

Fast speech phenomena in Asante Twi

Katherine Nelson
Illinois State University

Abstract

A descriptive study is utilized to examine fast speech phenomena in Asante Twi, a Niger-Congo language, focusing on three fast speech rules: vowel deletion, vowel alternation in modifiers, and fricative voicing between sonorants. Transcribed and interlinearized texts from a field methods class at Rice University are used for this study. The morphological and phonetic levels of the language are compared to formulate the rules for this paper. All phonetic level transcriptions were aurally checked at least twice for accuracy. Results indicate that fast speech rules are conditioned both phonotactically and syntactically in Asante Twi.

Keywords: fast speech phenomea, Asante Twi, phonology, phonetics

1 Introduction

The term fast speech phenomena (also casual speech) can be misleading as some people will demonstrate so called fast speech phenomena at a relatively slow speech rate while others will not demonstrate them at a fast speech rate (Zwicky 1972: 607; Bolozky 1977: 217).

Additionally, there can be a correlation between rate of speech and register, such that the faster one speaks the more informal the register; however as previously stated this is not always the case (Zwicky 1972: 607). Regardless of whether or not the name best describes the process under study, there are aspects that separate fast speech phenomena from canonical speech rules. One important distinction is that the rules do not apply to all possible cases (Zwicky 1972; Bolozky 1977: 217; Smith 1981; Chelliah 1992: 133 footnote). These rules are generalizations about data, rules that represent common phonetic changes at a higher rate of speech. They can apply across or within words (Chelliah 1992: 133 footnote). Additionally, sometimes rules that are formulated for slow speech which occur only within a word will apply across word boundaries in fast speech. Zwicky (1972) mentions that fast speech rules can sometimes lead to phonotactically unacceptable clusters in the surface structure. Also, phonemes that would

otherwise not be allowed to occur in succession by the language's phonological structure can occur in the surface structure as a result of the fast speech rules, and phones that are not in the phonological inventory may surface in fast speech (Zwicky 1972).

Chelliah (1992: 133 footnote) also asserts that fast speech rules can apply in any order and are not conditioned lexically. Zwicky (1972), however, writes that fast speech rules can be restricted syntactically and lexically. When Zwicky uses the term lexically he is using it to refer to the phonological word rather than to the semantic meaning. These points can be summarized for a definition of fast speech phenomena. Fast speech phenomena rules:

- do not always apply (Zwicky 1972; Bolozky 1977: 217; Smith 1981; Chelliah 1992: 133 footnote),
- apply at variable rates of speech (Zwicky 1972: 607; Bolozky 1977: 217),
- apply within and across word boundaries (Chelliah 1992: 133 footnote),
- can lead to phonotactically unacceptable sequences (Zwicky 1972).

Using this description of fast speech phenomena, this paper examines the process in Asante Twi, a Niger-Congo language of Ghana (Gordon 2005). Recorded stories and texts of variable speech rates are used to determine the differences between fast and slow speech. The results are compared to phonological rules of Asante Twi to ensure that the variation in the data is indeed a result of fast speech.

2 Method

2.1 Data, Materials, and Recording

This study uses data from two speakers of Asante Twi, a Niger-Congo language spoken in Ghana by about 2.8 million people (Gordon 2005). The corpus for this study was developed in the Rice University linguistics department field methods class in spring semester 2009. Dzifa Duose, the

consultant for the field methods class, is the speaker in all but one of the recordings. These texts were recorded in quiet rooms at Rice University on a Marantz PMD 600 digital audio recorder with a lapel microphone. The second speaker is the Dzifa’s aunt. This text was recorded in Ghana on an Edirol R-09HR. There are issues with the quality of this recording due to clipping.

The texts were transcribed and interlinearized by the students in this field methods class and are listed in table 1.

Table 1: List of texts, the transcriber, the speaker of each text, and the duration of the recording associated with the text.

