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Variations in the Role of Stress and Focus Marking in Tonal Languages: Evidence from Chinese [Num + Cl + *de* + NP] Expressions

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Abstract: The available literature disagrees on what the empirical generalizations should be regarding the conditions under which the marker *de* is possible after classifiers in Mandarin Chinese [Num + Cl + *de* + NP] expressions (Num for Number Projection, Cl for Classifier Projection). Online search also generates data contradicting generalizations presented in many relevant works. A field survey of speakers of "Taiwan Mandarin" vs. *Putonghua* "common language" (standard Mandarin in Chinese mainland) on their judgments about the acceptability of noun phrases [Num + Cl + *de* + NP] with the [Num + Cl] expression denoting a quantity reading (in contrast to a property reading) reveals that such disagreement could be due to dialectal differences: speakers of "Taiwan Mandarin" accepted a post-classifier *de* more than the *Putonghua* speakers, regardless of classifier

types. Research shows that such a dialectal variation is expected under an analysis that takes the occurrence of *de* as a phonological phrasing strategy to reflect focus on the quantity of the noun phrase, with different dialects in the Chinese language family differing in their use of this strategy due to the varying roles of stress (prosodic strong-weak contrast).

Keywords: focus-marking strategies; phonological phrasing; stress; tonal language; Chinese NPs with post-classifier *de*; quantity vs. property

1. Introduction

A prominent controversy in the grammatical studies of Chinese is the question of under what conditions the linker① *de* is acceptable after a classifier in a noun phrase [Num + Cl + NP] (Number Projection, Classifier Projection, and Noun Phrase). Different empirical generalizations on the possibility of *de* have been made (cf. Chao, 1968, Section 7.9; Li & Thompson, 1981: 104-113; Tai & Wang, 1990; Cheng & Sybesma, 1998, 1999; T'sou, 1976; Paris, 1979: 32; Tang, 2005: 444; Hsieh, 2008: 42; X.-P. Li, 2011, Section 3, Chapter 5; Her & Hsieh, 2010: 540; Her, 2012: 1223; Zhuang & Liu, 2012; Y.-H. A. Li, 2013: 101-105; Zhang, 2013: 79-80 and Section 5.5, among others). Proposals to account for the possibility or impossibility of *de* in the works just cited range from what occupies the Num or Cl position, whether the Num and Cl form a

① There have been different terms used for the grammatical marker *de*, because of its multiple usages in Chinese. Zhu (1961) is the first one describing in great details the multiple functions of *de*. Chao (1968, Section 5.3.6., Chapter 5) further expands the coverage and how the term "linker" or "particle" is used. Paris (1979), Li & Thompson (1981: 113-116) describe different usages of *de* within nominal phrases and use terms such as "nominalizer" or "particle". The term "modification marker" has been used widely but we cannot trace the origin of this term. The term "linker" was used in Dikken (2006) in relation to a predication relation. The use of "linker" in this paper does not carry any analytical or theoretical assumptions or claims.

constituent, to what semantic or prosodic information is conveyed by the presence or absence of *de*. In addition to the disagreement among published works on what the correct empirical generalization regarding the distribution and grammatical properties of *de* should be, online search generates data contradicting the empirical claims made in many of the relevant works. Such disagreement on data judgments needs to be addressed in order that adequate empirical generalizations can be identified and a proper analysis formed. It will be shown, through a field survey of data judgment on relevant expressions by speakers from different regions, that such disagreement is due to dialectal variations. The result of the field survey shows that "Taiwan Mandarin" speakers accepted the use of *de* in [Num + Cl + *de* + NP] more freely than speakers from Chinese mainland speaking *Putonghua*, the standard variety of Chinese and official language in Chinese mainland, whose pronunciation is based on the Beijing dialect. This difference between Chinese mainland and Taiwan Mandarin speakers gives us a clue to evaluating the available proposals for the distribution of *de* and supports a focus-prosody approach to the issue.

Focus in natural languages is commonly expressed through stress, as captured by Reinhart's (1995: 62) Stress-Focus Correspondence Principle.[①] Questions have been raised regarding how stress behaves in tonal languages[②] and how such languages encode focus phonologically. In a recent work that extensively discusses strategies to mark focus in different types of languages, Féry (2013: 720) observes that "It is not an accident that the languages predominantly using focus markers are tone languages with minimal use of intonation for pragmatic purposes. These languages cannot add tonal information like pitch accents or boundary tones as freely as intonation languages and are obliged to use other grammatical reflexes for the expression of focus." Pierrehumbert & Beckman (1988), Kanerva (1990), Downing et al. (2004), Koch (2008), among others, have proposed that, instead of stress, some languages use the strategy of phonological

① "Focus" in this work includes information focus and contrastive focus. It does not matter what kind of focus is involved, and focus can be marked in some overt manner. Prosodic prominence is a common manifestation of focus.

② For a recent summary and review of relevant issues, see Duanmu (2014).

phrasing to mark focus — making the focused part an independent unit in contrast to the unmarked pattern of being part of another phonological phrase.[①]

The data and analysis discussed in this work will show that stress (more precisely, prosodic strong-weak contrasts) and phonological phrasing strategies can play different roles in different varieties within a tonal language family — Chinese. The use of these strategies is related to the prominence of prosodic strong-weak contrasts and the way prosodic units are formed. Different varieties of a tonal language, Chinese in this case, may not exhibit the same behavior, resulting in differences in how focus is manifested. *Putonghua*, which has prominent prosodic strong-weak contrasts, naturally weakens some syllables in phrases or a syllable of bisyllabic words (such as pútao "grape", lǎopo "wife", etc.), and generally has a prosodically more prominent word in a phrase or a sentence (see Feng, 1995, for instance). Focus in this linguistic variety is commonly encoded via prosodic strong-weak contrasts. By comparison, "Taiwanese" (a Southern Min dialect of the Chinese language family, spoken in Taiwan) is prominent in the formation of tone groups, with each syllable within a tone group taking a full tone. The strategy of phonological phrasing in such a language becomes more important in focus encoding. In a noun phrase [Num + Cl + NP] in "Taiwanese", when the Num+Cl part is emphasized (regardless of whether it is information or contrastive focus), the linker[②] *e*, counterpart of the Mandarin *de*, can be inserted for proper phonological phrasing. "Taiwan Mandarin" (or "TM") has been deeply affected by "Taiwanese" in many ways (e.g., Kubler, 1985), including many phonological properties of "Taiwanese" adopted in

① The term "phonological phrase" in this work is a convenient label referring to the unit formed according to the strategy of phonological phrasing encoding focus. It is not used in contrast to other prosodic units such as Intonational Phrase, Intermediate Intonational Phrase, etc. (see, for instance, Pierrehumbert, 1980). The exact status of such a unit for the purpose of focus-marking is not a concern of this work.

