

Mandarin *Yě* and Scalarity

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Abstract

This paper examines the use of Mandarin *yě* ‘also’ in contexts which *dōu* can be used as well, e.g., in *no matter* and *even* contexts. I argue that there is a correlation between the possibility of using *yě* and the presence of a scalar reading as well as a reference to an extremity on the scale in question. The data we present show that *yě* is invariably associated with scalar readings: *yě* is always used in scalar contexts, and contexts that are not obviously scalar become so when *yě* is used. I also argue that a scalar interpretation of *wh*-elements in *no matter* contexts can be derived with the aid of negation or modals, thus accounting for the felicitousness of *yě* in such contexts. The paper ends with a short note on *lián*, hypothesizing that its function is to introduce the extreme of the scale. I also argue that the licensing condition of the additive/basic *yě*, i.e., the presence of alternatives in the background, also plays a role in the scalar use of *yě*.

Keywords

Mandarin *yě*, Mandarin *dōu*, scalarity, free choice, Mandarin *lián*

1. Introduction of Mandarin *yě*

It is generally assumed that additivity is the semantic core or “basic use” of the Mandarin particle *yě* (Hou 1998; Lü 1999; Hole 2004). As an additive particle, *yě* always triggers the alternatives in the discourse. The additive use of *yě* is essentially the same as that of English *also*, German *auch*, and Dutch *ook*. They all share the characteristics as noted by König (1991: 62): “All sentences with simple additive particles entail the corresponding sentences without particle and presuppose furthermore that at least one of the alternative values under consideration in a context satisfies the complex predicate.” For instance, as Yang (1988: 56) points out, there are at least three possible alternatives in the background due to the use of *yě* in the following sentence:

- (1) Wáng lǎoshī yě jiāo shùxué.
 Wáng teacher also teach math
 a. There is at least one other person who teaches math.
 b. Teacher Wang teaches at least one other subject besides math.
 c. Teacher Wang not only teaches but also studies math.
 (Yang 1988: 56)

It is clear that, with *yě* inserted in the sentence, every constituent of the sentence can be viewed as the added information to the alternatives in the background. This illustrates the “additive” nature of Mandarin *yě*.

However, in this paper, the basic, or additive, use of *yě* is not the focus of investigation. Instead, in this paper, the focus is the use of *yě* in other contexts, for instance, in sentences with a *wh*-phrase or a disjunctive phrase in the left periphery expressing *no matter* like (2) or sentences involving *even* like (3).

- (2) (Wúlùn) shéi *(yě/dōu) shuǐfú-bu-liǎo tā.¹
 no.matter who YE/DOU not.be.able.to.persuade (s)he
 ‘Nobody can persuade him.’
- (3) Tā lián yí-jù-Hélán-huà *(yě/dōu) bù huì.
 (s)he even one-CL-Dutch-language YE/DOU not can
 ‘He doesn’t even know one Dutch sentence.’

The *yě* in these contexts is referred to Hole’s (2004) term “parametric *yě*”. I eventually conclude that *yě* in these contexts would be aptly referred to as “scalar *yě*”. However, until we reach this conclusion, I use Hole’s term. As you may have noticed, an alternative particle, *dōu*, can also be used here. In its basic use, *dōu* typically forces the distribution of a predicate over a plural noun phrase preceding it. As such, it is called a distributor (Lee 1986; Liu 1990; Lin 1998; Cheng 1991 and Cheng 1995) or a maximality operator (Giannakidou and Cheng 2006; Cheng 2009;

1 The word *wúlùn* ‘no matter’ can co-occur with a *wh*-phrase without changing the meaning. Lin (1996: 56–58) claims that a null *wúlùn* exists in all *no matter* sentences without the overt *no matter* word. He treats *wh...dōu* constructions as elliptical *wúlùn* constructions.

Cheng and Giannakidou 2013). Some researchers (Jiang 2008; Chen 2008; Jiang and Pan 2013) linked *dōu* to scalarity. However, this paper is only about *yě* and not about *dōu*. *Dōu* will only be mentioned when it is necessary to compare its use with *yě*, in order to make the distributional and other properties of *yě* come out clearly.

After a close investigation of the distribution of *yě* in these parametric contexts, we find that *yě* is not always acceptable, especially in *no matter* contexts.

- (4) Wǒ wúlùn tí shénme tiáojiàn, tā *yě dāying.
I no.matter mention what condition (s)he YE agree
'No matter what conditions I bring up, he will agree.'
(Liu 2001: 246)
- (5) Wǒmen shénme dǐxì *yě zhīdao!
we what exact.details YE know
'We know all the exact details!'
(Hole 2004: 87)

There are two different ways to “save” the use of *yě* in the above mentioned sentences. The first is to insert a negative adverb, as shown in (6) and (7):

- (6) Wǒ wúlùn tí shénme tiáojiàn, tā yě bù dāying.
I no.matter mention what condition he YE not agree
'No matter what conditions I bring up, he will not agree.'
- (7) Wǒmen shénme dǐxì yě bù zhīdao!
we what exact.details YE not know
'We don't know any exact detail!'

In view of sentences such as these, Hou (1998: 620), Liu (2001: 246), and others conclude that parametric *yě* is mainly used in negated contexts.

The second way to save sentences such as (4) and (5) is to insert a modal; see (8) and (9).²

- (8) Wǒ wúlùn tí shénme tiáojiàn, tā yě huì dāying.
I no.matter mention what condition he YE will agree
'No matter what conditions I bring up, even the most harsh ones, he will agree.'
- (9) Wǒmen shénme dǐxì yě yào zhīdao!
we what exact.details YE must know
'We must know all the exact details, even the most trivial ones.'

It seems that, besides negation, modals can also save *no matter* sentences with the parametric *yě*. Hole (2004) reports on a survey that the outcome confirms the claim that adding a modal can make *yě* acceptable in a *no matter* sentence. One of his examples is (10):

2 Some informants report that sentences (8) and (9) get better when the *wh*-elements are stressed. I will come back to this later.

- (10) Wǒ shénme-yàng-de shū yě *(děi/yīnggāi/yào/xiǎng) kàn.
 I what-kind-ATTR book YE must/should/must/want read
 ‘I must/should/want to read any kind of book.’
 (Hole 2004: 87)

Furthermore, we need to point out that *dōu* is good in sentence (10) even if there is no modal, as is shown in (11).

