

PREMODAL HOW IN MANDARIN, TAIWANESE SOUTHERN MIN, AND CHANGSHANESE

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This paper studies a category of *how* questions, namely the premodal *how* questions, in Mandarin Chinese, Taiwanese Southern Min, and Changshanese. According to Tsai (2008), the Mandarin *zenme* ‘how’ yields different interpretations depending on its syntactic position. When *zenme* occurs after modals, it licenses an instrumental interpretation, whereas a causal and a denial interpretation both become available if *zenme* precedes a modal. While Tsai uniformly grouped the latter two interpretations, in this study, based on several diagnostics and lexicalization of different *how*’s in the three Chinese languages, we argue that interpretations of the premodal *how* (also *how* occurring before a stative or non-agentive predicate) should be categorized into information-seeking (causal and cognitive resolution) and non-informational-speaking (exclamative and refutatory).

1. Introduction

1.1 Types of *how* questions

The interrogative *how* asks a wide domain of questions. Jaworski (2009) summarizes the domain of English *how* into three categories, namely analytic-*how* questions, manner-*how* questions, and *how* questions that express cognitive resolution. Analytic-*how* questions include questions of means, methods, or mechanisms, manner-*how* questions inquire about the manner in which an event takes place, and cognitive resolution-*how* questions request information to resolve cognitive tension. The differences are illustrated in (1).

- (1) a. A: *How did you open the jar?*
B: *With a jar opener.* ANALYTIC
B’: *Very forcefully.* MANNER
- b. A: *How are you here right now? I thought you were out of town.*
B: *I came home early from the trip.* COGNITIVE RESOLUTION (CR)

While cognitive resolution-*how* questions may have similar surface syntax as the other types of *how*-questions in English, a few diagnostics are discussed in literature to distinguish them. Pak (2007) terms cognitive resolution questions as ‘propositional surprise’ questions and establishes that while propositional questions allow the embedding of a wide array of stative and non-agentive predicates, analytic and manner

questions are more restricted. Additionally, propositional questions fully license sentential negation, whereas negation creates weak-islands effects on the other two types of *how*-questions, disallowing a felicitous question with negation (Abrusán 2008).

On the other hand, Sandoval and Morzycki (to appear) note that the English propositional *how* can achieve two pragmatic effects, namely a ‘reluctant acceptance’ effect and ‘incredulous rejection’ effect. The difference between the two effects is demonstrated by Sandoval and Morzycki (to appear) as (2).

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|-----|----------------------------------|-----------------------|
| (2) | How is Floyd tall?! | |
| a. | ... His parents are so short! | RELUCTANT ACCEPTANCE |
| b. | ... He is 5’6”! That’s not tall! | INCREDULOUS REJECTION |

In essence, though the acceptance response in (2a) questions the prejacent (i.e., *Floyd is tall*), they recognize that the prejacent is true. The incredulous rejection response in (2b), however, points out a fact contradictory to the prejacent and questions the addressee belief. Sandoval and Morzycki offer a unified semantic analysis for the propositional *how* and treat both interpretations as inherently information-seeking.

1.2 Interpretations of premodal *zenme* in Mandarin Chinese

To begin with, Tsai (2008) illustrates that the interpretations of Mandarin *zenme* in Mandarin Chinese (MC) depend on its syntactic position (see also Tang 2011, Pan and Xu 2022). When *zenme* occurs low, scoping under modals/adverbs, it licenses an analytic interpretation, whereas propositional interpretations become available if *zenme* occurs in a higher position at the left periphery, scoping over modals. Tsai terms the former case the postmodal *zenme*, and the latter the premodal *zenme*. In the premodal position, a *zenme*-question allows two varying interpretations, namely a causal interpretation and a denial one. Consider example (3) adapted from Tsai (2008: 85).