② There have been different terms used for the grammatical marker *de*, because of its multiple usages in Chinese. Zhu (1961) is the first one describing in great details the multiple functions of *de*. Chao (1968, Section 5.3.6., Chapter 5) further expands the coverage and how the term "linker" or "particle" is used. Paris (1979), Li and Thompson (1981: 113-116) describe different usages of *de* within nominal phrases and use terms such as "nominalizer" or "particle". The term "modification marker" has been used widely, but I cannot trace the origin of this term. The term "linker" was used in Dikken (2006) in relation to a predication relation. The use of "linker" in this paper does not carry any analytical or theoretical assumptions or claims.

"Taiwan Mandarin". Not surprisingly, the phonological phrasing strategy is also more commonly used in "TM". Such differences in the prominent use of focus encoding in the two varieties of Mandarin are demonstrated by the distribution of the linker *de* within noun phrases, as supported by the result of a field survey among college and graduate students speaking "TM" vs. *Putonghua*, which shows significant differences in accepting the linker *de* in noun phrases of the form [Num + Cl + *de* + NP] between the two groups.[①] Such a difference among different varieties of Chinese not only provides a better understanding of the controversies in the literature regarding the acceptability of noun phrases of the form [Num + Cl + *de* + NP], but also helps evaluate the available analyses proposed for the construction.

Our discussion will begin in Section 2 with a brief description of the main properties of the construction in question [Num + Cl + *de* + NP]. Then, Section 3 discusses the disagreement on data in the literature; Section 4 shows that, indeed, college and graduate students from Chinese mainland and Taiwan do differ in their acceptability of [Num + Cl + *de* + NP], according to field surveys conducted in Taiwan, Chinese mainland, and Hong Kong (in college classes with students mostly from Chinese mainland); Section 5 shows that this difference is not accounted for by all the analyses proposed in the literature except an analysis like the one in Y.-H. A. Li (2013) and Li & Feng (2015), which treats *de* as a marker for phonological phrasing to encode focus and considers the important factor of dialectal variation in how focus is manifested; Section 6 discusses directions of further research and concludes the paper.

2. Major properties of [Num + Cl + *de* + NP]

This section briefly summarizes the main properties of [Num + Cl + *de* + NP] that must be considered by an adequate analysis of this construction, illustrated as below:

① Different dialect groups, such as Southern Min (including "Taiwanese"), Northern Wu, Southern Wu, etc. have different tone group formation and sandhi rules (see, a good recent summary and review by Zhang, 2014). It would be important to compare focus-marking strategies in these groups, which, unfortunately, is outside the scope of this paper.

（1）三磅的西瓜

sān-bàng de xīguā

three-pound DE[①] watermelon

“three pounds of watermelon(s)”[②]

“three-pound watermelon”

As indicated by the translation, the expression in (1) has two interpretations. One is about the quantity of watermelon in terms of weight — watermelon of the quantity of three pounds. Let us refer to this interpretation as “quantity reading”. The other denotes the kind of watermelon whose property can be expressed in terms of its weight — the kind of three-pound watermelon. This interpretation will be referred to as “property reading”. The two readings can be more clearly distinguished in contexts favoring one reading or the other. For instance, an adverb like y!g7ng “altogether” requires the occurrence of a quantity expression. The following example allows only a quantity reading:

（2）他一共吃了三磅的西瓜。

Tā yígòng chīle sān-bàng de xīguā.

he altogether ate three-pound DE watermelon

“He ate three pounds of watermelon altogether.”

Similarly, the following example about a person’s eating capacity favors a quantity reading:

（3）他很会吃；十分钟就吃了三磅的西瓜。

Tā hěn huì chī; shí-fēn zhōng jiù chī-le sān-bàng de xīguā.

he very capable eat ten-minute then eat-LE three-pound DE watermelon

“He is good at eating. He ate three pounds of watermelon in 10 minutes.”

① The marker *de*, the subject of this paper, will simply be glossed as DE. The grammatical marker *le* is also glossed as LE. When it is attached to a verb, it can be a perfective aspect marker. When it is at the end of a sentence, it expresses change of state. When a sentence ends with V-*le*, it potentially has the combination of the two functions.

② “Watermelon” as a noun can be countable or uncountable. It does not matter if whole watermelons or pieces of watermelon are in question when what is expressed is the quantity of three pounds. Therefore, the plural morpheme –*s* is in parentheses in this example. However, for the sake of clearer presentation, the optional –*s* will not appear again in the rest of the paper.

A property-reading Num + Cl expression can occur with another Num + Cl, as illustrated in (4) below.

（4）他拿了一个三磅的西瓜。

Tā ná-le yí-ge sān-bàng de xīguā.

he take-LE one-CL three-pound DE watermelon

"He took a three-pound watermelon."

In this example, ge is a generic or default classifier and is the classifier to count watermelons. The Num + Cl expression "three pound" is a modifying expression describing the property of the following noun, just like an adjectival phrase or a relative clause modifying an NP — the watermelon in question is a three-pound type. Such a modifier, just like other nominal modifiers in Chinese, can occur before or after unit words (classifiers) — yí-ge in the example above and the one below with yí-ge and "three-pound" changing their ordering:

（5）他拿了三磅的一个西瓜。

Tā ná-le sān-bàng de yí-ge xīguā.

he take-LE three-pound DE one-CL watermelon

"He took a three-pound watermelon."

The two readings, quantity vs. property, can be further distinguished in the context where the NP following *de* is not present overtly [Num + Cl + *de* + ____] (conveniently referred to as "NP-ellipsis"), which can be due to deletion of the NP or base-generation of an empty element.[①] In the context of NP-ellipsis, only the property reading is available, illustrated by the following examples.

（6）a. 西瓜，他要三磅的，我要五磅的。

Xīguā, tā yào sān-bàng de, wǒ yào wǔ-bàng de. —property reading

watermelon he want three-pound DE I want five-pound DE

"Watermelons, he wants three-pound ones, and I want five-pound ones."

① The term "NP-ellipsis" is not intended to mean derivation by ellipsis or deletion. It simply means the NP position is not occupied by an overt noun phrase. See Y.-H. A. Li (2014) for relevant issues and analyses for NP-ellipsis in Chinese.

b. 我，西瓜要三磅的。

Wǒ, xīguā yào sān-bàng de. —property reading

I watermelon want three-pound DE

“I, watermelons, want three-pound ones.”

c. 西瓜，把三磅的卖完的人不多。

Xīguā, bǎ sān-bàng de mài-wán de rén bù duō. —property reading

watermelon BA three-pound DE sell-finish DE people not many

“Watermelons, the people that sold off three-pound ones were not many.”

Under the quantity reading, the NP in [Num + Cl (+ *de*) + NP] can be null only if *de* does not appear:

（7）a. 西瓜，他要三磅（*的），我要五磅（*的）。

Xīguā, tā yào sān-bàng (*de), wǒ yào wǔ-bàng (*de). —quantity reading

watermelon he want three-pound I want five-pound

“Watermelon, he wants three pounds, and I want five pounds.”

b. 他要三磅的西瓜，我要五磅（*的）。

Tā yào sān-bàng de xīguā, wǒ yào wǔ-bàng (*de). —quantity reading

he want three-pound DE watermelon I want five-pound

“He wants three pounds of watermelon, and I want five pounds.”

