



Sentence-final Particles and Intonation: Two Forms of the Same Thing

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Abstract

This paper argues that the linguistic forms of intonation that have scope over the whole sentence are morphemic, and should therefore be classified as suprasegmental sentence particles. In defense of this hypothesis, a range of studies are reviewed which argue that intonation expresses discourse meanings (or has grammatical functions), and that these meanings (or functions) are comparable to those expressed by segmental particles. Some of these are contrastive studies that compare segmental particles to intonation, and some are studies that look at intonational forms directly. The author's own research, based on translations from native bilinguals, has shown that a number of Cantonese sentence-final particles translate consistently into English as specific forms of intonation. Ladd (2008, p. 5) said that if the functional similarity between particles and intonation can be validated, then this should outweigh what he described as "clear phonetic and syntactic differences" between particles and intonation, and that intonation should then be redefined to include segmental particles. It is argued that there is now enough evidence to validate the claim that particles and intonation have the same meanings/functions. The implication is that the only difference between segmental particles and intonation is their phonological properties.

Index Terms: sentence-final particles, discourse particles, grammatical particles, tonal morphemes, intonation, left periphery

1. Introduction

Based on empirical evidence described in the literature, including the author's own, this paper argues that intonation is morphemic, and is therefore different from sentence-final particles (SFPs) in one sense only: it is suprasegmental rather than segmental. The idea that intonation is morphemic goes back at least to [1], [2] and [3], the authors of which all suggested that intonational meaning is like segmental meaning and is therefore morphemic. Ladd [4] said it has long been observed that intonation, like segmental particles, adds meaning to a sentence. He said that if this comparison is valid, then segmental particles should be included in the definition of intonation. The author agrees that they should be classified as the same thing, but instead of referring to segmental particles as intonation, it is suggested that intonation should be redefined as suprasegmental particles.

1.1. Defining intonation

Intonation here refers only to those linguistic suprasegmentals that have grammatical functions or that express discourse meanings. It is widely recognized that suprasegmentals can be divided into linguistic forms that are language specific, and

non-linguistic forms that express human emotions [4], [5], [6], [7]. While this difference is acknowledged, Ladd [4, p. 6] said "it is a matter of considerable controversy which aspects [of suprasegmental forms] are which, or whether such a distinction is even possible." It is beyond the scope of this paper to discuss the similarities and differences between the forms of linguistic vs. paralinguistic suprasegmentals, but the arguments of this paper are based on the assumption that the two types are qualitatively different—one is a component of language and the other is not.

Linguistic suprasegmentals either express discourse related meanings such as focus, emphasis, epistemic modality, speaker stance, questioning (i.e., response-seeking), etc., or they have grammatical functions such as case marking or clause typing. The term *intonation* in this paper excludes the "animal communication" forms of suprasegmentals (e.g., [7, p. 50]) that express emotions such as anger, fear, impatience, etc., and is defined as follows:

(1) Intonation:

A suprasegmental form that has semantic content or a grammatical function

We can refer to a given intonational form as a floating tone (or what some may prefer to call a tonal morpheme). Goldsmith [8, p. 57] defined a floating tone as "a segment specified only for tone which, at some point during the derivation, merges with some vowel, thus passing on its features to that vowel." Defining a floating tone as "a segment" is problematic, however, since it is suprasegmental. More in line with what we are proposing Yip ([9, p. 273] said that a floating tone "can be thought of as a type of particle that lacks segments, consisting solely of tone."

To facilitate the discussion that follows, it will be helpful to first clarify the implications of (1). Defining intonation in this way categorizes tonal morphemes and intonation together, based on the idea that both are suprasegmental morphemes. The term *tonal morpheme* has traditionally referred to suprasegmental morphemes that function as grammatical markers of focus, definiteness, case, etc. These have always been seen uncontroversially as morphemes that reside in the lexicon, and therefore as part of core semantics. The term *intonation*, in contrast, has traditionally referred to suprasegmental forms that add meaning to the entire sentence. These meanings are harder to pin down than are the grammatical meanings of tones that have traditionally been called *tonal morphemes*, and this has caused many authors to argue that tones which have scope over the entire sentence are only meaningful in relation to the context, and are therefore only pragmatic, i.e., not part of the lexicon or core semantics.

This paper assumes that sentence-level tones *and* what have traditionally been called tonal morphemes are both represented in the lexicon, and that both should be included

under the label *intonation* as defined in (1). Nonlinguistic suprasegmentals that express emotions, on the other hand, are not defined by (1). Nonlinguistic suprasegmentals are categorized here (along with sentence-level intonation) under the more inclusive label *prosody*.

The following two sections present evidence for the morphemic nature of intonation using different methodological approaches.

