

A Comparative Study of the Structure of the Intonation Unit in English, Japanese, and Mandarin Chinese

Shoichi Iwasaki
UCLA

Hongyin Tao
UC Santa Barbara

1. The intonation unit (IU)

The intonation unit is a prosodic unit in natural discourse, which is defined, in conjunction with other prosodic properties, as any speech segment that falls into a single coherent intonation contour, and is sometimes separated by pauses at the beginning and the end (Chafe 1987, Du Bois et al. 1992). E.g.,

Ex. 1.	(DINNER)	<u>C O D I N G</u>	
1	A: I could `never [^do it],	CLS	(fc)
2	B: [We=ll],	N/A	N/A
3	A: .. [2 in ^Seattle.	NON-CLS	(other)
4	.. but in ^Riverside,	NON-CLS	(other)
5	.. when 2] you go ^outside,	CLS	(fc)
6	B: [2 ^anything is `possible,	CLS	(fc)
7	.. in ^Riverside 2].	NON-CLS	(other)
8	A: .. and the ^air,	NON-CLS	(np)
9	.. sort of `wraps ^around you,	CLS	(sc)
10	.. except it's `not ^fog,	CLS	(fc)
11	.. it's `too ^hot for that,	CLS	(fc)

In the above excerpt, each line represents one intonation unit. Dots indicate pauses; commas and periods indicate non-final and final intonations respectively. We'll come back and comment on the coding scheme in a moment.

2. What is the exponent of the intonation unit?

Although by definition an intonation unit does not have to conform to any specific type of grammatical structure, in the spoken discourse tradition, it has been fairly well-established that the clause is representative of the intonation unit, as suggested by the pioneering work of Chafe. In a well-known paper, Chafe 1987 concludes that:

The clause appears to be the prototypical intonation unit type, from which most other types are derived, or are derivations. (p. 38)

Again, Chafe 1992 says,

Some intonation units are parts of clauses and some may contain more than a single clause, but the mean proportion of single-clause substantive intonation units

in the socially varied (interactional conversation--SI & HT) sample was 60%. (p. 78)

However, these observations are all based on spoken English. A natural question here is whether the clause can be said to be the exponent of the intonation unit in other languages than English. In order to test the cross-linguistic validity of this proposal, we would like to present spoken data from two languages that are typologically different from English, Japanese and Mandarin Chinese, and compare them with English.

3. Data and the coding scheme

We examined about 1000 intonation units in interactional conversations for each of the three languages we are comparing: two conversations from English, three from Japanese, and two from Mandarin Chinese.

We used the same coding categories for our cross-linguistic data. For our purpose here, we excluded from our study what Chafe (in press) calls 'regulatory intonation units' (backchannels, discourse markers, etc.), as well as uncertain hearings, truncated segments, and laughter tokens. In other words, we are dealing only with what Chafe calls substantive intonation units.

First, we distinguished between two general categories, clausal ('CLS') vs. non-clausal ('NON-CLS') intonation units. An intonation unit is said to be **clausal** if it contains a verbal predicate; any intonation units which do not contain a verbal predicate are considered **non-clausal**.

Clausal intonation units were then divided into **full clauses** and **semi-clauses**. When the verbal predicate and its associated core arguments (at least the subject) are present in a single intonation unit, that is, where there is a perfect match between a clause and an intonation unit, we call such intonation units **full clauses** ('fc', as 'I could `never ^do it' in line 1 of ex. 1)). If, on the other hand, the intonation unit has only a verbal predicate, and its associated core arguments are not given in the same intonation unit, or not given at all, these intonation units will be termed **semi-clauses** ('sc', as 'sort of `wraps ^around you' in line 9 of ex. 1).

Non-clausal intonation units were further divided into two subtypes: **nominal** intonation units ('np', as 'and the ^air' in line 8 of ex. 1) and **others** ('other', as 'in ^Seattle' in line 3 of ex. 1). **Nominal** intonation units refer to any intonation unit which consists of a nominal element, whether or not it is modified. (Here we made one adjustment in order to make a fair comparison among the three languages. For English and Mandarin, nominal intonation units are bare NPs without a preposition. For Japanese, NP intonation units are either bare nominals or postpositional phrases with a topic, subject, or object marking particle.) The second category of non-clausal intonation units is **others**, which include substantive non-

clausal intonation units which are not nominal.

Figure 1 summarizes the coding hierarchy.