（8a–c）Summarize the facts presented so far.

（8）In a noun phrase [Num + Cl (+ *de*) + NP] in Mandarin Chinese

a. The Num + Cl expresses the quantity or describes the property of the NP — quantity reading vs. property reading.

b. NP-ellipsis following *de* is possible only with the property reading.

c. NP-ellipsis is impossible under the quantity reading if *de* is present.

3. The acceptability of a post-classifier *de*?

The examples above use the classifier bàng “pound”, which is a unit to measure the weight of entities. Chinese has different kinds of unit words to measure or count entities. Chao (1968, Section 7.9) distinguishes 9 kinds of measure words, among which

are classifiers or individual measures (such as the generic gè, or tiáo for long and thin objects), group measures (such as qún "group"), partitive measures (such as sānf8nzhīyī "one-third"), container measures (such as bēi "cup"), standard measures (such as gōngjīn "kilo"), etc. Gradually, the distinction between the two terms "classifier" and "measure" became more frequently made as the two major types of unit words, although "classifier" is often used ambiguously to refer only to individual measures as in Chao (narrow sense), or any unit word occurring after Num (broad sense) (see, for instance, Li & Thompson, 1981:104-113; Tai & Wang, 1990, among others). Cheng and Sybesma (1998, 1999) use the term "massifier" (for mass classifier) and "count-classifier" ① to refer to the two major types.② For convenience, this work adopts these two terms and use "classifier" as a generic term covering both massifiers and count-classifiers. What is pertinent to this work is the observation made in Chao (1968: 289-290) that *de* is not inserted if a unit word is a count-classifier or if there is a demonstrative: * liǎng-tiáo *de* shé "two-CL DE snake", *nà-bàng *de* ròu "that-CL DE meat". In contrast, when a classifier is a massifier, *de* is optional. The same observation is made in T'sou (1976), Paris (1979: 32), among others. Cheng and Sybesma (1998: 388, 1999: 515) highlight this distinction and make the (im) possibility of *de* following a classifier as a diagnostic for distinguishing count-classifiers and massifiers. According to Cheng and Sybesma (1999: 515), "a modification marker *de* can intervene in [massifier + N], but not in [count-classifier + N] sequences".

However, many works have subsequently presented counterexamples showing that the possibility of *de* does not distinguish between massifiers and count-classifiers. For instance, Tang (2005: 444), Hsieh (2008: 42), X.-P. Li (2011, Chapter 5, Section 3), Her

① Following Tai & Wang (1990), Croft (1994), Peyraube (1998), among others, Cheng and Sybesma (1998, 1999) roughly distinguish classifiers into two groups: classifiers that create a unit of measure, and those that simply name the unit in which the entity denoted by the noun naturally occurs. They refer to the classifiers that create a unit of measure as massifiers (short for mass classifiers), and to the ones that simply name the unit of natural semantic portioning as count-classifiers (in contrast to terminological distinctions used in others such as Tai and Wang's measure vs. classifier).

② Zhang (2013) makes finer distinctions of unit words. However, for the purpose of this work, the distinction between count-classifier and massifier suffices.

& Hsieh (2010: 540), Her (2012: 1223), Y.-H. A. Li (2013: 101-105), and Zhang (2013: 79-80 and Section 5.5), among others, show that *de* may follow all types of unit words. Nonetheless, some of these authors note that the use of *de* with count-classifiers is more restricted than with massifiers, although they do not agree on what the restrictions are. Tang notes that information weight plays a role in determining when *de* is possible — *de* is allowed to follow a count-classifier and more complex numbers, or when complex and heavy modifiers are involved. Her & Hsieh present a similar observation: *de* is allowed with computationally complex numbers. On the other hand, Hsieh notes that *de* is used with number expressions of indeterminacy or approximation. She also notes emphasis plays a role: *de* may follow a count-classifier when the quantity is emphasized. Zhang notes that *de* is possible with all types of classifiers and that the context for *de* to show up has nothing to do with the count-mass contrast. She suggests that *de* can be a boundary marker between phrases or when quantity is emphasized. X.-P. Li allows *de* and classifiers with certain numerals (such as round numerals) and in certain contexts, essentially when a unit word has a measure function. Y.-H. A. Li lists varieties of examples from various webpages showing that count-classifiers are followed by *de* [see (13a-c) below for instance].

Sybesma (1992), cited in Cheng (2012), further made an observation that if the typical quantity-measuring massifiers were not used in the quantity measure sense, *de* was not possible. This was illustrated by the following examples with *de* and a massifier unacceptable because the context was for an individual (entity) reading, rather than a measure reading. (9a) is used, not (9b), to order a glass of wine in a restaurant: [Cheng, 2012: (25a, b)].

（9）a. 一杯酒

yì-bēi jiǔ

one-cup wine

b. 一杯的酒

yì-bēi de jiǔ

one-cup DE wine

The following example appeared in Sybesma [1992: 107, ex. (100a, b)], quoted in Cheng (2012), her (10a-b).

（10）a. # 他用小碗喝了三杯酒。

Tā yòng xiǎo-wǎn hē-le sān-bēi jiǔ.

he with small-bowl drink-LE three-cup liquor

"He drank three cups of liquor from a small bowl."

b. 他用小碗喝了三杯（子）的酒。

Tā yòng xiǎo-wǎn hē-le sān-bēi（zi）-de jiǔ.

he with small-bowl drink-LE three cup-DE liquor

"He drank three cups of liquor from a small bowl."

According to these authors, the sentence in (10a) is gibberish, indicated by #, but (10b) is not. In (10a), when bēi "cup" is used without *de*, the default interpretation is that the wine is consumed from the cup: the actual cup/glass is part of the scene. In contrast, when bēi "cup" is used with *de*, as in (10b), the wine need not be consumed from the cup/glass; in this case, bēi "cup" merely provides a measure for the amount of liquor that was consumed.

Unfortunately, it is not always easy to distinguish the so-called measure reading and the individual reading through the use of *de*. For the example above, when the scenario is a bowl of wine, whose content is equivalent to the amount of three cups of wine, then, the measure reading is clear — cups do not even exist in the scenario. However, when cups are present in the scenario, the distinction between the measure and individual readings is not clear.

Consider this scenario: I am ordered by my doctor to drink three cups of wine every day. The doctor and I must both have the quantity in mind, rather than the concrete entities of cups.

Under this scenario, the following sentence is acceptable, although *de* does not appear, regardless of whether cups are present in the context:

（11）我今天应该是已经喝了三杯酒了。可是因为我用小碗喝，量不准，所以我没有把握说我已经喝了三杯酒。

Wǒ jīntiān yīnggāi shì yǐjīng hē-le sān-bēi jiǔ le. Kěshì yīnwèi wǒ yòng xiǎowǎn hē, liáng bù zhǔn, suǒyǐ wǒ méiyǒu bǎwò shuō wǒ yǐjīng hē-le sān-bēi jiǔ.