2. Contrastive studies

Many linguists who have studied particles or tones have compared their functions and meanings to those expressed by tones or particles, respectively. Some have grammatical functions and others have semantic content. A tonal morpheme may have the same function and meaning as a segmental morpheme in the same language's own past, or it may be seen as having the same function or meaning as a segmental particle in another language (or languages). In addition to one-to-one contrasts, one study made a general contrast by looking at sentence-final intonation and SFPs in Cantonese, and demonstrated that intonation exists in complementary distribution with particles [10]. This can be seen as a form of empirical evidence that the two are of the same category.

Gussenhoven [7, p. 35] said "morphemes that consist only of tone [are] not uncommon in African languages." Hirst [3] gave the following examples: in Jukun (Takun dialect, Eastern Nigeria), replacing any lexical tone with a high tone can be analyzed as a morpheme that marks the utterance as hortative; in Babete (West Cameroon), an associative marker is realized as a "tone-raising on the prefix of the second noun," and in Bambara (dialect of Bamako, Mali) a floating low tone is the only phonetic manifestation of the definite determiner. These floating tones can be seen as counterparts to the segmental morphemes in other languages that function as hortative markers, associative markers, and definite determiners, respectively.

Referring to the Kwa languages of West Africa, Aboh and Essegbey [11, p. 3] gave the following examples of "grammatical morphemes [that]... are expressed with tones: Akan uses tone to distinguish between the habitual and the stative (e.g., *dá* 'sleeps' versus *dà* 'in a lying posture'); Gungbe expresses progressive aspect with a Low tone on the verb; Inland Ewe expresses progressive aspect with a rising tone on the verb; and Yaruba uses a Low tone to express negation.

In Bemba the relative marker in restrictive relative clauses can optionally take the form of a low tone, which has been argued to be a tonal morpheme that is functionally equivalent to its segmental counterpart [12]. In addition to its own segmental counterpart in Bemba, this floating tone can be compared to the segmental relative clause markers of other languages.

Another example of a grammatical floating tone is a sentence-final tone that forms unbiased interrogatives. Two languages that use such a tone are Gungbe and French [13, p. 92]. Regarding the former, note the contrast between the tones on the verbs in (2a) and (2b):

- (2) a. *Sétò kò wá.*
Seto already come
"Seto arrived already."

- b. *Sétò kò wâ?*
Seto already come.INTER
"Has Seto arrived yet?"
[13, p. 92]

In (2b), a sentence-final Low tone combines with the High tone of the verb *wá*, changing it to *wâ* and typing the clause as an interrogative. These sentence-final interrogative tones are comparable to the sentence-final interrogative particles used in other languages, such as the particle *à* in Fongbe (ibid) or the particle *ma* in Mandarin.

Arndt [14, p. 327] concluded from his analysis of Russian and German modal particles that "they have some functional resemblance, not to traditional 'parts of speech,' but to phonemes of intonation [and] may be thought of as, in a sense, 'suprasegmental morphemes'." This implies they are like intonation, but Arndt admitted there is an obvious problem with labeling modal particles "suprasegmental," because they "occur in the linear sequence of morphemes making up an utterance" [ibid]. The author agrees with this, and instead proposes that the intonational forms that have a "functional resemblance" to these modal particles should be analyzed as suprasegmental particles.

Hirst [3] proposed that English's emphatic and contrastive intonation are floating tones, based on the idea that contrastive intonation is comparable to the following examples from Bambara, which uses the contrastive particle *de* following the element that the speaker wishes to contrast:

- (3) a. *Muso fila bé John fe.*
wife two have have
"John has two wives."
- b. *Muso fila de bé John fe.*
wife two DE have have
"John has TWO wives."
- c. *Muso fila bé John de fe.*
wife two have DE have
"JOHN has two wives."
(Hirst, 1983:179-180)

The logic of Hirst's argument is that the meaning of the contrastive morpheme *de* is expressed in English as a form of intonation, so this English tone should also be analyzed as a morpheme. English's emphatic intonation can similarly be compared to segmental particles in other languages. For example, Mandarin marks emphasis with the emphatic marker *shì* [15] and Columbian Spanish does so with the emphatic marker *es* [16], both of which precede the element that they mark.

Another example of what appears to be segmental-to-tonal evolution is a null degree operator in the complementizer phrase of certain Northern Norwegian degree questions [17]. This analysis was based on the contrast between the following two sentences in Icelandic (4a) and Northern Norwegian (4b):

- (4) a. *Hvað ertu gammall?*
what are.you old
"How old are you?"