- | | | |
|-----|--|--------|
| (3) | Akiu zenme keyi qu Taipei? | MC |
| | Akiu how can go Taipei | |
| a. | ‘How come Akiu could go to Taipei?’ | CAUSAL |
| | <i>answer: Akiu had a relative there to visit; Akiu got extra vacation days...</i> | |
| b. | ‘Akiu can’t/shouldn’t go to Taipei.’ | DENIAL |

The causal interpretation presented in (3a) gives rise to the presupposition that the speaker recognizes that Akiu could go to Taipei, but is so surprised and requests information on how exactly he is able to. The speaker has the pre-existing belief that Akiu was unable to go to Taipei and is contradicted by facts in the world. This is akin to a *how come* or a causal-*why* reading in English (Zwicky and Zwicky 1973). The speaker of (3b), on the other hand, rejects the proposition and does not expect any answers. A context would be someone telling the speaker that Akiu traveled to Taipei, but the speaker denies the possibility of that by uttering the sentence in (3). Alluding to the Hamblin and Karttunen framework of question semantics (Hamblin 1973, Karttunen

1977), Tsai describes the causal interpretation of the premodal *how* an information-seeking question and analyzes that the denial interpretation differs from its causal counterpart in illocutionary force, shifting the speech act from inquiring about information to denying the proposition. Syntactically, following Rizzi's (2001) topography of the CP layer, Tsai places the denial *zenme* in the ForceP and the causal *zenme* in the lower Int(errogative)P.

1.3 The current issues

Sandoval and Morzycki (to appear) and Tsai (2008) differ in whether the propositional *how*, or premodal *zenme* in Tsai, is entirely information-seeking or not. Sandoval and Morzycki (to appear) propose a unified analysis for propositional *how* in English, contending for its inquisitiveness, whereas Tsai (2008) suggests that in Chinese only the causal-*how* interpretation of the premodal *zenme*, and not the denial-*how*, is truly a question.

Tsai's viewing all the premodal *zenme* questions as causal questions, however, seems to be too narrow. In the example in (4), *zenme* occurs before a copula, which is stative. Tsai posits that (4) introduces a causal question which presupposes the sky is blue. Additionally, it has as part of its pragmatics, a counter-expectation 'The sky shouldn't be blue' (Tsai 2008: 89).¹

- (4) Tiankong zenme shi lande? (zaoshang hai shi yin-tian) MC
 sky how COP blue (morning still COP cloudy-day)
 'How come the sky is blue? (It was cloudy this morning.)'

Presupposition: The sky is blue, and something caused the sky to become blue.

→ The sky shouldn't be blue.

Speech Act: The speaker wants to know what caused the sky to become blue.

answer: *Because the clouds just all blew away.*

This usage of *zenme* resembles the 'reluctant acceptance' effect in Sandoval and Morzycki (to appear). But recall the English propositional *how* also creates an 'incredulous rejection' effect. Consider (5) in the context of someone opening an Amazon package with the expectation of it containing a product made of wood, but upon discovering that it does not seem to be wood, one may ask a propositional *how* question:

- (5) Zhe zenme shi mutou? MC
 this how COP wood
 'How is this wood?'

¹ Abbreviations used in the glosses: ASP = aspect; CL = classifier; COP = copula; DIM = diminutive; INDEF = indefinite; NEG = negation; SFP = sentence-final particle; SG = singular.

In uttering (5), the speaker is incredulous, and inclines to reject that the product is wood. This incredulous usage yields an interpretation akin to Tsai’s denial interpretation. However, we argue that this is different from a true denial effect created by the interrogative *na(li)* ‘where’, as illustrated in (6).

- (6) Zhe *na(li)* shi mutou. MC
 this where COP wood
 ‘This isn’t wood.’

Unlike *zenme* in (5), the refutatory *na(li)* in (6) is used to refute a claim made by another interlocutor (Hsieh 2001, Cheung 2008, Liu 2022). By contrast, *zenme* does not carry a denial interpretation.

Now return to Tsai’s example in (3). As previously stated, we argue that a denial reading is not characteristic of the premodal *zenme* in (3) as (3b) cannot be translated into a negated proposition like *Aqui bu neng qu Taipei* ‘Akiu can’t go to Taipei’ or *Aqui bu yinggai qu Taipei* ‘Akiu shouldn’t go to Taipei’. To yield a true denial interpretation refuting a claim made by another interlocutor, we again opt for the refutatory *na(li)* ‘where’, for example *Aqui na(li) neng qu Taipei* ‘Akiu can’t go to Taipei’.