I today should be already drink-LE three-cup liquor LE but because I use small bowl drink measure not accurate so I not.have certain say I already drink-LE three cup liquor

"I should have already drunk three cups of liquor today. However, because I used a small bowl to drink and the quantity could not be measured accurately, I cannot say for certain that I already drank three cups of liquor."

Conversely, in the example below, a physical glass or a physical bottle can be intended and *de* is still used. This sentence can be uttered in this scenario: I know the restaurant that I am at generally serves Cola in a glass. But I know the new Cola bottle looks nice and I want to take it back as a souvenir. Therefore, I ordered a bottle of Cola specifically. Nevertheless, the waiter brought a glass of Cola. Seeing the glass of Cola, I can say:

（12）我点的是一瓶的可乐，不是一杯的可乐。

Wǒ diǎn de shì yì-píng de kělè, búshì yì-bēi de kělè.

I order DE be one-bottle DE Cola not be one-cup DE Cola

"What I ordered was a bottle of Cola, not a glass of Cola."

This scenario indicates that contrast or emphasis on the Num + Cl expression is the key, which is suggested in the works of Hsieh (2008), Zhang (2013), Jin (2012)[①] and Y.-H. A. Li (2013), among others. Indeed, Li highlights the role of focus (either contrastive or informative focus) and claims that it is the motivation for *de*-insertion in [Num + Cl + *de* + NP] expressions with a quantity reading, regardless of whether the classifier is a massifier or a count-classifier. It is therefore not surprising to find examples online, such as the following ones, which include small, non-heavy, and non-complex numbers with count-classifiers, contrary to the empirical generalizations made in most of the

① Jin (2012) does not include count-classifiers in her discussion.

relevant works such as Cheng & Sybesma (1998, 1999), Tang (2005), Hsieh (2008), X.-P. Li (2011), Her & Hsieh (2010), Cheng (2012), Her (2012), and Zhang (2013), as noted earlier[①]:

（13）a. 再来的就是一大个的牛心。

（http://gourmetkc.blogspot.jp/2011/09/blog-post_27.html）

Zài lái de jiù shì yí-dà-g- de niú xīn.

next come then be one-big-CL DE cow heart

"The one that came next was a big cow heart."

b. 司法考试三大本的新书，每年什么时候出？

（http://zhidao.baidu.com/question/311309695.html）

Sīfǎ kǎoshì sān-dà-běn de xīnshū, měinián shénme shíhòu chū?

judicial exam three-big-CL DE new book every year what time out

"When are the three big volumes of new judicial exam books published every year?"

c. 平均每 40 人才能占有一台的电视机。

（http://baike.baidu.com/view/4509271.htm）

Píngjūn měi sìshí rén cái néng zhànyǒu yì-tái de diànshì jī.

average every 40 people only can own one-CL DE TV set

"On average, only every 40 people can own a TV set."

d. 我们 20 件的家具，只卖了两万块钱[②]。

（http://big5.chī nanews.com:89/cj/2011/06-13/3107200.shtml）

① These webpages were accessed in April, 2012. The examples are in Chinese characters, and are copied directly here.

② Cheng (2012) separates a noun like *jiājù* "furniture" from other massifiers, citing its impossibility of occurring with *de*. She notes that "the classifiers which are used for *furniture*—nouns can be modified by *small* and *big*, though they cannot be followed by *de*. In other words, classifiers associated with *furniture* nouns differ from typical count-classifiers, which cannot be modified by *big* or *small*. However, these classifiers are not compatible with quantity measure." (Section 11.4.2). Nonetheless, examples like (13d) show that *de* is possible with *furniture* nouns, as long as the quantity reading is the intended information focus — the amount of money from the amount of furniture sold in this example. Many other examples illustrating the possibility of *furniture*-type classifiers with *de* can be found online, which will not be copied here because of the limited space.

Wǒmen èrshí-jiàn de jiājù, zhǐ mài-le liǎngwàn kuài qián.

we 20-CL DE furniture only sell-LE 20K *yuan* money

"Our 20 pieces of furniture was only sold for twenty thousand *yuan*."

Examples of the forms in (13 a–d) all involve nominal expressions with count-classifiers and simple numbers. Nonetheless, *de* is found in these nominal expressions. They are acceptable due to the fact that the quantity expression [Num + Cl] is the focus, as suggested in the works mentioned above. Such a focus accounting for the occurrence of *de* should also lead us to predict that, contrary to the observation made in Chao (1968: 289-290) (also discussed in Cheng & Sybesma, 1998:393; Zhang, 2013, Section 5.5.2.), a determiner can be present even when *de* appears after a count-classifier, if the quantity expressed by the Num + Cl expression is the focus. This prediction is born out. Examples like the following one is found online:

（14）这三大本的史诗巨著，涵盖的议题极其庞大。

（https://neganchor.com/2015/02/19/80/①）

Zhè sān-dà-běn de shǐshī jùzhù, hángài de yìtí jíqí pángdà.

these three-big-CL DE epic cover DE issue enormous

"These three big epics, the issues covered are enormous."

In this example, the quantity of the epic is the focus and *de* is possible. Even Chao's example mentioned above *nà-bàng de ròu, "that-CL DE meat", can be made acceptable if Num is overt and quantity is the focus, as in the following example (the quantity is such that it is questionable anyone is able to finish eating it). It is expected that the Num cannot be empty as in Chao's example, because it receives focus.

（15）这三磅的肉，有谁吃得完？

Zhè sān-bàng de ròu, yǒu shéi chī-de-wán?

this three-pound DE meat have who eat-DE-finish

"This meat of three pounds (in quantity), who can finish eating it?"

Briefly summing up, many examples of the form [Num + Cl + *de* + NP] are found with Num being simple numbers and Cl being count-classifiers — contrary to the

① This was accessed on 7/7/2016.

claim in the literature that such cases are unacceptable. Importantly, the occurrence of *de* in such expressions is possible under the quantity reading. Nonetheless, even though these examples are found online, produced naturally by speakers of Mandarin, the judgment is not shared by some other Mandarin speakers that we consulted with in person. Our informal polling of the judgment on the acceptability of the sentences in (13–14) revealed disagreement among native Mandarin speakers. Indeed, a larger scale field survey confirms the disagreement. Nevertheless, the important discovery is that the disagreement reflects the separation of two groups: speakers from Taiwan and from Chinese mainland.

4. Variation in speakers' judgment

Let us begin with some interesting examples in "Taiwanese" found in the corpus established by Prof. Chinfa Lien of Taiwan Tsing Hua University. The sentences prefixed with (T) in (16–20) appear in the corpus. Their Mandarin counterparts are given right below them with the prefix (M) and romanization of the Mandarin sentences. Glosses and translations are as follows:

（16）(T) 无变的只有 [彼两条的铁支路]。[①]

(M) 没变的只有 [那两条的铁路]。

Méibiàn de zhǐyǒu [nà-liǎng-tiáo de tiělù].

not change DE only have that-two-CL DE railway

"Not changed were only those two railways."

