Tones in Standard Thai Connected Speech[1]

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INTRODUCTION

The five tones of Standard Thai—mid, low, falling, high, and rising—have been studied for many decades from several different angles. As far as instrumental studies are concerned, the tones were first analysed in the context of monosyllabic words spoken in isolation (Bradley, 1911; Abramson, 1962; Erickson, 1974). Later tones on longer utterances were analysed to address the issues of coarticulation (Abramson, 1979; Gandour, Potisuk, & Dechongkit, 1994) and tonal representation (Gandour, 1975). There was also a study analysing the five tones in unstressed syllables in disyllabic words spoken in isolation (Phinicharom, 1991), and there were sociolinguistic studies to correlate variation in tonal realization with speakers' age groups (Arunreung, 1990; Panroj, 1991).

In the studies mentioned above, Standard Thai was chosen because it is the official variety of Thai "spoken by educated speakers in every part of Thailand, used in news broadcasts on radio and television, taught in school, and described in grammar books and dictionaries" (Tingsabadh & Abramson, 1993). In this study we have a different reason for choosing Standard Thai. We are interested in tonal variation among the sub-dialects of Central Thai, a number of which have been analysed (Tingsabadh, 1980, 1990; Debavalya, 1983; Ratanadilok Na Phuket, 1983; Malaichalern, 1988; Nualjansaeng, 1992; Banditkul, 1993; Pornsib, 1994; Krisnapan, 1995). Although from the sociolinguistic point of view Standard Thai has a different status from that of Central Thai, it can be classified as Central Thai on the basis of its tone system and its pattern of tone splits (Gedney, 1972; Brown, 1965). Consequently, we decided to turn our attention to Standard Thai. There are two main objectives in this study: to add tonal realizations of Standard Thai to our set of results, and to test the methodology that we have developed so far.

Tones of Thai dialects have been investigated since the 1950s (Miller, 1956; Chantavibulya, 1956; Haas, 1958). Up to recently, most of the studies analysed tones auditorily and their data were limited to monosyllabic words spoken in isolation (i.e., citation forms) (Pudhitanakul, 1979; Withayasakphan, 1979; Ngourungsi, 1980; Debavalya, 1983). The methodology that we now use concentrates on instrumental analysis, and our data come mainly from connected speech. We do include a set of words minimally distinguished by tone (i.e, a tone set) in our data, as we have come to believe that the tonal realizations in these words are the base forms of the tones (Tingsabadh & Krisnapan, 1992).

In the connected speech material we analyse both stressed and unstressed syllables in monosyllabic, disyllabic, and polysyllabic words. The methodology has been developed during the past six years (Tingsabadh, 1990; Tingsabadh & Krisnapan, 1992; Krisnapan, 1995). Several previous studies of tone have influenced the outcome of this methodology (Abramson, 1962; Tingsabadh, 1980; Ratanadilok Na Phuket, 1983; Malaichalern, 1988; Chinchest, 1989; Panroj, 1991).

Professor Vichin Panupong has played an important role in Thai dialectology beginning with her pioneering study of the Songkhla dialect (Chantavibulya, 1956). Our study is a part of a project investigating tonal variation in Central Thai, so we feel that it is appropriate to present this paper in her honour.

METHOD

Informant

The informant is a thirty-three-year-old educated male speaker of Standard Thai. This study selected him as its informant because he had been invited by the Thai Department, Faculty of Arts, Chulalongkorn University to record passages as their listening tests.

Data

The data in this study consist of two parts: the tone set /khaa^1, khaa^2, khaa^3, khaa^4, khaa^5/, and stressed and unstressed syllables in monosyllabic, disyllabic, and polysyllabic words that occur in connected speech. Five tokens are used for each tone in each context (see Table 1). Altogether 175 tokens were analysed.

The tone set was included to obtain tonal realizations in citation form. A word list was prepared consisting of the five tokens of every word listed at random. The informant was asked to read the list with a short gap between words. To obtain the connected speech data, the informant was asked to read five passages totalling approximately 5000 words at normal (i.e., medium-fast) speed.

Table 1. *Tokens for Each Tone in the Data According to Types of Speech, Degrees of Stress, and Number of Syllables per Word*

		Monosyllabic Word	Disyllabic Word	Polysyllabic Word
Connected speech	Stressed	5	5	5
	Unstressed	5	5	5
Citation form		5		

Analysis

The analysis in this study consists of two steps. The first uses auditory judgment to analyse the connected speech data into pause-defined units (PDUs)—the stretches of speech beginning and ending with a pause without any pause in between, and to identify stressed and unstressed syllables. Five syllables for each tone in each context (see Table 1) were selected from the middle section of the PDUs.

The second step involves instrumental analysis. The WINCECIL speech analysis system developed by the Summer Institute of Linguistics (SIL), run on a PC microcomputer, was used to find the F_0 curve of each token. Normalization of duration was made by measuring at every 10th percentage point along the time axis of each raw curve. The F_0 values of the five curves of each tone in each context were averaged. Line graphs showing the averaged F_0 of each tone in all contexts (Figures 1–5) and the averaged F_0 curves of the five tones in each context (Figures 6–12) were produced.