In the rest of the paper, we examine Tsai’s two types of premodal *how*-questions in Mandarin and contend that this is not an appropriate description of the premodal uses of *zenme*. We argue that instead of the two types that Tsai identified, the premodal *zenme* has a different set of interpretations in Mandarin, falling roughly into two categories: information-seeking (i.e., causal and cognitive resolution) and non-information seeking (i.e., exclamative and refutatory). These interpretations in Mandarin vary in detail compared with two other Chinese languages, namely Taiwanese Southern Min and Changshanese. We provide three diagnostics to compare and contrast these interpretations.

The three Chinese languages discussed in this paper are from three different varieties of the Chinese language branch, namely Mandarin, Min, and Xiang varieties. Taiwanese Southern Min is from the Min variety of Chinese and is spoken in Taiwan. Changshanese is the most prominent variety of Xiang Chinese, spoken in Changsha, the capital city of Hunan province in southern China, and two of its surrounding counties.

The following sections of the paper are structured as follows. Section 2 discusses the diagnostics we employed to address the similarities and distinctions among the interpretations. Sections 3 to 5 present cross-linguistic results from Mandarin, Taiwanese Southern Min (henceforth TSM), and Changshanese. Section 6 concludes.

2. Diagnostics

Three diagnostics that distinguish the different interpretations of a *how* question are as follows: embeddability, requirement of a factive prejacet, and licensing of NPI-like *wh*-indefinites.

2.1 Embeddability

The embeddability diagnostic separates the causal interpretation of premodal *zenme* from the other three. Refutatory questions display root phenomena (Hsieh 2001, Cheung 2008, Liu 2022) and cannot be embedded under a verb such as *xiang zhidao* ‘want to know’. Similarly, exclamatives are excluded from such a position. For example, by itself, (7a), which contains *zenme* and a degree modifier *zheme/name* ‘this much/that much’, can express an exclamative or just a causal question despite the presence of a degree modifier, but when it is embedded under *xiang zhidao* in (7b), it can only license a causal reading.

- (7) a. Akiu zenme zheme/name gao (a)!² MC
 Akiu how this.much/that.much tall SFP
 a. ‘How tall Akiu is!’ EXCLAMATIVE
 b. ‘How come Akiu is so tall?’ CAUSAL
- b. Ta xiang zhidao Akiu zenme zheme/name gao. MC
 3SG want know Akiu how this.much/that.much tall CAUSAL
 ‘I wonder how come Akiu is so tall.’

Similarly, we show in section 3 that when the cognitive resolution reading is embedded, a causal interpretation is forced to be accessed.

2.2 Requirement of a factive prejacent

² Badan and Cheng distinguish three types of sentences that may be analyzed as exclamatives in Mandarin. The example in (7a) belongs to Type III (2015: 388). They take this type of sentence to be ambiguous between an exclamative reading ‘How tall Akiu is!’ and a rhetorical reading ‘How come Akiu is so tall?’. They maintain that the presence of the final particle *a* highlights the exclamative reading of the clause, whereas the absence of it mainly yields a rhetorical interpretation. They point out that the rhetorical reading ‘seems to have the so-called “disapproval reading” (Obenauer 1994), in the sense that the speaker has a sort of negative attitude; for instance, ‘How come he is so tall and I am not?’. Type I and Type II sentences are exemplified below.

- (i) a. Ta zheme/name gao a! (Type I) MC
 3SG this.much/that.much tall SFP
 ‘How very tall he is!’
- b. Lisi duo gao a! (Type II) MC
 Lisi how.much tall SFP
 ‘How tall Lisi is!’

Type I has the degree modifier *zheme/name* ‘this much/that much’, whereas Type II has the interrogative *duo* ‘how much’.

Both a causal-*zenme* question and an exclamative-*zenme* sentence presuppose the truth of their prejacent, necessitating a factive complement.³ On the other hand, neither a cognitive resolution-*zenme* nor the refutatory *na(li)* ‘where’ have such a presupposition, and thus they do not require a factive complement.

2.3 Licensing of NPI-like *wh*-indefinites

In MC, *wh*-interrogatives are widely documented and analyzed to function as indefinites in various contexts that pattern like negative polarity items.