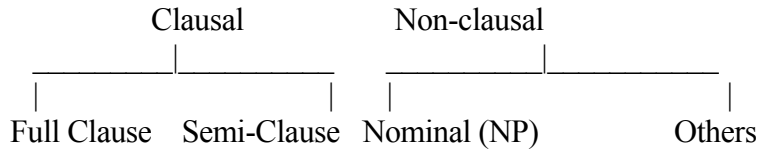


Figure 1. Coding categories

4. Results and discussion

4.1. intonation unit structure in the three languages

Let's first compare the ratio of clausal and non-clausal intonation units in the three languages, as shown in Tables 1-3.

Table 1. Intonation unit types in English conversation

	Total	Clausal	(%)	Non-Clausal	(%)
Carsales	641	348	(54.3%)	293	(45.7%)
Dinner	458	241	(52.6%)	217	(47.4%)
Total	1099	589	(53.6%)	510	(46.4%)

Table 2. Intonation unit types in Japanese conversation

	Total	Clausal	(%)	Non-Clausal	(%)
Bartalk	304	144	(47.4%)	160	(52.6%)
Ski Trip	149	69	(46.3%)	80	(53.7%)
Politics	303	130	(42.9%)	173	(57.1%)
Total	756	343	(45.4%)	413	(54.6%)

Table 3. Intonation unit types in Mandarin conversation

	Total	Clausal	(%)	Non-Clausal	(%)
JY	885	362	(40.9%)	523	(59.1%)
TKY	278	101	(36.3%)	177	(63.7%)
Total	1163	463	(39.8%)	700	(60.2%)

The bar graph combines the results represented in Tables 1 through 3.

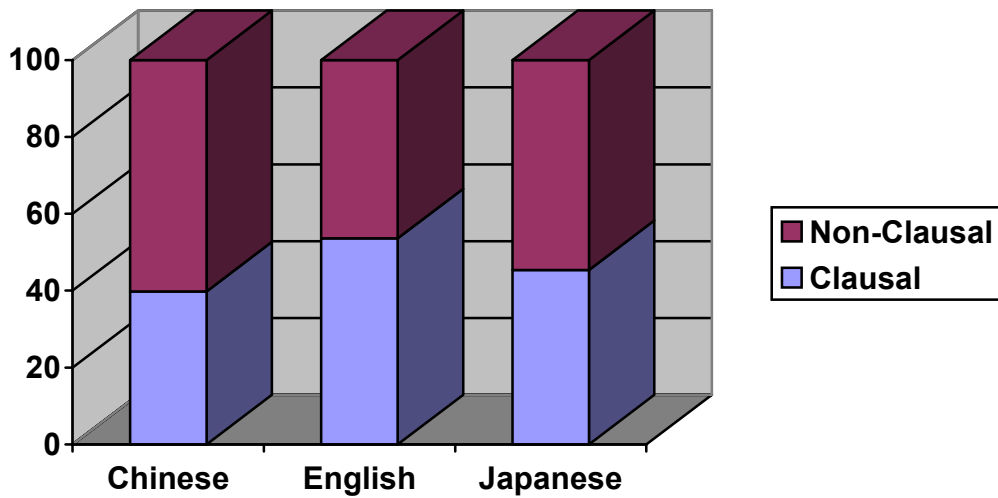


Figure 2. Proportions of clausal intonation units in English, Japanese, and Mandarin interventional conversations

From the above tables and the graph, we can make the following observations. While there is a clear tendency for English intonation units to be clausal (53.6%), in Mandarin, non-clausal intonation units (60.2%) outnumber clausal intonation units (39.8%) substantially, and Japanese seems to fall between the two patterns, with still a clear preference for non-clausal intonation units (54.6%). We now proceed to examine in more details the differences among the three languages.

4.2 Full clauses vs. semi-clauses

In addition to the difference in overall frequency of clausal intonation units among the three languages, they differ in several interesting ways. In terms of clause types, for example, the three languages are quite different. Table 4 gives the break-downs of full

clauses vs. semi-clauses in the three languages.

Table 4. Frequency of full clauses vs. semi-clauses in English, Japanese and Mandarin Chinese

	Total Clausal IU	Full Clause (%)	Semi-Clause (%)
English	589	486 (82.5%)	103 (17.5%)
Japanese	343	83 (24.2%)	260 (75.8%)
Mandarin	463	170 (36.7%)	293 (63.3%)

Evidently, in both Japanese and Mandarin Chinese semi-clauses are overwhelmingly predominant (75.8% and 63.3% respectively), while English has much more full clauses (82.5%).