（17）(T) 但是 [这二只的大山猪] 根本来无信伊这套。[②]

(M) 但是 [这两只的大山猪] 根本不信他这套。

Dànshì [zhè-liǎng-zhī de dà shānzhū] gēnběn búxìn tā zhè-tào.

but this-two-CL DE big wild boar at all not trust he this stuff

"But these two big wild boars did not trust this stuff of his at all."

① The example is from a 1988 soap opera in Taiwan *Are There Wine Bottles for Sale*（华视连续剧《酒瓶可卖否》）.

② The example is from *Southern Min Stories II of Xinshe County*, 1997, by Wanchuan Hu and Qingwen Huang, published by Taichung County Cultural Center in Fengyuan《新社乡闽南语故事集二》, 胡万川、黄晴文 . 丰原市：台中县立文化中心 .

（18）(T) 内底有 [六台的货运][①]。

(M) 里面有 [六台的货运]。

Lǐmiàn yǒu [liù-tái de huòyùn].

inside have six-CL DE truck

“There were six trucks inside.”

（19）(T) [七只的鸟仔] 飞出来[②]。

(M) [七只的鸟儿] 飞出来。

[Qī-zhī de niǎor] fēi chūlái.

seven-CL DE bird fly out

“Seven birds flew out.”

（20）(T) 因为 [一条的蟒蛇] 来听我诵经。

(M) 因为 [一条的蟒蛇]　来听我诵经。

Yīnwèi [yì-tiáo de mǎngshé] lái tīng wǒ sòngjīng.

because one-CL DE python come listen me chant scripture

“Because a python came to listen to my chanting of scriptures.”

These examples with a post-classifier *de* are especially interesting because they all involve count-classifiers, small numbers, and contain demonstratives in some of them — counterexamples to the empirical generalizations made in most of the relevant literature (cf. the brief review of the available works in Section 3). When the Mandarin sentences in (16–20) were presented to the speakers from Chinese mainland (CM), they either rejected the sentences completely or were hesitant to fully accept them. On the other hand, “TM” speakers showed a much higher degree of acceptance of the Mandarin sentences. Accordingly, a field survey was conducted with 16 college and graduate students in Chinese mainland (to be referred to as the CM group below), 89 college students from Hong Kong Polytechnic University, and college students in Taiwan — 36 students from Taiwan Sun Yat-Sen University (hereafter referred to as “A”), 46

① The example is from *Nantou County Stories I*, 2003, by Wanchuan Hu, published by Nantou Cultural Bureau, Nantou.《南投县福佬故事集一》, 胡万川 . 南投市：南投县文化局 .

② This example and the next are from *Daan Southern Min Stories I*, 1998, by Wanchuan Hu, published by Taichung County Cultural Center in Fengyuan《大安乡闽南语故事集一》, 胡万川. 丰原市：台中县立文化中心 .

students from Taiwan Kaohsiung Normal University (hereafter referred to as "B"), 46 students from Taiwan Normal University (hereafter referred to as "C"), and 12 students from Taiwan Tsing Hua University (hereafter referred to as "D"). Subjects were asked to describe their linguistic backgrounds in regard to the Mandarin varieties they know, and the percentage of daily use of each of the language varieties they know. The linguistic background information provided by the subjects showed that those from CM and HK did not speak "TM" and the students from Taiwan all spoke "TM". The HK group consisted of five students from Hong Kong and 84 from Chinese mainland. Among the 84 CM students, one each listed the following as their most frequently used and most comfortable language: Chaozhou dialect, Suzhou dialect, Wuhan dialect, Hubei dialect, Tianjin dialect, Shandong dialect, two listed Beijing dialect; three listed Sichuan dialect, and the rest listed *Putonghua* as their most frequently used and most comfortable language. The CM group also listed Mandarin as the most frequently used and most comfortable language, except one with Zhoukou dialect and one, Pingxiang dialect. None of the subjects in the CM and HK group were from the Southern Min area.[①] The groups from Taiwan all listed *Guoyu* ("National Language", "国语"), Mandarin or "Taiwanese" as the most frequently used and most comfortable language, except three. The three were deleted from the data.

The questionnaire contains 30 sentences with noun phrases of the form [Num + Cl + *de* + NP]. The quantity reading is facilitated by the meanings of the sentences, such as sentences about capacity (the quantity of food/drinks consumed within a period of time or a quantity contrasted with another quantity). There are seven examples with massifiers (píng "bottle", gōngjīn "kilo", bàng "pound"). The others are count-classifiers, including the counting word for furniture jiàn. The subjects were asked to assign a number from 0–5 according to their acceptability of the sentences, five as sounding the best to them and zero being the worst. They were also asked to rewrite the

① Recall that "Taiwanese" is a variety of the Southern Min dialect, which has the prosodic property as described for "Taiwanese" in Section 1. We asked help from Haoze Li of the Chinese University of Hong Kong to check with his friends. His informal survey yielded similar results: speakers from Southern Min accepted the post-classifier *de* more than non-Southern Min speakers did.

sentences if they felt the sentences were not quite acceptable. The responses all pointed towards the problem with *de* (their rewriting of the sentences did not contain *de* or they simply said the expression with *de* was strange). The acceptability numbers for each sentence assigned by each subject from the same group were added up and divided by the number of subjects in that group — deriving the average acceptability numbers for each sentence by the subjects from the same university. The following numbers are the result for each group. Table 1 is for the cases with count-classifiers; and Table 2, massifiers.

（21）Table 1

CM	HK	C	A	B	D
1.062833	1.824333	3.441667	3.282333	3.646167	3.106167

（22）Table 2

CM	HK	C	A	B	D
3.2834	3.2562	4.3762	4.086	4.1516	3.8908

The numbers in these two tables show interesting differences between the subjects from CM/HK (recall that this specific HK group is essentially CM) and those from Taiwan (A, B, C, D). Therefore, they were placed in two groups — CM and HK in one group, and Taiwan in the other. A t-test was run and the result showed that the difference between the two groups was significant — the Taiwan group accepted the sentences significantly more than the group from CM+HK.[①] Below are a few examples with the acceptability numbers by each group.

（23）平均每 40 人才能占有一台的电视机!

Píngjūn měi sìshí rén cái néng zhànyǒu yì-tái de diànshì-jī!

average every 40 people only can own one-CL DE TV-set

“On average, only every 40 people can own a TV set.”

CM	HK	D	C	A	B
1.000	1.646	3.182	3.300	3.152	3.343

① The statistical analysis was carried out by Xin Zhao, to whom we are grateful. Unfortunately, he is no longer with us and we dedicate this part of the work to him.

