

# Prosodic influence on Chinese disjunctive questions<sup>1</sup>

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## 1. Introduction

Since Selkirk (1984) proposed the Basic Focus Rule (an accented word is F-marked) and Focus Projection (F-marking of the head of a phrase licenses the F-marking of the phrase; F-marking of an internal argument of a head licenses the F-marking of the head), the correlation of the pitch accent and the information structure has been extensively discussed. For example, Schwarzschild (1999) investigates the relationship between pitch accents and the informational structure and argues that an un-F-marked constituent should be given information. Recent studies have also shown that even grammatical behavior such as intervention effects and subadjacency are affected by the prosody of the sentence (e.g., Tomioka 2007, Kitagawa and Fodor 2014). In this paper, I discuss the prosody of disjunctive questions, which are divided into alternative questions (alt-Q) and disjunctive polar questions (dis-Q) and argue that the prosody also intervenes in the acceptability of disjunctive questions.

The organization of this paper is as follows: section 1 is the introduction; section 2 summarizes the research on the prosody of disjunctive questions in English; section 3 introduces Chinese prosodic properties and explains how to measure the prosodic prominence in Chinese; section 4 introduces two types of Chinese disjunctive questions and the research on their prosodies; section 5 analyzes the prosodic data on Chinese disjunctive questions and shows the result; section 6 discusses the low acceptability of dis-Qs in Chinese and argues for the interaction between prosody and wellformedness; section 7 is the conclusion.

## 2. Prosody of alt-Qs and dis-Qs in English

The difference in prosody between alt-Qs and dis-Qs has been extensively discussed in English because both alt-Qs and dis-Qs are formed with the same constituents, namely, the prosody is the only feature that distinguishes the two constructions. Typically, the end of an alt-Q is uttered with a low phrase accent (L-) followed by a low boundary tone (L%), whereas that of a dis-Q is uttered with a high phrase accent (H-) followed by a high boundary tone (H%). Additionally, every disjunct in an alt-Q is pronounced in a separate intonation phrase, whereas all the disjuncts of dis-Qs are uttered in one intonation phrase. The Examples (1) and (2) are the typical

contours of both constructions described in Bartels (1999:84-5).

1) Would you like mineral water, iced tea, or lemonade?

H\* H- H\* H- H\* L-L%

2) Would you like mineral water, iced tea, or lemonade?

L\* H-H%

Hereafter, I call L-L% at the end of an alt-Q the final fall/falling contour and H-H% at the end of a dis-Q the final rise/rising contour. Because declarative sentences also end with a falling contour, Bartels (1999) concludes that the final fall of alt-Qs marks “assertiveness.”

However, this conclusion has not been supported by the prosody-semantic interface research on alt-Qs. Han and Romero (2004) argue that the peculiar prosody of alt-Qs reflects the movement of the operator that indicates the scope of the disjunction (SCOPE INDICATOR), whereas the absence of this prosody indicates that no movement is involved in dis-Qs. Only in alt-Qs does the Scope Indicator move to the left periphery of the sentence, resulting in the wide scope of the disjunction over the question operator (Q), as presented in (3a). In contrast, Scope Indicator remains in situ in dis-Qs, as shown in (3b).

3) Does John drink beer or vodka?

a. SCOPE-INDICATOR<sub>i</sub> [Q John drinks t<sub>i</sub> [ beer or vodka ] ] ?

= Which does John drink: beer or vodka?

b. [Q John drinks SCOPE-INDICATOR [ beer or vodka ] ]?

= Does John drink something like beer or vodka?

By contrast, Biezma (2009), based on Zimmermann’s (2000) analysis on disjunctions, argues that the final fall of alt-Qs represents the closure operator that indicates the exhaustivity of the list of alternatives. For example, the final fall in (4a) triggers the presupposition that the only epistemic alternatives are ‘you make pasta’ and ‘you make fish’. (4b) shows the logical form of (4a), in which the disjunctive proposition is in the scope of the closure operator ( $\Gamma$ ). (4c) provides the definition of the closure operator: all the propositions that are epistemically available are included in the set of worlds in which the given proposition is true and vice versa. By contrast, in the dis-Q uttered as (5a), the closure operator is absent, allowing an open list of alternatives, as presented in (5b). ([[ ]] stands for the interpretation function.)

