. This shows that this nominal (Juma) cannot be a topic since it would bear both topic function and focus function at the same time.
In sum then, four arguments have been presented that all suggest that the pre-verbal DP in Swahili is not a topic, but a true grammatical subject. If this is the case, then the SC cannot also be a subject, but must be a verbal agreement marker – a position that will be adopted for the remainder of this chapter.

3.2 Status of OC

We turn now to the status of OC in Swahili. Two arguments are provided which suggest that OC is in fact agreement, akin to SC, and not pronominal in nature.

First, OC may occur with an overt direct object (i.e., clitic doubling is possible). If it were the case that OC is a pronoun, then it is unclear what the status of the overt ‘direct object’ would be. If it were some kind of adjunct, perhaps postposed, then we would expect a marked prosodic pattern to be associated with the presence of an overt object, something akin to ‘comma’ intonation. However, this is not the case: when the direct object is present, there is no marked prosodic contour across the sentence overall, nor over the direct object in particular.

Second, as we saw with idiomatic expressions in the analysis of SC, with the insertion of OC, idiomatic objects do not lose their idiomatic meaning. The logic of this argument is as follows. If the postverbal DP is a genuine direct object when OC is absent, but a topic/postposed adjunct when OC is present, then the insertion of OC into an idiomatic expression should disrupt the idiomatic meaning of that idiom, since the object has been moved out of the idiom. As (12) shows, this is not the case: the insertion of OC does not disrupt the idiomatic meaning of an idiom.

(12) a. ni - li- pig– a pasi
   \(s_{C1}^{s} \text{- past-} \text{hit-} \text{IND iron}\)
   ‘I ironed’
   (lit.: ‘I hit iron.’)

   b. ni - li - i - pig- a pasi
   \(s_{C1}^{s} \text{- past-} \text{OC}^{3}_t \text{- hit-} \text{IND iron}\)
   ‘I ironed it’
   (lit.: ‘I hit it (with) iron.’)

(12a) is an idiomatic expression which occurs without OC, and (12b) occurs with OC. Note that the absence of OC means that a non-specific reading is intended (as formulated in the Specificity Condition, see section 2.2), and this is
reflected in the gloss. (12b), on the other hand, takes a specific reading, but in both cases, the idiomatic meaning is not disrupted. If OC were an incorporated pronoun, then the object in (12b) would have to be a kind of postposed topic of some kind, which would break up the idiomatic meaning. The fact that the idiomatic meaning is not disrupted suggests that the postverbal nominal in (12) is not in fact postposed (neither in 12a nor in 12b), but is in the same (direct object) position in both sentences. This, in turn, suggests that OC is not an incorporated pronoun, but a true agreement marker.

An anonymous reviewer suggests that the manner in which the Specificity Condition (exemplified in 4 above) is presented may be misleading, and an alternative view of the Specificity Condition may lead to a pronominal analysis of OC. The reviewer’s argument goes as follows. Assume that OC is a pronominal clitic which has a requirement that the DP with which it is cross-referenced must always be specific (the Specificity Condition). That is, rather than viewing the Specificity Condition as a condition on when OC may occur, the Specificity Condition states that when OC does occur, the postverbal nominal must be specific. This would then mean that a sentence with OC and a direct object (clitic-doubling) would be a case of right dislocation, along the lines of the English sentence *Juma bought it, the book*. While this view of the Specificity Condition is feasible, the associated pronominal analysis of OC is not. First, if the postverbal DP were in fact right-dislocated, the fact that no prosodic evidence of this dislocation is present would be puzzling and cross-linguistically odd. As mentioned above, the postverbal DP does not in fact carry so-called ‘comma’ intonation. Additionally, and importantly, other constituents (e.g., the subject) may be right-dislocated, in which case they always carry the typical comma intonation. This suggests that the direct object is not dislocated, but occurs in its base position. Second, the evidence from idiomatic expressions discussed above also suggests that the postverbal DP is not dislocated.