- (11) Wǒ shénme-yàng-de shū dōu kàn.
 I what-kind-ATTR book DOU read
 ‘I read all kinds of books.’

In short, we can conclude that the use of parametric *yě* in *no matter* contexts is restricted, unlike that of *dōu*: either it is used in a negated context or in an affirmative context with a modal verb. However, the question of how and why parametric *yě* is licensed in the above mentioned contexts is still a puzzle. In this paper, I argue that the distribution of parametric *yě* is conditioned by two factors. First, I show that the presence of scalarity in the meaning of the sentence is a necessary condition for the use of parametric *yě*. On this basis, I show that it is not a sufficient condition; what is also needed is the expression of the extreme of the scale.

2. *Yě* and scalarity

2.1 Scalarity and free choice

When the meaning of lexical items involves the expression of a degree or gradability, there is necessarily a “scale” on which the degree is measured (as a result, these expressions are also scalar). As such, a scale can be seen as “ordered sets of degrees” (Kennedy 1997, and Kennedy 2007) or “a collection of all possible values of representation” (Lassiter 2011) with an ordering on these values (see also Solt 2015; Bolinger 1972; Constantinescu 2011). Sometimes one extreme (like the end point) of the scale is also evoked. A typical example is an *even* sentence like (12).³

- (12) *Even the king will come.*

To interpret this sentence, the alternatives in the background should be considered, besides the fact that they are ordered, in this case socio-hierarchically: other people with a lower social status will also come. The *even* focus also anchors the end point of the scale because the king, who is considered to have the highest social status, is an extreme of the scale of the likelihood of showing up at the event in question. That is to say, the king is considered to be the most unlikely person to show up. This is in line with Giannakidou’s (2007) analysis that *even* elements

3 The interpretation of an *even* sentence typically involves a highest point in a contextually determined scale of unlikelihood, surprise, etc. (Jacobs 1983; König 1991; Hole 2004 and Hole 2017). That is to say, the *even* focus introduces the most unlikely or surprising candidate in the set of all possible alternatives.

impose an ordering of individuals on the predicate of the clause on a likelihood scale. Thus, an *even* phrase is inherently scalar.

Another notion relevant to our discussion is free choice item (FCI). The following characteristics are often mentioned to define the nature of an FCI: “freedom of choice” (Vendler 1967), “indifference” (Fintel 2000; Giannakidou 2001), and “indiscriminate arbitrariness” (Horn 2005: 185; Duffley and Larrivéé 2010: 11). Thus, an FCI requires that all variables denoted by the phrase should be treated absolutely equal and arbitrary as to which one the predication applies to. In other words, there is no need to introduce a scale to interpret the phrase and even if there is one, the end points of the scale in a purely unstressed FCI are “not given any particular status” (Duffley and Larrivéé 2010: 9). FCIs denote nonspecific and non-gradable variables. A well-known example is *any key* in the English sentence *Hitting any key will reactivate the screen*: all the possible keys in the range of reference should be seen as equally valid candidates to which the predication applies. Therefore, we can see that the alternatives denoted by an FCI are not ordered on a scale.

2.2 Clear evidence that *yě* is associated with scalarity

2.2.1 Non-scalar sentences

If there is a connection between the occurrence of *yě* and scalarity, we predict, first, that, in explicitly non-scalar contexts, the use of *yě* would lead to ungrammaticality and, second, that *yě* is always acceptable in sentences that involve a scale one way or another. In this section, we investigate these predictions.

As to the first prediction, consider (13), a sentence from the *Hànyǔ Shuǐpíng Kǎoshì* (HSK) composition corpus, in which the use of parametric *yě* is marked by the native graders as “CC” (short form of *cuò cí* ‘wrong word’), presumably because, as we hypothesize, the interpretation of the *wh*-word in the sentence cannot be associated with scalarity.⁴ This is clear from (13), as all the possible alternatives denoted by the *wh*-word *shénme* are enumerated in the preceding part of the sentence in a “flat” way without any bias or hierarchy.

- (13) Wǒ zhēnde xué-le hěn-duō dōngxì:
 I really learn-PERF very-many thing
 wénhuà-shang-de, xuéshù-shang-de, yányǔ-shang-de,
 culture-on-ATTR academic-on-ATTR language-on-ATTR
 shénme dōu {CC yě} yǒu.
 what DOU YE have
 ‘I really learned a lot, for instance, on culture, academics, language and so on. Everything is included.’

4 The HSK Dynamic Composition Corpus, created by Beijing Language and Culture University, is composed of 11,569 compositions written by learners of Chinese as a foreign language when they participated in the HSK. Learners’ errors are tagged at character, word, and sentence levels. This corpus is publicly available via this website: <http://202.112.195.192/hsk/login.asp>.

A similar example is given by Lin (1996). In this example, the *wh*-phrase *nǎ-yī-ge* ‘which-one-CL’ can only have a pure free choice/non-scalar reading due to the domain provided by the preceding phrase. In addition, parametric *yě* is incompatible with this sentence.

- (14) Zhè- jǐ- ge háizi, wúlùn nǎ-yī-ge dōu/*yě hěn
 this-several-CL child no.matter which-one-CL DOU/YE very
 cōngming.
 bright
 ‘As for these children, no matter which one is bright.’
 (Lin 1996: 64)

Consistent with Lin, Giannakidou and Cheng (2006: 137–138) observe that the Mandarin D-linked *wh*-phrase *nǎ*-CL ‘which’ exhibits a distribution which is the same as that of polarity FCIs in Greek, Spanish, and Catalan (e.g., they are not acceptable in episodic contexts). In other words, it is more like a pure FCI than other *wh*-phrases. As it is predicted, *yě* is bad in (15) cited from them.

- (15) Nǎ-ge xuéshēng dōu/* yě kěyǐ jìnlai.
 which-cl student DOU/YE can enter
 ‘Any student can enter.’
 (Giannakidou and Cheng 2006: 137)

In (13)–(15), we have three *wh*-phrases with a pure free choice reading, in other words, no scale is involved in the interpretation. As we predicted earlier, *yě* is bad in all these sentences.

