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DOI

[10.1111/stul.12198](https://doi.org/10.1111/stul.12198)

Publication date

2022

Document Version

Final published version

Published in

Studia Linguistica

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[Link to publication](#)

Citation for published version (APA):

Fang, H., & Hengeveld, K. (2022). Sentence-final particles in Mandarin. *Studia Linguistica*, 76(3), 873-913. <https://doi.org/10.1111/stul.12198>

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SENTENCE-FINAL PARTICLES
IN MANDARIN*Hongmei Fang  & Kees Hengeveld

Abstract. Mandarin Chinese is rich in sentence-final particles, which have to follow a rigid linear order when they cluster. In much of the literature, researchers focus on clarifying the functions of individual particles, with less attention being paid to the explanations of their highly restricted order. Based on corpus data and using the framework of Functional Discourse Grammar (FDG, Hengeveld & Mackenzie 2008), this paper explores the questions which particles can cluster and why they cluster in a specific order. We show that maximally three Mandarin sentence-final particles can cluster, and we argue that their sequence is restricted by their positioning in a strict four-layered hierarchical structure, in which each particle pertains to a specific semantic or pragmatic layer. In addition, Mandarin particles provide evidence that there are operators at a higher discourse level than so far assumed to exist in FDG.

1. Introduction

Mandarin is rich in sentence-final particles (SFPs) which, though not obligatory, have a high frequency of occurrence in daily conversations. One of the prominent features of Mandarin is that sentence-final particles can cluster in a rigid linear order. For instance, any permutation of the order of the particles *de*, *le*, and *a* (的/了/啊) in (1) results in an ungrammatical sentence.¹

(1) 就是这方面的专家也没那么多可讲的了啊!

jiu shi zhe fang-mian de zhuan-jia, ye mei na-me duo ke
even COP this aspect ATTR expert also not that much can
*jiang de le a*²
say CERT MIR MIT

‘Even an expert in this field surely does not have that much to say, either.’

*This is a revised version of a chapter in the first author’s dissertation. We acknowledge our gratitude to a number of people who have helped improve the earlier versions of this paper: Hella Olbertz, Rint Sybesma, Waltraud Paul, and multiple anonymous reviewers.

¹ The alternative order *le de a* is acceptable only when *le* is not a mirative marker but an aspectual marker, in which case it is not a sentence-final particle but a postverbal particle. Sentence-final particles in languages are often used to communicate a range of meanings relating to speaker attitude, force of assertion, evidentiality, clause type, etc. (Simpson 2014:157). Postverbal particles often express meanings that bring restrictions to the verb, such as tense or aspect. Hence postverbal particles have different functions from sentence-final particles.

² Gloss abbreviations are as follows: 1 = first person, 2 = second person, 3 = third person, ATTR = attributive, CERT = certainty, CLF = classifier, COMP = complementizer, COP = copula, CTR = contradiction, DEM = demonstrative, EXP = experiential aspect, INGR = ingressive, MIR = mirative, MIT = mitigation, MP = modal particle, NEG = negation, PST = past, PRF = perfect, PFV = perfective, PL = plural, PROG = progressive, PROH = prohibitive, REINF = reinforcer, REM = remote, RHET = rhetorical question, SG = singular.

Studia Linguistica 76(3) 2022, pp. 873–913. © 2022 The Authors. *Studia Linguistica* published by John Wiley & Sons Ltd on behalf of Editorial Board of *Studia Linguistica*.

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The meanings and functions of Mandarin sentence-final particles are elusive and notoriously controversial, which has led to a focus on the specific contextual interpretations of individual particles by many researchers, rather than to attempts to assign individual particles to specific semantic or pragmatic categories such as modality or mirativity.

As compared to the many studies on the interpretations of individual particles, less attention has been paid to the explanation of their highly restricted order. There is much support in the literature for the idea that the ordering can be explained by a three-way split among particles, albeit with variations as regards which particles are included in the discussions (cf. Zhu 1982; Hu 1981; Huang & Liao 2011; Paul 2014; Simpson 2014). This split, however, has been challenged by Pan (2015), who proposes a different split of more than three. One of the problems with several of these explanations is that they are limited to constructed sentences or sentences taken from classical literary works. As observed by Simpson (2014:177), “[c]urrently, the full range of permitted SFP sequences has not been established, despite predictions and expectations that a range of multiple SFP clusters should be possible.” To the best of our knowledge, there is only one study that attempts to investigate the ordering possibilities using corpus data (Wang 2017). By comparison, extensive research has been carried out on a far greater number of sentence-final particles in spoken Cantonese (e.g. Law 2002; Li 2006; Sybesma & Li 2007). There is, therefore, still a definite need to establish the full range of permitted orderings based on large amounts of naturally occurring data, and provide a systematic explanation for it. A further point to be mentioned is that much of the research that has been carried out on particle ordering made use of the framework of Generative Grammar.

This paper aims to add to the research on particle ordering in Mandarin by taking the perspective of Functional Discourse Grammar (FDG, Hengeveld & Mackenzie 2008), a theory of linguistic structure that has not been applied to Mandarin particle ordering to date. Particularly the multi-layered approach of FDG to Tense-Aspect-Modality/Mirativity-Evidentiality-Polarity (TAMEP) (Hengeveld 2017), in which each TAMEP category is assigned to a hierarchical layer, is relevant for our purposes. Like Wang (2017) we will use naturalistic corpus data, from the CCL corpus,³ in building our argument. These data are used to determine which semantic or pragmatic category each individual particle falls into in a systematic way and then to explore the full range of combinatory possibilities of particles. The application of FDG will allow us to propose a systematic and novel explanation for

³ All the examples, unless otherwise stated, are from this corpus. Further information can be found in Section 3.

why some particles can be combined and why they are restricted to a rigid linear order in a sentence.

The organization of this paper is as follows. After a brief introduction to the relevant aspects of the theoretical framework adopted in this paper in Section 2, Section 3 formulates predictions and explains the methods used in this study. Section 4 discusses the semantic and pragmatic categories that the individual sentence-final particle falls into. Section 5 provides the corpus findings, discusses the clustering of the particles and explains why the clustering is rigid and highly restricted. Section 6 presents the conclusions.

2. Hierarchies in FDG

This section will give a short and selective introduction to the hierarchical approach used in this study, focusing on the points that are directly relevant to our later discussion.

Functional Discourse Grammar (Hengeveld & Mackenzie 2008) is a top-down model of language structure, and is typologically-based. It consists of several levels of organization: the Interpersonal Level, dealing with pragmatics, the Representational Level, dealing with semantics, and the Morphosyntactic and Phonological Levels. Only the first two levels are relevant here.

Each level is hierarchically organized in terms of scopal layers. At the Interpersonal Level, the highest layer is the *Move*, which is a complete contribution to a discourse; the next highest layer is the *Discourse Act*, which is the smallest unit of communicative behaviour. The Discourse Act consists of an *Illocution*, the speech act *Participants*, and a *Communicated Content*, which is the message that is being communicated. The Communicated Content itself is built up with *Subacts of Ascription* and *Reference*. At the Representational Level, the highest layer is the *Propositional Content*, which is a mental construct. It contains one or more *Episodes*, which are coherent combinations of States-of-Affairs which share participants, absolute time, and location. A *State of Affairs* is an event or state that can be situated in relative time. It contains a *Configurational Property*, which is a predication frame specifying a combination of a property/relation and its arguments that describes the State of Affairs. Finally, the *Lexical Property* represents the predicate on which the predication frame is built.

Each layer may be modified by a corresponding set of operators, which are grammatical expressions of aspectual, temporal, modal, etc. categories. Recent years have witnessed the development of a systematic hierarchical approach within FDG to Tense, Aspect, Modality, Mirativity, Evidentiality, and Polarity (TAMEP) systems (Hengeveld 1989; Hengeveld 2017; Hengeveld & Olbertz 2018) as shown in Table 1. This approach aims at predicting, describing, and explaining

a number of properties of relevant systems, such as “the ordering and co-occurrence or non-occurrence of the relevant morphemes, as well as the degrees of their grammaticalization” (Hengeveld & Olbertz 2018:323).

As can be seen in Table 1, semantic and pragmatic categories are organized in terms of their scope. More specifically, they pertain to the various hierarchical levels and layers distinguished above. Semantic categories are organized at the Representational Level whereas pragmatic categories are organized at the Interpersonal Level. The Interpersonal Level has scope over the Representational Level and within each level, reading from left to right, each layer has higher scope than the next. Let us illustrate the scope relations by means of (2) from Hidatsa.

- (2) *Wíra i ápári ki stao ski.*
 tree it grow INGR REM.PST CERT
 ‘The tree must have begun to grow a long time ago.’ (Hengeveld 2017:14, citing Matthews 1965)

In (2), the ingressive aspect *ki*, specifying the internal temporal structure of the event, is at the layer of Configurational Property; the absolute tense marker *stao*, indicating the external temporal structure of the event, is at the layer of Episode; the modality marker *ski*, indicating certainty, is at the layer of Propositional Content. Thus their hierarchical relations are as follows: *ski* (Propositional Content) > *stao* (Episode) > *ki* (Configurational Property). This hierarchy precisely mirrors their relative order in (2). This also holds for the clustering of expressions at other layers or of other categories allocated in Table 1 when they use the same morphological strategy, such as affixes, auxiliaries or particles (Hengeveld 2017:15).

We propose two modifications of the system proposed in Table 1. First of all, as explained above, the Discourse Act contains the Illocution, the speech act Participants, and the Communicated Content as elements of like rank. It is therefore incorrect to say that the Illocution has scope over the Communicated Content, as these are sisters, though it is correct to say that the Communicated Content is within the scope of the Discourse Act. Secondly, we do not agree with the distinction made by Hengeveld & Mackenzie (2008) between two types of illocutionary modification: one at the layer of the Discourse Act and one at the layer of the Illocution. Hengeveld & Mackenzie (2008:66–68) argue that illocutionary modification applies at the layer of the Discourse Act when one and the same marker of mitigation or reinforcement can be combined with more than one Illocution; it applies at the layer of the Illocution (Hengeveld & Mackenzie 2008:83) when it can be combined with one Illocution only. This approach means that, contrary to the general principles of FDG, operators with exactly the same pragmatic effect end up at different layers

Table 1. Tense, aspect, mood, evidentiality, mirativity, polarity, and localization categories in FDG (adapted from Hengeveld & Olbertz 2018:325)

	Interpersonal Level				Representational Level				
	Discourse Act (A)	Illocution (F)	Communicated Content (C)	Ascriptive Subject (T)	Propositional Content (p)	Episode (ep)	State-of-Affairs (e)	Configurational Property (F)	Lexical Property (f)
Mood	illocutionary modification	basic illocution; illocutionary modification	denial	basic negation	proposition-oriented modality	episode-oriented modality	event-oriented modality	participant-oriented modality	
Polarity	rejection	negative basic illocutions	denial	metalinguistic negation	disagreement	co-negation	non-occurrence	failure	local negation
Evidentiality	quotative		reportative	reportative	inference	deduction	event perception		
Mirativity			mirative			absolute tense	relative tense		property quantification
Tense							event quantification		
Aspect									
Localization							event location		directionality

on distributional grounds only. We therefore will treat all instances of illocutionary modification as operators of the Discourse Act, as their function is to mitigate or reinforce the effects of a Discourse Act as a whole.