These *wh*-indefinites are notably licensed under negation, polar questions, and antecedent of conditionals (Huang 1982; Li 1992; Lin 1996, 1998, 2014). While NPIs are licensed in all downward-entailing contexts, *wh*-indefinites in MC differ in their embeddability in questions. Li (1992) describes the *wh*-indefinites’ occurrence in questions as a spectrum: they occur freely in polar questions, with some restraints in A-not-A questions, and most restricted under *wh*-interrogatives.

The principle behind this diagnostic lies in the hypothesis that if a premodal *how* interpretation introduces a denial effect, the question no longer is inquisitive, shifting from a downward-entailing context of a question to negation.

We employ this diagnostic to differentiate between a true denial interpretation and a cognitive resolution reading. We argue that as a denial operator, the interrogative in the three Chinese languages will be able to license these NPI-like *wh*-indefinites. Such prediction is corroborated with the refutatory *na(li)* ‘where’ in Mandarin, the refutatory *ná* in TSM and the *how*-interrogative *ode* in Changshanese.

3. Mandarin data

Mandarin *zenme* can have a causal reading, a cognitive resolution interpretation, and an exclamative use. We contrast them with the refutatory *na(li)* ‘where’, which gives rise to a true denial effect.

3.1 Information-seeking interpretations

The two information-seeking interpretations differ in their behaviour when embedded and whether they presuppose a factive prejacent. Neither interpretation can license *wh*-indefinites.

Recall the sentence in (3), reiterated as (8a). In our taxonomy, (8a) gives rise to two information-seeking interpretations, namely a causal one and a cognitive resolution reading. However, once (8a) is embedded, only a causal reading can be accessed.

- (8) a. Akiu *zenme* keyi qu Taipei? *MC*
 Akiu *how* can go Taipei

³ For the analysis that exclamatives are factive, see Elliot 1974, Grimshaw 1979, Abels 2010, among many others.

- | | | |
|----|---|--------------|
| | ‘How can Akiu go to Taipei?’ | CAUSAL |
| | ‘How come Akiu can go to Taipei?’ | CR |
| b. | Wo xiang zhidao Akiu zenme keyi qu Taipei. 1SG want know Akiu how can go Taipei ‘I wonder how Akiu can go to Taipei.’ | MC CAUSAL |

Causal-*zenme* presupposes that the prejacent is factive, thus requiring the proposition to be true. This is evidenced by the fact that the presupposition cannot be canceled. Consider the following example. When the causal-*zenme* is joined with a follow-up comment that contradicts the prejacent *Akiu keyi qu Taipei* ‘Akiu is able to go to Taipei’, the causal reading is lost and a cognitive resolution interpretation is coerced.

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|--------|---|--------|
| (9) a. | Akiu zenme keyi qu Taipei? Ta mei you Akiu how can go Taipei 3SG NEG have huzhao. passport | MC |
| | #‘How is Akiu able to go to Taipei? He doesn’t have a passport.’ | CAUSAL |
| | ‘How come Akiu could go to Taipei? He doesn’t have a passport.’ | CR |

3.2 Non-information-seeking interpretations

Mandarin *zenme* has one non-information-seeking interpretation, namely the exclamative use. As evidenced by (7b), the exclamative use cannot be embedded and also presupposes the embedded proposition to be true, requiring for a factive prejacent.

Lastly, we contrast *zenme* with *na(li)*, which gives rise to a true denial reading. Consider (10a), which resembles the syntax of the two information-seeking uses of *zenme*. Neither interpretation is licensed with a *wh*-indefinite *nali* ‘where’ and the sentence is ungrammatical. Similarly, (10b) illustrates that an exclamative interpretation also does not allow a *wh*-indefinite *duo* ‘how much’, yielding an ungrammatical sentence.

- | | | |
|---------|---|--------------|
| (10) a. | *Akiu zenme neng qu nali? Akiu how can go where.INDEF (int.) ‘How could Akiu go anywhere?’ | MC |
| b. | *Akiu zenme duo piaoliang a! Akiu how how.much.INDEF pretty SFP (int.) ‘How is Akiu so pretty!’ | MC |
| c. | Akiu na(li) neng qu nali. Akiu where can go where.INDEF ‘Akiu can’t go anywhere.’ | MC DENIAL |
| d. | Akiu na(li) duo piaoliang. | MC |

Akiu where how.much.INDEF pretty DENIAL
 ‘Akiu isn’t pretty.’