4) a. Are you making pasta<sub>L\*H-</sub> or fish<sub>H\*L-L%</sub>?

b. [[Q]]( $\Gamma$ ([[{  $\lambda w$ .make<sub>w</sub>(you, pasta),  $\lambda w$ .make<sub>w</sub>(you, fish) }]]))

c. The closure operator

$\Gamma := \lambda G_{\langle s, t, t \rangle} : (\forall q)[\text{EpistemicallyAvailable}(q) \leftrightarrow q \in G].G$

5) a. Are you making pasta or fish<sub>L\*H-H%</sub>?

b. [[Q]]([[{  $\lambda w$ .make<sub>w</sub>(you, pasta),  $\lambda w$ .make<sub>w</sub>(you, fish), ... }]])

The closure operator explains the ‘cornering effect’ of alt-Qs formed with ‘or not.’ Polar question (6) ends with a rising contour, indicating no closure operator, and alt-Q (7) is uttered with a final fall, indicating that the list of alternatives is closed; thus, the latter corners the listener, who must now answer one of the alternatives.

6) a. Are you making pasta?

L\*H-H%

7) a. Are you making pasta or not?

L\*H- H\*L-L%?

Extending Biezma's (2009) study, Roelofsen and van Gool (2010) propose a fine-grained classification of the prosody of disjunctive questions based on whether the disjunctive phrase is uttered with a rising contour or a falling contour: block intonation, open intonation, and the closed intonation. They assert that each intonation highlights a different possibility: the block intonation highlights a single possibility, the open intonation highlights multiple possibilities, and the closed intonation highlights the possibilities in the sentence.

On the one hand, the rising and falling contours have been widely discussed; on the other hand, some semanticists have argued that the pitch accent on every disjunct is more relevant to the semantics of alt-Qs. Based on the hypothesis that Selkirk (1996) proposes, namely, an accented word is marked as a focus (F-marked), Aloni and Van Rooy (2002) argue that every disjunct is F-marked in an alt-Q, with the other parts of the sentence being presupposed. By contrast, the F-marking can be projected to the whole proposition in a dis-Q, because Selkirk's (1984) focus projection rule allows it. In example (8) and (9), F-marked constituents are shown as [ ]<sub>F</sub>.

8) a. Do you want [coffee]<sub>F</sub> or [tea]<sub>F</sub>?

b. [[Q]](PRESUPPOSE( $\lambda x$ .WANT(you, x)) $\wedge \exists x$ .x=coffee $\vee$ x=tea)

9) a. [Do you want coffee or tea]<sub>F</sub>?

b. [[Q]](WANT(you, coffee)  $\vee$  WANT(you, tea))

To answer which prosodic feature is more relevant to the interpretation of alt-Qs, Pruitt and Roelofsen (2013) conduct an experiment. They prepare four types of samples produced by combining a final contour and pitch accents, namely, sentences with a final fall and pitch accents, sentences with a final fall but no pitch accents, sentences with a final rise and pitch accents, and the sentences with a final rise but no pitch accents. Next they ask native speakers of American English to answer which sample is interpreted as an alt-Q. The result shows that the final contour is more relevant than pitch accents for the research subjects to interpret a disjunctive question as an alt-Q: contours ending with a final fall were interpreted as alt-Qs 86% of the time, and contours with pitch accents on all disjuncts were interpreted as alt-Qs 54% of the time.

In summary, which prosodic feature plays what role in disjunctive questions remains controversial. To clarify the role of prosody in alt-Qs, considering languages that differentiate alt-Qs from dis-Qs by other means than prosody might be useful. In section 4 and 5, I present the prosodic data from Chinese, which has specialized coordinators to distinguish alt-Qs from dis-Qs.

### 3. Chinese tones and prosody

Thus far, pitch stress and pitch contours have been the primary notions in the discussion on English disjunctive questions. However, the role of pitch in Chinese differs from English because

Chinese is a tonal language. According to Chao (1968), the sentential intonation in Chinese is represented as a sum of the tone pitch and the stress pitch. Thus, to distinguish prosodic stress, we must eliminate the effect of tones.