With these modifications in mind, the layers relevant to our discussion of Mandarin sentence-final particles from among those listed in Table 1 are the Propositional Content, the Communicated Content, and the Discourse Act. The *Propositional Content* is defined as a mental construct entertained about a series of states of affairs; the *Communicated Content* is the message transmitted in an utterance; the *Discourse Act* represents the basic unit of communicative behavior (Hengeveld & Olbertz 2018:324; for more details see Hengeveld & Mackenzie 2008, 2010). Their scope relations are as follows: Discourse Act > Communicated Content > Proposition.

The operator categories relevant for our discussion are proposition-oriented modality, mirativity, polarity, and illocutionary modification. There are four types of modality in FDG, but what is relevant here is just proposition-oriented modality, which expresses the degree of commitment of a speaker with respect to the truth value of a proposition. Mirativity is concerned with the information status of the content of a speech act in terms of whether the information is newsworthy or surprising; polarity operates at every layer of the Interpersonal and Representational Levels. We will show below that the subtype of polarity of denial, which operates at the layer of the Communicated Content, is relevant for the analysis of sentence final particles in Mandarin. Illocutionary modification, finally, modifies a Discourse Act by either mitigating or reinforcing it.

Table 2 summarizes the layers and operator categories from Table 1 that are relevant for the current paper. Note that we will add a further layer and category later based on our discussion of the Mandarin particles below.

3. Predictions and methods

The following predictions follow from the hierarchical FDG approach: (i) each sentence-final particle can be assigned to a pragmatic or semantic layer once its meanings or functions are identified; (ii) particles that pertain to the same layer but belong to different categories, or particles that pertain to different layers, can cluster together; (iii) the linear ordering within clusters is determined by the particles' hierarchical positioning in the layered FDG framework, which it iconically reflects.

In order to test these predictions, we use corpus data. The corpus we use is the CCL modern corpus,⁴ made up of 509,913,589 words and including various text types, ranging from novels, newspaper articles, academic

⁴ http://ccl.pku.edu.cn:8080/ccl_corpus/

Table 2. Relevant mood, mirativity, and polarity categories in FDG

	Interpersonal Level		Representational Level
	Discourse Act	Communicated Content	Propositional Content
Mood	illocutionary modification		proposition-oriented modality
Polarity		denial	
Mirativity		mirative	

papers, talk shows, to cyber texts. We searched the CCL corpus for all logically possible combinations of the sentence-final particles under investigation. We first searched for all combinations of two and then for all combinations of three particles. Within the latter group, we then searched for combinations of four, which turned out not to occur in the corpus.

In order to provide evidence for our interpretation of the meanings and functions of the particles we (i) contrast the meanings and uses of sentences with and without the particle, to detect the contribution of the particle to the final interpretation; (ii) present the particles in the wider context in which they are used so as to establish their uses in discourse, in those cases in which such a presentation sheds further light on their meanings and functions; and (iii) make use of introspection, making use of the intuitions of the first author of this paper, who is a native speaker of Mandarin.

To avoid any possible personal bias, we also designed a questionnaire to test the acceptability of certain orderings of the particles in those cases in which these had a frequency lower than five and went against the intuition of the first author. Based on these criteria, we collected seven sentences in total from the corpus, which were given in the questionnaire along with their counterparts with a reversed particle order. The sentences were randomized before they were submitted to the informants. Fifteen native speakers of Mandarin were asked to fill out the questionnaire. Two extra pairs of sentences whose particle ordering is undisputed were also included as controls with the aim of testing the reliability of the answers.

4. Sentence-final particles in Mandarin

4.1. Introduction

The most frequently used sentence-final particles in Mandarin Chinese are the following six: *de* (的), *le* (了), *ne* (呢), *ba* (吧), *ma* (吗),⁵ and *a* (啊) (Huang and Liao 2011:31).⁶ Since, as we will show, there are two

⁵ The graphic form of *ma* can also be 嘛. Further explanation can be found in Section 4.4.

⁶ Less frequently used particles are *ma* (嘛), *bei* (呗), *ba le* (罢了), *er yi* (而已), *ye ba* (也罢), *ye hao* (也好), *la* (啦), *lei* (嘞), *lou* (喽) and *zhe ne* (着呢) (Huang and Liao 2011:31).

homophonous particles with the form *ne*, we are in fact dealing with seven particles here. Apart from these seven particles, this paper will also study the particle *ou*⁷ (哦), as *ou* is a particle that is recently increasingly used (Zhang 2013:82). In all, then, the article will deal with eight particles.

In this section, we shall explore each individual particle's semantic or pragmatic function(s).⁸

4.2. *The sentence-final particle de*

The sentence-final particle *de* is a modal marker of certainty⁹ (Chao 1968:800; Huang & Liao 2011:32; Li 2007:270; Lü 2016:162;

⁷ Actually, the Pinyin for 哦 is 'o'; for the sake of convenience we use *ou* to refer to 哦. Further explanations can be found in Section 4.7.

⁸ If not otherwise stated, the term 'particle' means sentence-final particle.

⁹ However, what is complicated in its identification is that the particle *de* can also be an attributive marker that marks a modifier within a noun phrase. Additionally, when the head of the noun phrase is dropped, it functions as a nominalizer. In these cases the contextual information is sufficient to retrieve the modified element. For the sake of consistency, we gloss it as an attributive marker in this use as well, as the nominalizing use seems to be derived from the attributive one. When the original last element of the sentence happens to be the omitted one, this leaves the attributive *de* to occupy the sentence-final position as in (i).

- (i) (我不在乎), 现在你是最重要的。

(*wo bu zai-hu*), *xian-zai ni shi zui zhong-yao de*.
 1SG not care now 2SG COP most important ATTR
 'I don't care, now you are the most important one.'

In this case, one of the most effective ways to distinguish the attributive *de* from the modal *de* is to see whether the deletion of *de* results in incompleteness of the sentence or a change of its basic meaning. In (3), the modal *de* can be deleted with the loss concerning the modal meaning only, whereas the deletion of the attributive *de* in (i) leads to ungrammaticality of the sentence.

The copula *shi* occurs highly frequently with *de*, which avails a negation test to distinguish the two kinds of *de* (Huang & Liao 2011:33–34). If the negative word *bu* or *mei* can be added before *shi*, then *de* is attributive; if *bu* immediately follows *shi*, then *de* is modal. When *shi* is added to (3), the negative word has to follow *shi* as in (iia) and cannot precede *shi* as in (iib); conversely, as regards (iii), *bu* can precede but not follow *shi* as shown in (iiia) and (iiib).

- (ii) a. 我是没问过老吴的。

wo shi mei wen guo Lao-wu de.
 1SG COP not ask EXP Lao-wu CERT
 'Surely I haven't asked Lao-wu.'

- b. **wo bu/mei shi wen guo Lao-wu de*.

- (iii) a. 我不在乎, 现在你不是最重要的。

wo bu zai-hu, xian-zai ni bu shi zui zhong-yao de.
 1SG not care now 2SG not COP most important ATTR
 'I don't care, now you are not the most important.'

- b. **wo bu zai-hu, xian-zai ni shi bu zui zhong-yao de*.

A negation test like this might prove not to be effective when there is a complex sentence, the negation of which might involve the interaction with other constituents. Hence, in the following relevant sections, we will use the deletion test only.

Paul 2014:99). For instance, in (3), the presence of *de* indicates that the speaker is quite certain about the propositional content *wo wen guo Lao-wu*, whereas its absence leads to a neutral statement.

(3) 我问过老吴的。

wo wen guo Lao-wu de.

1SG ask EXP Lao-wu CERT

'Surely I have asked Lao-wu.' (Lü 2016:162)

If certainty is the meaning that *de* expresses, it has scope over the entire proposition and thus can be assigned to the category of proposition-oriented modality. In FDG, it is a subjective epistemic modal that operates at the layer of the Propositional Content at the Representational Level. As shown in Table 2, this makes *de* the only sentence-final particle that operates at the Representational Level.

There is controversy in the literature over whether the sentence-final *de* is a certainty marker or a construction marker in the “*shi...de*” construction. Xiong (2007:321–330) conflates these two different uses of *de*, arguing that *de* expresses certainty in the “*shi...de*” construction. This stance is followed by Paul & Whitman (2008:413–451; Paul 2014:99–102), who claim that the construction with the sentence-final particle *de* is actually a subtype of the *shi...de* construction which they label the ‘propositional assertion’ construction, and which Hengeveld (1990) calls a ‘veridical construction’. An example of this construction is given in (4):

(4) 我是从来不抽烟的。

wo shi cong-lai bu chou yan de.

1SG be ever NEG inhale smoke ATTR

'(It is the case that) I have never smoked.' (Paul 2014:99, glossing ours)

In this construction the copula *shi* takes the nominalized clause *cong lai bu chou yan de* as its complement. Since the copula is optional in Mandarin, Paul (2014) argues that cases with and without the copula *shi* are equivalent, and that cases such as the one in (3) are underlyingly equivalent to cases such as the one in (4). Though we think that this may well provide a diachronic explanation for the existence of *de* as a sentence-final marker of certainty, we do not agree that sentences with and without *shi* are equivalent, as *shi* has a focalizing effect that is not present in sentences in which *shi* is absent. Besides, although there is already a negative word *bu* in the complement, we can still add the same negative word *bu* before *shi*, as in (5). This clearly shows that *de* in (4) is not a modal particle as argued by Paul but an attributive marker, as according to Huang & Liao (2011:33–34), *de* is not a modal element if a

negative word can precede *shi* (for details, see endnote 8). We thus consider *de* in (3) to be a certainty marker rather than a specific instance of the attributive marker *de*.

(5) 我不是从来不抽烟的。

wo bu shi cong-lai bu chou yan de.
 1SG NEG be ever NEG inhale smoke ATTR
 ‘(It is not the case that) I have never smoked.’