Text	Transcriber	Speaker	Transcribed Portion of Recording
“A Boy, a Dog, a Frog, and a Friend”	Weber	Dzifa Duose	2:30 of 8:00 Minutes
Fufuo Recipe	Nelson	Dzifa Duose	2:30 Minutes
“Papa Amampene and the Apetupres”	Olivo	Dzifa’s Aunt	2:30 Minutes
“Pear Story: Part I”	Hoecker	Dzifa Duose	3:00 Minutes
“Pear Story: Part II”	Clemmons	Dzifa Duose	3:00 Minutes
			Total=13:30 Minutes

Some transcribers included the fast speech (the phonetic transcription) and the morphological breakdown in their transcriptions, while others only included the morphological information. For the transcriptions without the fast speech, the recordings were reviewed and the fast speech was phonetically transcribed. All recordings, those with and those without phonetic transcriptions, were checked at least twice.

2.2 Analysis

The two forms, the phonetic (fast speech) and the morphological breakdown, were compared. All differences were noted and rules were written to explain the individual differences. The case-by-case rules were then combined into general rules that applied to all cases. After rules were formed, these rules were compared to literature on Asante Twi to determine if they were

restricted to fast speech phenomena or if they were canonical rules. Given the current data, not all variation could be accounted for. Perhaps with more data this variation could be explained.

3 Results and Analysis

The following rules were formulated after analyzing the five texts listed above in table 1. As previously mentioned, the rules do not apply all of the time as was found by Smith (1981) in Venezuelan Spanish and as was mentioned by Zwicky (1972) and Chelliah (1992).

3.1 Vowel Deletion

Vowels occurring in sequence in fast speech are reduced. The first vowel deletes and the second vowel is retained.¹ This is displayed in all five texts.

(1) $V_1 \rightarrow \emptyset / _ V_2$

- | | | | |
|----|--|---------------|--|
| a. | /paja eɔza/
pear tree
'pear tree' | → [pajeɔza] | (adapted from PS1-3: Dzifa Duose) ² |
| b. | /ena ɔmu se/
CONJ 3PL say
'And they said,' | → [enoɔmu se] | (adapted from PAA-18: DA) |
| c. | /ɔcɛ ɔmu sa:/
CONJ 3PL keep.PST
'He kept looking at them,' | → [ɔcɔmu sa:] | (adapted from PS2-54: Dzifa Duose) |

It is unclear what happens when the V_1 and V_2 are the same: are they long, one and one half as long, or the same length (following rule A)? V_1 and V_2 are most often the same vowel with [a] and [ɔ]. These instances need to be measured for duration, however, due to the variable speech

¹ There is one example of a vowel deleting before a sonorant and one example of the first vowel reducing to a glide before a vowel for the postposition /mu/.

² Examples are cited first by the initials of the transcriber of the text, then the line of the text that the example came from.

rate within speaker and between speakers, each text would need to be normalized using the formulas in Grabe and Low (2002). Such an analysis is beyond the scope of the paper.

Rule 1 is different from previously described vowel deletion rules found by Schachter and Fromkin (1968).

(2) Deletion Rules from Schachter and Fromkin (1968)

a. /ʊ/ → ∅ / __ V (adapted from Schachter and Fromkin 1968: 88)

b. /ɪ/ → ∅ / __ V (adapted from Schachter and Fromkin 1968: 93)

c. V_{+high} → ∅ / C __ r (adapted from Schachter and Fromkin 1968: 104)

The Schachter and Fromkin rules do not describe all of the data covered by rule 1, above, as the data in this study show that any vowel can be deleted when before another vowel.

3.2 *Vowel Alternations*

This section is concerned with the modifiers /nʊ/ and /mu/. /nʊ/ is a determiner and enclitic (McCracken 2013: 2), while /mu/ is the postposition ‘in’ (Osam 1994: 22). Both of these modifiers have multiple surface forms. The forms that surface in fast speech are subject to rule 1, occur at the end of an intonation contour, and can surface as [nʊ], [nɛ], [nɪ], and [ni] for /nʊ/, and [mu], [mʊ], [m^w], [m], and [mi] for /mu/.

