Phonological Representation of Connective Words
-- A ToBI study in Gouyu and Taiwan Min

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Abstract

This paper aims at analyzing phonological representation of connective words frequently used in Gouyu and Taiwan Min[1]. Based on 180-mintue spontaneous speech in Gouyu and Taiwan Min, it is found that speakers tend to use connective words quite often to link phrases or sentences either consciously or unconsciously. Thus, following the labeling of the ToBI system, this study will focuses on phonological representation of these connectives in terms of syntactic or pragmatic behaviors of the clauses. In addition, I would like to see if there is any innovative proposal for labeling in M-ToBI and Taiwan Min ToBI since both systems are still at initial stages.

1. Introduction

While English ToBI system has been well-constructed, Mandarin ToBI [1] and Taiwan Min ToBI [2] are still at the preliminary stage since only a few researchers work on them. Based on 180-mintue spontaneous speech in Gouyu and Taiwan Min, it is found that the speaker uses many connective words to link words, phrases or sentences with or without awareness. Thus, this study focuses on three research questions: first, what are the connective words mostly used in Gouyu and Taiwan Min? Second, what's their phonological representation in ToBI system by labeling syllable, stress, tones and breaks? Third, is there any innovative proposal for both labeling systems?

2. Database

The database provided by Prof. Janice Fon's spoken data corpus contains six 30-mintue recordings of three speakers[2] who come from Tainan[3]; they all can speak both Gouyu (Taiwan Standard Mandarin) and Taiwan Min. Based on these data, I made an orthographic transcription of each spoken data first and transform each word to Han-yu spelling for Gouyu and the Church Romanization for Taiwan Min respectively. And then I label words, syllable, stress, tone, breaks, misc and so forth based on each ToBI system.

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[1] Gouyu, mostly spoken in Taiwan, is one of the dialects in Mandarin. In addition, it is the official language in Taiwan. And Taiwan Min is the second large language in Taiwan.

[2] Three speakers are all born in Tainan. They are at the age of 65, 55, 53 respectively.

[3] Tainan, located in southwestern Taiwan, is considered the oldest city where Taiwan started her history in the past. Thus, Taiwan Min with Tainan accents is considered worth noticing among the other accents of Taiwan Min in Taiwan.

3. Connective Words

In the literature of connective words [3, 4], they are defined as cues that show relationship between ideas. In academic writing, they link phrases, sentences and paragraphs together smoothly so that there are no abrupt jumps or breaks between ideas. In oral communication or speech, connective words are used to connect ideas as bridges with or without awareness; yet, more often, they are produced as personal mannerisms Since this paper focuses on spoken data, I attempt to first calculate tokens of connective words frequently used in 180-minute spontaneous speech and then investigate phonological representation to see their similarity and difference.

4. Analyses and Discussion

4.1 Tokens of Connective Words

It is interesting to find that connective words frequently used in Gouyu and in Taiwan Min share some similarities. Table 1 shows tokens of connective words in Gouyu and Table 2 in Taiwan Min. Among all the connective words, the results show that *suo35 i21* "so" and *yin55 wei51* "because" in Gouyu as well as */so55 i55/*→*[so55 i51]* "so" and */in55 ui33/* → *[in33 ui21]* "because" in Taiwan Min ranks in the position of the first three. Moreover, I present individual tokens to argue that some are personal mannerisms served as fillers in spoken data. For example, *ran35 hou51* in Gouyu has more than 120 tokens in one speaker's data. I consider it individual differences. Furthermore, I choose *jiu51 shi51 shou55* in Gouyu and */tioh3 si33 kong51/* → *[tioh3 si33 kong55]* in Taiwan Min to make a comparison as well[4]. All the connective words I am going to discuss later can appear in initial, medial, and final positions[5]. Moreover, although they have their semantic meanings, most of them are produced unconsciously by speakers, that is, like fillers.

Table 1: *Tokens of connective words in Gouyu*

	WHH	CHC	SQM	Total
***ran35 hou51* "then; and"**	13	120		133
***suo35 i21* "so"**	22	19	33	74

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[4] The change results from Tone Sandhi Group (TSG).

[5] The reasons why I pick up these connective words are as follows: first, they can all appear in sentence-initial, medial and final positions; second, they both connect two phases or sentences and appear frequently in spoken data. Third, even though *na55 shi35 hou51* in Gouyu and *hit5 (si24) chun33* in Taiwan Min rank quite high in both tables, they can only appear in initial position, Thus, I prefer not discussing it in this paper.