4.3. *The sentence-final* le_3 ¹⁰

Sentence-final le_3 is a mirative marker, encoding newsworthiness or surprise (Fang 2018). In (6), the speaker uses le_3 to signal to the addressee that this information transmitted is worthy of notice in the sense of, for instance, trying to remind him/her to make less salty dumplings next time.

(6) 晚上的饺子有点咸了。

wan-shang de jiao-zi you dian xian le_3.
 night ATTR dumpling have a.little salty MIR
 ‘The dumplings I had last night were a little salty!’

The meaning of the sentence-final le_3 is highly controversial. The opinions are surprisingly divergent as regards the functions that it realizes as well as the category that it falls into. It is believed to indicate “change of state” (Zhu 1982:209; Lü 2016:352), or “currently relevant state” (Li & Thompson 1981:240), and the completion of a sentence (Lü 2016:351; Huang and Liao 2011/2015:32). According to other authors, it expresses mood (Lü 2014:321, Peng 2009), tense (Liu 2002, Chen 2005), aspect (Jin 2003), and even evidentiality (Shi 2000). However, as argued by Fang (2018:590–594), sentence-final le_3 is a mirative marker in its own right as it always occurs in contexts involving a new situation. In other contexts the sentence would be infelicitous. She further demonstrates this by applying Peterson’s (2017) tests for mirativity. One further reason for controversy about le_3 is that there are two more *le*’s: a perfective le_1 and a perfect le_2 (Fang 2018:598). The former occupies the post-verbal position, encoding completion, whereas the latter occupies the sentence-final position, encoding that a state-of-affairs started in the past and continues to the present. As such, the sentence-final *le* could be a mirative le_3 or a perfect le_2 . Despite the fact that there

¹⁰ There are three different particles *le*: le_1 — a perfective marker; le_2 — a perfect marker; and le_3 — a mirative marker. In this paper, we only take le_3 into consideration. See Fang (2018) for further discussion of all three particles.

are clear cases in which sentence-final *le* is mirative as in (6), sometimes the perfect *le*₂ and the mirative *le*₃ can coincide as shown in (7).

(7) 小明也喜欢跳舞了。

*Xiao Ming ye xi-huan tiao-wu le*_{2,3}.

Xiao Ming too like dance PRF.MIR

‘(You may not know that) Xiao Ming has come to like dancing, too.’ (Lü 2016:352)

In (7), the speaker not only means that Xiao Ming began to like dancing, but also indicates that this information is newsworthy to the addressee.¹¹ In this case, *le* expresses both perfect and mirative meanings which are impossible to separate. Hence, we incorporate perfect *le*₂ into our investigation.

The sentence-final *le*₃, as a mirative marker, presents the communicated content as newsworthy or surprising, thus operating at the layer of the Communicated Content at the Interpersonal Level.

4.4. The particle *ma*

The particle *ma* has two common graphic forms: 吗 and 嘛. The first has been argued to be an interrogative marker in polar questions (Simpson 2014:160), while the second would be used in the remaining sentence types. However, we here follow Li (2006:28–36), who convincingly argues that *ma* is a single particle that should be given a unified treatment, because the two graphic forms come from one and the same etymological source and are furthermore used in complementary textual distribution in terms of sentence types. The fact that the second written form can also occur in polar questions in the CCL written corpus, as in (8), shows that it is not really different from the first.

(8) 我喜欢教导别人，帮别人拿主意，做决定...这很容易嘛?

wo xi-huan jiao-dao bie-ren, bang bie-ren na zhu-yi,

1SG like instruct others help others make ideas

zuo jue-ding... zhe hen rong-yi ma?

make decide this very easy REINF

‘I like to instruct people and help them to make a decision... Can you call this very easy? Not at all!’

Chao (1968:803), too, considers 吗 and 嘛 as just graphic variants, although 吗 and 嘛 give the impression that 吗 has a high pitch and 嘛

¹¹ We have found that sentence final *le* may express mirativity only, both mirativity and perfect meaning, but never just perfect meaning. This may have to do with the fact that in many languages the mirative is historically derived from the perfect (Hengeveld & Olbertz 2012).

has a low pitch. This latter impression is not a result of differences in the prosodic properties of the particle itself. Actually, particles are in neutral tones and always unstressed (Chao 1968:798). For this reason, the high or low tone that they seemingly have is attributed by the prosodic contour of the sentence, not by their inherent tonal features. Thus, it is the overall intonation of the sentence that affects the prosodic realization of SFPs. As in (8), the replacement of 嘛 with 吗 only brings a less strong rhetoric effect: *Is this very easy? (I don't think so).*

The claim that 吗 is a question particle of the polar interrogative force is incorrect for the simple reason that it is optional in questions. Without its presence, the interrogative illocutionary force can be fulfilled by the interrogative intonation. If we compare the corresponding sentences with and without *ma*, the difference lies in the explicitness of the interrogative force; therefore, *ma* can be said to reinforce this interrogative force which has already been encoded by the intonation. Therefore, the general function of *ma* is to reinforce a speech act. (9) is a further example of this use of *ma* in a polar question, in which the speaker's interrogative intention is made more explicit with the presence of *ma*.

(9) 你懂我的意思吗?

ni dong wo de yi-si ma?
2SG understand 1SG ATTR meaning REINF
'Do you understand what I mean?'

One could argue that the use of *ma* in (8) and (9) does not rule out that it is an interrogative marker, as languages may use multiple expression strategies for a single illocutionary value. But such an analysis would be incorrect, as *ma* also has a reinforcing effect in other sentence types, such as declaratives, directives, and prohibitives, as well. (10a) is a declarative in which *ma* reinforces the assertiveness, in the sense that what's being asserted is very obvious; (10b) is a *wh*-question in which *ma* indicates that the speaker is insisting on the addressee providing an answer; (10c) is a directive in which *ma*₂ makes the directive force stronger; and (10d) is a prohibitive in which the speaker is urging the addressee to not be nervous.

(10) a. 再大也是孩子嘛!

zai da ye shi hai-zi ma!
whatever old also COP child REINF
'No matter how old, (he) is still a child (in front of me). Don't you see?'

b. 我犯了哪门子法嘛?

wo fan le na-men-zi fa ma?
1SG violate PFV what law REINF
'(I insist to tell me) What crime did I commit?'

- c. 再忍耐一下嘛!

zai ren-nai yi xia ma!
 continue tolerate one CLF REINF
 'Please have some patience.'

- d. 不要紧张嘛，慢慢地讲。

bu-yao jin-zhang ma, man-man de jiang.
 don't nervous REINF slowly COMP speak
 'Don't be nervous, don't. Speak slowly.'

As *ma* expresses illocutionary modification, it pertains to the layer of Discourse Act at the Interpersonal Level in the FDG framework.

4.5. *The sentence-final ne*

The sentence-final *ne*, one of the most controversial particles, is by some believed to have a unified function (Li & Thompson 1981:300–307; Hu 1981:108–109; Chu 2006:127–134; Li 2006:11–19; Wu 2009:1–25), and by others to have multiple separate functions (Chao 1968:804–805; Zhu 1982:208; Lü 2016:412–413). Both approaches, however, agree that sentence-final *ne* has an interrogative use and a non-interrogative use. According to Qi (2002:128), these two uses are generally believed to originate from different sources and to have undergone different grammaticalization paths. Although *ne* has finally grammaticalized into the same pronunciation and written form, its functions remain different. In our opinion, *ne*₁ is a marker of contradiction while *ne*₂ is a reinforcer which enhances the interrogative illocutionary force of all question types except the polar one.

Fang (2021) argues that *ne*₁ is used to signal that what's being said is in contradiction with the preceding utterances or with the existing expectation, assertion, claim, belief, assumption, etc. Consider the following example from Chao (1968:805):

- (11) 他还会扯谎呢。

ta hai hui che huang ne₁.
 3SG even can pull lie CTR
 'He can even tell lies, which is not expected.'

Without *ne*₁, (11) is just a neutral statement; with *ne*₁, the speaker is highlighting that the information being conveyed contradicts the existing assumption that the third person subject cannot tell lies. Similarly, in (12), the speaker tries to signal that the information provided is against the assumption that hospitals do not test on dogs. In both cases, the previous belief or assumption is being contradicted and abandoned.

(12) 医院用狗做实验呢。

yi-yuan yong gou zuo shi-yan ne₁.
 hospital use dog make experiment CTR
 'The hospital tests on dogs.'

As remarked by Hancil et al. (2015:18), “[i]ntonation can fulfill discourse and pragmatic functions similar to those of FPs,¹² and such functions can also be expressed by a combination of prosody and particle use.” This is true for Mandarin sentence-final particles. Our proposal for their functions such as mitigation and reinforcement is quite in line with this idea (e.g. the discussion on *ma* in Section 4.4). In the case of *ne₁*, the speaker has three options, if he/she intends to express contradicting information: (i) contradicting prosodic contour;¹³ (ii) a neutral declarative intonation with *ne₁*; and (iii) a combination of prosody and *ne₁*. However, if the second strategy is applied to (12), the removal of *ne₁* results in the loss of the contradiction meaning in the sentence. This shows that *ne₁* inherently indicates contradiction. In that sense it is different from *ma*, as discussed in the previous section. When *ma* is removed from a question, that question remains a question, although not a reinforced one. But when *ne₁* is removed from a sentence, that sentence does not express a contradiction any longer.

In languages such as English and German, intonation plays a significant role in expressing contradiction. However, this is less the case in tonal languages such as Mandarin Chinese. In tonal languages, syllables and utterances in general are restricted in terms of pitch variation and intonation contour, which means that they often have to resort to other ways of expressing functions taken over by intonation in non-tonal languages (Hancil et al. 2015:17). Sentence-final particles are one of such ways. It is therefore not surprising for Mandarin to have a particle that fulfills the function realized by intonation in some European languages. Although intonation plays a modest role in Mandarin, the speaker can still use prosodic contour to indicate contradiction as listed in (i) and (iii) above, despite the fact that it is hard to achieve the same effects as in non-tonal languages. What should be noted is that contradicting prosodic contour is not the same as the accentuation of an element in a sentence with regard to contrast. In Mandarin, the former involves the prosody of the whole sentence while the latter highlights an element of the sentence. For instance, if *gou* ‘dog’ in (12) is accentuated, then *gou* is contrasted with other animals such as cats or rats. This is quite different from the contradiction effect brought by the presence of

¹² FP refers to final particle.

¹³ However, if (12) is uttered with a rising interrogative intonation, the sentence does not mean ‘Is the hospital doing tests on dogs?’, but means ‘what about the fact that the hospital tests on dogs?’. In this case, *ne* is the interrogative *ne₂*.

ne_1 , which enables the whole sentence in which it occurs to contradict or correct a certain explicit or implicit message. The question is then whether, with the interplay of tones, the contradiction effect brought out by intonation or prosodic contour alone is as prominent as the one brought out by the presence of ne_1 . Further investigation is needed in this respect.