In contrast to *zenme* in (10a) and (10b), the *where*-interrogative *na(li)* doubles as a refutatory and licenses *wh*-indefinites, as borne out by (10c) and (10d). This distinction paints the difference between Tsai’s denial interpretation of *zenme* and a true denial effect achieved by a *wh*-interrogative.

A summary of the Mandarin *zenme* interpretations and their diagnostic results are presented in the following table.

Table 1. Types of interpretations and their diagnostic results in Mandarin Chinese.

| | Interpretations | Interrogatives | Embeddabil -ity | Factive prejacent | NPI/EPW licensing |
|---------------------------------|-------------------------|---|--------------------|----------------------|----------------------|
| information -seeking | causal | <i>zenme</i> ‘how’ | ✓ | ✓ | × |
| | cognitive resolution | <i>zenme</i> ‘how’ | × | × | × |
| non- information- seeking | exclamative | <i>zenme</i> ‘how’ + <i>zheme/name</i> ‘this.much/that .much’ + (<i>a</i> SFP) | × | ✓ | × |
| | denial | <i>na(li)</i> ‘where’ | × | × | ✓ |

4. TSM data

Just like Mandarin *zenme*, *án-tsuánn* ‘how’ in TSM obtains a causal-*how* reading or an analytic-*how* reading depending on its position. Occurring before the modal *ē* ‘will’, *án-tsuánn* ‘how’ in (11a) has a causal reading. By contrast, *án-tsuánn* in (11b) occurs after the adverb *lóng* ‘all’ and carries an analytic reading.

- (11) a. Tsit-tsia^h toh-á án-tsuánn ē hai-khì? TSM
 this-CL table how will break-ASP CAUSAL
 ‘How was the chair broken?’
*answers: because it was left outside for too long; because someone too heavy
 sat on it...*
 (cf. Lau and Tsai 2020: 262)

- b. Tsuí-sūn lóng án-tsuánn khi siōng-pan? TSM
 Tsuisun all how go work ANALYTIC
 ‘By what means does Tsuisun go to work?’
answers: by car; by bus...
 (Lau and Tsai 2020: 262)

What is special about TSM is that cognitive resolution-*how* has to be expressed by *ná* plus an additional modal *ē* ‘will’, marking its position to be higher than the modal.⁴ *Án-tsuánn* is not allowed.

- (12) Tse ná/*án-tsuánn ē sī tshâ? TSM
 this where/how will COP wood CR
 ‘How is this wood?’

Moreover, a causal-*how* question which involves a stative predicate also requires *ná* plus *ē*:

- (13) Thinn ná/*án-tsuánn ē sī nâ-sik--ê? TSM
 sky where/how will COP blue CAUSAL
 ‘How is the sky blue?’

Just like causal-*how* and cognition resolution-*how* in MC, their counterparts in TSM behave the same with respect to the three diagnostics. While causal-*án-tsuánn/ná* can be embedded, it requires a factive prejacent and does not license a *wh*-indefinite. By contrast, cognitive resolution-*ná* cannot be embedded, does not require a factive prejacent and cannot license a *wh*-indefinite. For example, the contrast in (14) shows that while a causal-*ná* question can be embedded, a cognitive resolution-*ná* question cannot.

- (14) a. Guá siūnn-beh tsai-iánn thinn ná ē sī nâ-sik--ê. TSM
 1SG want know sky where will COP blue CAUSAL
 ‘I wonder how the sky is blue.’
- b. *Guá siūnn-beh tsai-iánn tse ná ē sī tshâ. TSM
 1SG want know this where will COP wood CR
 (int.) ‘I wonder how come this could be wood.’

The examples in (15) show that neither a causal-*ná*, nor a cognitive resolution-*ná* licenses a *wh*-indefinite:

- (15) a. *I án-tsuánn ē khi tó-uī? TSM
 3SG how will go where.INDEF CAUSAL

⁴ It is not clear what *ná* means by itself. In this paper, we simply gloss it as ‘where’ just like the refutatory *na* in MC, assuming they are cognates.