（24）他一口气能吃四十个的包子!

Tā yìkǒuqì néng chī sìshí-ge de bāozi!

he one. breath can eat 40-CL DE bun

“He can eat 40 buns in one breath.”

CM	HK	D	C	A	B
1.188	1.699	3.273	2.900	2.804	3.714

（25）他们才五分钟就吃了两个的巧克力蛋糕。

Tāmen cái wǔ-fēnzhōng jiù chī-le liǎng-ge de qiǎokèlì dàngāo.

they only five-minute then eat-LE two-CL DE chocolate cake

“They finished two chocolate cakes in only five minutes.”

CM	HK	D	C	A	B
0.563	1.408	2.091	2.900	3.130	3.412

（26）他把两条的纵贯铁路都详细地画出来了。

Tā bǎ liǎng-tiáo de zòngguàn tiělù dōu xiángxì-di huà-chūlái le.

he BA two-CL DE north.south.through railway both carefully draw-out LE

“He carefully drew the two railways through the north and south.”

CM	HK	D	C	A	B
0.500	1.972	2.545	4.150	3.444	3.676

（27）这次我们请了十五位的退休教师。

Zhè-cì wǒmen qǐng-le shíwǔ-wèi de tuìxiū jiàoshī.

this-time we invite-LE fifteen-CL DE retired teacher

“This time we invited 15 retired teachers.”

CM	HK	D	C	A	B
0.500	1.994	4.091	4.100	4.130	4.229

（28）我们 20 件的家具，才卖了两万块钱。

Wǒmen èrshí-jiàn de jiājù, cái mài-le liǎng-wàn kuài qián.

we 20-CL DE furniture only sell-LE 20K *yuan* money

“Our twenty pieces of furniture was only sold for twenty thousand *yuan*.”

CM	HK	D	C	A	B
2.688	2.926	3.909	4.250	3.652	3.914

（29）我一个晚上就看了三篇的博士论文，再多一篇的硕士论文算什么？

Wǒ yí-ge wǎnshàng jiù kàn-le sān-piān de bóshì lùnwén,

I one-CL evening then read-LE three-CL DE doctor thesis

zài duō yì-piān de shuòshì lùnwén suàn shénme?

again more one-CL DE master thesis count what

“I read three doctoral theses in one night, what’s with one more master’s thesis?”

CM	HK	D	C	A	B
1.750	2.460	3.182	4.300	3.739	4.000

（30）他才看了两篇的博士论文，就觉得很累。

Tā cái kàn-le liǎng-piān de bóshì lùnwén, jiù juéde hěn lèi.

he only read-LE two-CL DE doctor thesis then feel very tired

“He only read two doctoral theses and already felt tired.”

CM	HK	D	C	A	B
1.875	3.052	4.091	4.250	4.348	4.486

Even for noun phrases with massifiers, the difference was still significant:

（31）我刚喝了三瓶的可乐。

Wǒ gāng hē-le sān-píng de kělè.

I just drink-LE three-bottle DE Cola

“I just drank three bottles of Cola.”

CM	HK	D	C	A	NKHU
2.594	2.421	3.455	4.750	3.978	3.971

These interesting differences in acceptability judgements between “TM” speakers and CM speakers can help us decide on a proper analysis for the pattern [Num + Cl + *de* + NP], as we show next.

5. Analyses proposed

The contrast between “TM” and CM speakers’ judgments described above helps us understand the complexity of judging the acceptability of relevant expressions—focus

and strategies to mark focus in different varieties of Mandarin must be considered.

Sections 2–3 show that [Num + Cl + *de* + NP] can have either the quantity reading or the property reading. Only the latter allows NP-ellipsis following *de*. *De* cannot be present when NP-ellipsis applies to the nominal expressions with the quantity reading, as summarized in (8). In addition, the online data show that *de* can follow count-classifiers and the associated Num can be a small, simple one, such as the examples in (13 a–d), when the quantity reading is intended. This means that an adequate analysis for the construction [Num + Cl + *de* + NP] needs to address the following issues, regardless of classifier types: (i) why *de* is possible in nominal expressions with the quantity reading; (ii) why an empty NP following *de* (NP-ellipsis) is possible under the property reading but impossible under the quantity reading.

In the case of property readings, Num + Cl expressions are modifiers describing properties of entities and can be analyzed in the same way as other nominal modification structures, *de* serving as the modification marker and licensing NP-ellipsis (see, for instance, Aoun & Li, 2003, Chapters 5 and 6; Y.-H. A. Li, 2008). However, it has been more controversial what the analysis should be for the construction with quantity interpretations. The following paragraphs briefly review the major proposals in the literature and show that only an analysis along the line of Y.-H. A. Li (2013) and Li & Feng (2015) accommodates the dialectal variation described in Section 4.

Cheng and Sybesma (1999) equate the case of *de* following massifiers with the one following relative clauses. That is, for them, such a Num + Cl expression is essentially a relative clause modifying the following noun. The *de* following a massifier is just like the modification marker *de* in complex NPs with relative clauses. However, their work does not discuss why relative clauses and the Num + Cl expressions in question differ in allowing NP-ellipsis after *de*. The dialectal variation described in Section 4 is not expected, either. X. P. Li (2011), Li & Rothstein (2012), Zhang (2013, Chapter 6) propose that *de* can follow measure phrases or mark phrasal boundaries. The impossibility of NP-ellipsis could simply be the failure of a certain head occupied by *de* not licensing NP-ellipsis, in contrast to those cases where *de* occupies an appropriate head and licenses NP-ellipsis. However, it is not clear why the distinction should

exist. Again, the noted dialectal variation is not captured. A linker analysis along the line of Dikken (2006) is adopted in Jiang (2012). However, such an analysis does not distinguish different types of *de* in regard to the possibility of NP-ellipsis, nor predicts dialectal variations. Jin (2012), which does not include cases when Cl is a count-classifier, proposes that the post-Cl *de* heads a focus projection, encoding the fact that focus is on the quantity expression (and our work shares this insight regarding focus on quantity expressions), although the (im)possibilities of NP-ellipsis need to be stipulated in this work and, again, dialectal variation was not a concern in that work. Tang's works (1993, 2005) propose an insertion operation, but there is no discussion on what the insertion operation is and how it works (see Huang, 1982 for *de* inserted between two NPs). Tsai (2011) provides a formal structural licensing account for NP-ellipsis. He distinguishes two kinds of *de*, one is a syntactic head and the other is marked as a clitic attached to the preceding phrase. The former is the one for the construction involving modification (such as by relative clauses) and the property reading discussed in Section 2; NP-ellipsis is possible. The latter is for the quantity reading in question and NP-ellipsis is not possible. However, there is no discussion on why the latter has to be a clitic or exactly what a clitic is syntactically (see, for instance, a more recent collection Salvesen & Helland, 2013, allowing the option of a clitic being a head syntactically). Many other options have been proposed, such as *de* being a complementizer, a determiner, a conjunction, or a head heading its own functional projection *de*P (e.g., Simpson, 2005; Tang, 1993, 2005; Tang, 2006; Sio, 2006; Y.-H. A. Li, 2008; Paul, 2012, among many others). Without going into details of these analyses, the challenge has been that the impossibility of NP-ellipsis in the construction of quantity readings remains a stipulation — either a certain head is stipulated as not licensing NP-ellipsis or *de* is assumed to be a non-head, in contrast to the cases when *de* is an appropriate head licensing NP-ellipsis. Moreover, the dialectal variation described in the previous section was not discussed and was not expected.

