Relative clauses in Asante Twi

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Abstract

Relative clauses in Twi, a Niger-Congo language spoken in Ghana, have received little attention in the literature. I examine a corpus of naturally-occurring relative clauses, collected from a native speaker living in Houston, TX, to describe and analyze the tone, morphosyntax, and discourse characteristics of Twi relative clauses. This research also contributes to understanding of the cross-linguistic accessibility of noun phrases to the process of relativization.

Based on spectrographic comparison within a set of minimal clauses, I determine that the phonemic form of the relativizer is áá. I examine the "optional" use of the relative clause enclitic no using a framework similar to Fox and Thompson’s (1990, 2007) studies on English relative clauses, concluding that the enclitic is only used in about half of cases and that the conditioning environment depends on a number of discourse factors including the topic-worthiness of the relativized argument and the distance between the head noun and the end of the relative clause. Finally, I examine noun phrase accessibility in Twi according to Keenan and Comrie (1977), finding that Twi relative clauses contradict Keenan and Comrie’s Accessibility Hierarchy Constraints in two respects: Twi resumptive pronouns are obligatory in the relativization of subjects, and the use of the resumptive pronoun strategy in Twi relativization covers a discontinuous portion of the Accessibility Hierarchy.

Keywords: relative clauses, Asante Twi, language typology, language documentation and description

1 Introduction

Asante Twi is one of the set of mutually intelligible dialects of the Akan language that also includes Akuapem Twi and Fante. Akan is a member of the Kwa branch of the Niger-Congo family and is spoken by 8.3 million people in Ghana; 2.8 million of these speak Asante Twi (Gordon 2005). Akan is a written language that is taught in schools and serves as a literary medium. However, many aspects of Akan grammar have been comparatively understudied; in particular, relative clauses have received little attention. This paper will be an attempt both to better explain the specific morphosyntax of relative clauses in Asante Twi and to examine the availability of NPs to the process of relativization in this dialect, hereafter referred to as Twi.¹

It is necessary to describe some basic qualities of Twi grammar in order to characterize its relative clauses. Twi is a nominative-accusative language with strict SVO word-order and its grammatical relations are determined chiefly by word-order and pronouns (Osam 1997: 254). Note that the 3SG pronouns vary by case, as shown in Table 1.

1 Questions and comments should be addressed to Chelsea McCracken at strandsofpearl@gmail.com.
¹ Many thanks to consultant Dzifa Duose for her hardworking and patient collaboration in the preparation of this study. I would also like to thank Ann Olivo for her analysis of mean vowel length in Twi; Natalie Weber and Katie Nelson for helpful discussion; and Laura Robinson, Michel Achard, and Robert Englebretson for their comments and advice. Thanks also to consultant Ben Appiah and the other students in Field Methods 2008-2009 for their contribution to and collaboration in this project; and to Jeremy Young for his support and counsel.
In terms of word order, the head noun in a noun phrase (NP) precedes all modifiers. Noun phrases in Twi may be marked for definiteness with the determiner no. NPs are of the form Head Noun + (Modifier) + (Determiner) + (Relative Clause). For example, in (1), the head noun ɔbaa ‘woman’ is followed by the modifier titi ‘tall’, the determiner no, and a relative clause (indicated by brackets).

(1) ɔbaa titi no [ā ɔ-srī no]  
woman tall DEF REL 3SG-PROG-laugh DCM  
‘the tall woman who is laughing’

Twi relative clauses, such as ɔ-srī ‘she is laughing’ in (1), are preceded by an invariant relativizer āà, whose phonemic form is discussed in detail in §2. Relative clauses are frequently followed by the relative clause enclitic no (discussed further in §3), which is glossed in this work as a dependent clause marker, DCM. Relative clauses follow the same strict SVO word order as main clauses. Only NP-headed, restrictive relative clauses will be considered in this study. For a discussion of other types of relative constructions, including focus constructions with na, headless relative clauses with nɛa and other pronouns, and nonrestrictive relatives, see Boadi (2005) and Saah (2009).

In the rest of this article, I present a more detailed description of various aspects of Twi relative clauses. In §2, I discuss tone in the relativizer and in relative clauses. I argue that the phonemic form of the relativizer is āà (ML). In §3, I present the results of a discourse study on the use of the relative clause enclitic no. I show that, far from being obligatory as many scholars have suggested, it only occurs in about half of cases, and its occurrence is linked to a number of complex discourse features such as the humanness and definiteness of the head NP and the length of the relative clause. In §4, Twi is analyzed according to the Accessibility Hierarchy Constraints [AHC] of Keenan and Comrie (1977) and Comrie and Keenan (1979); the available strategies for identifying the case of the relativized argument within the relative clause—‘gapping’ and resumptive pronouns—are outlined. Two unusual contradictions to the

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2 The 1SG and 3SG pronouns undergo vowel harmony to agree in ATR with the verb; 2SG pronouns do not do this, so I have only glossed the latter as a separate word (Osam 1994).

3 Many scholars (for example, Osam 1997: 255) attribute this alternation to an animate/inanimate distinction. Though this explanation does not fit with my data, it will not be further explored here. I have glossed ɛ- as ‘PLE’, a pleonastic pronoun.

4 When no is used as a noun phrase determiner in this work, it is glossed DEF. I have chosen to follow Amfo and Fretheim (2005) in glossing no as DCM, a dependent clause marker, when it is used as a relative clause enclitic (see §3). In this paper I use no to refer to both morphemes when making in-text references, as this is the spelling used by the official Twi orthography. Example sentences taken from my research were transcribed using a phonemic orthography developed with the consultant, who is not literate in Twi. In these example sentences, I use nʊ.

5 Though Twi is a tonal language, tones are not reflected in the orthography. Aside from the discussion of tonality in section 2, only the relativizer āà will be marked for tone.
AHC are highlighted: in Twi, resumptive pronouns are used to relativize subjects (a highly cross-linguistically unusual occurrence); and this strategy covers a discontinuous portion of the Accessibility Hierarchy, a circumstance argued to be rare or exceptional by Keenan and Comrie (1977). Section 5 contains my conclusions.

2 Form of the relativizer

In the published literature on Twi, there are generally two approaches to describing the phonemic form of the invariant relativizer. Some scholars use a to refer to the relativizer (Christaller 1875; Balmer & Grant 1929; Saah 1994; Osam 1997; Amfo & Fretheim 2005); this is the official spelling in the Twi orthography. The other group of scholars believes the relativizer is åâ (Welmers 1946; Schachter 1973; Boadi 2005; Saah 2009; and Fiedler & Schwarz 2005, who also use à).

It is not surprising that there is disagreement over the tone and length of the relativizer, since it most frequently occurs in an extremely reduced form. Many NPs are followed by a determiner—usually the definite determiner no /nɔ/ (see fn. 4)—and considerable phonetic reduction occurs at the boundary between this determiner and the following relativizer. This reduction is only referred to in passing by Fiedler & Schwarz (2005), who list the following example, reproduced here as example (2).

(2) ảbrántié n(o)-âà ɔ̀-bóó wó nó

boy DEF-REL 3SG-hit 2SG DET

‘the boy who hit you’ (Fiedler & Schwarz 2005: 122)

In example (2), the noun phrase ảbrántié no ‘the boy’ is followed by the relativizer and relative clause ɔ̀-bóó wó ‘he hit you’; the parentheses indicate that the vowel they enclose may not be fully pronounced.

Saah (2009) remarks that there are other words in Twi which are also represented in the orthography by a. Their phonetic realization may be very similar to that of the relativizer. One such morpheme is used as a conditional, subjunctive, or temporal marker, similar to the potential morpheme in Ewe (Balmer & Grant 1929, Boadi 2008, Essegbey 2008; see Weber 2009 for further information). I will show that the relativizer (hereafter åà) and the subjunctive morpheme (hereafter written àà and glossed DÉP) have different phonetic realizations.