RESULTS

Each Tone in All Contexts

Figures 1–3 show that the realizations of the level tones—mid, low, and high—are similar both in citation form (CF) and in the six contexts of connected speech: stressed syllable in monosyllabic word (Sd1Syl), unstressed syllable in monosyllabic word (Usd1Syl), stressed syllable in disyllabic word (Sd2Syl), unstressed syllable in disyllabic word (Usd2Syl), stressed syllable in polysyllabic word (Sd34Syl), and unstressed syllable in polysyllabic word (Usd34Syl).
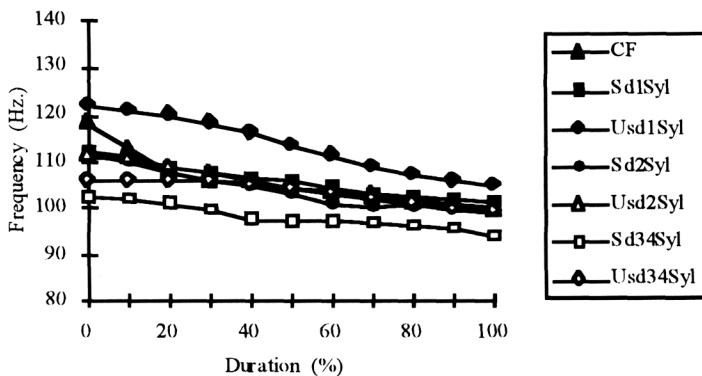

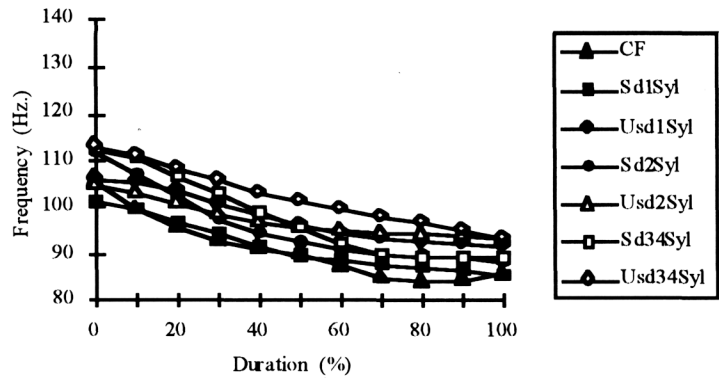Figure 1. Standard Thai mid tone in citation form and six contexts in connected speech.

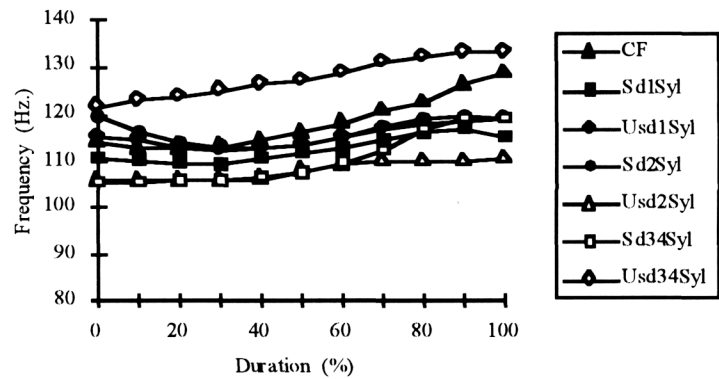Figure 2. Standard Thai Low Tone in citation form and six contexts in connected speech.

Figure 3. Standard Thai high tone in citation form and six contexts in connected speech.

A different situation is found in the case of the contour tones: the falling tone (Figure 4) and the rising tone (Figure 5). Their distinct fall and rise, which appear in citation form, disappear in connected speech.
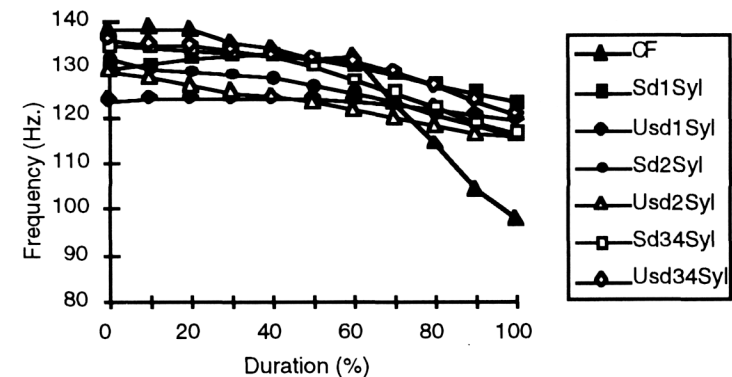

Figure 4. Standard Thai falling tone in citation form and six contexts in connected speech.