An obvious factor for such a difference can be attributed to the difference in the grammar of the three languages. That is, both Japanese and Mandarin allow for abundant use of zero anaphora, while English does not, and thus English has many fewer semi-clauses.

On the other hand, English has the 'non-restrictive relative clause' option, which is unavailable for both Japanese and Mandarin Chinese speakers. This option adds to the greater number of full clauses in English. An example of a non-restrictive relative clause can be found in ex. 2 below.

Ex. 2.

```
D: I `just got ^liability.
G: .. Just ^liability.
-> D: .. Which is= `good ^enough.
    .. At `least it's ^insured, (CARSALES)
```

4.3. NP intonation units

However, structural differences do not fully explain the differences shown in Tables 1-3 and Graph 1. This can be clearly demonstrated by the frequent use of NP intonation units in both Japanese and Mandarin Chinese, but not in English. We find that even when Japanese and Mandarin speakers produce a clause, which is certainly an option available in both languages, on many occasions they break up the clause into pieces, hence the many NP intonation units. Table 5 shows the frequency of NP intonation units in the three languages.

Table 5. Frequency of nominal intonation units in English, Japanese and Mandarin

Chinese

	Total IU	NP IU	% of NP IU
English	1099	128	11.6%
Japanese	756	163	21.6%
Mandarin	1163	272	23.4%

Clearly, both Japanese and Mandarin Chinese nearly double the frequency of NP intonation units in English. The frequencies of clausal intonation units and NP intonation units in the three languages, together, suggest that although structural differences can be an important factors for the realization of the intonation unit structure, there are other, perhaps more interesting, factors, which contribute to the differences between English on the one hand, which has more clausal intonation units, and Japanese and Mandarin Chinese on the other, which have more non-clausal intonation units.

One factor which many linguists have identified and which may play some role in the construction of the intonation unit has to do with cognition. Chafe (1987), for example, has discussed the impact of human's limited capacity in activating thoughts on the production of the intonation unit. While acknowledging the important role of cognition, we would like to draw attention to other areas which have been largely ignored in the study of the intonation unit: interpersonal interaction and ways in which speakers establish referents.

5. Intonation unit structure and the interactional component in Japanese

In Japanese natural conversations, it is typical that speakers divide a clause up into constituent phrases. (See also Clancy 1982.) Following Iwasaki (to appear), we would like to suggest that this is because Japanese has grammaticized speaker-hearer interactional information in addition to textual cohesive information and propositional/ideational information in the construction of discourse. In other words, Japanese speakers are given the opportunity to code all these kinds of information in an intonation unit. Thus it is typical for speakers of Japanese to divide ideational information, generally realized in clausal forms, into pieces. This explains, in Japanese, the frequent uses of semi-clauses and NP intonation units accompanied by interactional particles. Ex. 3 illustrate this point. (Here we want to emphasize that, the findings reported here for both Japanese and Mandarin are based on careful observations of our quantified data; but due to time constraints, we will give only one example each to illustrate our findings.)

Ex. 3. (BARTALK)

C O D I N G

1	Yamato-san-ga nee, Yamato-title-NOM IP* 'Mr. Yamato, you know,	NON-CLS	(np)
2	kekkyoku nee, in short IP in short, you know,	NON-CLS	(other)
3	wareware-o nee, we-ACC IP us, you know,	NON-CLS	(np)
4	sofuto-no nee, software-LK IP software, you know,	NON-CLS	(other)
5	shigoto-ni taisuru. job-to towards to the job,	NON-CLS	(other)
6	=hyooka-ga ano hito nee, evaluation-NOM that person IP evaluation, he, you know,	NON-CLS	(other)
7	shite^nai. do:NEG:NONPAST doesn't do	CLS	(sc)
8	hyooka-o. evaluation-ACC (high) evaluation	NON-CLS	(np)
9	ze^ttai. never never.' 'Mr. Yamato never values our software job.'	NON-CLS	(other)

This excerpt consists of 9 intonation units, among which a semi-clausal intonation unit appears only once (line 7), and there are no full clauses at all. (In fact the whole excerpt seems to do what a full clause would do in English). Most of the other intonation units are phrases (nominal or other non-clausal intonation units). We can also see that most intonation units contain two functional components. The first intonation unit, for example, which is an NP, consists of a referential component (Mr. Yamato), and an interactional component (the particle NEE), which signals the speaker's invitation towards the addressee for participation. As a matter of fact, five of the first six non-clausal intonation units are accompanied by an interactional particle.