A few authors have noted that verbs within relative clauses may undergo tonal alternations (Schachter & Fromkin 1968, Schachter 1973, Fiedler & Schwarz 2005). For example, according to Schachter & Fromkin, the subject prefix and the verb root in an independent clause are both low-toned (3), but in a subordinate clause (such as a relative clause or focused constituent), the verb root is produced with high tone (4).

(3) ɔ̀-wɔ Ényírési

3SG-LOC England

‘S/he is in England.’

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6 Here I include the original gloss, although I would gloss this morpheme DCM.

7 Dependent clause marker, after Amfo & Fretheim (2005).
(4) Kôfi nà ɔ̀-wɔ̀ Ényirésì  
Kofi FOC 3SG-LOC England  
‘It’s Kofi who is in England.’ (Schachter & Fromkin 1968:208-209)

In (3), the indicative verb root wɔ̀ has low tone, while in the focused constituent in (5) it has high tone. Schachter (1973) argues that relative clauses are “formed by inserting the relative marker áà at the beginning of the clause...and replacing certain underlying low tones [(6)] by high tones [(7)].”

(6) Mì-hú-ù àbòfrá  
1SG-see-COMPL child  
‘I saw a child’

(7) àbòfrá áà mì-hú-ù nó  
child REL 1SG-see-COMPL 3SG  
‘a child that I saw’ (Schachter 1973:22-23, glosses and morpheme breaks added)

In these examples, it is the 1SG subject prefix (underlined) which undergoes tonal alternation; in the indicative clause in (6), mì is produced with low tone, while it occurs with high tone in the relative clause in (7). Anecdotal evidence from my research suggests that tonal alternations within relative clauses may be more complex than Schachter and Fromkin (1968) and Schachter (1973) have asserted; however, these alternations will not be discussed in this paper.

In the following sections, I will discuss the methodology I used to examine the form of the relativizer in Twi relative clauses (§2.1), then provide the results and discussion of my research on the length of the relativizer (§2.2) and on its phonemic tone (§2.3). Note that tone is not marked in the phonemic orthography used in my example sentences except for on the relativizer and the subjunctive morpheme. Tone is not used in the official orthography of Asante Twi, but it is marked on these words in this article to avoid confusion.

2.1 Methodology

To study the form of the relativizer, I composed a list of 10 English sentence sets that I believed would translate as minimal clauses. Each set contained four lines:

- a sentence containing the subjunctive morpheme;
- a sentence containing a relative clause;
- a sentence containing the conjunction na;
- two separate sentences separated by a period.

The lines were not always in the same order. An example sentence set is given in (8); observe that the four sentences are segmentally identical except for the fourth word and the enclitic nó on the relative clause (to be discussed in section 3). Punctuation in these sentences represents intonation breaks.

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8 Note that the third person singular accusative pronoun nó (Table 1) is homophonous with the determiner and dependent clause marker discussed in §3.
All ten minimal clause sets were translated and recorded by consultant Dzifa Duose, a Ghanaian native and native speaker of Asante Twi. Although 40 sentences were recorded, only 10 of these contained relative clauses. While the number of examples was very small, and they were only repeated once, this study nonetheless offers new insights into the form of the Twi relativizer and suggests opportunities for further research.

2.2 Length of the relativizer

Redden (1963) states that Twi has three phonemic tones, H, M, and L, indicating that the percept of falling tone on the relativizer and the subjunctive must come from the combination of multiple phonemic tones. Olivo (2008) has shown that the tone-bearing unit of Twi is the mora, and that long vowels are composed of two moras—a potential source for the realization of falling tone. To confirm that the relativizer was a long vowel, it was necessary to measure its duration. First, the duration in ms of the relativizer āà and subjunctive morpheme āà were measured and averaged across the ten tokens. The average duration of each morpheme is shown in Table 2.

<table>
<thead>
<tr>
<th>Average duration</th>
<th>Relativizer</th>
<th>Subjunctive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>171 ms</td>
<td>173 ms</td>
</tr>
</tbody>
</table>

There is only a 2 ms difference between the average duration of the two morphemes, which is not indicative of a phonemic vowel length distinction.

Data gathered by Olivo (p.c.) for a phonetic analysis of the translation into Twi of the North Wind and the Sun was reanalyzed for this project to determine mean vowel duration in

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9 Dzifa Duose was raised in Accra by an Asante mother and an Ewe father. She has lived in the US since she was 18 years old.

10 The three cases where āà followed a word other than no did not show a meaningful difference in length from the tokens where it followed no.
Twi. Her calculations showed that the mean short vowel duration is 80 ms, and the mean long vowel duration is 160 ms. These measurements indicate that both the Twi relativizer and the subjunctive morpheme occur as phonetically long vowels.

However, as noted in example (2), significant phonemic reduction occurs when the relativizer follows the determiner no; raw vowel duration measurements alone were thus not adequate to determine whether the realization of the relativizer as a long vowel was due to phonemic length or due to the vowel quality assimilation of the vowel in no.

Using a corpus of relative clauses from natural discourse (to be discussed in §3.1), I measured the average duration of the relativizer both following no (28 tokens) and following other words (27 tokens). The mean durations of these measurements are shown in Table 3.

Table 3: Average duration of the relativizer in corpus

<table>
<thead>
<tr>
<th>Avg. duration of relativizer</th>
<th>After no</th>
<th>After other words</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 ms</td>
<td>160 ms</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that there is not a meaningful difference between the duration of the relativizer following no and following other words.

To summarize, I found that the mean duration of the relativizer was 171 ms in an elicitation task, 150 ms in natural discourse following no, and 160 ms in natural discourse following other words. These duration measurements are fully consistent with Olivo’s estimate of 160 ms for Twi phonemically long vowels and contrast strongly with her measurement of 80 ms for phonemically short vowels. I therefore conclude that the relativizer’s phonemic form is a long vowel.

2.3 Tone of the relativizer

I measured the pitch of the relativizer and that of the subjunctive morpheme using an elicited minimal clause set as discussed in (8).\(^{11}\) Pitch was measured using a pitch range of 50-350 Hz in Praat. Olivo (2008) showed that for this particular speaker the pitch ranges for the three phonemic tones are as follows:

- H >200 Hz
- M 180-200 Hz
- L <180 Hz

Since the pitch falls for both morphemes, I took one pitch measurement at the high point (generally the beginning) and one at the low point (generally the end). Only 8 tokens could be used for the subjunctive morpheme. The high and low pitch values were averaged across tokens and are shown in Table 4.

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\(^{11}\) Both frequently occurred after no, so the presence or absence of no did not affect any tonal differences between them.
Table 4: Average pitch of relativizer and subjunctive in elicitation

<table>
<thead>
<tr>
<th></th>
<th>Begin</th>
<th>End</th>
<th>Tone contour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relativizer</td>
<td>214 Hz</td>
<td>182 Hz</td>
<td>HM</td>
</tr>
<tr>
<td>Subjunctive</td>
<td>195 Hz</td>
<td>171 Hz</td>
<td>ML</td>
</tr>
</tbody>
</table>

The third column in Table 4 shows the categorization of the pitch values into tone ranges for this particular speaker. The first measurement for the relativizer is more than 200 Hz and therefore falls into the high-tone range; the end measurement for the relativizer and the first measurement for the subjunctive morpheme occur in the mid-tone range; and the ending measurement for the subjunctive is below 180 Hz in the low-tone range. These results indicate that, in the same morphosyntactic environment, the relativizer is one tonal step higher than the subjunctive morpheme; however, they do not indicate the underlying phonemic tone of either morpheme, since this tone may be influenced by the tonemic environment—in particular, by no, which has high tone.

To account for this problem, I measured the pitch of the relativizer in a corpus of natural discourse (see §3.1 for a description of this corpus), both following no (28 tokens) and following other words (27 tokens) which were not sorted by tone. The average measurements are shown in Table 5.