Taken together then, this evidence shows that both clitics in Swahili are agreement markers, and not pronominal arguments of the verb. The overt DPs that accompany the verb are true arguments of the verb, with which the verb agrees.

4. The Acquisition of SC and OC

In this section we investigate the acquisition of SC and OC, and then compare their relative development. First we discuss the method and the data, followed by predictions for the acquisition of SC and OC. .
4.1 Method and Data

The method employed in this study is the analysis of naturalistic data which consist of recordings from four children in Nairobi, Kenya aged 1;8 to 2;11. Swahili was the primary language in the home of all four children. Recordings were made once every two weeks or so, with the experimenter, the child and at least one parent present in most recordings. Each recording session lasted between 1 hour and 1.5 hours. Below is the relevant information for each child, including the age ranges of each child, the number of recordings, and the start and end mean length of utterances (MLU). The start MLU is the MLU calculated at the beginning of the child’s data recording period, and the end MLU is the MLU calculated at the end of the data recording period. Thus for Haw, her MLU at age 2;2.01 was 1.54, and her MLU at 2;6.05 was 2.46.

<table>
<thead>
<tr>
<th>Child</th>
<th>Age Range</th>
<th>Number of recordings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haw (girl)</td>
<td>2;2.01 – 2;6.05</td>
<td>07</td>
</tr>
<tr>
<td>Mus (boy)</td>
<td>2;0.16 – 2;10.10</td>
<td>23</td>
</tr>
<tr>
<td>Fau (girl)</td>
<td>1;8.19 – 2;2.07</td>
<td>10</td>
</tr>
<tr>
<td>Has (boy)</td>
<td>2;10.13 – 2;11.25</td>
<td>04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child</th>
<th>Starting MLU</th>
<th>Ending MLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haw</td>
<td>1.54</td>
<td>2.46</td>
</tr>
<tr>
<td>Mus</td>
<td>1.52</td>
<td>3.57</td>
</tr>
<tr>
<td>Fau</td>
<td>2.97</td>
<td>3.35</td>
</tr>
<tr>
<td>Has</td>
<td>3.15</td>
<td>4.23</td>
</tr>
</tbody>
</table>

Three measures of grammatical maturity were used to group the data into four developmental stages: (i) Mean Length of Utterance (MLU), (ii) V ratio (the proportion of verbal utterances to the overall number of utterances, a measure used by, for example, Valian, 1991), and (iii) the proportion of Mono-syllabic Placeholders, or filler syllables (Peters, 2001; Bottari, Cipriani and Chilosi, 1993). The corpora could be broken down into four stages, with three children falling into three different stages, and the fourth child spanning three stages.

3. The other languages that occurred in the homes were typically English from television, and occasionally another ethnic languages such as Kikuyu or Luo. However, all parents reported that the children did not understand any language other than Swahili, and knew very few words in other languages.
This is shown below in table 5, and the criteria for the establishment of these stages are given in table 6. See Deen (2002, 73; 2005) for details on the establishment of stages. Henceforth, data will be described in terms of these stages.

Table 5. Division of corpora into four stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Corpora</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Hawa, Mustafa01</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Mustafa02</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Mustafa03, Fauzia</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Hassan</td>
</tr>
</tbody>
</table>

Table 6. Criteria for the establishment of stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>MLU</th>
<th>V-Ratio</th>
<th>%MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>&lt;2.5</td>
<td>&lt;.15</td>
<td>&gt;25%</td>
</tr>
<tr>
<td>Stage 2</td>
<td>2.5–3.0</td>
<td>.15–.20</td>
<td>15–24%</td>
</tr>
<tr>
<td>Stage 3</td>
<td>3.0–3.5</td>
<td>.20–.25</td>
<td>5–14%</td>
</tr>
<tr>
<td>Stage 4</td>
<td>&gt;3.5</td>
<td>&gt;.25</td>
<td>&lt;5%</td>
</tr>
</tbody>
</table>