The distribution of parametric *yě* in *no matter* sentences with a disjunctive phrase also supports our claim. It is often believed that a disjunctive phrase has a similar implicature as an FCI, because the two alternatives (or more) in a disjunct are usually considered to be ordered in an arbitrary way and are not arranged with any hierarchy. Chierchia (2013: 86–90) notes the “FC (free choice) phenomenon” which takes place when disjunction occurs under a modal element. He argues that the interpretation of *You may take this cake or that cake* and *You may take any cake* “have the same logical structure”. Therefore, we predict that, if the disjunctive phrase has a pure free choice reading, parametric *yě* will be dispreferred. This is confirmed by (16):

- (16) Wúlùn nǐ háishì tā, wǒ *yě xǐhuān.
 no.matter you or he I YE like
 ‘No matter it is you or him, I simply like.’

We have seen from (13)–(16) that, whenever there is no scalar reading, as is the case in disjunctive phrases and *no matter* contexts in which all alternatives are enumerated without any bias, parametric *yě* cannot be used.

2.2.2 Scalar sentences

On the other hand, in explicitly or inherently scalar contexts, *yě* should be acceptable, and this is indeed the case, as we show now.⁵ The most obvious example is an *even* sentence. As we discussed earlier, the *even* phrase is inherently scalar and also anchors a minimal or maximal extreme on the scale. If our hypothesis is correct, parametric *yě* should be good in *even* contexts, and it is, as shown in (3), repeated here as (17):

- (17) Tā lián yí-jù-Hélán-huà yě bù huì.
 (s)he even one-CL-Dutch-language YE not can
 ‘He doesn’t even know one Dutch sentence.’

In this sentence, we have *lián* ‘even’ introducing a preposed minimizer and *yě* is good in this sentence.

Parametric *yě* is also used in *even if* sentences, as shown in (18).

- (18) Jíshǐ guówáng lái, wǒ yě bù qù.
 even if king come I YE not go
 ‘Even if the king comes, I won’t go.’
 (Hole 2004: 223)

To examine the use of parametric *yě* (and *dōu*) by native speakers in *lián/even* contexts and *even if* contexts, I conducted a corpus study using the Modern Chinese Language Corpus⁶ of the national language committee of China. The result is summarized in Table 1.

Table 1 Word frequency of *dōu* and *yě* in different types of *even/even if* sentences

Type of <i>even/even if</i> sentences	Number of <i>yě</i> sentences	Number of <i>dōu</i> sentences
<i>Lián</i> sentences	1,194	872
<i>Jíshǐ</i> sentences ⁷	734	17
<i>Jìbiàn</i> sentences	53	0
<i>Nǎpà</i> sentences	30	8
<i>Jiùsuàn</i> sentences	24	0
<i>Jiùshì</i> sentences	6	0

5 It is important to emphasize that it is not the goal of this paper to determine exactly what the source or the nature of the scale is (in formal semantic or other terms). All we want to show is that there is a correlation between the presence of a scalar reading and the possibility of using *yě*.

6 <http://www.ncorpus.org/>. The Modern Chinese Language Corpus includes 9,487 tagged essays with a long-time span and diverse registers. It covers a total of 162,875 words.

7 I searched the corpus for five types of *even if* sentences, namely, sentences introduced by five different Mandarin *even if* expressions, i.e., *jíshǐ*, *jìbiàn*, *nǎpà*, *jiùsuàn*, and *jiùshì*.

Two observations can be made based on the corpus data: 1) both *yě* and *dōu* can be used in *lián* contexts; 2) there is a preference for *yě* over *dōu* in *even/even if* sentences, a preference which is more obvious in *even if* cases than in *lián/even* sentences. In any case, *yě* is always good in the sentences with *even* elements, thus supporting the claim of the necessary relation between *yě* and scalarity.⁸

Another kind of inherently scalar expression, the superlative expression (Fauconnier 1975 and Fauconnier 1978), can also license the use of parametric *yě*, as shown in (19).

- (19) Tā zuì-gāo-de shān yě pá-guo.
 (s)he highest hill YE climb-ASP
 ‘(S)he has climbed the highest hill before.’

Similarly, parametric *yě* is also compatible with the indefinite minimizer, denoting the smallest possible quantity in a domain such as “(say) a word” and “(lift) a finger”, which is often seen as a negative polarity item (NPI) with an inherent *even* semantics (Heim 1984; Hole 2004: 198, Shyu 2016: 1385). See (20):

- (20) Tā yī-jù-huà yě shuō-bu-chūlai.
 (s)he one.word YE not.be.able.to.speak
 ‘(S)he couldn’t even say a word.’
 (Paris 1994: 249; Hole 2004: 198)

What all sentences ((17)–(20)) have in common is the element of scalarity, including the denotation of an extreme on the relevant scale. In addition, in all cases, the use of parametric *yě* is felicitous. In combination with what we observed in the non-scalar free choice sentences ((13)–(16)) in which the use of *yě* was infelicitous, these sentences show that there is an association between parametric *yě* and scalarity.

2.3 Some less clear cases

There are, however, also sentences containing parametric *yě* for which it is less clear that there is an association with scalarity, at least at first sight as shown in (21) and (22) as examples:

- (21) Shéi yě *(bú) huì guài nǐ.
 who YE not will blame you
 ‘No one will blame you.’

⁸ Furthermore, it is interesting to find that, different from what we found in *lián/even* contexts, it seems that the use of *dōu* is restricted in *even if* contexts. Again, I will not dig into why this would be so in this paper (which about *yě* and not about *dōu*). But at least, we can see, that *yě* and *dōu* are different distributionally in *no matter* and *even if* contexts. According to Hole (2004: 228), this is due to the interpretation of *dōu* foci not being able to refer to the alternative propositions that differ from the asserted proposition in factuality; thus, *dōu* cannot be used in (41).