3.2.1 /nʊ/

/nʊ/ is a determiner, can mark the end of a relative clause (Saah 1994: 151-159)³, and is homophonous with the third person singular object pronoun, which can occur in succession with

³ Saah (1994) uses the orthographic convention <no> for the determiner rather than phonological realization /nʊ/.

the determiner (Saah 1994: 153-155). This study considers the various surface forms of the determiner: [nu], [nɛ], [ni], [ni]. No phonotactic explanation for the various surface forms can be found. At the end of an intonation contour, /nu/ is always realized as [nu]. When it does not occur at the end of an intonation contour, it is either subject to rule 1 (see section 3.1 above for the rule, process shown in example 4 below) or is realized as [nɛ] (examples 3 and 4), [ni] (example 5), or [ni] (example 6). The end of an intonation contour is marked with **IC** after the last word of the intonation contour in the first three tiers of each example. /nu/ is marked in green where it surfaces in a different form. Instances where rule 1 affects the determiner /nu/ are marked in blue.

(3) Ma obi: ɛnfa wɔma nu**IC** ɛnbubɔ
 Ma obi: ɛn-fa wɔma nu**IC** ɛn-bubɔ
 Let someone INF-take pestle DET**IC** INF-pound

bɔdijɛ nɛ su na ɛnfiofio**IC**
 bɔdijɛ nu su na ɛn-fiofio**IC**
 plantain DET top so INF -crumble**IC**

‘Let someone take the pestle to pound the plantain until it crumbles.’
 (Adapted from FR-15: Dzifa Duose)

(4) ɛna ɔdɪ ahɔmanɛ tɛtɛɪ dɪɣa na nu**IC**
 ɛna ɔ-dɪ ahɔma nu tɛtɛɪ dua nu anu**IC**
 CONJ 3SG-INSTR string DET tie stick DET mouth**IC**

‘and he ties the string to the end of the stick.’
 (Adapted from BFF-21: Dzifa Duose)

(5) ti ne nɪhũ ɲina: kɔ.ɛsũõnim**IC**
 ti ne nɪ-hũ ɲina: kɔ-ɔ ɲa-a nsũõ nu mu**IC**
 head CONJ 3SG-body all go-COMPL plunge-COMPL water DET in**IC**

‘head and his whole body plunged into the water.’ (Adapted from BFF-62: Dzifa Duose)

- (6) Na wa kã a fɾa abɾa: obi: wɔ wɔ wedzɾu ni muIC
 Na wa kã a fɾa abɾa: obi: wɔ wɔ wedzɾu nu muIC
 Then 2SG mix TEMP mix while someone pound at mortar DET inIC
 ‘Then you mix them together while someone is pounding it in the mortar.’
 (Adapted from FR-22: Dzifa Duose)

[nɛ] is the most common variant. Many of these instances had been transcribed by Clemmons, Hoecker, Olivo, and Weber as [nu], [nɛ], [nɪ], and [ni]. However, upon review they were determined to be [nɛ].⁴ The variants [nɪ] and [ni] occur predominantly before the postposition /mu/ as seen in examples 5 and 6. Aurally, the majority of instances where /nu/ does not occur before /mu/ were [nɛ]. This variation suggests that vowel harmony may play a role in the various surface forms. Asante Twi has ATR (advanced tongue root) based vowel harmony (Osam 1994: 42-44), however, as /nu/ surfaces as [nɪ] and [ni] before [mu], it is also possible that dissimilation is playing a role. More research is needed to further understand this process.

The research of this section primarily investigates the determiner. However, it is important to mention that a cursory review of the data indicates that the results for the determiner may hold for the homophonous third person pronoun as well. Further study should be conducted on the third person pronoun and the relative clause marker.

3.2.2 /mu/

The intonation contour affects the surface form of the postposition /mu/ in a manner similar to how it affects /nu/ as discussed in 3.2.1. /mu/, however, has two forms at the end of an

⁴ Perceptually these vowels [i, ɪ, e, ɛ] are similar. In addition many times the speaker was talking so quickly it was very difficult to hear the vowel and it took many repetitions to be certain of a transcription.

intonation contour: [mu] (example 6 above) and [m] (example 7 below).⁵ While the vowel is never deleted for the determiner /nu/ at the end of an intonation contour, it is optionally deleted for /mu/. When /mu/ is not at the end of an intonation contour it is realized as [mu], [m^w], [m], and [mi]⁶ (example 8).