4.2 Predictions

First, in a variety of languages a general subject-object asymmetry is observed across a wide range of phenomena, beyond even agreement and pronouns. For example, various researchers have found that subject relative clauses are acquired before direct object relative clauses (e.g., Tavakolian, 1977; Goodluck and Tavakolian, 1982; Hamburger and Crain, 1982, amongst others). Furthermore, it has been observed that children acquiring English omit subjects at far higher rates than objects (Hyams and Wexler, 1993). Moreover, in Basque, a language that has both subject agreement and object agreement, Meisel and Ezeizabarrena (1996) find that Basque speaking children acquire subject agreement before object agreement. On this basis, we might expect there to be a difference in the developmental trajectory of SC over OC in Swahili.

Second, there is a wide-held belief that frequency affects when certain aspects of language are acquired, as exemplified by this representative statement from Diessel (2007, p.109): “There is a wealth of recent results suggesting that frequency has an impact on the comprehension, production, and emergence of linguistic categories and rules.”. More precisely, the idea is that the more frequent a structure is in the input, the earlier it is acquired. This is clearly exemplified in the Ambridge and Lieven (2011, p.277), who argue that the passive in the input to children dictates the age at which the passive is acquired: “there appears to be a rough cross-linguistic correlation between the age at which pas-
sives are acquired and the frequency of such utterances in the input. Children learning languages in which passives are more frequent in the input … produce passives earlier than learners of English.”. Let us refer to this as the Frequency Hypothesis:

(13) The Frequency Hypothesis: Relatively frequent structures in the input to children will be acquired earlier than relatively rare structures.

In Swahili, SC is more frequent in the input than OC because the large majority of indicative clauses require the presence of SC, while only those that refer to a specific direct object require the presence of OC. To show this, a corpus analysis was conducted on the adult tiers of the corpora of four children, targeting all speech to the children. The CLAN programs (MacWhinney, 2000) were used for this purpose, which allowed all utterances that contained either SC or OC or both to be extracted from the four corpora and tallied. This included the utterances of the parents, as well as any other adults in the environment such as aunts, uncles, grandparents, etc. All instances of SC and OC were included, irrespective of any other factors (such as the amount of repetition, or the variability of the tokens in the input). Overall, it was found that SC occurred a total of 1756 times in the child-directed speech of adults, while OC occurred 737 times. While this is a very gross figure, it appears that SC is significantly more frequent in the input than OC. Given the Frequency Hypothesis, we therefore expect SC to be acquired before OC.

Third, SC is semantically less complex than OC. Recall that OC is obligatory when the object is specific, and obligatorily absent when the object is non-specific. SC, on the other hand, has no semantic restriction of this sort, and is therefore acceptable (and mandatory) 100% of the time. This difference in complexity might also lead to the prediction that SC would be acquired before OC.

And finally, clitics that occur in prosodically salient positions might be acquired earlier than those that occur in prosodically less salient positions. A classic observation on the acquisition of bound morphology is that suffixes are acquired earlier than prefixes (Slobin, 1973), and it might be suggested that this is because the end of the sentence (or verbal unit) is prosodically more salient than the beginning. Considering SC and OC in Swahili, SC is at the beginning of the verbal complex in all affirmative indicative sentences, occurring in second position in negative indicative utterances. Furthermore, whenever the adult utterance is a null-subject utterance, the first element in the utterance is SC, making it a fairly prominent position for the clitic. OC, on the other hand,
is always medial within the verbal complex – a position that is undoubtedly less salient than the beginning of the verbal complex. This might also lead us to predict that SC would be acquired before OC.

So, in sum, given the factors above, it seems fair to say that all indications are that SC is acquired before OC in child Swahili. In what follows, we test these predictions using data from four Swahili speaking children.