- (22) Tā shénme yě *(bù) shuō.
 he what YE not say
 ‘He doesn’t say anything at all.’
 (Hole 2004: 206–207)

In sentences such as (21) and (22), we have the *wh*-words *shéi* and *shénme* and no obvious scalar item, inherent or otherwise, such as *even* or a minimizer, and yet, the use of *yě* is still grammatical. However, in contrast to sentences (13)–(15), (21) and (22) clearly involve scalarity: (21) means that ‘No one will blame you, not even a single person!’ and (22) expresses that he ‘will not say even a single word’. In other words, the *wh*-words in both sentences are interpreted as if they are minimizers. It should be noted that there is a negative adverb *bù* in both sentences, and without the negation, the sentences are bad. Thus, we have reasons to believe that it is the negation element that turns the in principle non-gradable and nonspecific *wh*-elements (like FCIs, as in (13)) into minimizers, thus invoking a scalar reading, just like NPIs. This is in line with Hole’s treatment of preposed *wh*-elements such as *shéi* and *shénme* in (21) and (22) as strong polarity items (Hole 2004: 199–209, cf. Krifka 1999). Therefore, if the *wh*-element in negative *no matter* contexts can yield a scalar NPI-like reading, it is not a surprise that parametric *yě* can be used here.

If we believe that it is the negation which ensures the scalar/NPI reading of *wh*-phrases in (21) and (22), the following affirmative sentence in which parametric *yě* is used requires a different account.

- (23) Nǐmen yǒuqián-rén, nǎlǐ yě néng qù, nǐ yě dài wǒ
 you rich-people where YE can go you also take I
 qù ba.
 go SFP
 ‘You rich people can go anywhere you want. Please take me with you too.’
 (Hou 1998: 620)

Although there is no negation in sentence (23), the use of *yě* is not unexpected, since, earlier on, we can see that, when a modal occurs in *no matter* contexts as in (8)–(10), the use of *yě* is possible. Sentence (23) contains the modal *néng* ‘can’. If our hypothesis that scalarity is necessary to license the use of parametric *yě* is right; then, it is natural to speculate that modals contribute to building a scalar reading of the sentences. Interestingly, the link between modals and scalarity was extensively studied by Lassiter (2011). Lassiter claims that, generally, modals, including epistemic, deontic, and bouletic modals, even those are not overtly gradable, have a semantics built on scales. Instead of treating modals as quantifiers over possible worlds, he has a different approach to the semantics of modality according to which modals are measure functions that map propositions to points on a scale and compare them to a threshold value. Based on these conclusions, we can say that, with the aid of modals, the non-ordered alternatives denoted by the *wh*-phrase in *no matter* contexts become ordered on a certain scale. The *wh*-element in *no matter*

sentences with modals can thus be treated as an NPI-like item, just like those we see in (21) and (22) with negation. Therefore, the use of parametric *yě* is possible. The fact that modals play an important role in licensing parametric *yě* in affirmative *no matter* sentences can consolidate Lassiter's claim.

There is another interesting observation: it seems that the sentence-initial NP *nǐmen yǒuqiánrén* 'you rich people' in (23) plays a role in facilitating the use of parametric *yě* in the sentence as well. It can be taken to serve as a kind of "restrictor" which restricts the domain of "the places that people can go to" and within the restricted domain, the *no matter wh*-element *nǎlǐ* 'where' acquires a reference; it can be seen as pointing at the extreme of the scale, namely "the places which cost the most". In fact, (23) yields a reading which can be paraphrased with a sentence containing a superlative expression, as given in (24).

- (24) *Nǐmen yǒuqián-rén, zuì-guì -de dìfang yě néng qù.*
 you rich-people most-expensive-ATTR place YE can go
 'You rich people even can go to the most expensive places.'

Interestingly, the requirement of the presence of an alternative, in this case an "extreme", is something that parametric *yě* has in common with additive/basic *yě*. I will elaborate on this point later on.

The role of modals in building scales can also provide an account for the grammatical use of *yě* in a sentence with a free choice-like disjunctive phrase, as in (25).

- (25) *Búlùn báitiān wǎnshàng, tā yě yào diǎn-zhe*
 no.matter day-time evening he YE will ignite-DUR
yóudēng.
 oil-lamp
 'No matter whether it is during the day or in the evening, he always wants to keep the oil lamp burning.'
 (Hole 2004: 219, cf. Alleton 1972: 65)

It is the root modal *yào* which provides the scalarity element to license the use of parametric *yě* in (25). In addition, one of the two alternatives denoted by the phrase can be viewed as an extreme point on the scale, namely *báitiān* 'during the day'. That is because it is a natural and logical thing to have an oil lamp burning in the evening, and hence this should be considered as common sense or even a background assumption. The pragmatic importance of the disjunctive phrase falls on the (most unlikely) alternative *báitiān* 'during the day'. In other words, the disjunctive phrase in the abovementioned sentences denotes two unequal/scalar alternatives on a scale introduced by the modal verb, and one of the alternatives anchors the extreme point of the scale, thus making it possible to use parametric *yě*. Sentence (25) indeed yields a scalar interpretation, i.e., an *even* reading, as paraphrased by (26).

- (26) (Lián) **báitiān**, tā yě yào diǎn-zhe yóudēng.
 even day-time he YE will ignite-DUR oil-lamp
 ‘He wants to keep the oil lamp burning even in the day time.’

This is analogous to the observation earlier that *wh*-words can at times denote non-FC alternatives. That is to say, disjunctive phrases, exactly like the *wh*-phrases, can be interpreted as (extreme) points on a scale evoked by a modal in *no matter* contexts. Indeed, in the absence of a modal, the use of *yě* becomes degraded, as demonstrated in (27).⁹

- (27) Búlùn báitiān wǎnshang, tā dōu/*yě diǎn-zhe yóudēng.
 no.matter day-time evening he DOU/YE ignite-DUR oil-lamp
 ‘No matter whether it is during the day or in the evening, he always wants to keep the oil lamp burning.’

It should be noted that sentence (27) is minimally different from (25) in the absence of an overt modal, that is to say, we still have two alternatives that are biased according to world knowledge, as mentioned earlier, but the use of *yě* is infelicitous in (27). The minimal pair formed by (25) and (27) shows that the scale is introduced by the modal and not by pragmatics or context more generally.

It should be noted that although *dōu* and *yě* can be used interchangeably in (23) and (25), they may result in a difference in meaning. Whenever parametric *yě* is used, the preceding disjunctive phrase can only have a scalar or *even* reading, as indicated in (24) and (26). In contrast, *dōu* is compatible with both a nonspecific free choice reading and a specific scalar reading. This is in line with our hypothesis that parametric *yě* is exclusively scalar.