The literature has discussed how prosodic stress correlates with the contrastive focus in Chinese. Comparing the intonations of minimal pairs distinguished only by the locus of the focus, Gårding (1987), Jin (1996) and Xu (1999) have mentioned four prosodic features that mark the focus in Chinese: the widening in the pitch range of the syllable, the lengthening of the syllable, the ascending the upper limit of the pitch range, and the postfocus reduction. The reduction is manifested both in the pitch range and the length of the postfocus syllables.

Nonetheless, determining the locus of a stress in a given sentence is difficult, if the sentence consists of different tones. For example, a high flat tone is pronounced with a higher pitch and narrower pitch range than other tones, stressed or not. To solve this problem, Shen (1985) proposes a systematic means to measure Chinese prosodic stresses. He produces sentences with one type of tone; thus, a comparison of the prosodic features of the stressed syllable with that of the nonstressed syllables within a given sentence is possible. The following examples are from Shen (1985). I notate the tone in accordance with the standard notation of Chinese Romanization (Pinyin): “ˉ”denotes a high flat tone, “ˊ”denotes a rising tone, “ˋ”denotes a low tone (in the actual pronunciation, it is a low tone followed by a rising tone) and “ˋˊ”denotes a falling tone.

10) a. Zhāng Zhōngbīn jīntiān xiū shōuyīnjī. (All high flat tones)

<sub>PR</sub> today fix radio

(Zhang Zhongbin fixes the radio today.)

b. Wú Guóhuá míngnián huì Yángchéng hú. (All rising tones)

<sub>PR</sub> next-year back Yangcheng lake

(Wu Guohua will return to Yangcheng lake next year.)

c. Lǐ Xiǎobào jiǔdiǎn xiě yǎnjiǎng gāo. (All low tones)

<sub>PR</sub> 9 o'clock write speech draft

(Li Xiaobao writes a speech draft at 9 o'clock.)

d. Zhào Shùqīng bànyè shàng jiàoyùbù. (All falling tones)

<sub>PR</sub> midnight go up Ministry-of-Education

(Zhao Shuqing goes to the Ministry of Education at midnight.)

This strategy is widely accepted in the Chinese linguistic society of Mainland China (see papers in Shi and Wang 2017). Shi and Wang (2014) collect the data of native speakers of Beijing Chinese and point out that the widening of the pitch range and the lengthening of the last syllable of the constituent represent a prosodic focus. By contrast, Ma (2017) points out that the widening of the pitch range is the main strategy to mark the prosodic focus in Chinese, with the lengthening of the syllable as an ancillary mean. He also asserts that the postfocus reduction is observed only when the following two conditions occur simultaneously: no high flat tone is relevant and the stressed syllable is lengthened. Based on these findings, I regard the widening of the pitch range as the main strategy to manifest a stress in Chinese.

## 4. Chinese disjunctive questions

### 4.1. Structures of alt-Qs and dis-Qs

Chinese alt-Qs are formed by *haishi*, the coordinator specialized for alt-Qs. In (11), *haishi* coordinates two noun phrases: TOEFL and IELTS. The sentence asks which test the students in the English department should take.

11) Yingwen xi de xuesheng yao kao Tuofu haishi Yasi?

English department<sub>NOM</sub> student must take-exam TOEFL OR<sub>{ALT-Q}</sub> IELTS

(Which test are students in the English department required to take: TOEFL or IELTS?)

In addition to the alt-Q coordinator *haishi*, Chinese has a disjunctive coordinator for an assertion. In (12), the coordinator *huozhe* (or its shortened form *huo*) coordinates the two noun phrases: TOEFL and IELTS, resulting in a disjunctive assertion.

12) Yingwen xi de xuesheng yao kao Tuofu huo(zhe) Yasi.

English department<sub>NOM</sub> students must take-exam TOEFL OR<sub>{DIS-Q}</sub> IELTS

(Students in the English department are required to take TOEFL or IELTS.)

A disjunctive assertion can be turned into a dis-Q by attaching the sentence-final particle *ma*.<sup>2</sup> (13) is the interrogative counterpart of (12).

13) Yingwen xi de xuesheng yao kao Tuofu huozhe Yasi ma?

English department<sub>NOM</sub> students must take-exam TOEFL OR<sub>{DIS-Q}</sub> IELTS Q

(Are students in the English department required to take exams such as TOEFL and IELTS?)