- (int.) ‘How will he go anywhere?’
 b. *Tse ná ē sī siánn-mih tshâ? TSM
 this where will COP what.INDEF wood CR
 (int.) ‘How come this is any wood?’

On the other hand, an exclamative is expressed by *ná* ‘how’, the modal *ē*, the degree adverb *tsiah-nī-á/hia-nī-á* ‘this much/that much’, and SFP *leh*, as shown in (16).

- (16) I ná ē tsiah-nī-á/hia-nī-á sán (leh)? TSM
 3SG where will this.much/that.much thin SFP
 ‘How come he is so thin?’ CAUSAL
 ‘How thin he is!’ EXCLAMATIVE

In such a construction, a *wh*-indefinite cannot be licensed:

- (17)*I ná ē (tsiah-nī-á/hia-nī-á) guā sán? TSM
 3SG where will this.much/that.much how.much.INDEF thin
 (int.) ‘How come he is any thin?’ CAUSAL
 (int.) ‘How any thin he is!’ EXCLAMATIVE

Moreover, as expected, an exclamative cannot be embedded under verbs such as *siūnn-beh tsai-iánn* ‘want to know’. The embedded clause in (18) only has a causal reading.

- (18) Guá siūnn-beh tsai-iánn i ná ē tsiah-nī-á/hia-nī-á sán. TSM
 1SG want know 3SG how will this.much/that.much thin CAUSAL
 ‘I want to know how he is so thin.’

Finally, the denial interpretation is conveyed by the refutatory *ná*, which usually occurs before the aspect marker *ū* ‘have’ denying the existence of an event, or the copula *sī* denying the existence of a state. As shown in (19), although it cannot occur in an embedded clause, it can license a *wh*-indefinite.

- (19) a. *Guá siūnn-beh tsai-iánn tse ná ē sī tshâ. TSM
 1SG want know this where will COP wood CR
 (int.) ‘I want to know how come this is wood.’
 b. I ná ū tsiáh siánn-mih mih-kiánn. TSM
 3SG where ASP eat what.INDEF thing DENIAL
 ‘He didn’t eat anything.’
 c. Tse ná sī siánn-mih tshâ. TSM
 this where COP what.INDEF wood DENIAL
 ‘This is not wood at all.’

A summary of the TSM interrogative interpretations and their diagnostic results are presented in the following table.

Table 2. Types of interpretations and their diagnostic results in Taiwanese Southern Min.

| | Interpretations | Interrogatives | Embeddabil -ity | Factive prejacent | NPI/EPW licensing |
|---------------------------------|-------------------------|--|--------------------|----------------------|----------------------|
| information- seeking | causal | <i>án-tsuánn</i> 'how'/ <i>ná</i> 'how' | ✓ | ✓ | × |
| | cognitive resolution | <i>ná</i> 'how' | × | × | × |
| non- information- seeking | exclamative | <i>ná</i> 'how' + <i>tsiah-nī-á/hia-</i> <i>nī-á</i> 'this.much/that .much' + (<i>leh</i> SFP) | × | ✓ | × |
| | denial | <i>ná</i> 'where' | × | × | ✓ |

5. Changshanese data

The Changshanese equivalent to Mandarin *zenme* is the interrogative *osi*. Similar to *zenme*, *osi* also exhibits a premodal and postmodal dichotomy. Compare the two questions in (20).

- (20) a. Tian-bie *osi* *yao* *gaofan* (lo)? *Changshanese*
Tian-DIM how want cook SFP
'How come Little Tian wants to cook?'
answers: because he is hungry; because he wants to test out new skills...
- b. Tian-bie *yao* *osi* *gaofan* (lo)? *Changshanese*
Tian-DIM want how cook SFP
'How does Little Tian want to cook?'
answers: in the kitchen; by the woodfire; with a spatula; by himself...

The position of *osi* in relation to the volitional modal *yao* dictates the type of interpretations accessed. (20a) asks for a cause or a reason to the embedded proposition

Tianbie yao gaofan ‘Little Tian wants to cook’, whereas (20b) asks for the manner or method in which Little Tian wants to cook in.