2.4 Stress

Another observation, this time related to prosody, seems to provide additional evidence that the *wh*-elements before parametric *yě* are scalar. As noted earlier, for sentences such as (8), (9), and (23), native speakers tend to put stress on the *wh*-phrase. In view of the fact that it has been noticed (Krifka 1995; Haspelmath 1997: 125; Beaver and Clark 2008; Duffley and Larrivéé 2010: 9) that stress is a crucial factor in activating the scalar effect of an FCI, I believe that this is another sign that there is a link between *yě* and scalarity. In contrast, the use of *dōu* in *no matter* sentences does not necessarily require a stressed *wh*-phrase. See (28):

- (28) Zhè-ge háizi shénme dōu bú pà.
 this-CL child what DOU not afraid
 ‘This child is not afraid of anything.’
 (Cheng and Giannakidou 2013: 124)

9 Thanks to one of the reviewers for raising the question and providing her/his judgment in (27).

Depending on how this sentence is pronounced, i.e., with or without stress on the *wh*-element, the *wh*-element is ambiguous between an FCI/non-scalar and an NPI/scalar reading, as shown in (29).

- (29) Zhè-ge háizi shénme/**shénme** dōu bú pà.
 this-CL child what DOU not afraid
 Non-scalar reading: ‘There is nothing that this child is afraid of.’
 Scalar reading: ‘This child is not afraid of anything at all—not even the scariest thing.’

However, if we use parametric *yě* instead of *dōu*, we have to stress the *wh*-word, and only the scalar reading is available, as shown in (30).

- (30) Zhè-ge háizi *shénme/**shénme** yě bú pà.
 this-CL child what YE not afraid
 ‘This child is not afraid of anything—not even the scariest thing.’

We have noticed that native speakers are inclined to place stress on the *wh*-word *shénme* ‘what’ when they read the sentence with *yě* and not necessarily when the sentence contains *dōu*.

This intonation pattern is the same in sentences with a minimizer, such as *yi-diǎn* ‘a bit’.

- (31) Bìng-rén jīntiān **yī-diǎn** yě méi chī.
 patient today one.bit YE not eat
 ‘The patient did not eat even a little bit today.’

2.5 Concluding remarks

This all leads to the following hypothesis:

- (32) Parametric *yě* is always associated with scale: only when there is a scale, parametric *yě* can appear and whenever we have parametric *yě*, a scalar interpretation is obligatory.

The scalarity in the sentences with parametric *yě* may come from different sources, such the inherent scalar (or scale invoking) elements such as *lián/even*, the minimizer or NPI-like *wh*-elements or disjunctive phrases with the aid of negation or modals.

3. The presence of an extremity

In the “Introduction” section, I mentioned that scalarity is a necessary condition but not a sufficient one. The felicitous sentences with *yě* we have seen so far contain an element denoting the extreme on the relevant scale, and our hypothesis is that this is the second necessary condition for sentences with *yě* to be grammatical: the presence of an extremity.

It has been noted in the literature that there are cases in which the use of *yě* is ungrammatical even though the sentence in question contains a modal verb or

negation. Hole (2004: 89, 222) presents two of these exceptions involving a modal verb cited from Eifring (1995) as shown in (33) and (34):

(33) Tā shuō shénme wǒ dōu/*yě huì dāying de.
 (s)he say what I DOU/YE will agree PRT
 ‘Whatever he says, I will agree to it.’
 (Eifring 1995: 147)

(34) Bùguǎn cóng shénme dìfāng dōu/*yě kěyǐ shàng-qu.
 no.matter from what place DOU/YE can ascend-go
 ‘You can ascend from any place.’
 (Eifring 1995: 170)

In (33) and (34), there are modals which, in principle, provide a scale for the sentences. However, the sentences are not grammatical. What distinguishes these sentences from a sentence such as (23) is that they do not contain expressions to restrain the domain and anchor to a specific extreme on the scale. We can account for (35), which contains a negation, in the same way.

(35) Wúlùn nǐ háishì tā, wǒ dōu/*yě bù xǐhuān.
 no.matter you or he I DOU/YE not like
 ‘No matter it is you or him, I simply don’t like.’

Different from (25) in which one alternative can be easily seen as the extreme point of the scale, it is hard to treat either alternative denoted by the disjunctive phrase in (35) as one of the extremes on the scale.

We conclude that, in addition to (32), which says that there is a link between scalarity and the presence of *yě*, felicitous sentences with *yě* must also always contain an expression referring to one of the extremes on the scale.

4. Another piece of evidence

There is another piece of evidence for us to claim that a bare *wh*-word is not an FCI in sentences with parametric *yě*. Hole (2004: 222) observes the following facts, which he finds hard to account for:

(36) Tāmen shénme dōu/*yě gǎiliáng.
 they what DOU/YE change.for.the.better
 ‘No matter what, they change everything for the better.’

(37) Tāmen shénme dōu/yě gǎiliáng-le.
 they what DOU/YE change.for.the.better-PERF
 ‘They have changed everything for the better, no matter what it is.’

The only formal difference between the two sentences is the appearance of the perfective aspect marker *le* in sentence (37). But in that sentence, the use of parametric *yě* is legitimate, while in (36) it is not. The perfective particle *le* is used after the verb to denote the occurrence or completion of an action or an event (Liu 2001: 362) and adding it can change a sentence with a habitual or nonveridical

interpretation into a sentence with an episodic and veridical meaning, as illustrated in the following sentences:

(38) Wǒmen kàn Měiguó diànyǐng.
we see U.S. film
'We watch American films.'

(39) Wǒmen kàn-le Měiguó diànyǐng.
we look-PERF U.S. film
'We saw (an/some) American film(s).'