In summary, the interrogative force of alt-Qs and dis-Qs originates from different parts of speech: the interrogative force of alt-Qs is derived from the coordinator and that of dis-Qs from the sentence-final particle.

In addition to the difference in the origins of the interrogative force, I observe a difference in acceptability between the two questions. Some dis-Qs sound awkward and are not accepted by native Chinese speakers. Example (14), which was produced by the author, is not considered an acceptable sentence by some native Chinese speakers.

14) ?Ni yao kafei huozhe hongcha ma?

you want coffee OR<sub>{DIS}</sub> tea Q

(Do you want coffee or tea?)

In sections 4.2, 5 and 6, I first discuss the prosody of both questions and then consider the low acceptability of dis-Qs.

### 4.2. Prosody of Chinese alt-Qs

According to my review of the literature, one study investigated the prosody of alt-Qs. Yan et al. (2014) record examples of alt-Qs and their declarative counterpart and compare the intonation contours. The following are some of the examples recorded in their study.

- 15) a. Zhāng Zhōngbīn háishi Wú Guóhuá xīngqītiān xiū shōuyīnjī?  
 PR OR<sub>[ALT]</sub> PR Sunday fix radio  
 (Does Zhang Zhongbin or Wu Guohua fix the radio on Sunday?)
- b. Zhāng Zhōngbīn xīngqītiān háishi xīngqīyī xiū shōuyīnjī?  
 PR Sunday OR<sub>[ALT]</sub> Monday fix radio  
 (Does Zhang Zhongbin fix the radio on Sunday or on Monday?)
- c. Zhāng Zhōngbīn xīngqītiān xiū shōuyīnjī háishi mǎi shōuyīnjī?  
 PR Sunday fix radio OR<sub>[ALT]</sub> buy radio  
 (Does Zhang Zhongbin fix the radio or buy the radio on Sunday?)
- d. Zhāng Zhōngbīn xīngqītiān xiū shōuyīnjī háishi xiū diànshìjī?  
 PR Sunday fix radio OR<sub>[ALT]</sub> fix TV  
 (Does Zhang Zhongbin fix the radio or fix the TV on Sunday?)
- e. Zhāng Zhōngbīn xīngqītiān xiū shōuyīnjī.  
 PR Sunday fix radio  
 (Zhang Zhongbin fix the radio on Sunday.)

(15a) is an alt-Q with a disjunctive subject, (15b) is an alt-Q with a disjunctive adverb, (15c) is an alt-Q with a disjunctive object, and (15d) is an alt-Q with a disjunctive VP. Last, (15e) is the declarative sentence without a disjunction. Yan et al. (2014) produce four sets of examples for each tone and two sets of examples for mixed tones. Through extraction of the pitch value of each word, they highlight these four major points:

- A. Average pitch range of alt-Qs is larger than that of the corresponding declarative sentence.
- B. Average pitch range of disjunctive phrases of alt-Qs is larger than that of the informational foci in the corresponding declarative sentence.
- C. Average pitch range of the first disjuncts in alt-Qs is larger than that of the second disjuncts.
- D. The upper limit of the first disjunct's pitch range is higher than that of the second disjunct's.

Findings A and B indicate that the disjuncts of alt-Qs are not informational focus, but possibly contrastive focus, as Lee (2017) argues. Although findings C and D show that the two disjuncts are not equally stressed, they are distinctively stressed in the sentence. Hence, I posit that the prosodic prominence on the disjunct in Chinese is the counterpart of pitch accents in English.

The prosodic data on Chinese alt-Qs indicates the parallelism between English and Chinese alt-Qs regardless of the different morphological markedness between them: the prosodic prominence on every disjunct and the same final contour as declaratives. Thus, I propose the following question: is this parallelism also observed in dis-Qs? Thus, in section 5 I compare the pitch ranges of disjuncts in dis-Qs and alt-Qs. I do not compare the final contour of dis-Qs and alt-Qs because the Chinese dis-Q ends with the sentence-final particle *ma*, which is usually uttered with the same contour as the declaratives.