A different line of analysis is provided in Zhuang & Liu (2012), Y.-H. A. Li (2013), and Li & Feng (2015). Zhuang & Liu (2012) suggest that *de* can be inserted in some cases for prosodic reasons. However, there is no discussion on what prosodic reasons

there might be. Y.-H. A. Li (2013), on the other hand, shows that *de* is inserted to encode focus on the Num-Cl expression within noun phrases — when focus is expressed by the strategy of phonological phrasing, *de* is inserted to serve the purpose. Evidence is mainly built from "Taiwanese" and TM, in contrast to "Beijing Mandarin". This analysis is briefly summarized below.

As mentioned briefly in Section 1, natural languages generally encode focus in some way. Stress or a prosodic strong-weak contrast is commonly used to mark focus, as demonstrated by the principle of stress-focus correspondence of Selkirk (1984), and Reinhart (1995). It is also possible to use the strategy of phonological phrasing — making the focused part an independent unit in contrast to the unmarked pattern of being part of another phonological phrase (see Pierrehumbert, 1980; Pierrehumbert & Beckman, 1988; Kanerva, 1990; Downing et al., 2004; Koch, 2008, among others, for phonological phrasing marking focus). Y.-H. A. Li (2013) and Li & Feng (2015) observe that "Beijing Mandarin" and "Taiwanese" utilize focus encoding strategies differently, due to their differences in the prominence of neutral-toned words and prosodic strong-weak contrasts. "Beijing Mandarin" is prominent in the use of neutral-toned words and strong-weak contrasts in phrases and sentences, as its frequently-used functional words are mostly in the neutral tone, one syllable of bisyllabic expressions tends to be weakened to the neutral tone, and phrases and sentences often show strong-weak contrasts between syllables (see Feng, 1995, 2018, for example). By comparison, "Taiwanese" has few neutral-toned words, does not weaken a syllable of bisyllabic expressions, nor distinguishes strong-weak contrasts between syllables in phrases and sentences prominently.[①] What is prominent in "Taiwanese" is the formation of tone

① A head, mostly a V head, normally not ending a tone group might do so and allow a short phrase following it to take the weakened neutral tone. Such neutral-toned syllables are outside the tone group. However, this phenomenon is not found with many other heads, such as classifiers, prepositions, conjunctions. In addition, weakening of syllables within noun phrases is arbitrary, when allowed in limited cases. For instance, expressions of the form [Family name + Title] allow the title expression to take the weakened tone when it is "Xiansheng" (such as *ng sengsiN*, "Huang Xiansheng", with *ng* "Huang" taking the juncture tone and *sengsiN* "Xiansheng" taking the neutral tone. However, this is possible only when the title is "Xiansheng". Other titles such as "Xiaojie", "furen", "jingli", etc., all take the full tone.

groups and tone sandhi within tone groups. Each phrase of a lexical category, NP and VP, is a tone group. Within a tone group, all syllables except the final one must take the context tone. The final syllable has the juncture tone.[①] That is, a context tone anticipates a subsequent syllable in the same tone group. Both context and juncture tones are full tones; i.e., neither of them is weakened. In other words, the prosodic strong-weak contrast is not prominent in "Taiwanese" although it is in "Beijing Mandarin".[②]

The prominent prosodic strong-weak contrast provides an important prosodic strategy to encode focus in "Beijing Mandarin". "Taiwanese", on the other hand, resorts to the strategy of phonological phrasing more. How does one focus on the Num-Cl expression within a noun phrase using the phonological phrasing strategy?

Tone grouping divides expressions into separate phonological units in "Taiwanese". For a [Num + Cl + NP] expression in "Taiwanese", the entire expression is a unit syntactically and phonologically. Syntactically, a classifier is a head taking the following NP as its complement and licenses its deletion (Num can be another head, see Tang, 1990; Li, 1999; among others). The syntactic structure means that, under normal circumstances, the entire expression is a single tone group {Num + Cl + NP} (tone groups marked by curly brackets), according to tone grouping rules. That is, every syllable but the final one in the group must take the context tone. Only the final syllable

① See Wang (1967), Hsieh (1970), Yip (1980), Chen (1987, 1996, 2000), Tsay (1994), Meyers & Tsay (2008), among many others, for the tone sandhi rules in "Taiwanese" or Southern Min: a sandhi tone is a "basic" or "citation" tone changed to a different tone according to its position in a tone group. There is no agreement on whether the tone of the syllable ending a tone group is a basic or sandhi tone. See Meyers & Tsay (2008) for a review and references. They suggest to label the alternate tone forms "juncture tone" and "context tone", rather than the more commonly used "basic tone" and "sandhi tone". According to them, "The tone alternations are between tones as they appear in juncture position (i.e. the right edge of a prosodic constituent called a tone group) and in context position (elsewhere)." (Meyers & Tsay, 2008: 50). To be neutral to the debate as it is irrelevant to this work, the paper adopts the terms "context" and "juncture tone".

② Interestingly, in a study by Xu, Chen & Wang (2012) investigating the production and perception of focus in "Taiwanese", "Taiwan Mandarin", and "Beijing Mandarin", the results showed clear evidence of post-focus compression in "Beijing Mandarin" but lack of it in "Taiwanese" and "Taiwan Mandarin". These authors note that "Taiwan Mandarin" seems to have lost post-focus compression due to close contact with "Taiwanese". Shyu (2010) in her experimental study showed that "Taiwan Mandarin" speakers, affected by "Taiwanese", did not associate focus with stress.

of the NP takes the juncture tone. When focus is on Num + Cl (quantity reading), these expressions should form a unit separate from the following NP, according to the phonological phrasing strategy. How can the separation be achieved, creating separate units to reflect focus?① There is a conflict between tone grouping according to syntactic structures and the requirement of phonological phrasing to mark focus: according to the syntactic structure [Num [+ Cl [+ NP]]], a classifier is a head taking the NP following it as its complement and must take the context tone (forming a tone group with the following NP); however, it should use the juncture tone in order to reflect the grouping of {Num + Cl} as a separate unit excluding the NP following it — focus encoding via the strategy of phonological phrasing. To resolve the conflict, the linker within noun phrases, *e*, the counterpart of Mandarin *de*, is inserted, as the linker in "Taiwanese" is always preceded by a syllable in the juncture tone (end of a tone group). The presence of *e* allows Num + Cl to be a phonological unit separate from the following NP: {Num + Cl} + *e* + NP. Just like all the instances with an overt NP in a noun phrase, the inserted *e* forms a tone group with the NP and takes the context tone: {{Num + Cl} + {*e* + NP}}.