Sentence (38) expresses a habitual reading. As such, it cannot have an episodic reading and it cannot denote a specific event. In contrast, sentence (39) denotes that one specific event "watch an American film or some American films" has happened: it has an episodic interpretation. According to Giannakidou (1997, 2001), Giannakidou and Cheng (2006), and Cheng and Giannakidou (2013), FCIs are cross-linguistically not admitted in episodic sentences, the so-called "anti-episodicity effect".¹⁰ One example from Cheng and Giannakidou (2013) is given here as sentence (40) to show that the typical Mandarin FCI *rèn hé* 'any' is incompatible with an episodic context:

(40) *Rèn hé rén dōu jìn-lái-le.
any person DOU enter-come-PERF
(Cheng and Giannakidou 2013: 13)

However, bare *wh*-phrases demonstrate a different ability to appear in an episodic sentence as illustrated in sentence (41):¹¹

(41) Shéi dōu jìn-lái-le.
who DOU enter-come-PERF
'Everyone came in.'
(Cheng and Giannakidou 2013: 13)

Cheng and Giannakidou (2013) argue that different from *rèn hé* in which the component *rèn* 'regardless' provides dependent world variables and is inherently intensionalized, a bare *wh*-phrase does not have dependent world variables and thus can occur in episodic contexts (for the details, see the original paper). However,

10 Giannakidou (1997, 2001) proposes that FCIs are incompatible with the veridical and episodic contexts (also including episodic negation and questions), because there is no binding operator in such contexts. She argues that different from the NP whose regular non-FC determiner is constant with the real world and therefore only denotes "a set of actual individuals", the variables in the FCI need binding by an operator, a Q-operator, such as a generic, habitual, modal or intensional operator. This dependency as a defining feature of FCIs can also be treated as a kind of presupposition that must be satisfied in order to use some specific variables (see also Giannakidou and Cheng 2006).

11 *Dōu* is in general preferred in *no matter* sentences, especially in sentences with a bare *wh* phrase as in (36). I have nothing to contribute to the discussion on the nature of *dōu*. In general, *dōu* can occur in scalar contexts, but, in contrast to *yě* it is not restricted to such contexts.

as we saw earlier, the bare *wh*-phrase in *no matter* sentences may under certain conditions yield a non-FC reading. Going back to (36) and (37), we observe that adding the aspect particle makes the use of parametric *yě* better in the sentence. The account here is quite straightforward: the bare *wh*-word in (36) and (37) should be interpreted differently: that is, *shénme* is a pure FCI in (36), but an item with a scalar interpretation in (37). After all, *shénme* cannot be interpreted as an FCI in sentence (36) because, as we saw, FCIs are incompatible with episodic contexts. The interpretation of the *wh*-phrase will be different: it is a scalar item and not an FCI anymore. The grammaticality of *yě* in sentence (37) can thus be accounted for.

Although both parametric *yě* and *dōu* can be used in sentence (37), the choice of *yě* or *dōu* will affect the meaning of the sentence. If parametric *yě* is used here, the sentence is forced to have the scalar or *even* reading: “They have improved everything for the better, even the most unnoticeable parts!” In contrast, the use of *dōu* can have both the scalar and the universal reading. It should be noted that there are repercussions for the intonation: when parametric *yě* is used in sentence (37), the *wh*-word is stressed by my native speaker consultants; they report that without the stress, the sentence is still bad. However, when *dōu* is used, the *wh*-word can be either stressed or unstressed, and when it is stressed we get the scalar reading. This is consistent with Chierchia’s (2013) observation that stress is often the trigger of scalarity.

5. A note on *lián/even...yě* sentences: What do *lián* and *yě* do?

If *wh*-elements can yield an *even* interpretation as we discussed earlier, a question that comes up is whether *lián/even* is compatible with *wh*-words. The general consensus seems to be that it is not and the question is why not.¹² As we have seen, in *no matter* sentences with *yě*, *wh*-words generally yield a scalar reading rather than an FC reading. (21) is repeated here as (42).

- (42) Shéi yě bú huì guài nǐ.
 who YE not will blame you
 ‘No-one will blame you.’

If the *wh*-word *shéi* ‘who’ in sentence (42) is scalar like an NPI minimizer, there is no reason to think that it cannot co-occur with *lián/even*, since *lián/even* is scalar and can introduce a scalar minimizer as we have seen in sentence (3), repeated here as (43):

- (43) Tā lián yí-jù Hélán-huà yě/dōu bù huì.
 (s)he even one-CL Dutch-language YE/DOU not can
 ‘He doesn’t even know one Dutch sentence.’

However, simply adding a *lián* in front of the *wh*-element will result in a bad sentence, as shown in (44).

¹² Thanks to Lisa Cheng for raising this question.

- (44) **Lián shéi yě bú huì guài nǐ.*
 even who YE not will blame you
 ‘No-one will blame you.’

It seems that *lián* is not compatible with a *wh*-word, even if the *wh*-word has a scalar interpretation. The question is then which function of *lián* makes it incompatible with *wh*-elements in such sentences. Chen (2008) claims that *lián* is the source of scalarity. Shyu (2016: 1380, cf. Xiang 2008), however, distinguishes two roles of *lián* in a sentence. It serves as a focus particle which evokes alternatives in the context but it also serves as a scalar operator that places the asserted focus at an end point on a scale of likelihood or expectedness in the set. In line with this, I would like to propose that the major role of *lián* in the *lián...yě* pattern is to introduce the extremity on the scale. It has been noted (Shyu 2016: 1359–1361) that Mandarin minimizers such as *yī-CL N* ‘one-classifier N’ or *yìdiǎn-N* ‘a little N’, which denote a minimal quantity, extent or degree, often occur in *lián...yě* sentences. One of the Shyu’s sentences is reproduced as (45) here:

- (45) *Tā lián yī-jù huà dōu méi shuō.*
 he even one-CL word DOU not speak
 ‘He didn’t say even a single sentence.’
 (Shyu 2016: 1361)

In this sentence, the minimizer *yī-jù huà* ‘one sentence’ in combination with *lián* denotes the minimal entity on the scale of “people say something”; hence, *lián* can be seen as introducing an extreme on the scale. It is necessary to note that a phrase such as *yī-jù huà* ‘one sentence’ is not necessarily interpreted as a minimizer. With *lián*, it is a minimizer, but without *lián* and without being stressed, it does not have to be and as such does not necessarily introduce the extremity. As noted by Shyu (2016: 1360), the interpretation of *yī-CL-N* phrases in a normal negative sentence is ambiguous. For instance, (46) indeed has three interpretations, and only in the third interpretation, the phrase *yī-jù huà* ‘one sentence’ has the extremity reading.