## 5. Method

### 5.1. Target sentences

I used examples from Shen (1985) and Yan et al. (2014), although I modified some wording to improve the effect of the different intonations. I produced examples strictly with one type of tone except for the coordinators *háishì* and *huòzhě* and sentence-final particle *ma*. This point differed from Yan et al. (2014) because some of their examples contain different tones, such as the second disjunct *Wú Guóhuá* in (15a), the verb *mài* in (15c), and the object noun *diànsǎjī* in (15d). I produced examples based on two dimensions, disjunctive subjects and disjunctive adverbs, and I applied these two dimensions on two types of questions, alt-Qs and dis-Qs. I did not produce examples either with disjunctive verbs or disjunctive objects because the stress on verb phrases are indistinguishable from the stress representing the focus. I obtain 16 types of examples, four tones times two types of disjunction times two types of questions. All the target sentences are shown in the Appendix.

### 5.2. Informants

The informants who participated in the recording were eight native speakers of Mandarin Chinese, all female. Six of the informants were graduate students, and two of the informants were audit students. The students were enrolled at Ochanomizu University. The ages of the informants varied between 23 and 35 years, and they were from various regions of Mainland China (i.e., two from Heilongjiang and one from Jilin, Liaoning, Anhui, Shanghai, Fujian, and Guangdong, respectively). This study aimed to assess the common prosodic property among varieties of Mandarin Chinese; hence, I accepted a wide variety of speakers of Mandarin Chinese. As some of the speakers used dialects at home and different dialects have different prosodic features from those of Beijing Mandarin (See the references cited in Ma 2017), I cannot exclude the possibility that the dialect affected their manner of speaking Mandarin Chinese. Hence, this variety might influence the results, which was a limitation of this study.

### 5.3. Recording

The recording was conducted in a soundproof booth in the Student Commons at Ochanomizu University. The dates of recording were from December 2018 to February 2019. The target sentences were randomly arranged with 12 filler items, which included disjunctive declaratives (8 examples) and declaratives without disjunction (4 examples), and were displayed successively on the display. The informants were told to read aloud the sentence presented on the display. As the recording equipment, I used Praat (ver. 6.0.30), which was installed on Surface 3 (DESKTOP-HD6PJKS, Intel Atom x7-Z8700, CPU was 1.60 GHz). The speech signals were directly digitized onto the hard disk using Praat. Sampling frequency was 44000 Hz, mono sound. The digitized signals were manually segmented into words and annotated by the author.

#### 5.4. Analysis

First, I extracted the maximal and minimal pitches from the first disjuncts and the entire sentences. Second, I calculated the ratio of the pitch range of D1 to the entire pitch range of the sentence. Lastly, I calculated their average values over the eight speakers. All the calculations were done by Excel 2016.

#### 5.5. Result

I collected 672 samples (16 target sentences plus 12 filler items that were spoken by 8 speakers for three times). Among them, I obtained 384 samples of target sentences. All the samples were inspected by the author, and 23 samples of them were excluded because of the unnatural intonations or the reading mistakes. As a result, I obtained 361 valid samples of target sentences. The breakdown of the samples is 89 alt-Qs with a disjunctive subject, 90 alt-Qs with a disjunctive adverb, 92 dis-Qs with a disjunctive subject, 90 dis-Qs with a disjunctive adverb.

Table 1 presents the ratio of the pitch range of D1s to the pitch range of the whole sentence consisting of high flat tones. I observed no significant difference between alt-Qs and dis-Qs either in disjunctive subjects or disjunctive adverbs.

	Disjunctive subject		Disjunctive adverb	
	Alt-Q	Dis-Q	Alt-Q	Dis-Q
D1-range	42%	45%	39%	39%
	t(40)=-.45, p>.050		t(40)=.26, p>.050	

Table 1. Relative pitch ranges of D1s in high flat tone sentences

Table 2 presents the ratio of the pitch range of D1s to the entire pitch range of the sentence consisting of rising tones. Again, no significant difference between alt-Qs and dis-Qs was observed either in disjunctive subjects or in disjunctive adverbs.

	Disjunctive subject		Disjunctive adverb	
	Alt-Q	Dis-Q	Alt-Q	Dis-Q
D1-range	75%	75%	65%	61%
	t(36)=-.40, p>.050		t(38)=.53, p>.050	

Table 2. Relative pitch ranges of D1s in rising tone sentences

Table 3 presents the ratio of the pitch range of D1s to the entire pitch range of the sentence consisting of low tones. No significant difference between alt-Qs and dis-Qs was observed either in disjunctive subjects or in disjunctive adverbs.