The intention of the speaker to call attention to the contradicted information can be further proven by the fact that ne_1 is very often followed by an exclamation mark despite the fact that the sentence is not exclamative as such, as observed by Hu (1981:108). The use of an exclamation mark is triggered by the emphatic stress on other constituents of the sentence, as, in the case of (13), on *xia ban'r*.

(13) 还没到下班儿的时候呢!

hai mei dao xia ban'r de shi-hou ne_1!

still not arrive down work ATTR time CTR

'It's not yet time to get off work!'

(Hu 1981:108)

It is generally believed that ne_1 occurs in statements only; however, Hu (1981:109) notices that ne_1 can occasionally occur in directives, having the function of calling the addressee's attention. In the following two sentences, the speaker is urging the addressee to do something that the addressee is not willing to do, as can be revealed by the adjacent clauses *wei-shen-me bu shuo* in (14a) and *hao mei-mei* in (14b). Therefore, ne_1 in directives, as in statements, also functions to signal a contradiction, more specifically with the addressee's unwillingness/reluctance to carry out the proposed action.

(14) a. 说呢, 为什么不说?

Shuo ne_1, wei-shen-me bu shuo?

say CTR why not say

'Say, please, why not say it?'

(Authors' own example)

b. 好妹妹, 替我梳梳呢。

hao mei-mei, ti wo shu shu ne_1.

good sister for 1SG comb comb CTR

'Good sister, come on. Comb for me.'

(Lü 2014:422)

As a matter of fact, statements and directives are not the only sentence types in which ne_1 can occur. It can also occur in interrogatives as in (15).

(15) The family of three plans to go somewhere, but when they are about to depart, the father is notified to have some urgent work to do. Then the mother says in a low voice to her daughter, 咱们先走吧, 没看见爸爸正在忙着呢吗?

zan-men xian zou ba, mei kan-jian ba-ba zheng mang zhe

we first go MIT not see Dad being busy PROG

*ne*₁ *ma*?

CTR MIT

'Let's go first. Don't you see Dad is busy right now?'

Although *ne*₁ occurs in (15), it is not to reinforce the interrogative force of the sentence, which, instead, is executed by the presence of *ma*. The fact that both *ne*₁ and *ne*₂ can occur in interrogatives but function differently indicates that they are different particles that cannot be differentiated only by the sentence types they occur in. The function of *ne*₁ is argued by Chu (2006:127–134) and Lin (1984:237) to indicate contrast, by Wu (2009:20–23) to indicate discrepancy, and by Xu (2008:159) to indicate difference. 'Contrast', 'discrepancy' and 'difference' share the same semantic domain --- difference, focusing on varying degrees of it. The reason why we prefer the term 'contradiction' is because it more accurately captures *ne*₁'s corrective or eliminating property. *Ne*₁ not only indicates that the information being communicated is contrastive with and different from the previous belief, assumption, claim etc., but also indicates that the information provided or implied is corrected and eliminated.

Sentence-final *ne*₂ can occur in all interrogative types other than polar questions, namely *wh*-questions such as (16), Verb-Not-Verb questions such as (17), alternative questions such as (18).

(16) 什么是教育学的研究对象呢?

*shen-me shi jiao-yu-xue de yan-jiu dui-xiang ne*₂?

what COP pedagogy ATTR study object REINF

'What is the object of study for pedagogy?'

(17) 这个快乐他得到没得到呢?

*zhe ge kuai-le ta de-dao mei de-dao ne*₂?

DEM CLF happiness 3SG gain not gain REINF

'Has he gained this kind of happiness?'

(18) 他宣传他的哪些呆板的东西, 对我们是好影响还是坏影响呢?

ta xuan-chuan ta na-xie dai-ban de dong-xi, dui

3SG advertise 3SG those rigid ATTR things for

*wo-men shi hao ying-xiang hai-shi huai ying-xiang ne*₂?

we COP good influence or bad influence REINF

'As for the rigid things he advertised, do they have a good or bad impact on us?'

The reasons why we do not treat Verb-Not-Verb questions as a subtype of the polar questions are the following. First, polar questions and Verb-Not-Verb questions concern different communicative expectations from the speaker. As observed by Chao (1968:803), a polar question, especially when *ma* is present, "contains either a slight or considerable

doubt about an affirmative answer, implying a probability of less than 50%”, whereas a Verb-Not-Verb question contains a 50:50 chance of a positive or negative answer. Second, they differ in their possibility to be embedded. It is impossible to embed a polar question in Mandarin, as when a polar question is embedded, it immediately loses its interrogative nature, as in (19a), which is only grammatical when the interrogation is on the main clause. A polar question expects the answer ‘yes’ or ‘no’, and in that sense the embedded sentence in (19a) cannot be a polar question. By contrast, Verb-Not-Verb questions can occur in an embedded clause as in (19b).

- (19) a. * 我知道你吃过了?
wo zhi-dao ni chi guo le?
 1SG know 2SG eat already PRF
- b. 我知道你吃不吃?
wo zhi-dao ni chi bu chi?
 1SG know 2SG eat not eat
 ‘I know whether you will eat or not?’

Sentence-final *ne*₂ can also occur in truncated questions and phatic questions. The truncated questions in which *ne*₂ occurs, are made up of a noun or a noun phrase with the *wh*-word being unambiguously retrievable from the context, either *zai na er* ‘where’ or *zen me yang* ‘what/how about’ (Lü 2016:412; Hu 1981:109) as in (20a) and (20b).

- (20) a. 陈白鹿...告诉我,你妈妈呢?
Chen Bai Lu: ... gao-su wo, ni ma-ma ne₂?
 Chen Bai Lu tell 1SG 2SG Mum REINF
 小东西:在楼上。
Xiao Dong Xi: zai lou-shang.
 Xiao Dong Xi exist upstairs
 ‘Chen Bai Lu: Tell me. Where is your Mum?’
 Xiao Dong Xi: Upstairs.’
- b. 我明天回上海,你呢?
wo ming-tian hui Shanghai, ni ne₂?
 1SG tomorrow back Shanghai 2SG REINF
 ‘I will go back to Shanghai tomorrow. (Lü 2016:412)
 What about you?’

Actually, there is another type of truncated question in which *ne*₂ occurs very often as in (21).

- (21) 如果你是政治人物呢?
ru-guo ni shi zheng-zhi ren-wu ne₂?
 if 2SG COP politics figure REINF
 ‘What if you are a political figure?’

As opposed to (20), (21) involves a conditional clause plus ne_2 , with a meaning similar to ‘what if...’ in English. These types of truncated sentences are conventionalized. *Wh*-words such as *when* and *who* can be omitted when they are combined with ne_2 but are reconstructed from the context. The same is true for cases such as (21). Whenever ne_2 is combined with a conditional clause, the sentence has a ‘what if’ reading only, whose complete structure is ‘If... what will happen ne_2 ?’ Due to the high conventionalization of these sentence structures, the omission of ne_2 leads to incomplete and ungrammatical sentences, which gives the impression that ne_2 does not have a reinforcing function. This is incorrect, as when the omitted *wh*-words are explicitly expressed in these sentences, the sentences become grammatical either with or without ne_2 .

The last type of questions in which ne_2 occurs is phatic questions, which are not real questions asked by the speaker to solicit an answer, but serve pragmatic functions such as ‘How are you?’ in English.

(22) (Situation: the son comes home in the evening and sees his father drinking alone, as he often does.)

Son: 喝着呢?

he zhe ne₂?

drink PROG REINF

‘Having a drink?’

Father: 嗯, 回来了?

ng, hui lai le?

Yes back come PRF

‘Yes, you are back?’

(Wu 2009:4)

In whatever type of question, the occurrence of ne_2 makes the sentence more explicitly inquisitive as compared its counterparts without ne_2 (Chu 2006:18; Li 2006:14). In other words, ne_2 has the function of reinforcing the interrogative illocution.

Sentence-final ne_1 and ne_2 have different functions and thus operate at different layers in FDG. Ne_1 indicates contradiction, signaling the inconsistent information status of the ongoing information with the previously existing one, so it is at the layer of the Communicated Content. Ne_2 is an illocutionary modifier, and thus operates at the layer of the Discourse Act at the Interpersonal Level.

4.6. *The sentence-final ba*

Fang & Hengeveld (2020) argue that the sentence-final *ba* has a unified function of mitigating the illocutionary force of all sentence types. We follow Han (1995:100) and Li (2006:35) here, who made a similar point, though using a different terminology. In different contexts, this general

mitigating function accommodates different specific values. Let's look at the following sentences.

- (23) a. 你在开玩笑吧。
ni zai kai wan-xiao ba.
 2SG PROG make joke MIT
 'You are joking, I suppose.'
- b. 你明白我的意思吧?
ni ming-bai wo de yi-si ba?
 2SG understand 1SG ATTR meaning MIT
 'You understand what I meant, right?'
- c. 一共多少钱吧?
yi-gong duo-shao qian ba?
 altogether how.much money MIT
 'How much altogether? Please tell me.' (Zhu 1982:211)
- d. 你给我们慢慢道来吧。
ni gei wo-men man-man dao lai ba.
 2SG give us slowly say come MIT
 'Tell us and speak slowly, OK?'
- e. 爷爷奶奶想独吞不成?太小气了吧!
ye-ye nai-nai xiang du tun bu-cheng? Tai xiao-qi
 Grandpa grandma want alone take RHET too mean
le ba!
 MIR MIT
 'How could grandpa and grandma want to take exclusive possession of it? This is too mean, isn't it!'
- f. 别吊了吧。
bie diao le ba.
 PROH sling MIR MIT
 'Don't sling it any more, OK?'
- g. (The son is afraid of swinging. His father is trying to encourage him to have a try by showing him how. Seeing that his father is enjoying himself on the swing, the son says.)
 好吧, 但我不要荡得那么高。
Hao ba, dan wo bu yao dang de na-me gao.
 okay MIT but 1SG NEG want swing ATTR that high
 'Alright then, but I don't want to swing that high.'

In comparison with the absence of *ba*, the illocutionary force of all the sentences in (23) is mitigated and different mitigating effects are obtained depending on the sentence type: (23a) sounds less assertive and less committed by the speaker; in (23b), the speaker is soliciting confirmation rather than giving a direct statement; in (23c), the speaker is urging the addressee to give an answer to the content question without sounding too inquisitive; in (23d), *ba* softens a request, making it less face-threatening;

in (23e), *ba* mitigates the intensity of strong negative emotions, making it less harsh; in (23f), a prohibition sounds less offensive; in (23 g), the presence of *ba* reduces the degree of the willingness embedded in the actional *yes* 'hao'. In general, in all the sentences in (23), the speaker is using the mitigator *ba* to negotiate with the addressee in order to maintain their interpersonal relationships. Hence, negotiation is *ba*'s general mitigating function.