The proposal of inserting *e* to resolve the conflict between the requirement of tone grouping rules according to syntactic structures and the encoding of focus via phonological phrasing is reminiscent of the P(rosodically motivated)-movement in Zubizarreta (1998), which is to resolve the conflict between the Nuclear Stress Rule and Focus Prominence Rule in the grammar. P-movement of a phrase creates a different word order that allows both rules to apply successfully. In addition, Zubizarreta notes that P-movement should be subject to the condition of Last Resort, like other movement operations. That is, it does not apply if it is not needed. In the same spirit, P-insertion of *e* should not apply when Num-Cl is followed by an empty NP, marking the Num-Cl the end of a phonological unit for the purpose of phonological phrasing. In other words, the Num + Cl part of a [Num + Cl + NP] expression is already a tone group by itself when the following NP is empty. [Also see Nunes' (2008) economy condition that enforces faithfulness between the lexical items present in the numeration and the

① An adjective can optionally occur before the classifier, but does not affect phonological phrasing. The adjective before the classifier is part of the tonal group containing the classifier.

lexical items present in the PF output.] This means that the apparent failure of *e* in the quantity reading construction licensing a null NP should actually be the non-application of *e*-insertion due to the lack of need to insert one. In contrast, in the cases where NP-ellipsis is possible with *de*, the *de* is base-generated.

In short, the impossibility of NP-ellipsis following *e* in "Taiwanese" quantity reading cases is due to the failure of *e* insertion, which is governed by the working of phonological phrasing and tone-grouping rules in this language.① The application of P-insertion is carried over to "Taiwan Mandarin" (abbreviated as "TM"), as "TM" exhibits strong similarity with "Taiwanese" in regard to prosody: "TM" does not naturally weaken a syllable in bisyllabic words or make a part in a phrase or a sentence more prominent than the others prosodically [see Note (25) regarding the loss of post-focus compression in "Taiwanese" and "TM"]. For instance, "TM" expressions like pútao "grape", lǎopo "wife" have full tones on each syllable: pútáo "grape", lǎopó "wife". A neutral-toned syllable is generally for specific lexical items. Accordingly, it is not surprising that "TM" uses *de*-insertion to mark focusing on quantity. The *de*-insertion strategy should also be available in Beijing Mandarin (abbreviated as "BM"). However, due to its prominent prosodic strong-weak contrast, the insertion strategy is not commonly used. In other words, the variation in speakers' acceptability of *de* in the quantity [Num + Cl + *de* + NP] reported in the previous section follows straightforwardly from the P-insertion account. This account is the only one among the available analyses that predicts such a contrast.

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① Marking a contrastive focus requires deviation from the unmarked case. When the norm is {Num + Cl + NP}, a contrastively focused NP may become a separate unit by the same mechanism of *e*-insertion. This is indeed the case, as illustrated by the following example:

(i) 在生予咱吃一粒的土豆，是较好死去共咱拜一粒的猪头

生时给我们吃一个的土豆（花生）比死后给我们拜一个的猪头好

tsai seng ho lan tsia tsit-liap e thotau si kahho sikhi ka lan pai tsit-liap e tithau

when alive give us eat one-CL DE peanut be better dead to us worship one-CL DE pig. head

"It is better to give us a peanut to eat when we are alive than to pay respect to us by a pig head when we are dead."

The sentence in (i) is from a 1988 soap opera in Taiwan from Prof. Lien's corpus (like those in Section 4) *Are There Wine Bottles for Sale* 华视连续剧《酒瓶可卖否》http://tw.myblog.yahoo.com/kgbz-kgbz/article?mid=7564

6. Conclusion

This work reviews the literature on the distribution of a post-classifier *de* in Mandarin Chinese, noting disagreement on the generalizations regarding the use of such a *de* among the authors and the data cited. Online search also generates data that have been claimed to be unacceptable in the literature. Such disagreement and inconsistency can be better understood when we investigate dialectal variations — they actually reflect differences in native speakers' acceptance of a post-classifier *de* in noun phrases with a quantity reading. "TM" speakers accept such a *de* more generously than the Mandarin speakers in CM/HK in our study. This is not surprising because "TM" is heavily influenced by "Taiwanese" and "BM" is the foundation of standard Mandarin (*Putonghua*) in China. Among the analyses proposed in the literature for the use of *de*, only the ones by Li (2013) and Li & Feng (2015) noted and accounted for the difference in the role of *de* between the two varieties of Mandarin. The greater use of such a *de/e* in "Taiwanese" / "TM" than in "BM" are captured nicely in an approach that allows different roles of focusing strategies in different dialects within the same tonal language.

Nonetheless, many interesting issues should be raised. For instance, different dialects in Chinese vary in the formation of tone groups and tone sandhi rules, such as Southern Min vs. Wu (and Northern Wu vs. Southern Wu. See Zhang (2014) for a more recent summary of relevant properties). How do Wu speakers use their counterpart of the Mandarin *de* in noun phrases with the quantity reading? How is the variety of Mandarin spoken by these speakers? What other dialects in the Chinese language family seldom use prosodic strong-weak contrasts for focusing? What is the distribution of their *de*? In addition, even though our subjects are well-educated (at least college education) and take "TM" or *Putonghua* as their primary language, individual variations must exist — some individuals may be influenced by their local dialects more than others. Our group scores show significant differences between the "TM" and *Putonghua* speakers. If there are large numbers of subjects for certain dialects, would the numbers change significantly? Clearly, much larger scale replicable experimental studies are needed to answer these and other related questions in order to fully understand how prosody

affects the distribution of the post-classifier *de* in the many linguistic varieties of the Chinese language family.

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声调语言中重音和焦点标记作用的变异：来自汉语［数＋量＋的＋名］结构的证据

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摘　要　现有文献对普通话中 Num + Cl + *de* + NP 结构的表达里在何种条件下量词后出现 *de*（“的”）存有分歧。网上搜到的数据和在很多相关著作中概括的相矛盾。通过调查说台湾“国语”的人和说普通话的人，了解他们对名词词组 Num + Cl + *de* + NP 的可接受性。Num + Cl 的表达表示阅读的数量（与“阅读的性质”相对应）。调查表明，这样的分歧可能是由于方言的差异造成的。不管哪种量词类型，说台湾“国语”的人比说普通话的人更容易接受 *de* 用于后置量词中。研究表明，此类方言上的差异通过分析是可以预知的。在分析中，我们把 *de* 的出现当作一种语音措辞策略，来集中反映名词词组的数量。汉语各种方言，由于重音扮演角色的不同，应用策略也有所差异（韵律强弱对比）。

关键词　焦点标注策略　音系短语划分　重音　声调语言　汉语名词短语中量词后的“的”　数量相较于性质

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