- (46) *Tā méi shuō yī-jù huà.*
 he not speak one-CL word
 (i) ‘He didn’t say one sentence (, but he said more than one).’
 (ii) ‘He didn’t say one sentence (rather, he said a lot).’
 (iii) ‘He didn’t say any sentence.’
 (Shyu 2016: 1360)

Therefore, since the extremity reading in (45) does not originate from, or is not enforced by, the minimizer itself, it is reasonable to assume that *lián* is the element which introduces the extremity.

If we take another Mandarin word meaning *even*, *shènzhì*, into consideration, we can identify *lián*’s role even better. Consider (47):

- (47) *Tā shènzhì/*lián méi shuō yī-jù huà.*
 he even not speak one-CL-word
 ‘He did not even say a word.’

Sentence (47) shows the different syntactic restrictions between *shènzhì* and *lián*, namely *lián* cannot be put right before the verb as adverbs can. What is even more important to point out, however, is that *yī-jù huà* in sentence (47) does not necessarily anchor the end point or extremity of the expectedness scale of “people say something”, which is different from what we observed for sentence (45). Sentence (47) can simply be uttered to express surprise in a situation which is contrary to people’s expectation. For instance, suppose that all of you were in a Karaoke gathering where everyone was expected to sing happily. However, Zhangsan was not happy at that moment, he did not sing and he even did not say anything. We can then say: *Tā shènzhì méi shuō yī-jù huà*. ‘(He did not sing any song, and) he even did not say a word.’ Therefore, *shènzhì* here is used to introduce an unexpected event. As we can see, the adverb *shènzhì*, in contrast with *lián*, does not necessarily associate with the phrase expressing the extremity, i.e., the minimizer *yī-jù huà*. *Lián*, however, requires a phrase expressing an extremity immediately following it, and this is another reason (besides the syntactic reason) why *lián* is not good in sentence (44).

Lián’s function of introducing an extremity can account for its unacceptability in *no matter* sentences with a scalar reading. According to Lin (1996: 90), the *wh*-phrase selected by *wúlùn* ‘no matter’ must denote possible individuals rather than actual individuals. For instance, as we have seen, *wh...dōu* cannot occur in an episodic event, because in an episodic environment, the *wh*-subject has an actual individual reading, as demonstrated in (48) and (49).

- (48) Shéi (*dōu) zài chànggē?
 who DOU PROG sing.song
 ‘Who is singing?’
- (49) Shéi (*dōu) yǐjīng líkāi-le?
 who DOU already leave-PERF
 ‘Who has already left?’
 (Lin 1996: 89)

Based on the abovementioned observation, I propose that a *wh*-word in *no matter* contexts is not referential in the way required by *lián*. Therefore, the requirement of an immediate extremity which *lián* can point at cannot be satisfied if it co-occurs with a *wh*-word, like in *no matter* contexts. Again, *shènzhì* demonstrates the difference because it can indeed occur before the *wh...dōu/yě* construction. See the minimal pair in sentences (50) and (51).

- (50) Tā shènzhì shénme yě méi shuō.
 he even what YE not say
 ‘He even did not say anything.’
- (51) *Tā lián shénme yě méi shuō.
 he even what YE not say
 ‘He even did not say anything.’

In short, in accordance with Shyu (1995), I argue that the function of *lián* is to introduce the extreme point of the scale provided by the context and non-referential *wh*-elements, by their very nature, cannot co-occur with *lián*: being non-referential, they cannot instantiate the right category for *lián* to point at.

However, according to Lin, the *wh*-word in episodic sentences denotes an actual individual and thus is referential. If this is indeed the case, we predict that *wh*-words with a referential reading can occur in the *lián...yě* pattern. In fact, this prediction is borne out, as shown in (52) and (53), cf. (48) and (49).

(52) Nǐ zhīdào lián shéi yě zài chànggē ma?
 you know even who YE PROG sing.song SFP
 ‘Do you know even who is singing?’

(53) Nǐ zhīdào lián shéi yě yǐjīng líkāi-le ma?
 you know even who YE already leave-PERF SFP
 ‘Do you know even who has already left?’

In (52) and (53), we have two questions concerning episodic contexts, in which the question word *shéi* can refer to a specific person in the episodic contexts (“you know who I mean”). For instance, sentence (52) can be paraphrased as follows: one specific person whom the speaker already knows is singing. In addition, the speaker believes that he/she is the person who is the least likely person who is singing. As we see, the *lián...yě* pattern is compatible with it. This leads to the following conclusion:

(54) *Lián* introduces the extremity. Non-referential *wh*-elements which cannot point at any extreme cannot co-occur with it.

So far, it seems that we are facing a contradiction. As discussed earlier, *wh*-phrase in *no matter* contexts can denote an extreme of the scale relying on the preceding contextual elements. However, they cannot be introduced by *lián* which functions as an extremity determiner, as in (44) and (51). We may attribute this to the fact that *lián* formally requires an explicit “extremity” phrase and a *wh*-phrase functioning as a minimizer is still not good enough for it. Interestingly, my native speaker consultants agree that although (55) is not a very good sentence, it sounds better than sentence (56) without the preceding domain “restrictor”.

(55) ? Nǐmen yǒuqián-rén, (*lián) nǎlǐ yě néng qù.
 you rich-people even where YE can go
 ‘You rich people can go anywhere you want.’

(56) ?? Nǐ (*lián) nǎlǐ yě néng qù.
 you even where YE can go
 ‘You can go anywhere you want.’

This consolidates my earlier claim that the preceding domain “restrictor” contributes in anchoring the extreme in the *no matter* sentences with *wh*-phrases,

but at the same time it is clear that the incompatibility of *lián* and a *wh*-expression is still in need of further investigation.