	WHH	CHC	SQM	Total
yin55 wei51 "because"	14	17	18	49
...(de) shi35 hou51 "when"		47		47
na55 shi35 hou51 "at that time"	10	32		42
jiu51 shi51 shou55 "that is"		30	9	39
...de hua51 "if"		31		31

Table 2: *Tokens of connective words in Taiwan Min*

	WHH	CHC	SQM	Total
so55 i55 "so"	23	23	42	88
hit5 (si24) chun33 "at that time/then"	30	13	9	52
in55 ui33 "because"	17	14	11	42
tioh3 si33 kong51 "that is"		17	8	25
e24 oe33 "if"		21		21

4.2 Phonological Representation of Connective Words

4.2.1"So"

As for *suo35 i21* "so" in Gouyu, it occurs in either clause-initial, medial, or final position. In spontaneous speech, *suo35 i21* often occurs with liaison, or lengthening of the last words. In addition, pauses might or might not follow *suo35 i21*; but in general, it doesn't affect phonological representation of the following utterance. With pauses, %reset, where the arrow is, does happen. H* often falls on the first following word or the first content phrases in Fig. 1. Interestingly, even without pauses, H* still occurs and falls on the first content phrases. However, concerning *suo35 i21* itself, it is not necessarily stressed since I regard it as a filler instead. But if *suo35 i21* appears in the final position of the sentences, in most cases, *suo35 i21* will be stressed, which implies that the speaker is going to explain the results of an event. Overall, *suo35 i21* marked by the circle is accompanied by lengthening of the last word *i21* and with rising or leveling tone in the end.
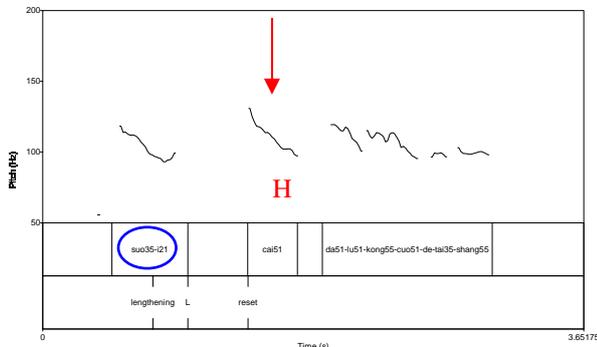

Fig. 1 *suo35 i21* occurs in clause-initial position with pause afterward. *suo35 i21, cai51... da51-lu51kong55 cuo51 de tai35 shang55...* "Thus, for those Taiwanese businessmen who worked in China, …"

As for *so55 i55* in Taiwan Min, it shares the similar features with *suo35 i21* in Gouyu. It can appear in clause-initial, medial, and final positions. In addition, *so55 i55* is not necessarily stressed in sentences as well even with or without pauses after. However, %reset or L* usually falls on the first following words. That is, the pitch contour may start from a low level after *so55 i55*, which is different from representation in Gouyu, shown in Fig.2. But if *so55 i55* appears sentence-final, it is absolutely stressed and ends with the rising tone.
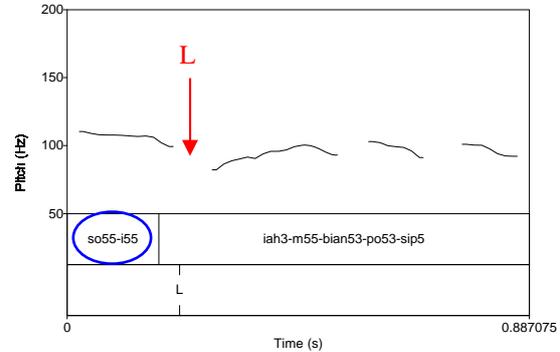

Fig. 2 *so55 i55* occurs in initial position of the clause without pauses. And the pitch contour starts from a low level after %reset. *so55 i55 iah3 m55 biah53 po53 sip5* "So, (we) didn't need to go to cram school."

4.2.2"Because"

With respect to *yin55 wei51* "because" in Gouyu and *in55 ui33* in Taiwan Min, it can appear sentence-initially, medially or finally as "so" discussed in section 4.2.1. In addition, lengthening of the second word and liaison of the connective words, are still prominent in general except that the former seldom occurs in the one which appear sentence-medially. Furthermore, the pitch contour that resets after *yin55 wei51* is high while that following *in55 ui33* is still low, which is the same as the pattern of "so".