- b. *Er du gammel?*
 are you old
 “Are you old?”
 “How old are you?”
 [17, p. 134]

It was argued that the Icelandic degree operator *hvað* (“what”), which questions the degree of the adjective *gammel* (“old”), has a counterpart that exists at the front of the Northern Norwegian sentence in (4b). The difference is that this operator is phonologically null in Northern Norwegian. The authors said this operator originates inside the AdjP and moves into the complementizer phrase, just as its counterpart *hvað* is assumed to do in Icelandic. The sentence in (4b) is interpreted in one of two ways depending on the intonation. When the prosodic peak is associated with the predicative adjective *gammel*, then this sentence is interpreted as a yes/no question, but when the peak is associated with a word further to the left, then it is interpreted as a degree question. The authors did not provide any detailed phonological analysis, but what they described implies that the degree operator is realized phonologically as a floating tone.

2.1. Translation-based studies

Chao’s [18] seminal study equated English intonation to Chinese grammatical particles and proposed a number of English-to-Chinese translations. He translated written lines from stage plays that included intonational markings, and from sentences found in the literature on English intonation. Another later study did something similar for English intonation and German modal particles [19]. These early studies are interesting and informative, but some potential weaknesses are that the authors used written data and relied on their own bilingual intuition.

Some more recent studies have contrasted Cantonese SFPs with English intonation by eliciting translations from native-bilingual participants, who were speakers of both L1 Cantonese and L1 English [20], [21], [22], [23]. In these studies evidence was found to indicate that a number of Cantonese particles have a one-to-one correspondence with specific forms of intonation. For example, question-forming particles were consistently translated into English as rising question-forming intonation. The question particles *aa4* and *me1* translated as a mid-rising and high-rising sentence-final tone, respectively. This indicates that English has at least two distinct rising question tones. An example of the contrast between the two particles’ translations are shown here from the same male speaker:

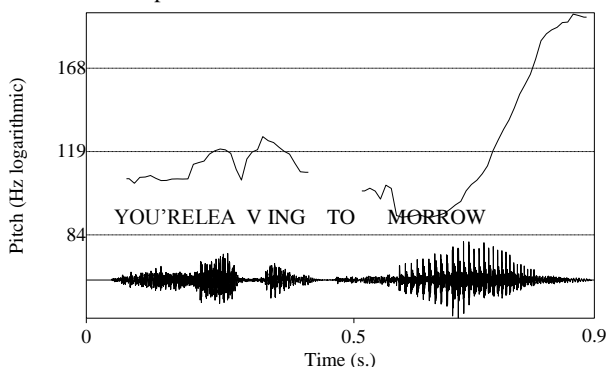


Figure 1: Translation of *aa4*-suffixed sentence.

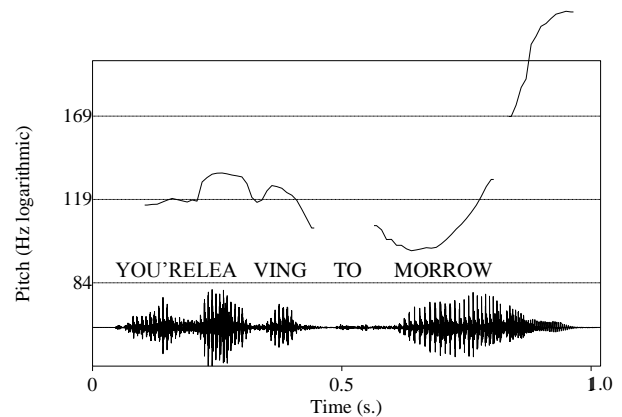


Figure 2: Translation of *me1*-suffixed sentence.

The translations shown in figures 1 and 2 were elicited from two constructed dialogues with the same context. The only difference was which question particle was attached to the Cantonese sentence that was translated into English. Cantonese-to-English translations were also elicited for the following particles: the listener-oriented evidential particle *lo1* [20], [21], which translated as a high-falling tone; the “persuasion” particle *aalmaa3* [20], which translated as a rise-fall tone; the diminutive particle *zaa3*, which translated as “only” plus a high-falling tone on the focused element [20], [23]; and the “diminutive plus downplay” particle *ze1*, which translated as “only” plus a rise-fall-rise tone [20], [23], an example of which is shown in figure 3 in the following section. Preliminary research on the “noteworthiness” particle *wo3* indicates that it is rendered in English as a rise-fall tone plus lengthening of the vowel [20].

Each of these studies involved at least 4 native-bilingual translators, none of which heard the translations of the other translators. They translated each particle multiple times using what appeared to be allotones of the same tone—in relation to both their own and to the other translators’ translations. This is a strong form of evidence that the English forms of intonation thus discovered share the same (or very similar) meanings with the SFPs in the source translations.