(7) ti ne nihũ jina: kɔ.ɛsũõnimIC
 ti ne ni-hũ jina: kɔ-ɔ ja-a nsũõ nu muIC
 head CONJ 3SG-body all go-COMPL plunge-COMPL water DET inIC
 ‘head and his whole body plunged into the water.’
 (Adapted from BFF-62: Dzifa Duose)

(8) kofina adeiatɛmakɔtɔsũõ nimiseiIC
 kofi na adie ji a-tɛɪ nu a-kɔtɔ nsũõ nu mu seiIC
 Kofi FOC thing PROX.DEM⁷ PERF-pull 3SG.OBJ IRR-go.fall water DET in like.thisIC
 ‘And Kofi, this thing pulled him into the water like this.’
 (Adapted from BFF-60: Dzifa Duose)

Words such as *su* ‘top’ or *anu* ‘mouth’ do not follow the rules outlined above because they are lexical while the modifiers are grammatical.

3.3 Fricative voicing between sonorants

Another example in Asante Twi of fast speech phenomena is the fricative voicing between sonorants. Lenition, spirantization or the voicing of voiceless stops before vowels, is a common process seen in languages around the world (Odden 2006: 239). Asante Twi only has voiceless fricatives in the phonological inventory (Osam 1994: 46-47), however, there are multiple examples of voiced fricatives between sonorants in the texts.

⁵ The same color conventions are used in this section as in 3.2.1 for marking the end of an intonation contour (IC). /nu/ and /mu/ are marked in green where they surface in a different form. Instances where rule 1 affects the determiner /nu/ are marked in blue.

⁶ For most of these forms there is only one example of each.

⁷ Weber (2009) did not provide a gloss for DEM.

Fast speech rules can yield surface forms that are not allowed by the phonological inventory of the language (Zwicky 1972). This voicing is seen predominantly with the voiceless alveolar fricative, /s/. While there are many examples showing alveolar fricative voicing, there is one example for the voiceless labiodental fricative /f/ and another for the voiceless alveopalatal fricative /ç/. [z], [v], and [ʒ] are not members of the phonological inventory of Asante Twi, however, they are realized in the surface forms (example 9).

(9) FRI_{-voice} → FRI_{+voice}/S__S [Where FRI is a fricative and S is a sonorant.]

- a. /ansana/ → [anzana]
 before
 ‘before’ (adapted from PS2-28: Dzifa Duose)
- b. /ɔsɛ/ → [ɔzɛ]
 3SG-say
 ‘He’s saying . . .’ (adapted from PS2-37: Dzifa Duose)
- c. /kofi/ → [kovi]
 kofi
 ‘Kofi’ (adapted from PS2-11: Dzifa Duose)
- d. /ɔ:kɔ çɛ/ → [ɔ:kɔʒɛ]
 3SG.PROG-go look
 ‘go look’ (part of a serial verb construction)
 (adapted from PS2-7: Dzifa Duose)

4 Conclusion and Future Research

Fast speech in Asante Twi is displayed through vowel deletion, vowel alternations, and fricative voicing. These rules are conditioned both phonotactically and syntactically. Returning to the summary definition discussed in the introduction, we can see how the data in this paper supports the findings of previous researchers (Zwicky 1972; Bolozky 1977; Smith 1981; Chelliah 1992: 133 footnote). Fast speech phenomena:

- do not always apply (seen in *vowel deletion* and *vowel alternations*),
- apply at variable rates of speech (seen in *vowel deletion*, *vowel alternations*, and *fricative voicing*⁸),
- apply within and across word boundaries (seen in *vowel alternations* and *fricative voicing*),
- can lead to phonotactically unacceptable sequences or phones that are not phonemes (seen in *vowel alternations* and *fricative voicing*).

The results of this paper were compared to phonological rules of Asante Twi and were not found in any of the literature, indicating that they are indeed fast speech phenomena. To be thorough, however, the speech rate should be included in the study.

Instances where V_1 and V_2 are the same vowel need to be measured for duration, however, due to the variable speech rate within speaker and between speakers, each text would need to be normalized.⁹ This is beyond the scope of this study but should be completed to further understand the vowel deletion rule.

The vowel alternations suggest that vowel harmony may be at play,¹⁰ however, there is also some evidence of dissimilation found in the modifiers. [nɪ] and [ni] occur predominantly before the postposition /mu/, suggesting dissimilation, while /nu/ can be realized as [nɪ] and [ni] before a high front vowel, indicating vowel harmony or assimilation. Further analysis and more data may yield a conditioning factor.