Table 5: Average pitch of the relativizer in corpus

<table>
<thead>
<tr>
<th></th>
<th>After no</th>
<th>After other words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. begin tone</td>
<td>225 Hz</td>
<td>197 Hz</td>
</tr>
<tr>
<td>Avg. end tone</td>
<td>190 Hz</td>
<td>171 Hz</td>
</tr>
<tr>
<td>Tone contour</td>
<td>HM</td>
<td>ML</td>
</tr>
</tbody>
</table>

Comparing these measurements to the ones from the elicited minimal clause set, I found that the pitch of the relativizer after no in natural discourse was most similar to the results from the minimal clause set; namely, after no the tone of the relativizer is realized as HM. However, when the relativizer occurred in the corpus after other words, its average tone was realized as ML. This indicates that the occurrence of pitch values of more than 200 Hz in the relativizer is most likely assimilation from the preceding high-toned no and is not phonemic. I therefore conclude that the phonemic form of the relativizer is most likely ML, or àà.12

2.4 Summary

My measurements of the relativizer in both an elicitation task and a corpus of natural discourse indicate that its phonemic form is àà, a long vowel with falling (ML) tone, and that it is not homophonous with the subjunctive morpheme. Though the relativizer is realized as HM in the environment after no, this is the phonetic influence of high-tone no rather than an underlying phonemic property.

Other tonological processes, such as those described by Schachter and Fromkin (1968) may take place; however, the data set was too small to draw any further conclusions.

12 Since the subjunctive morpheme is a tonal step lower, I have chosen to write it àà, though further investigation is necessary.
3 The use of enclitic no

Noun phrases in Twi may be marked for definiteness with the enclitic no, as in example (9), where no occurs in the noun phrase papa no ‘the man’.

(9) Pàpá nò bà-à há.
man DEF come-COMPL here
‘The man came here.’ (Amfo 2007:140)

A homophonic morpheme no is often used as an enclitic on dependent clauses, as in (10) where no (glossed here as DCM as in the original) marks the clause Adjoa bae no ‘when Adjoa came’ as dependent.

(10) Adjoa ba-e no, me-a-n-hu no.
Adjoa come-COMPL DCM I-COMPL-NEG-see her
‘When Adjoa came, I didn’t see her.’ (‘I didn’t see Adjoa when she arrived.’) (Fretheim & Amfo 2008:360)

Relative clauses in Twi may also be marked with this enclitic no. The role of no in the relative clause construction has received significant attention by scholars of Twi. Some authors have characterized it as an obligatory feature of relative clauses—a definite determiner (Saah 1994; 2009), a determiner (Fiedler & Schwarz 2005), or a demonstrative (Welmers 1946). Amfo & Fretheim (2005) make a distinction between this use and its use as a dependent clause marker “in all and only those cases where the proposition of an embedded clause is presupposed rather than asserted or just potential, like temporal, causal, and concessive clauses, and, above all, restrictive relatives” (Amfo & Fretheim 2005:61). Boadi (2005) states that, not only is enclitic no—which he calls a deictic determiner, marking the boundary of the clause—obligatory, it makes up part of a Subordinate Clause Particle Phrase together with a Subordinate Clause Particle. This particle “occurs before the Deictic and after the Adverbial Adjunct if the clause contains one” and “is realised by one of the mid vowels [e o ɛ ɔ], the choice of vowel depending partly on the backness-feature value of the immediately preceding vowel and partly on its ATR feature specification,” (Boadi 2005: 149). He also discusses a particular kô-type of relative clauses, which always occur “as a clausal Complement of matrix verbs, especially those of the V-Comp type,” (Boadi 2005: 151). Neither the subordinate clause particle nor kô-type relatives are found in my data or mentioned in other works; it is possible Boadi’s work is based solely on Fante, though he does not note the dialect of his consultants.

A few authors have countered that the use of enclitic no is not obligatory but depends on certain discourse features. A 1929 grammar of Fante remarks that “if the antecedent noun is defined, the definite article or adjective, no, is not attached to the noun, but comes at the end of the relative clause,” (Balmer & Grant 1929). Osam (1997) agrees, stating that, “if the head noun is definite, the definite article appears again as clitic at the end of the REL clause,” (Osam 1997: 258). Colley (2007) goes even further and lists various conditions which favor the use of enclitic no in Twi: if the relative clause appears in the middle of the sentence rather than the end; if the head NP is lower on the accessibility hierarchy (as defined by Keenan and Comrie 1977); if the head NP is definite; if the relative clause does not already end in a definite NP (that is, one marked with no). This last characteristic has also been noted by Saah (1994) and Osam (1997),
with the caveat that the homophonous 3SG.ACC form no may, by contrast, be followed by the enclitic no. This morpheme, according to Saah (2009), could also be argued to “demarcate the end of the relative clause,” (Saah 2009: 10). Saah asserts that “the omission of the clause-final determiner results in an ungrammatical sentence in most cases,” (Saah 2009: 9), but he does not elaborate on what the possible exceptions might be.

The sections that follow contain an examination of the presence of enclitic no in relative clauses based on a corpus of natural discourse data. First I describe my methodology (§3.1), then I provide a discussion of each variable (§3.2 to §3.9). A summary of my findings follows.

3.1 Methodology

Despite the scholarly disagreement over whether enclitic no is obligatory, its function is widely understood to be related to definiteness, deixis, or other discourse features. To study these factors, I assembled a corpus of 59 relative clauses from spontaneous speech. All but one were uttered by the primary consultant Dzifa Duose; the other one was uttered by her mother.

The data for this corpus was collected in 2008-2009 in Houston, TX, and it came from a variety of genres. These include: a narration of the Pear Story; an orally recited recipe; an elicitation task involving describing an unusual basket and trying to sell it to another student; a card and a dice game; and a session in which the consultant described photographs that she had taken in Ghana to another native speaker. The single relative clause uttered by the consultant’s mother was drawn from a conversation between her mother, a pediatrician, and the mother of one of her patients. Table 6 gives the distribution of relative clauses by text type.

<table>
<thead>
<tr>
<th>Text type</th>
<th>Number of relative clauses</th>
</tr>
</thead>
<tbody>
<tr>
<td>cow locations (CC1, CC2)</td>
<td>24</td>
</tr>
<tr>
<td>cow dice game (T1, T3-T5)</td>
<td>11</td>
</tr>
<tr>
<td>photo description (PD)</td>
<td>8</td>
</tr>
<tr>
<td>basket description (BD)</td>
<td>6</td>
</tr>
<tr>
<td>fufu recipe (FR)</td>
<td>4</td>
</tr>
<tr>
<td>pear story (PS)</td>
<td>2</td>
</tr>
<tr>
<td>cow story (T2)</td>
<td>3</td>
</tr>
<tr>
<td>conversation on babies (BC)</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>59</strong></td>
</tr>
</tbody>
</table>

Relative clauses were identified and transcribed with the help of the primary consultant, and they were all re-checked by her.

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13 Given a set of Deja Moo ™ cards (which each contain a drawing of an identical cow, each wearing slightly different clothes), the consultant Dzifa Duose laid out a certain number of them to match a pattern I had drawn on another card. Then she explained to a hypothetical other player, not present in the room, how that person would arrange their identical set of cards to match the ones she had dealt in front of her. Another game she played with the cards involved rolling a die, drawing that number of cow cards, and drawing a verb card from another deck. She was then asked to make up a sentence or story involving the cow(s) and the verb. In most cases this produced a single sentence, but in a few cases it produced a long narration.
This corpus has several limitations. It relies almost exclusively on one speaker’s dialect, making applicability to other speakers questionable. On the other hand, its internal consistency is also a strength. In addition, most of the relative clauses in the corpus were produced through somewhat contrived communicative situations and removed from their cultural contexts, though they were nonetheless produced more naturally than elicited translations. Though the corpus is fairly small—relative clauses are somewhat rare in discourse—it still provides a useful case study for the use of no. As the small sample size made it impossible to carry out tests of statistical significance, my general rule when noting interesting patterns was to only take into account variables with ten data points or more, and to only consider a data slant of 70% or more.