3. Studying intonation directly

Referring to intonation, Brazil [24, p. 4] said “the only research procedure available is to make tentative phonetic observations and try to associate them with generalisable meaning categories.” However, the studies discussed above show that other research procedures are in fact available, and that the tones discovered through such research have specific functions and meanings, rather than have merely an association “with generalizable meaning categories.” Studying intonational forms directly, without making contrasts with segmental particles, is probably the most difficult method, but it is not impossible and it can produce results. The approach and analysis will be guided by whether or not the linguist assumes intonation to be morphemic. Intonation is difficult to study on its own because, unlike segmental particles, it is difficult to know whether two separate occurrences of similar sounding tones are different or the same. For example, one could mistakenly conclude that the rising tones in Figures 1 and 2 are allotones of the same tone. Likewise, without reflecting carefully on the meaning, one could easily mistake the English high-falling tone that is equivalent to Cantonese’s

hearer-oriented evidential particle *lol* to be emphatic intonation, rather than a homophonic tone with a different meaning. Despite these difficulties, studies that have directly examined the forms and meanings of intonation have provided interesting and useful results.

For example, a detailed study of English rising declaratives proposed a formal semantic definition of the sentence-final rising tone in English [25]. After that study, the translation-based study that discovered the tones in figures 1 and 2 proposed a refining of the definition proposed in [25], giving distinct meanings to a mid-rise vs. a high-rise tone [22]. To the extent that definitions of tones can consistently describe their meanings, irrespective of the context within which they appear, this can be seen as a form of evidence that tonal forms are linked to a meaning, which is the basic definition of a morpheme. Of course this is an extremely difficult task, considering the complicating factors of allotones and homophonic tones mentioned above. Another complicating factor is the difficulty in providing context-free definitions to intonational forms, which is something that Ladd [1] said is comparable to defining sentence particles.

Another study that looked at the form-meaning link of intonation examined the forms of prosodic focus and sentence modality in English and Mandarin, and concluded that prosodic functions “exhibit properties similar to segmental morphemes: a) multi-componential coding, b) conditional allomorphs, c) non-autonomy of components, and d) language-specificity with possible diachronic sources” [26, p. 128].

An additional complicating factor for isolating an intonational form and its meaning is that what may appear like two instances of the same tone on paper may actually be two distinct tones. Consider the rise-fall-rise tone that appears on the word “little” in figure 3. This is a male speaker’s translation of the Cantonese particle *ze1* expressing “only” plus downplay:

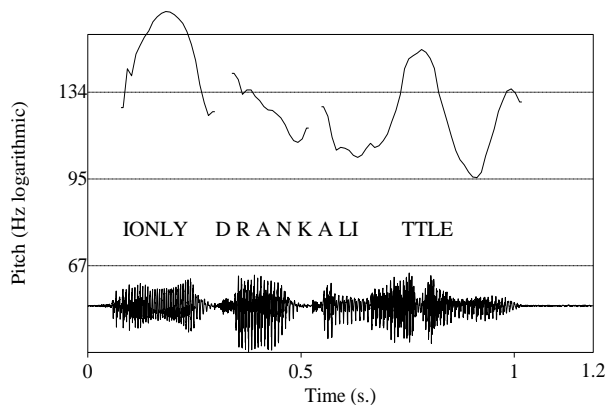


Figure 3: *Translation of ze1-suffixed sentence.*

The form of this tone is comparable to what was referred to in [27] as the $L^*+H_L_H\%$ tone. That study found that speakers make a binary, categorical (rather than a gradient) distinction between this tone and what they called an $L+H^*_L_H\%$ tone, in which the stress is associated with the first peak (indicated by H^*). In other words, speakers make a categorical distinction between a rise-fall-rise tone and a fall-rise tone that appears after a non-accented L tone. Another study also found that English speakers distinguish between these two contours [7]. The rise-fall-rise tone in figure 3 is therefore categorically

different from a fall-rise, which may look the same on paper, and allotones between these two tones would be interpreted by speakers as being one or the other but not something in between—yet more evidence of meanings linked to intonational forms.

4. Conclusions

The definition of intonation as stated in (1) refers to all tonal morphemes. This includes the grammatical tones that have been extensively described in many languages, most notably in a large number of African languages. It also includes the discourse related tones that have semantic scope over the entire sentence. It excludes nonlinguistic suprasegmental forms that express human emotions.

Studies that have looked directly at intonational forms have found that they have morphemic properties, and that they exist in complementary distribution with SFPs. Intonational forms that have sentential scope have been compared generally to segmental particles that have similar functions and express similar meanings. Some studies have gone a step further and made specific one-to-one comparisons between particles and intonation. Translation based studies have arguably provided the strongest form of empirical evidence that certain forms of sentence-level intonation express the same (or very similar) meanings as segmental SFPs.

Taking all of this into account, the author proposes that there is sufficient empirical evidence and theoretical justification for concluding that intonation is morphemic, and that its forms should be analyzed as suprasegmental particles. If so, then sentence-level intonation and SFPs are the same thing in different form.

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