While *osi* is commonly referred to by Changshanese speakers as the equivalent to Mandarin *zenme*, another interrogative *ode* comes into view when examining *how*-questions in Changshanese. The main bodies of work in Changshanese explain *ode* as the Mandarin *zenme* (Bao et al. 1998, 1999), however, with closer inspection, *ode* differs from Mandarin *zenme* and its Changshanese counterpart *osi* in their domains of interpretations. The following table summarizes the two Changshanese *how*-interrogatives in their premodal interpretations.

Table 3. Types of interpretations and their diagnostic results in Changshanese.

| | Interpretations | Interrogatives | Embeddabil -ity | Factive prejacent | NPI licensing |
|---------------------------------|-------------------------|--|--------------------|----------------------|------------------|
| information- seeking | causal | <i>osi</i> ‘how’ | ✓ | ✓ | ✗ |
| | cognitive resolution | <i>osi/ode</i> ‘how’ | ✗ | ✗ | ✗ |
| non- information- seeking | exclamative | <i>osi</i> ‘how’ + <i>gong</i> ‘this.much’ + (<i>lo</i> SFP) | ✗ | ✓ | ✗ |
| | denial | <i>ode</i> ‘how’ | ✗ | ✗ | ✓ |

Changshanese interrogative *osi* reflects the interpretations of Mandarin *zenme*, allowing for two information-seeking interpretations and a non-information-seeking exclamative reading. The curious thing to note is that the interrogative *ode* does not yield a causal reading or an exclamative reading, but can be accessed to express incredulity (cognitive resolution) and denial. Contrast the following scenarios with opposite contexts.

- (21) a. Context: I haven’t seen Zouyi in a long time, and he grew taller than I expected.

Ni ode you go(ng) gao, ni baba mama
2SG how have this(.much) tall, 2SG dad mom
you bu gao.
also NEG tall
Changshanese

(int.) ‘How come he is (much) tall? His parents are not tall.’

- b. Context: I haven’t seen Zouyi in a long time, and our mutual friend told me Zouyi grew five inches since I last saw him.

| | | | | | |
|-----|-------|------|------------|-------|---------------------|
| Ta | ode | zan | hao | gao, | |
| 3SG | how | grow | much.INDEF | tall, | |
| bu | konen | lo. | | | <i>Changshanese</i> |
| NEG | can | SFP | | | |

‘He cannot be tall, that’s not possible.’

The crucial difference between (21a) and (21b) lies in that while (21a) is uttered with the prejacent as a fact, (21b) denies the truth of the prejacent, expressing disbelief to the interlocutor’s comment. Note that in (21b), *ode* takes in a *wh*-indefinite *hao*, creating an negation-like environment.

To summarize, the interrogative *osi* in Changshanese closely mirrors the interpretations of Mandarin *zenme*. However, the Changshanese *how*-inventory includes a distinct interrogative *ode*. Contrary to the *how*-interrogatives in Mandarin and TSM, *ode* not only licenses information-seeking questions but can also establish a *wh*-context that permits NPI-like *wh*-indefinites.

6. Conclusion

In this paper we examined an existing observation of the Mandarin interrogative *zenme*. Particularly when positioned premodally, *zenme* can be interpreted in two ways: either as inquiring about the causes of the prejacent or to deny it. By applying three diagnostics, we argue for a different taxonomy of premodal interpretations, consisting of four interpretations in two subcategories based on whether or not the interpretation is information-seeking. We extended the new taxonomy to two other Chinese languages and found that while the Mandarin types largely apply, there are cross-linguistic differences across the board.

Next steps include taking a more focused look into the syntactic and semantic components of these different interpretations. Tsai’s (2008) analysis proposed that the different interpretations of the premodal *zenme* merge at the left periphery, with the denial *how* scoping over the entire sentence in the ForceP and the causal *zenme* locating in the IntP. We hypothesize that whether the interpretation is information-seeking or not may have emerged from different phrasal positions occupied by the interrogative. Further investigation on the syntactic positioning of the interrogatives is needed.

We are also interested in the semantic composition of the interrogatives and their pragmatic extensions. Sandoval and Morzycki (To appear) treat the English propositional *how* as an information-seeking interrogative, proposing that *how* consists of a modal component that inquires for conversational background updates to make the prejacent true. We intend to explore this analysis to determine if it can be applied to Mandarin and the other two Chinese languages.

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