	Disjunctive subject		Disjunctive adverb	
	Alt-Q	Dis-Q	Alt-Q	Dis-Q
D1-range	74%	73%	81%	80%
	t(40)=-.17, p>.050		t(40)=.15, p>.050	

Table 3. Relative pitch ranges of D1s in low tone sentences

Table 4 presents the ratio of the pitch range of D1s to the entire pitch range of the sentence consisting of falling tones. When the disjunctive phrase appears in the subject position, the average pitch range of D1 in alt-Qs was significantly wider than the one of D1 in dis-Qs, whereas no significant difference was observed in the case of disjunctive adverbs.

	Disjunctive subject		Disjunctive adverb	
	Alt-Q	Dis-Q	Alt-Q	Dis-Q
D1-range	74%	64%	70%	66%
	t(40)=2.14, p>.050 significantly different		t(40)=1.18, p>.050	

Table 4. Relative pitch ranges of D1s in falling tone sentences

In summary, except for the disjunctive subjects in falling tone sentences, there is no significant difference between alt-Qs and dis-Qs in terms of the pitch range. Although the reason of the exception in disjunctive subjects in falling tone sentences remains unclear, there is no significant difference between the prosodic prominence of D1 in alt-Qs and the one in dis-Qs in general.<sup>3</sup>

## 6. Role of the stress and its effect on acceptability

### 6.1. Low acceptability of Chinese dis-Qs

The findings in section 5 indicate that alt-Qs are not differentiated from dis-Qs prosodically. Meanwhile, the parallel prosody between them indicates that the informational structure of Chinese dis-Qs differs from that of English dis-Qs. In English, the different F-marking of alt-Qs and dis-Qs leads to different informational structure, as argued in Aloni and Van Rooy (2002). Examples (8) and (9), reproduced as (16) and (17), respectively, are notable in this regard.

- 16) a. Do you want [coffee]<sub>F</sub> or [tea]<sub>F</sub>?  
 b. [[Q]](PRESUPPOSE( $\lambda x$ .WANT(you, x)) $\wedge \exists x$ .x=coffee $\vee$ x=tea)
- 17) a. [Do you want coffee or tea]<sub>F</sub>?  
 b. [[Q]](WANT(you, coffee)  $\vee$  WANT(you, tea))

In an alt-Q, F-marking on every disjunct prohibits its projection to the VP, if we follow the restriction proposed by Selkirk (1996) that the focus of a sentence is not dominated by any other F-marked constituent. Meanwhile, in a dis-Q, an F-marking can be projected in the following sequence: to its head, to the phrase, and to the sentence.

In contrast, Chinese dis-Qs do not allow the similar projection of F-marking, as every disjunct is

F-marked. Thus, the logical form of a Chinese dis-Q is represented as (18b), which is basically the same as the logical form for an alt-Q, shown in (16b), except for the existential closure on the list of alternatives.

18) a. ?Ni yao [kafei]<sub>F</sub> huozhe [hongcha]<sub>F</sub> ma?

you want coffee <sub>OR<sub>[DIS-Q]</sub></sub> tea Q

(Do you want coffee or tea?)

b. [[Q]](PRESUPPOSE( $\lambda x$ .WANT(you, x)) $\wedge \exists x$ .x=coffee $\vee$ x=tea $\vee x$ =...)

However, logical form (18b) is contradictory, considering the prosody: on one hand, the prosody presupposes that the individual wants a limited number of things; on the other hand, it denotes the unlimited number of candidates. The low acceptability of Chinese dis-Qs is derived from this contradiction.

I argue that the degraded acceptability is one instance of the prosodic effects on grammaticality. Much evidence has been presented that supports this effect. For example, Tomioka (2007) argues that the intervention effects in Japanese *wh*-questions should be accounted for by prosody, and Kitagawa and Foder (2014) demonstrate that prosody can promote or demote the acceptability of a sentence in which subjacency is violated. Hence, I propose that the prosody, especially the prosodic focus, degrades the acceptability of Chinese dis-Qs.