⁸ This point is further discussed in the following paragraph.

⁹ The data can be normalized using the formulas in Grabe and Low (2002). The standard deviation of the vocalic intervals would need to be calculated as in Ramus et al. (1999). By using the standard deviation, the length of the vowels could be determined relative to the other vowels in the text. This would indicate if these vowels are indeed long or if they follow rule 1.

¹⁰ As previously mentioned, Asante Twi displays ATR vowel harmony (Osam 1994: 42-44).

List of abbreviations

3	third person
COMPL	completive
CONJ	conjunction
DCM	dependent clause marker
DET	determiner
FOC	focus
INF	infinitive
INSTR	instrumental
IRR	irrealis
OBJ	object
PRF	perfective
PL	plural
PROX	proximal
PST	past
SG	singular
TEMP	temporal

References

Primary Resources

DA (Dzifa Duose's Aunt) (Speaker). Papa Amampene and the Apetupres (**PAA**). Dzifa Duose (Recorder), Ann Marie Olivo (Transcriber). 3 January 2009. Accra, Ghana.

Duose, Dzifa (Speaker). Pear story, part 1 (**PS1**). Jennifer Hoecker, (Recorder, Transcriber). 26 January 2009. Rice University.

Duose, Dzifa (Speaker). Pear story, part 2 (**PS2**). Jennifer Hoecker, (Recorder), Margeux Clemmons, (Transcriber). 26 January 2009. Rice University.

Duose, Dzifa (Speaker). Fufu recipe (**FR**). Katherine Nelson, (Recorder, Transcriber). 29 January 2009. Rice University.

Duose, Dzifa (Speaker). A Boy, a Frog and a Friend (**BFF**). Natalie Weber, (Recorder, Transcriber). 23 January 2009. Rice University.

Works Cited

Bolozky, Shmuel. 1977. Fast Speech as a Function of Tempo in Natural Generative Phonology. *Journal of Linguistics* 13. 217-238.

- Chelliah, Shobhana L. 1992. Morphological Change and Fast Speech Phenomena in the Manipuri Verb. *Papers from the Second Annual Meeting of the Southeast Asian Linguistics Society* 2. 121-134.
- Grabe, Esther and Ee Ling Low. 2002. Durational variability in speech and the rhythm class hypothesis. In Gussenhoven, Carlos and Natasha Warner (eds.), *Papers in Laboratory Phonology* 7, 515-546. Berlin: Mouton de Gruyter.
- Gordon, Raymond G., Jr. (ed.). 2005. *Ethnologue: Languages of the World*, Fifteenth edition. Dallas, Tex.: SIL International. Online version: <http://www.ethnologue.com/>.
- McCracken, Chelsea. 2013. Relative Clauses in Asante Twi. *Rice Working Papers in Linguistics* 4.
- Odden, David. 2006. *Introducing Phonology*. Cambridge: Cambridge University Press.
- Osam, Emmanuel Kweku Ahen. 1994. *Aspect of Akan grammar: A functional perspective*. Eugene, OR: University of Oregon dissertation.
- Ramus, Franck, Marina Nespors and Jacques Mehler. 1999. Correlates of linguistic rhythm in the speech signal. *Cognition* 73. 265-292.
- Saah, Kofi. Korankye. 1994. *Studies in Akan syntax, acquisition, and sentence processing*. Ottawa, ON: University of Ottawa dissertation.
- Schachter, Paul and Victoria Fromkin. 1968. A Phonology of Akan: Akuapem, Asante, & Fante. *Working Papers in Phonetics* 9. U. California: Los Angeles, CA.
- Semiloff-Zelasko, Holly. 1973. Vowel Reduction and Loss in Modern Hebrew Fast Speech. *Hebrew Computational Linguistics* 7. 53-72.
- Smith, Jan. 1981. Fast Speech Phenomena in Venezuelan Spanish. *Minnesota Working Papers in Linguistics and Philosophy of Language* 7. 36-44.
- Weber, Natalie. 2009. The Subjunctive in Asante Twi. Class Presentation. April 13, 2009.
- Zwicky, Arnold M. 1972. On Casual Speech. *Proceeding of the Eighth Chicago Linguistic Society* 8. 607-615.