

**Dedicated bias particles: A case study of Mandarin *nandao*-Qs**

An analysis of Mandarin *nandao*-Qs is presented with a view to address the following questions: Are there dedicated particles to express bias in natural languages? What is the relationship between biased questions and rhetorical questions?

**Phenomenon.** *Nandao*-Qs have been shown to have rhetorical (Yu 1984; Yu 2006; Xu 2012) as well as information-seeking bias uses (Sun 2000; Sun 2007; Xu 2013) both of which necessarily express a negative epistemic bias (1-2). Unlike other kind of biased question (e.g. declarative questions in English which require the addressee to be publicly committed to the proposition expressed (Gunlongson 2001)), *nandao*-Qs are more stringent in their contextual requirements.

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| <p>(1) <u>Context</u>: A's house is messy. One day, A's classmate B is visiting him and suggests he clean it.<br/>A: <i>Nandao ni shi wo ma ma?</i><br/>Nandao you be I mom Y/N-Q<br/>'What are you, my mom or something?'<br/>= 'You are not my mom!'</p> | <p>(2) <u>Context</u>: Policeman A strongly believes criminal B has not escaped. During a search, A finds a receipt of yesterday's flight in B's name.<br/>A asks his colleagues: <i>Nandao ta fei-zou le ma?</i><br/><i>Nandao he fly-go PERF Y/N-Q</i><br/>'He hasn't escaped, right?' ≠ 'He hasn't escaped.'</p> |
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In (1), A holds a strong belief that *B is not A's mom* and does not consider the alternative possibility (i.e. *B is A's mom*). A's use of the *nandao*-Q can be classified as rhetorical since both A and B know that B is not A's mom. In (2), A has a strong prior belief that B has not escaped but the discovery of the receipt shakes this belief. He uses the *nandao*-Q to ask his colleagues to confirm his belief (cf. Reese & Asher's (2007) analysis of nuclear tag question with rising intonation). I provide an account of both rhetorical and bias uses of *nandao*-Qs by treating *nandao* as a subjective epistemic modal adverb that modifies the interrogative act. I do so using a theory that tracks Discourse Commitments (DC).

***Nandao* vs. Negation & Verum Focus.** Positive Polar Questions in both Mandarin and English have [-negative] evidential bias and no epistemic bias (cf. Sudo 2013). We can therefore impute the introduction of the negative epistemic bias seen in (1-2) to *nandao*. We do not treat *nandao* itself as introducing negation. If it had a negation-like function, *nandao*-Q would denote a singleton set with only the negative answer (Xu 2012). However, the *nandao*-Q in (2) is an information-seeking question denoting a set of both positive and negative answers. In addition, *nandao* does not trigger bias like ordinary negation in Chinese/English. Negative Polar Questions always carry a positive epistemic bias (Sudo 2013) while *nandao*-Qs express a negative one. Furthermore, unlike English *really*, *nandao* does not introduce a Verum focus (cf. Romero 2006). The epistemic bias triggered by Verum focus in Y/N-Qs requires "a contradiction scenario" where the speaker and the addressee has contradicting beliefs or "a suggestion scenario" where the speaker believes one of the answers but lacks evidence for it (Romero & Han 2004). The Verum focus analysis cannot be extended to the rhetorical use of *nandao*-Qs (e.g. (1)) where the discourse participants share the relevant information (cf. Caponigro & Sprouse 2007).

***Nandao* & Modality.** I propose that the epistemic bias seen in (1-2) comes from the semantics of *nandao*. Lyons (1977) distinguishes two kinds of epistemic modality: objective and subjective. Objective epistemic modality deals with the factuality of a proposition while subjective one the expresses speaker's opinion of his utterance. A *nandao*-*p*? question conveys that the speaker has a higher degree of belief towards  $\sim p$ . We therefore claim that the adverb *nandao* is a subjective epistemic modal adverb.

The core meaning of *nandao* in a *nandao*-*p*? is the bias, i.e. the speaker believes that the correct answer is more likely to be  $\sim p$  than *p*. To model such a meaning, I use a Kratzerian framework for modality and adopt the notion of *Better Possibility* (Lassiter 2011).