Now that we have some idea of the function of *lián*, let us consider the function of *yě*.¹³ Hole (2008, 2013, 2017: 389–409) argues that the parametric *yě* should be regarded as a different linguistic sign from the basic additive *yě*. Hole (2017) treats the scalar use of *yě* as the head of a scalarity phrase. The preceding foci, such as the *lián*-phrase, are in a spec-head relationship with the scalarity head *yě*. Meanwhile, it seems to me that the basic meaning of *yě*, namely “additivity”, still plays a role as well. Just like basic *yě*, parametric *yě* needs alternatives in the background; the difference is that the latter needs them to be ordered on a scale, indeed, it needs the relevant alternative to be one of the extremes on that scale. Consider the following example from Chen (2008):¹⁴

- (57) John lián dì-èr-tí dōu/*yě zuò-chūlai le.
 John even problem 2 DOU/YE work-out PERF
 Búguò tā méi zuò-chūlai líng-yí-dào.
 but he not work.out another-one-CL
 ‘John solved even problem 2, but he didn’t solve the other problem.’
 (Chen 2008: 75)

In a situation in which only two problems need to be solved, the continuation that *John did not solve the other problem* is not good with the preceding *lián... yě* sentence. This shows that just like its additive use, the scalar *yě* also requires at least one alternative in the background. The “additivity” nature of *yě* requires its asserted proposition to be one “actual” or specific proposition, rather than possible propositions, like those denoted by FC *wh*-elements. This also explains why parametric *yě* has to point at at least one single actual item in all variables in the set, like an extreme denoted by *lián/even* phrase or a biased alternative denoted by a *wh*-element or a disjunctive phrase in *no matter* sentences. The difference between the basic *yě* and the parametric/scalar *yě* lies in the relation between the added proposition and the alternative(s) in the domain. Different from its additive use, scalar *yě* enforces a hierarchy between the added proposition and alternatives. See the contrast in (58) and (59):

- (58) Zhè-ge Zhōngguó-rén chī miànbāo, yě chī nǎilǎo.
 this-CL Chinese-person eat bread YE eat cheese
 ‘This Chinese person eats bread and also eats cheese.’
 (59) Zhè-ge Zhōngguó-rén chī miànbāo, lián nǎilǎo yě chī.
 this-CL Chinese-person eat bread even cheese YE eat
 ‘This Chinese person not only eats bread, he even eats **CHEESE!**’

13 According to many earlier publications (Alleton 1972; Sybesma 1996; Zhang 1997; Hole 2004), *yě* and *dōu* have different stress patterns between its basic use and special uses, for instance, they cannot be stressed in their special uses.

14 Chen (2008) basically claims that *dōu* is scalar and that *yě* only denotes existentiality.

In (58) with a basic *yě*, “cheese” is simply another kind of food that he eats. The two propositions “eating bread” and “eating cheese” are not ordered on any scale. In (59) with the scalar *yě* and *lián*, the asserted proposition “eating cheese” not only is the added information but also forms a hierarchical relation with the preceding alternative “eating bread”. In addition, “cheese” is believed to be the most unlikely thing for this (or any!) Chinese person to eat. Thus, it is put at the lowest extreme on the scale of the likelihood of “this Chinese person eats x” and “bread” locates higher than “cheese” on the scale. *Lián* is used to introduce the extremity, and *yě* relates extremity to the alternative(s) in the contexts and orders these alternatives on a scale. This means that both basic *yě* and parametric *yě* evoke alternatives. The difference is that with basic *yě* the alternatives are not hierarchically ordered, while with parametric *yě* they are.

A following speculation will be that both extremity and additivity are inherent components of *even*. However, some languages, such as English, do not have an overt morpheme to mark the additivity. Others, however, use the additive particle itself to express *even*, such as Korean *-to* and Japanese *-mo*. One sentence in Japanese cited in Shyu (2016: 1387, cited from Nakanishi 2006) is copied here as (60) to illustrate this.

- (60) Hito-ri-mo ko-na-katta.
 one-CL-also come-NEG-PAST
 ‘(lit.) Even one person didn’t come.’ = Nobody came.

In Mandarin, as an analytical language, we can have two explicit morphemes, namely *lián* and *yě*, to mark the two components of *even*.

6. Summary

Reviewing the distribution of parametric *yě*, I argue that different from its basic use, parametric *yě* requires a scalar context with an explicit extreme on the scale. I demonstrate that when no scalarity is marked in any way, such as in a *no matter* context with a pure FC reading, *yě* cannot be used. In contrast, when an inherent scalar phrase such as *even* or a minimizer occurs in the sentence, the use of parametric *yě* is possible. I also argue that negation and modality provide scalarity in *no matter* contexts, and together with contextual elements which assist in anchoring the extremity of the scale, the use of parametric *yě* can be licensed in *no matter* contexts. I have said little about *dōu*, but its distribution suggests that, unlike *yě*, scalarity may not be the crucial element for its licensing.

In addition, with respect to *lián...yě* sentences, I propose that the role of *lián* is to introduce the extremity and *yě* relates the extremity to the alternatives. This can account for the fact that *lián* cannot co-occur with non-referential *wh*-words in *no matter* contexts, although it can appear before the referential *wh*-word in episodic contexts. In line with Hole (2017), I agree that, in its parametric use, *yě* is the head of a scalarity phrase. Furthermore, I also argue that the additive meaning still exists in the scalar use of *yě* in the sense that a specific alternative, i.e., an

extreme on the scale, is required to license scalar *yě*. Although both basic *yě* and parametric *yě* evoke alternatives, with scalar *yě* the alternatives are hierarchically ordered, while with basic *yě* they are not.

Acknowledgments

I am indebted to Rint Sybesma, Daniel Hole, and Lisa Cheng who provided insightful comments and expertise that greatly assisted the research. An earlier version of this work was presented at a “CHILL” workshop on Chinese linguistics held at Leiden University in April 18, 2018. I want to thank my colleagues and other participants of the workshop, in particular, Jenny Doetjes, Yiya Chen, Jeroen Wiedenhof, and Anne Sytske Keijser who gave me valuable comments and suggestions. I also thank all the helpful informants on the Mandarin data. My special thanks go to two anonymous reviewers whose questions and comments led me to rethink some fundamental issues and greatly improved this paper.

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Received: June 21, 2018

Accepted: November 22, 2018

漢語“也”及其“量級性”

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提要

本文考察了“也”在含有“無論”、“連”、“即使”等詞語的句子中的用法。本文提出在上述語境中，“也”的使用與“量級性”和“極點”有關，也是其區別於另外一個常用的替代詞語“都”的關鍵。在上述語境中，舉凡有明顯“量級性”的語境，使用“也”皆佳；“也”的使用，也強化語境“量級性”解讀。在否定詞和情態詞的幫助下，“無論”語境中的疑問詞具有“量級性”。本文最後也會簡要探討“連”的用法，提出其功能是引出語用量級的“極點”。

關鍵詞

漢語“也”，漢語“都”，量級性，任選含義，漢語“連”