## 6.2. Conditions of acceptance of Chinese dis-Qs

Although I said that the contradicting logical form leads to low acceptability, I observed that some dis-Qs are perfect. To attest to the acceptability of dis-Qs in Chinese, I searched for examples from the corpus of Center for Chinese Linguistics at Pekin University (CCL). I set the search criteria as follows: containing both the disjunctive coordinator *huozhe* and the sentence-final particle *ma* within ten characters' distance. Notably, a word can be written by one character or more than one character in Chinese; hence, "10 characters" do not equal to "10 words." In example (19), the disjunctive coordinator *huozhe* is within ten characters' distance from the sentence-final particle *ma*, although it is within 6-words' distance from it.

19) Erzi fenjia de changhe, fumu tongchang

child set-up-branch-families NOM condition parents usually

huozhe<sub>e[0]</sub> yiding<sub>[12]</sub> baoliu<sub>[34]</sub> ziji<sub>[56]</sub> de<sub>[7]</sub> caichan<sub>[89]</sub> ma<sub>[10]</sub>?

<sub>OR<sub>[DIS]</sub></sub> surely retain self NOM property Q

(If the child sets up a branch family, do the parents usually or surely retain their property?)

As a result, I obtained 146 examples. Excluding the usages as adverbials and sentential connectives, I found 68 true dis-Qs. All parts of speech can be disjunctions: the predicates in (20) and (21), modifiers in (22) and (23); pre- and postverb adverbials in (24) and (25); subject noun phrases in (26) and (27); and object noun phrases in (28) and (29). Ito (2014) demonstrated that the assertive disjunctive connective *huozhe* often alternates with the alt-Q-connective *haishi* in negative modal contexts. However, I am certain that the following examples are true dis-Qs and not representatives of alternation.

- 20) Neige shihou xin-li hui hen nanguo huozhe shengqi ma?  
 that time in-mind possibly very sad OR<sub>[DIS]</sub> angry Q  
 (At that time, did you feel sad or angry?)
- 21) Ni hui suji huozhe dazi ma?  
 you can write-shorthand OR<sub>[DIS]</sub> type Q  
 (Can you write shorthand or type?)
- 22) Ni hai renshi biede xi huozhe biede daxue de jiaoshou ma?  
 you in-addition know other department OR<sub>[DIS]</sub> other college NOM professor Q  
 (In addition to that, do you know professors from other departments or other colleges?)
- 23) Ni du guo Fuluoyide huozhe Rongge de shu ma?  
 you read EXP Floyd OR<sub>[DIS]</sub> Jung NOM book Q  
 (Have you ever read Floyd's or Jung's book?)
- 24) Ni zuijin huozhe yiqian chi-guo guozili ma?  
 you recently OR<sub>[DIS]</sub> before eat EXP masked-palm-civet Q  
 (Did you eat masked palm civets recently or before?)
- 25) Ruguo ni de nan pengyou yingzheng ruwu le,  
 if you NOM male friend recruit enter-the-army PERF  
 ni dasuan dengshang ta yinian, sannian huozhe wunian ma?  
 you plan wait-up him one-year three-year OR<sub>[DIS]</sub> five-year Q  
 (If your boyfriend is recruited into the army, are you going to wait for him for one year, three years, or five years?)
- 26) Zai you diyi shunxu jichengren jicheng de qingkuang xia,  
 at have first order heir inherit NOM circumstance below  
 dier shunxu de jichengren huozhe qitaren keyi fende yichan ma?  
 second order NOM heir OR<sub>[DIS]</sub> others can get-share property Q  
 (In the circumstance that the first heir inherits [a piece of property], can the second heir or others inherit [the remainder]?)
- 27) Wo caixiang ni ye shi ge guer, ni fuqin huozhe muqin qushi le ma?  
 I guess you too be CL orphan your father OR<sub>[DIS]</sub> mother die PERF Q  
 (I guess you are an orphan too. Did your father or mother pass away?)
- 28) Ni yuanyi liu-zai wo shenbian dang yi ming hushi huozhe yisheng ma?  
 you want stay-at my side work as one CL nurse OR<sub>[DIS]</sub> doctor Q  
 (Do you want to stay by my side and work as a nurse or a doctor?)
- 29) Na shihou ni jingchang canjia yixie hechangtuan huozhe shi huiyuan zhilei de  
 that time you often attend one-CL chorus OR<sub>[DIS]</sub> be joint-show and-the-like NOM  
 yanchu ma?  
 performance Q  
 (At that time, did you often attend a chorus or a performance of a joint show and the like?)