The functions of the particle *ba* are highly controversial in the literature. As shown in Fang & Hengeveld (2020), it has been interpreted in the literature as expressing modal meanings (e.g. Li 2007:274–276; Wang 1985:174; Zhu 1999:234–241; Chu 1998:139; Zhao & Sun 2015:121–132; Zhang 1997:19) as well as in many other ways, for instance as a particle expressing estimation (Wang 1985:174), soliciting agreement (Li & Thompson 1981:307–311), encoding a suggestion (Wiedenhof 2015:241–242), or undetermined intention (Zhao & Sun 2015:121–132). In addition to categorizing the sentence-final *ba* as a mitigator, Fang & Hengeveld (2020) have argued on the basis of the following five aspects that *ba* is not a modal marker: first of all, unlike a modal marker that occurs only in declaratives and restrictively in interrogatives, *ba* can occur in all basic sentence types of Mandarin, as also emphasized in Li (2006); secondly, *ba* can co-occur with all different subtypes of modal elements; thirdly, *ba* is used even when the speaker assumes a high confidence in the propositional content; fourthly, *ba* can occur in non-propositional utterances (such as imperatives), and fifthly, the hierarchical ordering of *ba* and other sentence-final particles when they cluster shows that *ba* has scope over the utterance as a whole.

As an illocutionary modifier, the sentence-final *ba* operates at the layer of the Discourse Act, and is thus similar to *ma* and *ne*₂ which are its reinforcing counterparts (see Sections 4.3 and 4.6).

4.7. *The sentence-final ou*¹⁴

We argue that the sentence-final *ou* is a marker of reinforcement, highlighting the importance of the information being conveyed. As

¹⁴ One of the issues concerned with *ou* is what its written form is. Some (Chao 1968:810; Zhu 1982:207; Hu 1981:83) use the form 呕, but others (Li & Thompson 1981:311–313; Wu 2005:967–995) do not specify the form. The attribution of *ou* to 呕 could be either a mistake or be chosen for reasons not yet known. *A Dictionary of Current Chinese* (Chinese Academy of Social Sciences 2012:962) defines 呕 only as a verb that has a third tone ([əw]3) and means 'vomit'. Hence, 呕 couldn't be the right form for *ou* for the obvious reasons that a lexical verb cannot be a grammatical particle. Furthermore, a sentence-final particle cannot have a third tone, because all particles have a neutral tone. In modern Mandarin, 哦 is a sentence-final particle that has a similar pronunciation to the third toned 呕. If we replace 呕 with 哦, or assign 哦 to *ou* in the examples provided in the literature, the sentential meanings remain unchanged. Hence, despite the fact that the Romanized form for 呕 is *ou* and for 哦 is *o*, in this paper, we equal 呕 in the literature to 哦 but our corpus data are confined to 哦 only.

shown in the following examples, *ou* can modify, more specifically, reinforce the illocutionary force of all sentence types. (24a) is a statement, in which the speaker uses *ou* to call the addressee's attention to his/her assessment that the addressee is not like a Shanghainese at all; (24b) is a directive in which the speaker is highlighting his/her request for the addressee to do something in case that the addressee would forget or fails to take it seriously; (24c) is an interrogative in which the speaker questions strongly what they are doing; (24d) is an exclamation in which the speaker is emphasizing his/her excitement.

- (24) a. 你一点不像上海人哦!
ni yi-dian bu xiang Shanghai ren ou!
 2SG a little not like Shanghai people REINF
 'You are not like a Shanghainese at all. Maybe even you yourself are not aware of this.'
- b. 拜托了哦。
bai-tuo le ou.
 entrust MIR REINF
 'I leave all that to you. Please don't forget.'
- c. 我们这是在干什么哦?
wo-men zhe shi zai gan shen-me ou?
 1PL this COP be do what REINF
 'What are we doing now?'
- d. 我好兴奋哦!
wo hao xing-fen ou!
 1SG good excited REINF
 'I am so excited! You should know this.' (Zhang 2013:83)

In whatever sentence type *ou* may occur, its presence shows that the speaker intends that the addressee should pay special attention to what he/she says. In the literature, there are not many studies on sentence-final *ou*, and opinions are divergent about the functions of *ou*. It is believed to function as a 'warning reminder' (Chao 1968:810; Paul 2014:92; Pan & Paul 2016:25), as just a 'reminder' (Zhu 1982:208; Hu 1981:109), as a 'friendly warning' (Li and Thompson 1981:311), or to 'highlight the salience and newsworthiness of a focal event' (Wu 2005:993). Li and Thompson (1981:311) claim that *ou* is often used in a command, which is also implicitly agreed upon by most as can be gathered from the examples given in the literature. However, as shown in (24c) and (24d), *ou* can occur in interrogatives and exclamatives as well, in both of which it does not function as expressing a warning or reminder. Let us look at (25), an example given by Li and Thompson (1981:311), in which *ou* is believed to have the function of converting the command into a concerned warning. However, if we remove *ou* from (25), it is still a warning issued by the speaker to ask the

addressee to be careful. Therefore, the warning reading of (25) is not due to *ou*, but to *xiao-xin*.

- (25) 小心哦
xiao-xin ou.
 careful REINF
 'Be careful. Please do!'

Nevertheless, even if *ou* occurs in a 'warning' or as a 'reminder', it has the effect of reinforcement as both highlight the importance of the information in a more specific way. Hence, reinforcing is a general function that *ou* realizes in different sentence types.

As *ou* is a reinforcing illocutionary modifier, similar to the particles *ma* and *ne*₂, it also seems to operate at the layer of the Discourse Act at the Interpersonal Level. However, as we will show in Section 4.9, some aspects of its behaviour show that it operates at an even higher layer.

4.8. *The sentence-final a*¹⁵

The sentence-final *a* is another particle that has a unified function that is similar to mitigation, but actually expresses an even more general conversational strategy, that of expressing friendliness, in combination with all kinds of sentence types. This was already observed by Li and Thompson (1981:313–317), who indicate that sentence-final *a* performs the function of reducing the forcefulness of the sentence and indicating friendliness. In (26a), the occurrence of *a* softens the force of an assertion, making it less blunt; in (26b), the *wh*-question is asked in a more polite and welcoming way; in (26c), the request sounds more suggestive and thus much less pushy and face-threatening; in (26d), the intensity of strong emotions is softened and in (26e), the interjection *hao* is given with willingness and gladness.¹⁶

¹⁵ The particle *a* can be assimilated with the immediately preceding phoneme into three variants: *ya* (when preceded by [a], [i], or [ü]), *na* (when preceded by [n]), and *wa* (when preceded by [u]). In our preliminary searching of the CCL corpus, the particle *a* never precedes any one of the other seven particles. Hence, as this paper investigates the clustering of particles, these assimilations are only concerned with the phonemes of the particles that precede the particle *a*. The last phoneme of *de*, *le* and *ne* is [e]; the last phoneme of *ma* and *ba* is [a]; the last phoneme of *ou* is [o]. Therefore, the assimilated variant of *a* is only *ya*, when it is preceded by *ma* or *ba*. The sequences of *ma ya* and *ba ya* were also searched in the corpus. However, no such combinations were found. Apart from assimilations, the particle *a* can be fused with the preceding phoneme into *la* (*le* + *a*) and *lou* (*le* + *ou*), both of which have been taken into consideration in the data.

¹⁶ The English equivalent for *hao* is 'good' or 'great'. When the speaker does not want to show too much enthusiasm for an offer, the presence of *a* results in the English equivalent 'okay'. Although the willingness and gladness are mitigated, the friendliness is intentionally retained by the speaker.

- (26) a. 实在是没有时间啊。
shi-zai shi mei-you shi-jian a.
 really COP not time MIT
 'I really don't have the time. I wish I had the time.'
- b. 哪本书啊?
na ben shu a?
 which CLF book MIT
 'Which book is it then?'
- c. 大家记住啊
da-jia ji-zhu a.
 everyone learn.by.heart MIT
 'Everyone, please learn it by heart.'
- d. 这多么好笑啊!
zhe duo-me hao-xiao a!
 this how.much funny MIT
 'How funny this is!'
- e. 好啊。
hao a.
 good MIT
 'Okay!'

The difference between *ba* and *a* is that the former mitigates to negotiate with the addressee while the latter shows friendliness towards the addressee.

Similar to the particle *ba*, there is much controversy concerning the functions of sentence-final *a*. This controversy is largely due to two kinds of misinterpretations. First, very often the meanings of other elements of the sentence, or the illocutionary force, are attributed to the particle *a*. Chao (1968:805–808) lists ten uses of *a*, most of which have been argued by Li and Thompson (1981:313–317) to be unrelated to the occurrence of *a*. For example, Chao (1968:807) holds that *a* can signal commands, but Li and Thompson (1981:314–315) argue that *a* does not signal commands because the sentence itself is a command as in (27), in which *a* instead has the function of reducing the forcefulness of the command, thus making the sentence more of a suggestion or an encouragement than a command.

- (27) 你来啊
ni lai a.
 2SG come MIT
 'Come here then.' (Li & Thompson 1981:315)

Paul (2014:92) believes that *a* expresses astonishment as in (28).

(28) 你要去啊?

ni yao qu a?

you want go MIT

'You are going as well? Did I hear you right?' (Paul 2014:92)

There is indeed a surprise reading in the sentence; however, this reading is due to the remaining elements of the sentence as well as to a certain intonation rather than to the occurrence of *a*, as this reading persists even after *a* is removed. Apart from surprise, the particle *a* is also considered to express emotions and feelings (e.g. Hu 1987:86) such as lamentation in (29). The speaker is expressing emotions about how pitiable certain children are. However, again, the particle *a* is not responsible for expressing the emotions of the sentence as the sentence still sounds emotive after the removal of *a*. The presence of *a* just reduces the intensity of the emotions;¹⁷ therefore, *a* is also a mitigator in highly expressive sentences.

(29) 想想孩子们吧, 多可怜啊!

xiang xiang hai-zi-men ba, duo ke-lian a!

think think children MIT more pitiable MIT

'Come on, think about children. How pitiable they are!'