3.2 Is no obligatory?

In my corpus, the relative clause enclitic no is not obligatory. In fact, it only occurs about half of the time in this dataset. As Table 7 shows, in 29 of 59 relative clauses (49%), no did not occur.

Table 7: Presence of no in corpus of relative clauses

<table>
<thead>
<tr>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

To explain the variable presence of enclitic no, I examined a number of discourse factors which have been hypothesized to influence its occurrence. These factors were chosen based on the framework of Fox and Thompson’s (1990; 2007) studies on English relative clauses which, like my study, were performed on a small corpus of spoken relative clauses that was not always accessible to chi-square statistical tests. In addition to noting whether enclitic no was present or absent, I followed Fox and Thompson in coding for the following criteria: the grammatical relation (GR) of the head NP in the main clause; the GR of the NP\textsubscript{rel} within the relative clause; information status of the head NP (new, given, or accessible); humanness of the head NP; definiteness of the head NP; and length in number of words of each relative clause. These variables are all associated in some way with deixis and/or dependency—factors suggested by various Twi scholars to be relevant to the use of no. I added two other variables: whether repair occurred in or near the relative clause; and the distance in words between the head NP and the relativizer. If no served as a dependent clause marker, it might be more frequently used when the relative clause was less clearly linked to its head NP, either through distance or through an interruption in the clause. My data for each variable will be presented in the following sections.

3.3 GR of head NP

Given the cross-linguistic generalization that the topic-worthiness of a noun phrase affects its position in an utterance (Du Bois 1987), I hypothesized that the grammatical role of a Twi head noun modified by a relative clause might affect the presence of no. To study this
variable, I divided the GR of the Head NP into Topic;\textsuperscript{14} Focus;\textsuperscript{15} Subject, Object, Secondary Object (OBJ2), Oblique, and Possessor (see §4 for definitions of these terms in Twi). Predicate nominals and locatives were included with Objects, since this is how they are marked formally in Twi. My data are shown in Table 8.

Table 8: GR of head NP by presence of no

<table>
<thead>
<tr>
<th>Head NP GR type</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Focus</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Subject</td>
<td>4</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Object</td>
<td>16</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Secondary Object</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Oblique</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Possessor</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

There are two marked correlations represented in Table 8. First, there is a correlation between the presence of no and relative clause NPs serving as the Subject of a clause. Of the 16 Subject NPs modified by relative clauses in the data, 12 (75\%) contained enclitic no; these 12 relative clauses also made up 40\% of the instances of enclitic no in the corpus. Second, there is a correlation between clausal Objects and the absence of no. In 16 of 29 relative clauses where no was absent (55\%), the head NP served as an Object; these 16 relative clauses made up 72\% of all Objects modified by a relative clause in the corpus. These data indicate that relative clauses headed by main clause Subjects are most likely to be marked with no, while those headed by main clause Objects are most likely to lack no.

3.3 GR of NP\textsubscript{rel}

I also examined the topic-worthiness of the relativized noun phrase within the relative clause to determine if this had an effect on the presence of no. To that end, I divided the GR of the NP\textsubscript{rel} into Subject, Object, OBJ2, Oblique, and Possessor (these categories will be discussed further in §4). Cases where the NP\textsubscript{rel} was the subject of a complement clause have been grouped with Subject since their behavior is the same. My data are shown in Table 9. Table 9 shows that there appears to be no correlation between the grammatical role of the relativized NP and the presence of no, though the data for most GRs is quite limited. Note that 37 of 59 relative clauses in the data (63\%) were subject-relatives (that is, the NP\textsubscript{rel} was the subject of the relative clause). This is explained by the fact that most of the data was drawn from the cow card game (see fn. 13), which tends most strongly to produce subject-relatives. Subjects are also cross-linguistically the most easily relativized arguments (Keenan & Comrie 1977).

\textsuperscript{14} Marked with the postpositional deɛ. Also called a ”non-exclusive or potentially inclusive” focus marker by Boadi (1974: 8).

\textsuperscript{15} Marked with the enclitic na (Ameka 1992).
Table 9: NPrel GR by presence of no

<table>
<thead>
<tr>
<th>NPrel GR type</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>17</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>Object</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>OBJ2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Oblique</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Possessor</td>
<td>5</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

3.4 Information status

Using the cross-linguistic framework of Chafe (1987), I categorized head NPs by their information status; that is, how active referents or concepts are in a speaker’s consciousness at a given time. Chafe divides information into three categories: Given, or active in a person’s focus of consciousness; Accessible, or semi-active in a person’s peripheral background awareness; and New, or “neither focally nor peripherally active” (Chafe 1987: 25).

There is a close relationship cross-linguistically between deixis and information status; different deictic distances may be coded based on information status. As several authors have speculated on the deictic nature of no in Twi relative clauses, information status was hypothesized to have relevance to the presence of no. I coded Twi relative clauses in my corpus in terms of whether their referent was Given, Accessible, or New information. All referents relating to cow cards were categorized as Accessible the first time they were mentioned, since part of the setup of the game was that the listeners knew what cards were in the deck. NPs were categorized as Given if they had been mentioned in discourse already. The data is presented in Table 10.

Table 10: Information status by presence of no

<table>
<thead>
<tr>
<th>Information Status</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given</td>
<td>13</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>New</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Accessible</td>
<td>9</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 10 shows that Given information seems to correlate fairly strongly with the absence of no—13 of 18 Given referents modified by a relative clause (72%) lacked no, and 13 of 29 relative clauses lacking no (45%) referenced Given information. In addition, Accessible NPs are correlated with no—21 of 30 Accessible referents modified by relative clauses (70%) contained no, and Accessible information represented 70% (21 of 30) of referents of relative clauses which contained no. These results are somewhat anomalous—if no is closely associated with the most salient discourse factors (as hypothesized by several scholars), we might expect it to be more strongly correlated with Given information. Further research is needed to explain these findings.
3.5 Humanness of head NP

Noun phrases in the corpus which were modified by relative clauses were categorized according to whether or not their referent was human. References to the cows on the cow cards (see fn. 13) were also categorized as human if they were anthropomorphized to such an extent that they used human pronouns. My data are shown in Table 11.

Table 11: Humanness of head NP by presence of no

<table>
<thead>
<tr>
<th>NP humanness</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>17</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>Nonhuman</td>
<td>12</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 11 shows that relative clauses with nonhuman referents tend to lack no—12 of 17 relative clauses with nonhuman referents (71%) did not use no. However, the converse does not hold—the absence of no does not imply a nonhuman referent—and neither does the inverse. In fact, human NPs are about equally likely to occur with or without no. This may be an artifact of the small dataset. If not, a possible explanation is that no is correlated with human referents (which are usually definite, see §3.6), but that the factors which cause it to be ‘dropped’ are related to some other variable. Perhaps the odd situation of anthropomorphizing the cows caused the speaker to become less consistent in her use of no.

3.6 Definiteness of head NP

I categorized relative clause head NPs according to definiteness. NPs were characterized as definite if they were followed by the definite determiner no ‘the’ (discussed in §3), or if they were possessed. Possessed NPs are accessible through anchoring to their possessor; they are linked by the possessive pronoun contained in them to another referent already active in the discourse (Fox & Thompson 1990: 300). Definiteness was coded separately from information status (§3.4) since there were a few Given and Accessible NPs which were not coded as definite. An example of this occurs in (11).