Then, what makes these sentences acceptable? I presumed that the context cancels the

F-marking on disjuncts. Example (30) attest to the cancellation of F-marking by the context:

30) Context: A and B live in Japan. They went to China and then to Korea for vacation. While shopping in a duty-free shop at Incheon International Airport, A asks B:

Ni you Renminbi huozhe Hanyuan ma?  
you have Chinese-currency OR<sub>[DIS]</sub> Korean-currency Q  
(Do you have Chinese currency or Korean currency?)

In this context, alternatives other than the disjuncts are ignored, as they are urged to use foreign currency before going back to Japan. Hence the possibility of contrastive focus is excluded. Besides, the context assures that the alternatives are given information, thus we have no choice but cancel the F-marking. The evidence that supports this cancellation is that (30A) can be rephrased into an A-not-A question such as (31A), whose focus is the verb *you* (have).

31) Ni you mei you Renminbi huozhe Hanyuan?  
you have not have Chinese-currency OR<sub>[DIS]</sub> Korean-currency  
(Do you have Chinese currency or Korean currency?)

In summary, even if the disjuncts are prosodically prominent, the context can cancel their F-markings. This cancellation of F-marking allows dis-Qs in some context to be well-formed.

## 7. Conclusion

In this paper, I first introduced the discussion on the prosody of disjunctive questions in English. Second, based on the prosodic data of Chinese disjunctive questions, I demonstrated that the information structure of Chinese and English dis-Qs differ. Finally, I accounted for the low acceptability of Chinese dis-Qs as an instance of the prosodic effects on grammaticality.

### 〈Abbreviation〉

CL: classifier

EXP: experience aspect

OR<sub>[ALT-Q]</sub>: disjunctive coordinator for interrogatives

OR<sub>[DIS-Q]</sub>: disjunctive coordinator for declaratives

PERF: perfect

PR: proper noun

Q: question marker

NOM: nominalizer

### 〈Appendix〉

- I. a 张中斌还是汪东芬星期天修收音机? (All high flat tones)
- b 吴国华还是于宏杰重阳节回阳澄湖? (All rising tones)
- c 李小宝还是马楚颖五点整写演讲稿? (All low tones)
- d 赵树庆还是廖碧玉毕业后到教育部? (All falling tones)
- II. a 张中斌或者汪东芬星期天修收音机吗? (All high flat tones)
- b 吴国华或者于宏杰重阳节回阳澄湖吗? (All rising tones)

- c 李小宝或者马楚颖五点整写演讲稿吗? (All low tones)
- d 赵树庆或者廖碧玉毕业后到教育部吗? (All falling tones)
- III. a 张中斌还是汪东芬星期天修收音机? (All high flat tones)
- b 吴国华还是于宏杰重阳节回阳澄湖? (All rising tones)
- c 李小宝还是马楚颖五点整写演讲稿? (All low tones)
- d 赵树庆还是廖碧玉毕业后到教育部? (All falling tones)
- IV. a 张中斌或者汪东芬星期天修收音机吗? (All high flat tones)
- b 吴国华或者于宏杰重阳节回阳澄湖吗? (All rising tones)
- c 李小宝或者马楚颖五点整写演讲稿吗? (All low tones)
- d 赵树庆或者廖碧玉毕业后到教育部吗? (All falling tones)

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注

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- 2 *Ma* is an interrogative marker that forms a polar question. Notably, it does not form a *wh*-question.
  - i) Yingwen xi de xuesheng yao kao shenme (\*ma)?  
English department NOM student must take-exam what (\*<sub>Q</sub>)  
(What exams are students in the English department required to take?)
- 3 The reason that the disjunctive subjects in falling tone sentences differ from other instances might be caused by the different lexical importance of adverbs used in the examples. The adverb used in the falling tone sentences was “after graduation”, which sounds less important than other adverbs that denote more specific points in the timeline.