The second misinterpretation involves the secondary connotation of sentence-final *a*. This connotation results from the interaction between the interrogative illocutionary force of the sentence and the generalized mitigating function that the sentence-final *a* carries. For instance, sentence-final *ba* has a confirmation-soliciting reading in interrogatives. However, this is not a direct function that *ba* realizes; instead, it is a mitigating effect resulting from the interaction between the general mitigating function and the inquisitiveness of a question. With regard to sentence-final *a*, it is also considered to have the function of seeking confirmation (Chao 1968:806; Lü 2016:46–47; Zhu 1982:212), which has been argued against by Li and Thompson (1981:314), who show that the particle *a* does not signal a confirmation question. The sentences in (30) both have a confirmation reading but differ in degrees and explicitness. When compared on a question continuum, (30a) is closer to a polar question while (30b) is closer to a tag question. The inquisitiveness of a polar question is higher and more imposing than that of a tag question. Therefore, the function that *a* plays in

¹⁷ This mitigation becomes apparent when compared with the sentence without the presence of *a*. In (i), the emotional intensity is stronger than that of (29). The motivation for the speaker to mitigate strong emotions is to avoid sounding too intense and to leave space for the addressee to think otherwise.

(i) *xiang xiang hai-zi-men ba, duo ke-lian!*

think think children MIT more pitiable

'Come on, think about children. How pitiable they are!'

(30b) is not to encode confirmation-seeking but to reduce the potential face-threatening effect that a question might have, as a result of which the confirmation-seeking intention becomes more explicit.

- (30) a. 你不去?
ni bu qu?
 2SG NEG go
 'Aren't you going?'
 b. 你不去啊?
ni bu qu a?
 2SG NEG go MIT
 'Aren't you going then?' (Chao 1968:806)

Furthermore, in (30a), the speaker expresses a high expectation that the addressee is going, whereas in (30b) the speaker still implies this expectation, but its intensity is much softened and the question sounds more friendly and consultative. Again, this effect is a result of the interaction between the mitigating function of *a* and the force of an interrogation.

Note that there is a difference between the confirmation-soliciting sentences with *ba* and those with *a*, although both function as mitigators. With *a*, as in (30b), the speaker is trying to show friendliness and kindness with the implicature that the speaker expects the addressee to go but that it is also fine if the addressee is not going. With *ba*, on the other hand, as in (31), the speaker is trying to leave space for negotiation with the implicature that the speaker assumes that the addressee is not going and is just confirming this assumption. As a consequence, the sentence with *ba* is more confirmation-inviting than that with *a*.

- (31) 你不去吧?
ni bu qu ba?
 2SG NEG go MIT
 'You are not going?'

From the above discussions about the pragmatic functions of *a*, it seems that the particle *a* functions also at the layer of the Discourse Act in FDG. However, some aspects of its behavior, such as its combinability with *ba* in (29) above, for instance, suggest that it operates at an even higher layer. We will pursue this issue further in Section 5.2.

4.9. The positioning of Mandarin sentence-final particles in FDG

In the previous sections, we have categorized each individual particle according to its semantic or pragmatic function(s). The way in which each particle operates at a specific layer in the FDG framework can be preliminarily summarized as follows:

de: a modal marker of certainty at the layer of the Propositional Content;
*le*₃: a mirative marker of newsworthiness and surprise at the layer of the Communicated Content;

ma: a reinforcer of different illocutionary forces at the layer of the Discourse Act;

*ne*₁: a contradiction marker at the layer of the Communicated Content;

*ne*₂: a reinforcer of interrogative force at the layer of the Discourse Act;

ba: a mitigator of negotiation at the layer of the Discourse Act;

ou: a reinforcer of emphasis at the layer of the Discourse Act, or perhaps at a higher layer;

a: a mitigator of friendliness at the layer of the Discourse Act, or perhaps at a higher layer.

After we locate each particle into Table 2, we get Table 3.

Table 3. The predicted hierarchical layering of Mandarin sentence-final particles (preliminary)

	Interpersonal Level		Representational Level
	Discourse Act	Communicated Content	Propositional Content
Mood	<i>a, ba, ma, ne</i> ₂ , <i>ou</i>		<i>de</i>
Polarity		<i>ne</i> ₁	
Mirativity		<i>le</i> ₃	

Table 3 shows which layer each individual particle pertains to and how the particles are hierarchically related. As seen from this table, the particles *a, ba, ma, ne*₂, and *ou*, as illocutionary modifiers, operate at the layer of the Discourse Act (or at an even higher layer); particles *ne*₁ and *le*₃, as markers of contradiction and mirativity, respectively, are located at the layer of the Communicated Content; the particle *de*, a modal marker of uncertainty, operates at the layer of the Propositional Content. The particle *de* is the only one that applies at the Representational level while the remaining seven apply at the Interpersonal Level.

As in FDG pragmatics governs semantics, the Interpersonal Level occupies a hierarchically higher position than the Representational Level, the particle *de* occupies the lowest layer while for those that are at the Interpersonal Level, the hierarchy that applies from higher to lower layers is: *a/ba/ma/ou/ne*₂ > *ne*₁/*le*₃. As all layers maintain hierarchical relations with each other, we expect that particles pertaining to these layers manifest themselves in such a way that the higher the layer at which they operate, the more remote from the predicate they will be expressed, irrespective of their category (e.g. Mood). With regard to the particles that pertain to the same layer, either they are mutually exclusive if they fall into the same category

(e.g. Mirativity), or they can co-occur if they belong to different categories (e.g. one belonging to Mood and the other to Polarity). Therefore, it is predicted that the linear orderings of particle clusters should be restricted by both their hierarchical positioning in Table 3 and their membership of specific categories.

5. Particle layering

5.1. Introduction

In order to test the above prediction and to see the actual full range of possible sequences of these particles, we searched the CCL corpus for all logically possible permutations of these eight particles. Since two of these are homophonous and cannot be distinguished graphically in the corpus (ne_1 and ne_2), we would in theory expect that there would be $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$ possibilities for combining them. The result will be discussed in detail in this section.

5.2. The three-particle sequence and the layering of *de* and *le*

Although there are immense possibilities for the eight particles to combine with each other, in reality maximally three sentence-final particles are found to cluster in a sentence, which is consistent with Wang's (2017) findings. After extracting the raw frequencies of the combinations of three particles from the corpus, we manually annotated each sentence, eliminating non-final uses such as attributive *de* and aspectual *le*. In this phase we also split out the two different uses of *ne*. The results are presented in Table 4.

The most frequent cluster is *de la* ($le_3 + a$). In (32), *de la* indicates that the speaker is certain about the smell of the petroleum because as a local, he/she smells it all the year around and presents this information as newsworthy to the addressee, who fusses about it, in a less assertive and thus friendlier way.

Table 4. Frequencies of three particle sequences

Particle sequence	Frequency
<i>de la</i> ($le_3 + a$)	229
<i>de le_3 ba</i>	26
<i>de lou</i> ($le_3 + ou$)	23
<i>de le_3 ma</i>	4
<i>de le_3 ne_1</i>	1
<i>de le_3 ne_2</i>	2
<i>de le_3 a</i>	1
<i>de ma le_3</i>	1

- (32) (The locals smell petroleum in the air after it rained. Some think this is serious air pollution but many others simply dismiss it, and say:)

汽油味?整年都有的啦, 有什么值得大惊小怪的!

qi-you wei? zheng nian dou you de la, you
petroleum smell whole year all have CERT MIR.MIT have
shen-me zhi-de da-jing-xiao-guai de!
what worthy fuss CERT

‘Petroleum smell? (We) have it all year around. There is nothing to fuss about.’

As shown in Table 4, the second and third most frequent combinations are *de le₃ ba* and *de lou* (*le₃ + ou*). In (33a), with *de le₃ ba*, the speaker is soliciting confirmation (*ba*) from the addressee about the propositional content that he/she is quite sure of (*de*), which is however beyond the present knowledge of the addressee (*le₃*). In (33b), with *de lou*, the speaker is not only certain about the positive answer (*de*), but also signals its newsworthiness (*le₃*), and presents it in a forceful way (*ou*) to the addressee, although immediately after this he/she corrects his/her strong commitment to it.

- (33) a. 我说得够清楚的了把?

wo shuo de gou qing-chu de le₃ ba?
1SG speak COMP enough clear CERT MIR MIT
‘I have made it clear, right?’

- b. 是的喽, 啊, 也不一定, 不一定

shi de lou, a, ye bu yi-ding, bu yi-ding.
yes CERT MIR.REINF INTJ too not certain not certain
‘Yes, indeed. Ah, it may not be so certain, not so certain.’

Table 4 shows the high degree of combinability of *de le₃* with all the other particles (*ba*, *ou*, *ma*, *ne₁/ne₂* and *a*).¹⁸ This is in agreement with the hierarchical relations predicted in Table 3 between *de* and *le₃* themselves as well as between both *de le₃* and the other particles. Although there are quite a lot of sentences in our data that have a sequence of *le de*, the particle *le* is in those cases always an aspectual marker *le₂*, as exemplified in (34).¹⁹

- (34) a. 大约也是“命中注定”了的吧。

da-yue ye shi “ming zhong zhu-ding” le₂ de ba.
perhaps too COP fate middle destined PRF CER MIT
‘Perhaps, this has been destined.’

¹⁸ The combinability of *le₃* and *ne₁* will be discussed in Section 5.5.

¹⁹ Note that in (34) the particle *de* combines with the modal *da-yue* ‘perhaps’. This does not contradict our analysis of *de* as a modal particle expressing certainty, as the two modal elements have different scope (see Table 1).

b. 你保证了的啊。

ni bao-zheng le₂ de a.
 2SG promise PRF CERT MIT
 'You have promised.'

In both linear orders *le₂ de ba* and *le₂ de a* in (34), *le₂* is a perfect marker which encodes that the state-of-affairs concerned has occurred in the past and that its effect continues to the present. The legitimacy of the sequence *le₂ de* can also be understood from the fact that perfect aspect is an operator at the layer of the State of Affairs within the Representational Level, a layer lower than that of the Propositional Content, at which *de* is situated.

To sum up, our corpus data confirms the hierarchical positioning of *de* and *le₃* as predicted in Table 3: *de* is located at the lowest layer and *le₃* is at the second lowest. This hierarchical layering not only determines their sequential order when they co-occur, but also the sequential orders when they combine with the other five particles. There is only one counterexample to this generalization, which is the sequence *de ma le₃*, which occurs only once in the corpus. We will come back to this counterexample in Section 5.6.