(11)  wʊ wʊ ɛji bajre bi ə̀ː wʊ e-ɛtọa no tatataa
     2SG have um yam some REL 2SG PRF-cut 3SG flat
     ‘you have, um, a yam that you have cut flat’

     [ə̀ː wʊ m-pɛ ɛ]
     REL 2SG NEG-want COMP
     ‘that you don’t want’

     ɛ wʊ nwa wʊ m-pɛ ɛ se nsuo kɔ 0 mu]
     uh 2SG cook 2SG NEG-want COMP water go in
     ‘uh, while you’re cooking, you don’t want water to make it soggy’ (BD-4:30-4:35: Dzifa Duose)
In example (11), the relative clause indicated by the brackets is a characterizing relative clause whose referent was coded as Given, since bajre bi ‘some yam’ was defined by the first relative clause (āà wu e-ctɛa nu tatataa ‘that you have cut flat’). However, the head NP is not definite; it is marked with the indefinite determiner bi ‘some’.

My data for the variable of definiteness are represented in Table 12.

Table 12: Definiteness of head NP by presence of no

<table>
<thead>
<tr>
<th>NP Definiteness</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite</td>
<td>15</td>
<td>28</td>
<td>43</td>
</tr>
<tr>
<td>Indefinite</td>
<td>14</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 12 shows that the strongest correlations are that 14 of 16 indefinite NP heads (88%) were modified by relative clauses that did not include no, and 28 out of 30 relative clauses where no was present (93%) were definite.

As with nonhuman head NPs, indefinite head NPs tend not to co-occur with no; however, in this case the inverse and the contrapositive are true—definite head NPs do tend to co-occur with no (28 of 43, or 65%), and the presence of no strongly indicates definiteness. The absence of no, however, is not correlated with either definite or indefinite NPs. This observation, along with the observed correlation with humanness (§3.5), gives some credence to the assertion that no indicates definiteness; perhaps the historical origin of this enclitic is as an echo of the homophonous definite determiner no marking the head NP, although it is no longer uniquely correlated with this meaning.

3.7 Length of relative clause

Word boundaries are not well-understood in Twi. To code the number of words in each relative clause (excluding the relativizer and enclitic no), I counted 1SG and 3SG subject pronouns as verbal affixes, while other subject pronouns were counted as separate words (after Osam 1994). I counted possessive prefixes as part of the noun they attach to, but postpositions as separate words. The results from my corpus are shown in Table 13.

Table 13: Length of RC by presence of no

<table>
<thead>
<tr>
<th># of words</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9+</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>
In Table 13, we observe that relative clauses of two and three words are more common than shorter or longer ones (51% of relative clauses in the corpus contain either two or three words). Relative clauses containing two words are highly likely to contain no (10 of 13, or 77%); while relative clauses with three words are somewhat likely to lack no (10 of 17, or 59%). These correlations are similar if we differentiate between relative clauses of two words or less (13 of 17, or 76%, contain no) and relative clauses of three words or more (25 of 42, or 60%, lack no).

3.8 Repair

In general, I coded a relative clause as having undergone repair if a repair took place within the same sentence, either internally or externally to the relative clause. My data are shown in Table 14.

Table 14: Repair by presence of no

<table>
<thead>
<tr>
<th>Repair occurrence</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>No repair</td>
<td>21</td>
<td>24</td>
<td>45</td>
</tr>
<tr>
<td>Repair</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

There appears to be no correlation between whether repair occurs and the presence of no.

3.9 Distance from head NP to relativizer

Some relative clauses in Twi may be extraposed; that is, separated from the head NP by one or more words (Saah 2009). In my data, shown in Table 15, 13 of 59 relative clauses (22%) were extraposed.

Table 15: RC extraposition by presence of no

<table>
<thead>
<tr>
<th>Extraposition</th>
<th>no absent</th>
<th>no present</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not extraposed</td>
<td>19</td>
<td>27</td>
<td>46</td>
</tr>
<tr>
<td>Extraposed</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>30</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 15 shows that non-extraposed relative clauses show no correlation with the presence of no. However, extraposed clauses are likely to lack no; 10 of 13 extraposed relative clauses (77%) followed this pattern.

3.10 Summary

The most salient correlation in my corpus is that indefinite and nonhuman head NPs tend not to co-occur with no. While definite NPs do favor no, human NPs do not. This is a more nuanced finding than the claims of correlation with definiteness by Balmer & Grant (1929).
Osam (1997), and Colley (2007). Perhaps the original meaning of no was as a definite marker, but it is dropped in circumstances dictated by other variables.

For example, head NP main clause Subjects favor no, which is not surprising given the strong relationship between Subjects and definite, human NPs. However, Objects favor its absence; perhaps no is more likely to be dropped when it comes later in a clause.

Another fairly strong result is that the length of a relative clause and the probability of no occurring are in roughly an inverse relationship—longer relative clauses correlate with a less frequent use of no. Extrapoosed relative clauses also use no less frequently.

The result that Given information correlates with the absence of no, while Accessible information favors the use of no, is not well understood at this time. It is unclear whether this result contradicts Saah’s (2009) theory that no indicates old information, since he does not give a definition for this term.

There appears to be no relationship between the presence of no and the GR of the NP_rel, or whether a repair occurs.

The data suggests that no is used to mark relative clauses modifying highly topic-worthy head NPs, but that it is dropped when a relative clause occurs at the end of a clause or at a long distance from its head NP. This conclusion is compatible with the fact that other Kwa languages of West Africa differ in the placement of a determiner and a relative clause in a noun phrase. In Urhobo the determiner immediately follows the head noun, and in Yoruba it immediately follows the relative clause (Keenan 1985: 145). Perhaps Twi, which often does both, is in the process of switching from one to the other. Saah’s (2009) native speaker intuitions can detect no difference in meaning between a relative clause with both a determiner no and an enclitic no, and one with only the enclitic. He also notes that when both positions are filled, they normally must be filled with the same determiner. This explanation is supported by the relative clause length and extraposition correlations—long relative clauses, or ones removed from their normal environment, might be expected to be less felicitous to noun phrase marking.

Another possible explanation for the patterns evidenced by no is that the enclitic is in fact a dependent clause marker, as Amfo & Fretheim (2005) and Weber (2009) have claimed. If this is true, perhaps its “optional” usage varies based on whether the clause it demarcates is construed as being dependent. Fox & Thompson’s (2007) study of English relative clauses found that the English relativizer that is dropped when the relative clause is construed as being part of the main clause, and inserted when a relative clause is construed as being a separate clause. If Twi enclitic no was used to indicate biclausality, that would fit with the avoidance of co-occurrence of no with a nonhuman, indefinite head NP—a relative clause modifying an NP low in topic-worthiness and semantic weight would be expected to be a more monoclausal construction.

However, much more work is needed to determine which, if either, of these explanations is correct.

4 NP accessibility to relativization in Twi

This section will describe in detail the relativization strategies used in Twi according to Keenan and Comrie’s typology. Most languages have some construction whereby the subject of a clause is relativized such that the clause becomes part of a noun phrase (Keenan & Comrie 1977: 67). Many languages are also capable of relativizing other NPs, and Keenan and Comrie’s (1977) accessibility hierarchy (Figure 1), revised in Comrie and Keenan (1979), explores what
roles these NPs are likely to have within the relative clause. Namely, “If a language can relativize any position on the A[ccessibility] H[ierarchy], then it can relativize all higher positions” (Comrie & Keenan 1979: 651); that is, all positions to the left.\footnote{Subject, direct object, indirect object, oblique, genitive, and object of comparison.}

**Figure 1**: Keenan and Comrie’s (1977: 66) accessibility hierarchy

SU > DO > IO > OBL > GEN > OCOMP

The grammatical strategies by which the relativized NP’s role in the relative clause (NP\textsubscript{rel}) can be understood by the hearer also vary systematically across the world’s languages, encompassing three main strategies: pronoun retention, also called resumptive pronouns, where an appropriate pronoun appears in the position of the NP\textsubscript{rel}; ‘gapping’ or the W[ord] O[rd]er-S[trategy], where the normal position of the NP\textsubscript{rel} is empty; and relative pronouns, which combine the function of a relativizer with case-marking to indicate the NP\textsubscript{rel} (Keenan & Comrie 1977, Comrie & Keenan 1979, Keenan 1985, Payne 1997).