4.3 Development of SC

All verbal utterances in the corpora and obligatory contexts for SC were identified. This was done by removing all imperative clauses, verbal fragments, hu-marked clauses (see above), and other unclear cases. This left 1326 verbal utterances across all four stages.

A stage-wise analysis of these verbal utterances reveals that SC is omitted at high rates in early stages, and omission rates decrease steadily. As figure 1 below shows, at Stage 1, of the 208 obligatory contexts for SC, 81 occur with SC (39%). That rate decreases marginally in Stage 2 (83/292, 28%), and then increases in Stage 3 (256/456, 56%) and Stage 4 (251/370, 68%). Note, however, that even in Stage 4, a fairly high degree of SC-omission persists.

![Figure 1. Rate of SC in obligatory contexts.](image)

The conclusion from these data is that SC is acquired quite late in Swahili. In Stage 4, SC is supplied at a rate of 68% - well short of most standards for the acquisition of a morpheme, in particular the 90% criterion set by Brown (1973).4 We can therefore say that SC is acquired relatively late by Swahili

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4. An anonymous reviewer asks whether this conclusion might be too strong – the fact that children sometimes use SC (and correctly too) suggests that SC might in fact be
children – not until Stage 3, perhaps even as late as Stage 4. As we shall now see, this contrasts with the acquisition of OC, which by all measures seems to be acquired much earlier.

4.4 Development of OC

An analysis of the development of OC along the lines done for SC is not possible because of the differences in distribution between the two clitic types: SC is not conditioned by any semantic factors, while OC is conditioned by specificity. This makes the determination of obligatory contexts somewhat more complicated, since it is difficult to determine from naturalistic data transcripts what an obligatory context for a specific referent is. When a context occurs in which it seems to the experimenter that OC would be obligatory, it is always possible that the speaker intended a non-specific reading of a referent (and vice versa).

To get around this problem of obligatory context, Deen (2006) investigates the occurrence of OC in three contexts in which direct objects are obligatorily specific – when the direct object is:

(i) a proper noun,
(ii) a first/second person referential,
(iii) topicalized.

The first constitutes an obligatory context for OC because proper names are always specific, and therefore occur with OC 100% of the time in adult speech. Similarly, first/second person referents (whether overt or not) are inherently specific because they refer to the interlocutors in the discourse (and therefore specific), and therefore always occur with OC in adult speech. The third category (topicalization), while strictly not an obligatory context, is a context that very strongly favors a specific object. This is because topicalization occurs with given, already-mentioned referents, which strongly tend to be specific. Combining these three contexts together, table 7 shows the rate of supply of OC across the four stages. As can be seen, in Stage 1, OC occurs on more than three quarters of all clauses that are either topicalized or have a personal name/1st/2nd acquired, and children have not acquired the optionality of SC. Indeed some researchers make use of such a criterion for acquisition (see, for example, Snyder’s, 2007 First Use criterion). However, knowledge of when the morpheme is obligatory/optional is a crucial part of having acquired a morpheme, and so only at a stage when the child is providing the morpheme at high rates in obligatory contexts should the morpheme be considered acquired.
person referent as direct object. This rate goes up to 83% in Stage 2, 97% in Stage 3 and reaches 100% in Stage 4.

Table 7. Occurrence of OC in **obligatory contexts** (personal names, topics, 1st/2nd person objects).

<table>
<thead>
<tr>
<th></th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt OC (Target-like)</td>
<td>21 (78%)</td>
<td>20 (83%)</td>
<td>90 (97%)</td>
<td>49 (100%)</td>
</tr>
<tr>
<td>Absent OC (non–target-like)</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>27</td>
<td>24</td>
<td>93</td>
<td>49</td>
</tr>
</tbody>
</table>

This result stands in striking contrast to the development of SC, which recall, fell far short of Brown›s 90% criterion even in Stage 4. The data in table 7 show that OC, on the other hand, reaches this criterion by Stage 3, and reaches 100% in Stage 4, showing that OC is acquired significantly earlier than SC.