5.3. The layering of *ne₁*, and *a*

As the maximal number of Mandarin sentence-final particles in a cluster is three and these clusters are always made up of *de le₃* along with one of the other six particles, the hierarchical distribution of the other six (*ba*, *ma*, *ne₁*, *ne₂*, *ou*, and *a*) has to be investigated through the data on the linear ordering of pairs of these particles. Their combinatory frequencies are given in Table 5, in which the frequencies of the combinations of *de*

Table 5. Frequencies of two particle sequences (among *ba*, *ma*, *ne₁*/*ne₂*, *ou*, and *a*)

Particle sequence	Frequency
<i>ne₁ le₃</i>	1
<i>ne₂ le₃</i>	2
<i>ne₁ ba</i>	32
<i>ne₁ ma</i>	54
<i>ne₁ a</i>	12
<i>ne₂ a</i>	2
<i>ma le₃</i>	3
<i>ma a</i>	4
<i>ba a</i>	13
<i>b'ou (ba + ou)</i>	211 ²⁰
<i>a ne₂</i>	1

or le_3 with any other particle are not presented, as the hierarchical relations of de and le_3 with the remaining six have already been clarified in Section 5.2.

Basically, the hierarchical relations presented in Table 3 are confirmed by our data on combinations of two particles. The particle ne_1 does not follow but precedes ba , ma or a ($ne_1 ba$, $ne_1 ma$, $ne_1 a$) as in (35), which shows that ne_1 occupies a lower layer than ba , ma and a .²¹

- (35) a. 你就等着我说这句话呢吧?
ni jiu deng zhe wo shuo zhe ju hua
 2SG right.way wait PROG 1SG speak this CLF words
ne₁ ba?
 CTR MIT
 ‘You are just waiting for me to say this sentence, right?
 (You think I don’t know. I know it!’
- b. 我不是正睡觉呢吗?
wo bu shi zheng shui-jiao ne₁ ma?
 1SG not COP PROG sleep CTR REINF
 ‘Aren’t I sleeping? (Do you think I am not?)’
- c. 我这一会还得回家吃饭去呢啊。
wo zhe yi hui hai de hui jia chi fan qu
 1SG this one CLF still have.to back home eat meal go
ne₁ a.
 CTR MIT
 ‘You may not realize that I have to go back home to eat now.’

Also, as seen from Table 5, a mostly follows ba , ma and ne_2 ($ba a$, $ma a$, $ne_2 a$) and only in one case precedes ne_2 , which shows that a occupies the outermost position of all sentence final particles, and is therefore supposed to operate at the highest layer in terms of FDG. The position of a is illustrated in (36). We will return to the counterexample in Section 5.6.

- (36) a. 行，待着吧，待着吧啊。
xing, dai zhe ba, dai zhe ba a.
 fine stay PROG MIT stay PROG MIT MIT
 ‘Fine, stay where you are, all right, stay where you are, all
 right, please do that.’

²⁰ More than half are fixed sentences such as *hao bo* ‘OK?’, *shi bo* ‘Is it?’ and *xiao de bo* ‘you know?’. Their relative frequencies are 30%, 21% and 6% respectively. However, as each is uttered in a different context, we consider them as separate instances. Note that even without these cases the combination *ba ou* would be the one with the highest frequency in Table 5.

²¹ There is only one counter-example ($a ne$) in our data as shown in the last row of Table 5. We will discuss this exception in Section 5.6.

- b. 你们仲裁员是瞎了吗啊?
ni-men zhong-chai-yuan shi xia le ma a.
 2PL arbitrator COP blind PRF REINF MIT
 'Is the arbitrator of yours blind?! Isn't he?'
- c. 孙操心话说怎么这样乐呢啊。
Sun Cao xin hua shuo zen-me zhe-yang le ne₂
 Sun Cao heart words say how like.this happy REINF
a.
 MIT
 'Sun Cao spoke to himself, how could (she) be so happy?
 Please tell me.'

However, the ordering of *ba* and *a* is not compatible with the layering presented in Table 3, in which *ba* and *a* fall into the same category and are at the same layer, that of the Discourse Act, which means that *ba* and *a* would be expected to be mutually exclusive and never co-occur. Thirteen instances of the surface sequence *ba a* suggest that *a* functions at a layer even higher than the one occupied by *ba*, a conclusion that Li (2006:63–65) also arrives at. However, in Table 3, *ba* already operates at the highest layer. Actually, FDG acknowledges the existence of such a higher layer, which is the layer of the Move, defined as an autonomous contribution to an ongoing interaction (Hengeveld & Mackenzie 2008:50–60). The reason why the layer of the Move is not included in Table 1 in Section 2 is that few operators (defined as grammatical expressions) have so far been encountered operating at this layer (Hengeveld & Mackenzie 2008:59–60; Keizer 2015:91–92). The particle *a* could be a further example of the expression of an operator modifying a Move. The difference between a Move and a Discourse Act is that the former is the minimal free unit of discourse (Hengeveld & Mackenzie 2008:50) and furthers the communication in terms of approaching a conversational goal, whereas the latter is the smallest identifiable units of communicative behavior and does not further the communication in the same sense as a Move does (Hengeveld & Mackenzie 2008:60). Hence, *a* would not be used to modify a Discourse Act that may constitute only part of a Move; instead, it would modify a complete and minimal unit that advances the communication. Evidence for this can be found in the following examples.

- (37) a. (The interviewee talks about her experience of buying a dress at a children's clothing store in a foreign country.)
 鲁豫:真的在童装店买到了啊?
Lu Yu: zhen-de zai tong zhuang dian mai dao le
 Lu Yu really be children clothes shop buy arrive PFV
a?
 MIT

Lu Yu: 'You really finally bought it at a children's clothing shop?'

周迅:对啊。而且那件衣服还挺有中国的感觉。

Zhou Xun: *dui a. er-qie na jian yi-fu hai ting*
 Zhou Xun right MIT besides that CLF clothes even very
you zhong-guo de gan-jue.
 have China ATTR feel

Zhou Xun: 'Right. Besides, that dress even has a Chinese feel.'

- b. (Two people are arguing about whether it is the wind that moves or it is the flag that moves. A Master monk asks them to stop the fight and says,)

我愿意为你们做个公证的裁判，其实不是风动，也不是幡动，而是二位仁者心动啊！

wo yuan-yi wei ni-men zuo ge gong-zheng de
 1SG willing for you make CLF fair ATTR
cai-pan, qi-shi bu shi feng dong, ye bu shi fan
 judgment actually not COP wind move also not COP flag
dong, er-shi er wei ren-zhe xin dong a!

move instead two CLF the.virtuous heart move MIT
 'I am willing to judge your dispute objectively. Actually it is not the wind that moves, nor is it the flag that moves; instead, it is the hearts of you two virtuous' that move.'

In (37a), *a* is used in the adjacency pair of a question asked by Lu Yu and an answer given by Zhou Xun. Both serve as Moves that further the communication between the two interactants. In the answer part, *dui a* is a complete answer to the question whether she has bought the clothes, while the follow-up sentence is additional information not solicited by the question and therefore constitutes a new Move. Therefore, the answer is not made up of two Discourse Acts but of two Moves, in which *a* mitigates the first Move.

While (37a) is a case in which the Move and the Discourse Act coincide, (37b) shows that *a* has scope over three Discourse Acts that collectively serve as the contents of the monk's promised judgment. The three Discourse Acts are manifested by the serial sentences *bu shi...*, *ye bu shi...*, *er shi...* 'it is not the case that..., nor is the case that..., it is actually that...'. Each of the three forms part of the Monk's overall judgment he makes in order to stop the fight. The particle *a* here is used at the end of the sequential sentences to mark the friendliness over the three Discourse Acts, thus having scope over the entire Move.

The fact that *a* and *ba* are both mitigators but operate at different layers reflects their different communicative strategies. The particle *a* represents a more general strategy of expressing the speaker's intention to be friendly in all kinds of illocutions with which it occurs, whereas

the particle *ba* interacts directly with specific types of illocutions which results in different pragmatic effects. For instance, in declaratives, the presence of *ba* reduces the assertiveness of the statement; in directives, its presence provides more space for negotiation and the request is thus less face-threatening for the participants involved. Hence, *ba* reinforces in a less general way than *a* does, thus functioning at a lower scope.

In this section, we have confirmed from corpus data the hierarchical relations of *ne*₁, a marker expressing contradiction, with the other particles predicted in Table 3 and also proposed that a new layer, the Move, at which *a* operates, should be added to the TMAEP operator system based on the sequence *ba a*.

5.4. The layering of *ma*, *ne*₂, *ba* and *ou*

Among the six particles discussed in the previous subsection, the layers of *a* and *ne*₁ have now been determined. In the following, we will move on to discuss the hierarchical relations between *ma* ‘REINF’, *ne*₂ ‘REINF’, *ba* ‘MIT’ and *ou* ‘REINF’.

In our data, *ma*, *ne*₂, and *ba* never co-occur. This is as we would expect, as we have initially classified them as belonging to the same layer, that of the Discourse Act, at which they serve as illocutionary modifiers. The fact that they never co-occur is consistent with our prediction in Table 3 that they pertain to the same layer of the Discourse Act, and confirms that these three particles fall into the same category, as otherwise they could still co-occur as elements of different categories.

However, as also mentioned in the literature (Chao 1968; Pan 2015; Pan & Paul 2016), *ba* and *ou* can co-occur. This happens despite the fact that we have classified *ou* as an illocutionary modifier, just as the other three. An example is given in (38):

- (38) 都九点了，快起来啵。
dou jiu dian le, kuai qi-lai b'ou.
 already nine o'clock PRF hurry get.up MIT.REINF
 ‘It’s already nine o’clock. Get up quickly.’ (Zhu 1982:207)

Zhu (1982:207) suggests that the fused graphic form of *b'ou* is 啵 (*bo*). The searching for this form in CCL corpus results in 211 instances, as shown in Table 5. Consider example (39).

- (39) 下次让你请客，好啵？
xia ci rang ni qing ke, hao bo?
 next time let 2SG invite guest good MIT.REINF
 ‘Next time you pay, OK?’

In (39), the mitigating effect of *ba* interacts with the reinforcing effect of *ou*, which results in less space for negotiation compared with the single occurrence of *ba*, as well as in a less demanding tone compared with the single occurrence of *ou*. The sequence *b'ou* or *bo* thus actually suggests that, just as *a*, *ou* also operates at a layer higher than that of the Discourse Act, that is, the layer of Move.

The fact that *ou* and *ma* are both reinforcers but operate at different layers reflects their different communicative strategies. *Ou* has a more general strategy as in whatever sentence types in which *ou* occurs, it invariably reinforces the cruciality of the message being conveyed, whether it is a proposition that should be paid special attention to or an action that should be carried out because of earnest and insistent necessity. In comparison, *ma* interacts specifically with every type of the illocutionary force, thus leading to different reinforcing effects. For instance, in declaratives, *ma* brings the effect of a dogmatic assertion; in polar interrogatives, it can strengthen the inquisitiveness of the question; in content questions, it explicitly expresses the speaker's insistence on an answer. Hence, *ma* reinforces in a less general way than *ou* does, thus functioning at a lower scope.