In the only publication to examine Akan relative clauses in depth, Boadi (2005) explicitly states that “It is not our intention to discuss our data in relation to [Keenan and Comrie’s (1977)] Accessibility Hierarchy Constraints [AHC],” (Boadi 2005: 144). Colley (2007) is a fairly systematic look at various NPs on the AH. He finds that subjects, objects, possessors, and the object of a serial verb construction can be relativized. Saah (2009), based on a 1990 conference presentation, mentions that, in addition to subject, object, and possessor, “Non-Direct Object (Locative)” and “Temporal adjunct” can also be relativized, while relativization of possessum is ungrammatical (Saah 2009: 13).

Most authors agree that, for relativized subjects and objects, the role of NP\textsubscript{rel} within the relative clause is marked with an obligatory resumptive pronoun (Schachter 1973; Saah 1994; Osam 1997; Boadi 2005; Saah 2009). Boadi (2005) believes that the “most crucial test of the Defining Relative Clause”—as opposed to appositive, or non-restrictive, relative clauses—is that “all Defining Relative Clauses contain a resumptive pronoun which is linked referentially to an antecedent noun topic,” (Boadi 2005: 145). This holds “with the possible exception of cases involving certain classes of adverbials,” (Boadi 2005: 147) and in fact the only examples he gives are of subject- and object-relatives. Saah (2009) also notes that the obligatory resumptive pronoun may be “null or overt, depending on whether its antecedent is inanimate or animate,” (Saah 2009: 11), but states explicitly that Akan relative clauses do not have “gaps”.

However, Saah provides two examples that do contain these gapped arguments: one a relativized non-direct object (locative) and the other a temporal adjunct (Saah 2009: 14). Osam (1997) also gives an example of a relativized secondary object where the NP\textsubscript{rel} is gapped, although he marks the gap after the primary verb (12).

\begin{center}
\textbf{12) Sika no a Kofi de ma-a [0] papa no a-yera}
\textit{money the REL Kofi take give-PAST man the PRF-be.lost}
\textquote{The money Kofi gave to the man is lost.} (Osam 1997: 262)
\end{center}

He also gives several other examples of relativized objects, secondary objects, and locative obliques where the NP\textsubscript{rel} is gapped, though he does not note this. Similarly, Colley (2007) suggests that pronoun retention may be merely “preferred”, and that it is optional for direct
objects but obligatory for possessors. He also mentions that the relativization strategy may be determined in some cases by tense/aspect factors.

In the remainder of this section, I will argue that two of Comrie and Keenan’s generalizations regarding the AHC are contradicted by the case of Twi. They state that pronoun retention “always applies to continuous segments of the AH,” (Comrie & Keenan 1979: 662), but my research shows that speakers of Twi use a resumptive pronoun to relativize subject and possessor, while most other positions use gapping. This also contradicts the generalization that, if pronoun retention “applies to a position X on the AH, then it applies to all lower positions which are relativizable at all,” (Comrie & Keenan 1979: 663). Similar exceptions occur in neighboring languages Hausa and Yoruba (Keenan & Comrie 1977) and Urhobo (Keenan 1985), indicating that Twi needs to be taken into consideration as well when attempting to explain these exceptions.

While the preliminary analysis for this study was based on elicited translations, it has been confirmed with the corpus of naturally-occurring speech discussed in sections 2 and 3. In this section, examples that come from this corpus are labeled with a code for the source they are drawn from, the line of the transcription in which they occur, and the identity of the speaker. Unlabeled examples were elicited through direct translation.

4.1 Relativization in Twi

As described in §1, headed relative clauses are postnominal in Twi; they follow the head noun. The relativizer āà, which comes after the head NP and before the relative clause, can be used to relativize all positions on Keenan and Comrie’s (1977) accessibility hierarchy, including subject (§4.1.1), primary object (§4.1.2), secondary object (§4.1.3), oblique (§4.1.4), and possessor (§4.1.5).

4.1.1 Relativized subject

If the NP_{rel} is the subject of the relative clause, it is marked as a resumptive pronoun within the relative clause. The pronouns used to mark it are the same as the SUBJ pronouns. For example, in (13), the noun phrase nentcie no ‘the cow’ is modified by the relative clause āà ɔ- wɔ enwa eni no ‘that [he] has snail eyes’.

(13) [nentcie no] [āà ɔ-wɔ enwa eni no] e-e-dzwane ntentem paa
cow   DEF REL 3SG-have snail eye DCM 3SG-PROG-run fast very
‘The cow with snail eyes is running very fast.’ (T1-36:10-36:20: Dzifa Duose)

In (13), the 3SG resumptive pronominal prefix ɔ- (underlined) acts as a resumptive pronoun to refer to the head noun.

4.1.2 Relativized OBJ1

In Twi, there is no distinction between the patient in a transitive construction (14) and the recipient in a ditransitive construction (15) (underlined). Both immediately follow the main verb and are not marked with any case-marking; both could be replaced by accusative pronouns.
(14) o-fí~fí ni-nsa
3SG-suck~suck 3SG.POSS-hand
‘He’s sucking his thumb.’ (BC-32: NN)

(15) ënà je ì dí mì tu-ù ì djutì énsù.
and PASS OBJ2 1SG.ACC put-COMPL duty also
‘they put me on duty too.’ (BC-18: DM)

When this argument, which I call OBJ1 or primary object, is relativized, the preferred method of NP_rel case-recoverability is gapping. In every elicited translation, the NP_rel was gapped, as in (16) where the noun phrase bëìma nò ‘the man’ is modified by the relative clause àà ekua hù-je nò ‘that Akua saw’.

(16) [bëìma nò] [àà ekua hù-je 0 nò] di-i baje
man DEF REL Akua see-COMPL DCM eat-COMPL yam
‘The man that Akua saw ate a yam.’

In example (16), the 3SG.ACC resumptive pronoun no which references the head noun is gapped; it is indicated here by zero. Note that if the object-relative is in the completive aspect, as in (16), the relative clause verb is marked with -jë. This is the form of the completive aspect morpheme which only occurs when the verb to which it is attached comes at the end of a clause (Osam 1994), further indicating that a resumptive pronoun is not felicitous here.

When asked specifically about resumptive pronouns, the consultant allowed (17) with the caveat that the resumptive pronoun (underlined) is highly emphatic.

(17) [bëìma nò] [àà ekua di baje ma-a nò nò] ba-jë
man DEF REL Akua OBJ2 yam give-COMPL 3SG.ACC DCM come-COMPL
‘The man Akua gave a yam to came (and it couldn’t have been anybody else but him who came).’

There was only one object-relative in the corpus of natural data—shown in example (18) below—but here, by contrast, a resumptive pronoun is used when the noun phrase bajre bì ‘some yam’ is modified by the relative clause àà wù e-cîtça nò tatrataa ‘that you have cut [it] flat’.
Example (18) contains two (bracketed) consecutive relative clauses modifying the head noun. The first is an object-relative where the resumptive 3SG.ACC pronoun ɲüs (underlined) is used to reference bajre bi ‘some yam’; the second is an oblique-relative (discussed in section §4.1.4 below). A larger corpus would need to be assembled to get a good sampling of object-relatives, to determine under what discourse conditions resumptive pronouns occur.

4.1.3 Relativized OBJ2

The semantic patient of a ditransitive clause, or secondary object, is marked differently from the primary object (which is the recipient). Both objects may be referenced with accusative pronouns. The secondary object either occurs immediately after the primary object, as in (19), or before the verb as in (20).

(19) ekua ma-a kwaame bajre
Akua give-COMPL Kwaame yam
‘Akua gave Kwaame a yam.’

(20) ekua de bajre ma-a kwaame
Akua OBJ2 yam give-COMPL Kwaame
‘Akua gave a yam to Kwaame.’