While coding non-referential, interactional information is a strong motivation for the non-clausal intonation unit structure in Japanese, Mandarin seems to have a different reason for a similar match-up pattern of prosody and structure.

6. Intonation unit structure and referential manipulation in Mandarin

In Mandarin, we find that referential manipulation, including referent establishment, referent highlighting, etc., by virtue of NP intonation units, is a salient property associated with non-clausal intonation units. Here we give only one example to illustrate how non-clausal intonation units are used for the establishment of a referent.

Ex. 4. (JIAOYU)	<u>C O D I N G</u>
1 B: ... xie`xin de shihou, write:letter NOM** time 'At the time (my husband) wrote (me) the letter,	NON-CLS (np)
2 ... ^ si= bai fen `yishang de , four hundred above NOM those with four hundred points,	NON-CLS (np)
3 ... jiushi kaosheng a, indeed:COP examinee PRT those college applicants,	NON-CLS (np)
4 .. ^ dadao si bai fen yishang de. reach four hundred score above NOM those who got four hundred points and above,	NON-CLS (np)
5 ... ` Bao zhiye `gaozhong de, apply vocation high:school NOM those who have applied for vocational schools,	NON-CLS (np)
6 ... hai you hao ^duo, still have very many there are still a lot of them,	CLS (sc)
7 .. jiu mei you. still NEG have (they) have not,	CLS (sc)
8 .. Genben jiu toudang bu chuqu, basically somehow accept NEG out they are basically accepted by nobody.	CLS (sc)
9 ... ^Meifa tou=. no:way accept There is no way for them to get accepted.'	CLS (sc)

What is striking in the Mandarin example is that there are four nominal intonation units (lines 2-5) which convey various types of information for the establishment of the same referent. All the information is packaged in non-clausal forms. (We note that English may

use NP intonation units for referent identification (Tao 1991), but it is seldom done in this fashion of clustering NPs. The difference among NP intonation units in the three languages is an issue which we would like to address in the future.)

7. Conclusion

Our quantitative data have shown that the role the (full) clause plays in conversational discourse varies to a considerable extent in different languages. Specifically, we found that English seems to use full clauses more than Japanese and Mandarin. On the other hand, although both Japanese and Mandarin use the non-full-clause strategy systematically, they do so for apparently different reasons: the break-up of clauses in Japanese is heavily influenced by interactional considerations, while that in Mandarin seems to have more to do with referential manipulation.

Our study suggests that, in investigating the structure of the intonation unit, it is important to consider the grammar of the language, but it is perhaps more important to consider factors which are traditionally not associated with grammar, especially the interaction of language users and referent establishment. We thus hope to have made a further contribution to the study of grammar from an interactional perspective.

Notes:

*Symbols in Japanese glosses.

ACC: accusative; IP: interactional particle; LK: linker;

NOM: nominative; NONPAST: nonpast

** Symbols in Mandarin glosses.

COP: copula; NOM: nominalizer; NEG: negative; PRT: utterance-final particle;

References

- Chafe, Wallace. 1987. Cognitive constraints on information flow. In R. Tomlin, ed., *Coherence and grounding in discourse*. Amsterdam: John Benjamins.
- Chafe, Wallace. 1992. *Discourse, consciousness, and time: The flow and displacement of conscious experience in speaking and writing*. Ms. University of California at Santa Barbara.
- Chafe, Wallace. (In press). Prosodic and functional units of language. In Edwards, Jane A., and Martin D. Lampert, eds. 1992. *Talking data: Transcription and coding methods for language research*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Clancy, Patricia. 1982. Written and spoken style in Japanese narratives. In Deborah Tannen, ed. *Spoken and written language: Exploring orality and literacy*. Norwood: Ablex.

- Du Bois, John W., S. Schuetze-Coburn, D. Paolino, and S. Cumming. 1992. Discourse transcription. In Sandra A. Thompson, ed. Santa Barbara Papers in Linguistics. Vol. IV. UCSB.
- Iwasaki, Shoichi. To appear. The structure of intonation units in Japanese. In Soonja Choi, ed. Japanese and Korean Linguistics, Vol. III. University of Chicago Press.
- Tao, Hongyin. 1992. NP intonation units and referent identification. Berkeley Linguistic Society 18.