4.2.3"That is (to say)"

In spontaneous speech, *jiu51 shi55 shou55* is very likely to occur with liaison or creaky voice quality as well. Whether it occurs in initial or final position, %reset of the next utterance is obvious. However, as for *jiu51 shi55 shou55* itself, lengthening with rising tone often occurs especially when *jiu51 shi55 shou55* implies hesitation of the speaker as Fig. 3; but when it implies affirmative tone of the speaker in order to explain or elaborate of the following ideas, *jiu51 shi55 shou55* often falls in the end as Fig. 4.

As for */tioh3 si33 kong51/* → *[tioh3 si33 kong55]* in Taiwan Min, liaison often occurs intra-phrasally. The only difference between *jiu51 shi55 shou55* in Gouyu and */tioh3 si33 kong51/* in Taiwan Min is that the former ends with L% in most cases while the latter always ends with H%[6].

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[6] In the spoken data, there is only one exception of *jiu51 shi51 shou55* in clause-final position which ends with H%. The sentence is listed as follows: *wo21 jiu51 shi51 shuo55, qi35 guai51, zhe51 hen21 jian21 dan55 de ti35 mu51, ni21 wei51 she35 me bu51 dong21?* "I said: 'Sounds strange. What an easy question it is. Why can't you understand it?" In my opinion, *jiu51 shi51 shou55* here leads to a direct quote; that's why the speaker raises his pitch after *jiu51 shi51 shou55*.
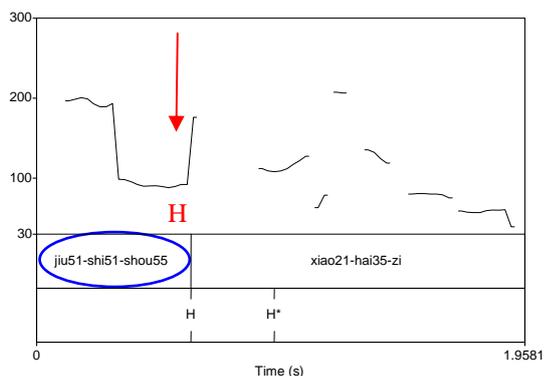
Fig. 3 *jiu51 shi51 shou55* occurs in clause-initial position without pause afterward. But due to its hesitative intonation, *jiu51 shi51 shou55* rises in the end. However, the creaky voice makes the pitch contour fall down. jiu51 shi51 shou55, xiao21 hai35 zi (jiao55 peng35 yiu21 zhe51 fang55 mian51)… "That is, as for children (making friends)…"
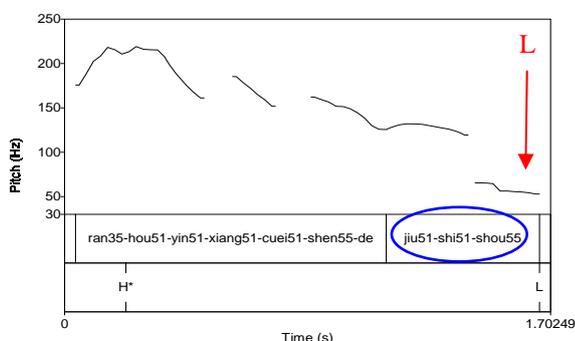

Fig. 4 *jiu51 shi51 shou55* occurs in clause-final position with pause afterward. And the falling tone implies the affirmative tone of the following ideas of the speaker. *ran35 hou51 yin51 xiang51 cuei51 shen 55 de jiu51 shi51 shou55, (xiao21 hai35 zi shang51 ke51 de shi35 hou51…)* "Then, what impressed (me) most is in childhood, …"

4.2.4ran35 hou51"Then" in Gouyu only

Although *ran35 hou51* in Gouyu is regarded as personal mannerisms, it shares the same syntactic properties with other connective words discussed above. It occurs in either clause-initial or clause-final position. In spontaneous speech, *ran35 hou51* is very likely to occur with liaison, or creaky voice quality, especially when it occurs continuously. When *ran35 hou51* appears, pauses might accompany *ran35 hou51* before as well as after; different from the above connectives, *ran35 hou51* does have %reset in the beginning itself and another %reset might happen in the next utterance.