To summarize, the hierarchical layering of *ma*, *ne*₂, *ba* and *ou* is: *ou* > *ba/ma/ ne*₂. Specifically, *ou* operates at the layer of the Move, *ba*, *ma*, and *ne*₂ operate at the layer of Discourse Act.

5.5. The sequence *le*₃ *ne*₁

In Table 3, both *le*₃ and *ne*₁ are at the same layer, that of the Communicated Content; however, in our data, *le*₃ precedes *ne*₁ as in (40).

- (40) 你写得太大了。我看还小了呢。
ni xie de tai da le. Wo kan hai xiao le₃ ne₁.
 2SG write COMP too big MIR 1SG see still small MIR CTR
 'Your writing is too big? I think it is still small.'

This does not contradict the prediction that *le*₃ and *ne*₁ operate at the same layer as they fall into different categories. *le*₃ belongs to the category of mirativity while *ne*₁ belongs to the category of polarity. The principle of mutual exclusivity applies only to elements of the same category. Actually, it is quite legitimate for *ne*₁ to have scope over *le*₃ as *ne*₁ indicates the opposite relationships between communicated contents, either with the previous communicated content or the implicit communicated content in the context, whereas *le*₃ encodes the information status of the single ongoing communicated content. This again confirms our prediction that particles of different categories can co-occur despite pertaining to the same layer.

5.6. Exceptional cases

In both Table 4 and Table 5, there are unusual sequences with extremely low frequencies: *de ma le₃* in Table 4 and *ne₁ le*, *a ne₂* and *ma le₃* in Table 5. As *de ma le₃* and *ma le₃* are actually the same sentence and it is not unusual for *de* to precede *le₃ ma*, we then narrowed down the exceptional sequences into three: *ne₁ le₃*, *a ne₂*, *ma le₃*. We asked 15 native speakers about the acceptability of these sequences as well as their counterparts with a reversed sequential order of the particles, where acceptability was tested in three degrees: ‘acceptable’, ‘unacceptable’, and ‘dubious’. The results are presented in Table 6.

Table 6. The acceptability of the unusual sequences

Sequence		Sentence number	Acceptable %		Unacceptable %		Dubious %	
found	expected		found	expected	found	expected	found	expected
<i>ne₁ le₃</i>	<i>le₃ ne₁</i>	1	60.0	86.7	40.0	6.7	0	6.7
<i>ne₂ le₃</i>	<i>le₃ ne₂</i>	1	13.3	93.3	53.3	6.7	33.3	0
		2	13.3	66.7	53.3	20.0	33.3	13.3
<i>ma le₃</i>	<i>le₃ ma</i>	1	13.3	80.0	86.7	13.3	0	6.7
		2	6.7	60.0	93.3	26.7	0	13.3
		3	13.3	46.7	80.0	26.7	6.7	26.7
<i>a ne₂</i>	<i>ne₂ a</i>	1	0	6.7	80.0	53.3	20.0	40.0
<i>ba de</i>	<i>de ba</i>	1	6.7	86.7	93.3	6.7	0	6.7

In Table 6, the orders found and the orders expected are given, as well as their evaluation by 15 native speakers, given as percentages. As can be seen in Table 6, there is a general tendency that the expected orders are more acceptable than the unexpected ones that were found in the corpus. There is no absolute unacceptability even concerning the sequence *ba de*, which is not from our data and is the reversed order of *de ba* as it occurs in a sentence from the CCL corpus. The pair *ba de* and *de ba* are given in the questionnaire to test the reliability of the results. Among the three orders investigated, there is a higher rate of unacceptability as regards the ordering *ma le₃* and *a ne₂* as shown in the fourth column. However, as for the ordering *ne₁ le₃/ne₂ le₃*, the rate of unacceptability for the first two sentences is just slightly above 50% while 60% of the participants think that the third sentence is acceptable, although in comparison the reversed ordering *le₃ ne₁* is more acceptable with a high rate of 86.7%. It is unclear whether this difference in the third sentence is brought about by the context or other constituents of the sentence. Further investigation is

needed in this respect. Nevertheless, the results in Table 6 show that usual orders are definitely more acceptable in Mandarin.

6. Discussion and conclusion

In this paper, we used naturally-occurring data and the Functional Discourse Grammar framework to explore the full range of possible orderings of eight Mandarin sentence-final particles and offered a systematic explanation for why these particles have to follow a rigid order when they co-occur. We found that maximally three particles can cluster and that the sentence-final particles investigated are organized in a strict four-layered hierarchical organization as presented in Table 7, in which each particle pertains to a specific semantic or pragmatic layer. Their surface ordering is restricted by their hierarchical positioning in the underlying structure. Particles of different layers may cluster according to their hierarchical scope over each other while particles of the same layer either are mutually exclusive or can cluster if they fall into different categories.

Based on the sequential ordering of these Mandarin particles and on their special pragmatic characteristics, we have shown that the particles *a* and *ou* prove to be operators at the layer of the Move in FDG; thus a category of Move operators should be added to the Interpersonal Level in FDG as indicated in Table 7.

Table 7. The hierarchical layering of Mandarin sentence-final particles

	Interpersonal Level			Representational Level
	Move	Discourse Act	Communicated Content	Propositional Content
Mood	<i>a, ou</i>	<i>ba, ma, ne₂</i>		<i>de</i>
Polarity			<i>ne₁</i>	
Mirativity			<i>le₃</i>	

In Table 8 we show how our conclusions relate to those arrived at by other scholars. As shown in this, our four-layered hierarchy shows considerable overlap with the results arrived at by other scholars, working in different theoretical frameworks. It is consistent with the three-split structures proposed by Hu (1981:99), Zhu (1982:210–211), and Paul (2014:83) in that *ba* and *ma* pertain to a layer lower than *a* and *ou* yet higher than *le*. It is also consistent with Paul (2014), Xiong (2007), and Huang and Liao (2011) in that *de* occupies the lowest layer. The co-occurrences of particles follow the hierarchies proposed by most scholars,

Table 8. Comparison with findings of other scholars

	A	B	C	D
This paper	<i>a, ou</i>	<i>ba, ma, ne₂</i>	<i>ne₁, le₃</i>	<i>de</i>
Hu (1981)	<i>a, ou, ai</i>	<i>ba₁, ba₂, ma, ne, mǎ</i>	<i>de, le</i>	--
Zhu (1982)	<i>a, ou, ne₃, ei, mǎ, ba le</i>	<i>ba₁, ba₂, ma, ne₂</i>	<i>ne₁, le, lai-zhe</i>	--
Li (2006)	<i>a</i>	<i>ba, ma</i>	<i>ne</i>	--
Xiong (2007)	<i>a, ou, ei, mǎ, ne₃, ba le</i>	<i>ma, ne₂, ba₁, ba₂</i>	<i>le, ne₁, lai-zhe</i>	<i>de</i>
Huang & Liao (2011)		<i>ne, ba, ma, a</i>	<i>le</i>	<i>de</i>
Paul (2014)	<i>a, ou, ne₃</i>	<i>ba, ma, ne₂</i>	<i>ne₁, le, lai-zhe</i>	<i>de</i> ²³

although not every layer needs to be filled when they co-occur, as predicted by Zhu (1982:208). Zhu's prediction, as well as others' such as Chao's (1968),²² that three particles can cluster with a rigid order, is confirmed by our corpus finding that maximally three particles cluster despite the fact that particles are located at more than three different layers.

Our proposal differs, however, from earlier ones in the following respects. Firstly, a different set of particles is included in our investigation and these particles are categorized quite differently as to their functions. For instance, according to Paul (2014), the particle *a* expresses astonishment; Paul (2014) considers *ma* to indicate the *yes/no* question status of a sentence and Zhu (1982) states that *ne* can be used to indicate a content question. However, Mandarin sentence-final particles are not obligatory. Their optionality makes it incorrect to categorize particles such as *ma* and *ne* as typing particles for questions. In this paper, we categorize *a* and *ba* as mitigators, and *ma*, *ne₂* and *ou* as reinforcers. Mitigators reduce, and do not indicate, the illocutionary force of the sentence; reinforcers enhance, and do not indicate, the illocutionary force of the sentence. Our categorization provides explanations for the optionality of these particles as well as an answer to the question why the illocutionary status of the sentence is retained after the removal of these particles in the sentence they occur in.

²² Chao (1968:799–800) mentions the phenomena of the succession of sentence-final particles by providing some examples of particle combinations. His purpose is to illustrate the fusional possibilities for particle successions. No further explanation is given concerning the layering relations between particles in his examples of particle combinations.

²³ Paul (2014) did not include *de* in her clause structure analysis, but argues later in the paper that *de* is a complementizer; therefore we assume that she locates *de* at a lower layer in her structure.

Secondly, we differentiate *ne* into *ne*₁ and *ne*₂ and they operate at different layers. Zhu (1982:210–211) and Paul (2014:83) propose three *nes*, which operate at three different layers, while Hu (1981:99) believes that there is only one particle *ne*, which shares its layer with *ba* and *ma*. Li (2006:65) also proposes a three-layered structure for the four particles she investigates (*a*, *ba*, *ma* and *ne*). Like Hu (1981:99), she gives *ne* a unified treatment, but argues that *ne* occupies a layer lower than *ba* and *ma*.

Thirdly, we differentiate the particles investigated according to their semantic or pragmatic functions. The sentence-final *de* is different from the rest in that it realizes semantic functions whereas the others all realize pragmatic functions. The particle *de* is proposition-oriented, concerning the truth or falsity of the propositional content. The rest of the particles are interpersonally motivated, functioning to maintain interpersonal relationships between the speaker and the addressee.

In all, we feel that our analysis is not only supported by the data from our corpus, but also finds support in work done by other scholars on this topic. This is even more important as the points of departure of different frameworks are radically different. In a formal framework, the ordering of particles (syntax) is the point of departure, and generalizations about the meaning and use of particles (semantics and pragmatics) are derived from that. In a functional approach such as ours, however, the meaning and use of particles (semantics and pragmatics) are the point of departure, and predictions about their ordering (syntax) are derived from those. When two approaches that take such different points of departure converge substantially in their conclusions, this makes these conclusions better supported and more convincing.

Our functional approach furthermore brings along that the meaning of the particles under consideration has to be defined carefully in terms of their semantic and pragmatic properties, as these are the starting point for the formal analysis. By adopting the notions of mitigation and reinforcement from Functional Discourse Grammar, as well as the distinctions between layers in this model, we hope to have contributed to a more fine-grained classification of this much debated set of particles.

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Received April 6, 2021

Accepted April 8, 2022

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