In (19), the secondary object bajre ‘yam’ occurs after the primary object Kwaame, a proper name; in (20), bajre occurs before the verb and is preceded by the deverbal particle de (/dɛ/, formerly ‘take, hold’), which Lord (1993) has analyzed as a case-marker. It can also mark instrument, means, material, manner, accompaniment, and causation (Lord 1993: 66-67). This particle has been a source of much discussion in the literature; Osam (1997: 276) counters that it is not a preposition, although he concedes that it is not a typical verb since it does not inflect for tense/aspect. I will use the term OBJ2 to refer to arguments that may occur marked with de. The only cases in which OBJ2 can undergo relativization are cases like (20), where it is preceded by de (Osam 1997: 262 noted this; see (12) above). In relativization of the secondary
object, the de remains in situ and the NP_rel is gapped. For example, in (21), the noun phrase

\[ \text{nentcie no} \] ‘the cow’ is modified by the relative clause \( \text{āa wɔ di to-\text{-}u ho kane} \) ‘that you put there first’.

\[ (21) \quad \text{[nentcie no]} \quad [\text{āa wɔ di} \quad 0 \quad \text{to-\text{-}u}] \]

\[
\begin{array}{llll}
\text{cow} & \text{DEF} & \text{REL} & \text{2SG} & \text{OBJ2} & \text{put-COMPL} \\
\text{‘as for the cow that you put’} \\
\text{ho kane no} & \text{de} & \text{ni-tetrem} & \text{nu} & \text{pij} & \text{abonti nu}, \\
\text{there first} & \text{DCM} & \text{TOP} & \text{3SG.POSS-tongue} & \text{DEF} & \text{come.out} \\
\text{outside} & \text{DEF} \\
\text{‘there first, his tongue is sticking out’} & \text{(CC1-35-36: Dzifa Duose)}
\end{array}
\]

Example (21) shows an instance of a gapped secondary object NP_rel (indicated by zero). Saah (2009) describes the Twi rule whereby pronouns referring to inanimates are dropped; however, this does not seem relevant to secondary object-relatives, where the NP_rel is gapped even when the referent is human, as in (22), where the head noun \text{akola no} ‘the child’ is modified by the relative clause \( \text{āa mi-\text{-}di ma-a Ama} \) ‘that I gave to Ama’.

\[ (22) \quad \text{[akola no]} \quad [\text{āa mi-\text{-}di} \quad 0 \quad \text{ma-a} \quad \text{ama no}] \quad \text{ɛ-su} \]

\[
\begin{array}{llll}
\text{child} & \text{DEF} & \text{REL} & \text{1SG-OBJ2} & \text{give-COMPL} & \text{Ama} & \text{DCM} & \text{PROG-cry} \\
\text{‘The child that I gave to Ama is crying.’} \\
\text{token first} & \text{DCM} & \text{TOP} & \text{3SG.POSS-tongue} & \text{DEF} & \text{come.out} & \text{outside} & \text{DEF} \\
\end{array}
\]

It is ungrammatical to use a resumptive pronoun for a relativized OBJ2, as demonstrated by the unacceptability of example (23), where the head noun \text{bajre no} ‘the yam’ is modified by the ungrammatical relative clause \( \text{*\text{āa Ama di no ma-a Kwaame} \) ‘that Ama gave it to Kwaame’.

\[ (23) \quad \text{*\text{wei je}} \quad [\text{bajre no}] \quad [\text{āa ama di} \quad \text{nu} \quad \text{ma-a} \quad \text{kwaame}] \]

\[
\begin{array}{llll}
\text{this} & \text{COP} & \text{yam} & \text{DEF} & \text{REL} & \text{Ama} & \text{OBJ2} & \text{3SG.ACC} & \text{give-COMPL} & \text{Kwaame} \\
\text{‘This is the yam that Ama gave Kwaame.’} \\
\end{array}
\]

The relative clause in (23) could be made grammatical by deleting the 3SG.ACC pronoun nu.

4.1.4 Relativized oblique

The semantic roles typically ascribed cross-linguistically to obliques—location, direction, setting, purpose, time, manner, etc. (Payne 1997:46)—are spread across a variety of formal constructions in Twi. As discussed in section §4.1.3, ditransitive constructions require a patient NP, which may be preceded by de. However, other optional roles such as manner, accompaniment, and instrument can also be expressed using de. Similarly, some ditransitive verbs require their second argument to be a locative postpositional phrase (Osam 1997:266), while in other cases use of a locative postpositional phrase is optional. In cases of the latter type, the phrase is preceded by the predicate locative particle wɔ which, like de, is a decayed verb form (as defined by Payne 1997:87). Postpositional locative phrases,\(^\text{17}\) which I will call obliques, may be relativized in Twi. In these cases, the postposition stays in situ while the

\(^{17}\) I would like to thank Natalie Weber for her notes on Twi postpositions and locative phrases.
oblique NP is moved to head noun position. For example, the extraposed oblique-relative in (24) modifies the head NP ntokruntoku bi ‘some hole’, and the NP_rel which immediately precedes the postposition mu ‘in’ is gapped.

(24) e-jɛ kama se
PLE-COP nice COMP
‘it’s nice that’

[ntokruntoku bi] wɔ hɔ [āà wɔ be-tumi dr a-sen 0 mu
hole some LOC there REL 2SG FUT-can OBJ2 CONS-hang in
‘there’s some hole there that you can hang it (jewelry) in’

saa] na a-m-bobo se wu hɔ
like.that and PRF-NEG-fold COMP 2SG.POSS body
‘like that and it won’t get tied in knots’ (BD-4:15-4:30: Dzifa Duose)

In my corpus, there are also three examples of a relativized time adverbial, mmre or abre ‘time’; in these instances there is no marking within the relative clause to denote the role of the NP_rel. For example, in (25), the head noun bɛ ‘time’ is modified by the relative clause āà bɔɔdeɛ nu be-fe ‘the time when the plantain is smooth’.

(25) wu bɛ-kɔ sʊ a-jɛ sei a kɔ pim [bre] [āà bɔɔdeɛ nu be-fe]
2SG FUT-go on CONS-do this TEMP go hit time REL plantain DET FUT-smooth
‘You will keep doing this, until the time when the plantain is smooth.’ (FR-22: Dzifa Duose)

This construction, bre āà ‘time that’, has become partially grammaticalized and generally carries the meaning ‘while’. It is unclear where such phrases ought to fall according to Keenan and Comrie’s Accessibility Hierarchy; I have grouped them with the obliques for this study, but they require further investigation.

4.1.5 Relativized possessor

When an animate possessor is relativized, NP_rel is marked as a possessive pronominal prefix on the possessed noun, as in (26) where the 3SG.POSS prefix n- (underlined) refers to the head NP baakɔ no ‘the one’.

(26) eno na wu dr be-tuș
that.one FOC 2SG OBJ2 FUT-put
‘it’s that one that you will put’

[baakɔ nu] [āà n-eni kɔɔ] ne-sʊ
one DEF REL 3SG.POSS-eyes be.red DEF-top
‘on top of the one whose eyes are red’ (CC2.48-49: Dzifa Duose)

Inanimate possessors cannot be relativized, as the ungrammatical example (27) shows. A periphrastic solution is used to communicate this meaning, as in (28).
(27) *wei jɛ [sikãɪ nʊ] [ān nɪ-nsa] bu-u
this COP knife DEF REL 3SG.POSS-handle break-COMPL
‘This is the knife whose handle broke.’

(28) sikāi weĩ nsa a-bu
knife this handle PRF-break
‘This knife’s handle is broken.’

A serial verb construction is used for comparative constructions, making comparatives irrelevant to discussions of the accessibility hierarchy. They will not be discussed here.

4.2 Twi and the Accessibility Hierarchy

To review, if we rename some of the positions on Keenan and Comrie (1977)’s accessibility hierarchy according to grammatical relations in Twi—instead of DO and IO we have OBJ1 and OBJ2—and leave off comparative obliques since they do not exist in the language, we see that all positions on the hierarchy can be relativized with ā (Figure 2).