5. **Discussion**

This chapter reports on the development of SC and OC in the speech of four children acquiring the Nairobi dialect of Swahili. SC occurs as the first or second syllabic morpheme in the verbal complex, and OC occurs as a medial syllabic morpheme. It was first shown that SC is in fact an agreement morpheme, and not pronominal in nature, and that OC too is an agreement morpheme, and not pronominal in nature. Thus the free nominals that occur to either side of the verbal complex are the true arguments of the verb, and the cliticized morphemes that occur on the verb itself are agreement reflexes that agree in number and person with those arguments. Additionally, it was shown that OC, and not SC, is subject to the Specificity Condition, in which OC occurs when the direct object is specific, but obligatorily does not occur when the direct object is non-specific.

We considered four predictions. The first prediction pointed to other aspects of child language in which subject properties seem to be acquired at different times than object properties, typically the former preceding the latter. This suggests that SC should be acquired earlier than OC. It was shown, however, that the four Swahili speaking children in this study developed SC rather slowly, omitting SC at extremely high rates at early stages of development, and by stage 4 still omitted SC at fairly high rates. In contrast, in obligatory contexts for the occurrence of OC, children used OC almost 80% of the time in stage 1, and by stage 4 were producing OC 100% of the time. Thus OC is acquired significantly earlier than SC.
Perhaps the most interesting finding in this study relates to the second prediction, which came from the Frequency Hypothesis, in which the more frequent SC is predicted to be acquired before the less frequent OC. Our findings, however, do not comport with this prediction: the less frequent OC is acquired earlier than the more frequent SC in direct contradiction of the Frequency Hypothesis. This shows that while it is true that frequency is an important factor in child language, frequency in the input is far from being the powerful determining factor that many now claim it to be. The factors that contribute to the acquisition of SC and OC are far more complex than simple frequency (and indeed any of the other factors that were considered in our other three predictions).

The third hypothesis suggested that the semantically less complex SC should be acquired before the more complex OC, and the fourth prediction came from the position of the morphemes within the phonological word – the medial OC is predicted to be acquired after SC, the latter of which occurs in a phonologically salient initial position. Neither of these predictions were borne out. Thus the acquisition results disconfirmed all four of these predictions.

So we are left with something of a puzzle. The four predictions considered in 4.2 were reasonable, well-motivated predictions based upon a lot of research on various languages. But despite this, we find here that OC in child Swahili is acquired before SC – why would this be the case? One reason to consider is that adults in this dialect of Swahili sometimes omit SC. That is, in approximately 5% of indicative utterances, adults omit SC when the referent of the subject is discourse-salient, and in fact the topic of the sentence. This happens in rapid, informal speech and also in child-directed speech. The result of this is the introduction of a small inconsistency in the supply of SC in the input. From the child’s perspective, then, it is not the case that SC is obligatory in 100% of utterances, but may be omitted under certain conditions. It may be that the omission of SC persists while children are exploring the boundaries of these conditions for the omission of SC.

One might argue that OC is also sporadically supplied in the input to the child, which might raise the same kinds of doubts in the mind of the child when encountering SC. However, the presence/absence of OC is not subject to discourse-type omission, but to specificity. In this regard, it is the case that when the object is specific, OC occurs in the input reliably, 100% of the time. Moreover, when the object is non-specific, OC never occurs. So the distribution of OC is entirely predictable from this one semantic feature. Thus, in a sense, the fact that OC is subject to the Specificity Condition makes it significantly easier to acquire than SC, which is omitted on the basis of discourse factors.

The conclusion, therefore, is that, despite being less frequent and less prominent in the input, the uniformity and predictability of OC leads to the early
acquisition of OC. The acquisition of SC is delayed because children must acquire those discourse contexts under which SC is obligatory and those under which it is optional. Such discourse conditions are, arguably, less obvious and more opaque than specificity, suggesting that perhaps certain semantic notions are more primal for children than discourse notions.

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