When *ran35 hou51* occurs in sentence-initial positions, there will be two conditions: for the one which has no pauses after, the break indices is labeled by B2 or B3 depending on whether there is lengthening and pause-like prolongation[7]. And usually there is no reset after *ran35 hou51*. For the one who has pauses afterward, undoubtedly, the break indices will be labeled by B4 or B5 and there will be %reset after next IP since *ran35 hou51* in such cases serves more as a connective word rather than a filler.

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[7] See my tentative proposal about how to distinguish B2 and B3.

4.2.5 Interim Summary

Based on studies on the data, I find that connective words might not necessarily be stressed in sentences since they serve as fillers rather than meaningful transitions in spoken data. However, they will definitely result in reset or prominence of pitch contour in the beginning of the next utterance, whether it is high or low. Besides, it is obvious that that syntactic positions, semantic implications or the phonetic features may all be factors to influence their phonological representation of connectives. Furthermore, it is "various tones" in both Gouyu and Taiwan Min that makes labeling even more difficult than usual since it will be problematic in order to distinguish whether it is pitch accent because of tone or intonation. Last, Mandarin ToBI and Taiwan Min ToBI are not mature enough; thus, I would like to propose my preliminary perceptions towards labeling boldly.

5. Tentative Proposal

When labeling the spontaneous speech, some label systems are not defined clearly, such as breaks and tones in M-ToBI as well as Taiwan Min-ToBI. Thus, I attempt to label based on the manual of labeling systems and see if I can provide any preliminary innovations boldly.

In M-ToBI, the most difficult part in labeling is tones tier since it's hard to distinguish. No one is assured whether reset or prominence is due to pitch or the falling tone. In my data, I consider *% reset* the most common boundary tone, which refers to a new pitch reset in the beginning of the sentence. In addition, I label *%e-prom* when the utterances seem prominent; yet, they are not necessarily high in pitch. However, I do not use *%compressed* in labeling since M-ToBI claims that it should be preceded by *%e-prom* and such cases do not occur in my data.

Besides, boundary tones, such as *L%* or *H%*, are tagged at the end of an utterance. However, if two phrases or sentences do not have pauses, boundary tone will be omitted since the labels for beginning seems more important than those for ending. I suggest that *H%* should be labeled in any case since *L%* is assumed as the "default boundary tone."

As for breaks in M-ToBI, I attempt to re-classify *B2* and *B3* in my own way. M-ToBI claims that *B2* and *B3* are used for phrase boundaries within a *B4* breath group. However, there are two rules to distinguish them from my point of view: first, *B2* is followed by another "downstep" pitch raising compared to the former raising while *B3* by a "higher" pitch raising. Second, there is no pause or hesitating disfluency after *B2* while *B3* denotes lengthening or pause-like prolongations.

As for Taiwan Min-ToBI, the labeling systems seem not complete; in fact, I am of the opinion that it should be simplified. For example, I propose that *b2*, the "default" break indice, doesn't need labeling after each syllable word for the sake of the clearness of the ToBI systems. Moreover, Taiwan Min-ToBI places the tone sandhi group (TSG) in the same slot and label tonal representation by PP and numbers as well in the tones tier. I propose that Taiwan Min-ToBI should follow the way of M-ToBI, marking sandhi tone in "sandhi" tiers and pitch contour representation in tones tiers. In this way, the pitch contour can be understood clearly.

6. Conclusions

Connective words which serve as function words in spontaneous speech are usually produced without awareness by the speaker. However, their significance cannot be over

emphasized because they affect the pitch contours directly in accordance with their syntactic positions and phonetic features. Furthermore, some ideas associated with labeling systems come to my mind in the process of labeling and analyses. Thus, I attempt to propose my viewpoints of labeling both ToBI systems to make both ToBI systems as complete and elaborate as E-ToBI.

To sum up, I attempt to investigate phonological representation of a certain connective words in terms of interface between syntax and phonology. However, connective words are not enough. In order to provide a more complete Mandarin ToBI and Taiwan Min ToBI systems, fillers, such as *zhe51-ge* "this" or *na51-ge* "that" in Gouyu or *hit5-le33* "this" in Taiwan Min, or particles and the like, are worth noticing as well.

7. Acknowledgement

8. References

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