Figure 2: Positions on the hierarchy that are accessible to Twi relativization
SUBJ > OBJ1 > OBJ2 > OBL > POSS (animate)

The strategies used for case-recoverability of NP_rel are the following:

- **SUBJ**: resumptive pronoun (13)
- **OBJ1**: gapping preferred, resumptive pronoun highly emphatic (16)
- **OBJ2**: gapping, retention of de in situ (21)
- **OBL**: gapping, retention of postpositions in situ (24)
- **POSS**: resumptive pronoun (26)

We see that the more explicit strategy for expression of NP_rel—pronoun retention—is being used only for the leftmost position and the rightmost position on the hierarchy, and optionally for primary objects, while gapping is used for the middle positions. This contradicts two of Keenan and Comrie’s generalizations about relative clauses.

First, Keenan and Comrie (1977) say that “Any R[elative] C[lause]-forming strategy must apply to a continuous segment of the A[ccessibility] H[ierarchy],” (Keenan & Comrie 1977: 67) but the pronoun retention strategy in Twi is discontinuous. Perhaps a partial explanation is provided by Keenan and Comrie themselves in their discussion of apparent exceptions to this rule—the cases of Hausa and Yoruba, both of which are spoken in parts of Ghana. In Hausa, as in Twi, a resumptive pronoun is used for relativizing subject and oblique, while gapping is used to relativize objects.

On examining further the pronoun that appears in the RC [in Hausa] when a subject is relativized, however, we note that this same pronoun is also required in simplex sentences with a subject NP...Quite generally in Hausa, full subject NPs must be accompanied by clitic pronouns. This suggests a different line of analysis for such
pronouns. Instead of regarding them as constituent parts of a +case strategy, we may regard them as an instance of verb agreement. (Keenan & Comrie 1977: 85-86)

However, this explanation does not account for the situation in Twi, where pronominal subject prefixes are usually in complementary distribution with full noun phrases, as in (29) and (30).

(29) Pàpá nó bà-à hà.
man DEF come-COMPL here
'The man came here.' (Amfo 2007:140)

(30) ɡ-ɡi-ɡi mi-na
3SG-suck-suck 3SG.POSS-hand
'He’s sucking his thumb.' (BC-32: NN)

In (29), the verb bà-à ‘came’ is not marked with a 3SG subject prefix to agree with Pàpá nó ‘the man’; by contrast, the 3SG subject prefix o- does occur in (30), where no subject NP is present. In general, subject prefixes and full noun phrases only co-occur in pragmatically marked clauses such as (31).

(31) mi-ba น๐ eñe 2-n-wensi-je
1SG.POSS-child DEF today 3SG-NEG-sneeze-COMPL
'My child, he didn’t sneeze today.' (BC-76: DM)

In (31), the topicalized NP mi-ba น๐ ‘my child’ co-occurs with the 3SG subject pronoun o-, but this is a marked construction. According to Ameka (1992: 16), after Christaller (1875: 99), clauses of this type are a form of topicalization, which is how I have glossed them. Osam (1994) believes that the co-occurrence of subject NPs and pronouns varies by dialect and does not apply to Asante Twi:

A[n] observation we can make regarding the pronominal system as it relates to the differences between subjects and objects is the possibility of cooccurrence of full NP and prefixed pronominal forms on verbs. With the subject it is possible to have a full NP and at the same time a subject prefix on the verb. This process is limited to the Fante dialect and to the speech of only some speakers. (Osam 1994: 151-152)

In either case, the argument Keenan and Comrie use to dismiss the exception posed by Hausa does not work for Twi. If the co-occurrence is dialectal, there are some speakers whose dialect still disobeys the AHC. If the co-occurrence is simply indicative of topicalization, then it is not truly co-occurrence. While the verbal prefixes in Hausa may merely be verb-agreement markers, the verbal prefixes in Twi are clearly pronouns.

Keenan and Comrie (1977) discuss another similar exception to the AHC—the case of Tongan, where resumptive pronouns, clearly not verb-agreement markers, are used to relativize subjects, indirect objects, obliques, and genitives, yet are ungrammatical in the relativization of objects (Keenan & Comrie 1977: 86-88). They resolve this by pointing to the historical development of Tongan. It is possible that the Twi case could be explained in this way as well, if the historical origin of this oddity is a decayed verb-agreement system. More research would be needed to determine whether this is in fact the case.
The other contradiction to Keenan and Comrie’s (1977) AHC is that a resumptive pronoun is being used to relativize subjects in Twi. In general, pronoun retention tends to be used for the rightmost types of relative clauses, while gapping is used more for the leftmost ones—only 5 of 166 languages sampled in the World Atlas of Language Structures database use pronoun retention as their subject relativization strategy (Comrie & Kuteva 2011). This is because “pronoun retention permits the formation of RC’s in a large variety of ‘difficult’ contexts, e.g. in various sorts of complex NP’s and conjoined structures” (Comrie & Keenan 1979: 663). However, again we have other related languages that provide exceptions. According to Keenan (1985), Urhobo (a Niger-Congo language) and Yiddish are the only languages that use the pronoun retention strategy to relativize subject. The fact that this rarity also occurs in another Kwa language suggests that my analysis may be the correct one for Twi.

As Comrie and Keenan argue in response to data from various exceptional languages (Comrie & Keenan 1979: 663), the validity and cross-linguistic generality of their hierarchy still holds. But it seems apparent that Twi is another exception to the case-recoverability of NP_rel that needs to be explained and taken into account.

5 Conclusions

I have used both elicited and naturally-occurring data to explicate three important aspects of the formation of relative clauses. I have examined the form of the relativizer both in a set of minimal clauses and in discourse, finding that it is always realized as a long vowel and that the underlying phonemic tone is ML; the HM tones it carries after no ‘the’ are likely inherited from no. I have therefore transcribed the phonemic form of the relativizer as āà.

I have also examined the occurrence of the relative clause enclitic no, finding that it is only used in about half of all cases and that discourse factors influence its use. Head NP main clause subjects, Accessible head NPs, definite head NPs, and short relative clauses correlate with the presence of the enclitic. Head NP main clause objects, head NPs which represent Given information, nonhuman and nondefinite head NPs, longer relative clauses, and extraposed relative clauses tend to disfavor the enclitic. In general, no is used for highly topic-worthy head NPs but is not used when it would occur far from the head NP. Possible explanations for the use of no are that it indicates bicausality, or that it is an indication of historical changes in progress, but further research is needed to determine which of these explanations, if any, is accurate.

Finally, I analyzed noun phrase accessibility to relativization in Twi, finding that it provides a counterexample to Keenan and Comrie’s (1977) cross-linguistic generalizations. In contrast to what has been observed cross-linguistically, Twi requires a resumptive pronoun to relativize subjects, a phenomenon only found in Yiddish and in Urhobo, another Kwa language. Also, the use of resumptive pronouns in relativization is only possible for subjects, objects, and possessors, while secondary objects and obliques require gapping. Thus, the resumptive pronoun strategy covers a discontinuous portion of the Accessibility Hierarchy—a situation Keenan and Comrie claim is highly improbable cross-linguistically. This characteristic also apparently obtains in Hausa and Yoruba, also spoken in Ghana, and in Tongan. Keenan and Comrie’s dismissal of the exception posed by Hausa and Yoruba is not relevant to Twi; like Tongan, Twi should be considered an exception to the AHC. A historical explanation is hypothesized as the reason for this exceptional behavior, but more research is needed.
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>first person</td>
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<td>2</td>
<td>second person</td>
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<td>third person</td>
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<td>complementizer</td>
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<td>completive aspect</td>
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<td>CONJ</td>
<td>conjunction</td>
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<td>consecutive (used for second verb in a verbal string)</td>
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<td>TEMP</td>
<td>temporal or subjunctive marker (see Weber 2009)</td>
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<td>TOP</td>
<td>topic</td>
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</table>
References

**Primary sources**


**Works cited**


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