- (3)  $\phi$  has better possibility than  $\psi$  ( $\phi \succ_{g(w)}^s \psi$ ) iff  $\phi \succeq_{g(w)}^s \psi$  and  $\psi \not\prec_{g(w)}^s \phi$ , given  
 $\succeq_{g(w)}^s := \{(\phi, \psi) \mid \forall u \in \psi \exists v \in \phi : v \succeq_{g(w)} u\}$ , where  $u, v \in \cap f(w)$ . (adapted from Lassiter 2011: 21-22)

Thus, in a *nandao*-*p*?, the meaning of bias can be represented as the speaker believes that  $\sim p \succ_{g(w)}^s p$ .

**Syntax of *Nandao*.** *Nandao* can appear at the sentence-initial position (1-2) or after a topic, but never after a focused phrase (4). Moreover, *nandao* can also be placed after the Y/N-Q (marked by *-ma*) (5).

- (4) [<sub>DP</sub> *Zuoye*]<sub>Top</sub> (-ne) (nandao) *zhiyou/jiu* [*Zhangsan*]<sub>F</sub> (\*nandao) *xie-le* *t<sub>DP</sub>* *ma?*  
 Homework TOP nandao only just Zhangsan nandao write-PERF Y/N-Q  
 'It is not the case that only [*Zhangsan*]<sub>F</sub> finished the homework, right?'
- (5) [<sub>CP</sub> *Ta fei-zou le ma*]<sub>Top</sub>, nandao *t<sub>CP</sub>*?  
 he fly-go PERF Y/N-Q nandao 'He hasn't escaped, right?'

Assuming Cheng's (2013) topic binding analysis of CP-ellipsis in Mandarin, the Y/N-Q surfaces as the topic of the *nandao*-Q in (5). In view of (1-2) and (4-5), I argue that *nandao* is base-generated at a higher syntactic node, i.e. Top > *nandao* > Foc and *nandao* > Y/N-Question (IntP in Rizzi (2001, 2004)). In this case, a focused phrase cannot move across *nandao* because its target position (Spec-FocP) is syntactically lower than *nandao*. Yet, a topic can surface on the left of *nandao* because Top > *nandao*. As Lyons (1977) argues that subjective epistemic modality qualifies illocutionary forces including interrogation, I further claim that *nandao* serves as a modifier of interrogative act (QUEST). Assuming Rizzi (2001, 2004)'s split-CP hypothesis and Krifka's (2001) and Tomioka's (2009) arguments for Topic > Speech Act, I posit (6) for (4).

(6)  $[_{TopP} \text{Zuoyek } [_{Top} (-ne)] [_{ForceP} \text{nandao QUEST } [_{IntP} \text{Y/N-op } [_{Int'} [_{Int} [+WH]]] [_{FocP} \text{zhiyou Zhangsan}_j [_{IP} \text{t}_j \text{xie-le t}_k]]]]]]]$

**Semantics of *Nandao*.** In a *nandao*-Q, as *nandao* scopes over the embedded Y/N-Q, how can *nandao* target the specific *p* or  $\sim p$  to rank them in terms of Better Possibility? Standard question semantics (e.g. Hamblin 1973) which treats all answers equally in the question denotation is not sufficient for this purpose. To solve this selectional problem, we need a kind of question semantics that can differentiate answers. Here, I adopt Roelofsen & van Gool's (2010) idea of *highlighting* from Inquisitive Semantics and adapt their definition of highlighted meaning of a question *Q* with the form *p*? to be:

(7)  $[[Q]]_H := [[p]]_H$  (*p* is the question nucleus). If *p* is an atomic proposition,  $[[p]]_H = \{p\}$ ; if *p* is composed of a disjunction *a or b*,  $[[p]]_H = \{a, b\}$ .

As a subjective epistemic modal adverb, *nandao* modifies the interrogative act. I propose that such a modification is achieved by updating the speaker's DC set (cf. Farkas & Bruce 2009; Rett 2016). When the addressee hears a *nandao-p*?, he becomes aware of the speaker's biased attitude towards the possible answers. In effect, by uttering the *nandao-p*?, the speaker makes public of this biased attitude, i.e. it becomes a public belief of the speaker. Under Gunlogson's (2001) term, the *nandao-p*? updates the DC set of the speaker with  $\sim p \succ_{g(w)}^s p$ .

Extending Farkas & Bruce's (2009) update semantics of speech acts (cf. Krifka 2001), I define that *nandao* is a function that takes the output context state ( $K_o$ ) of QUEST act as its argument and outputs a new updated context state ( $K'_o$ ) (cf. Rett 2016). ( $K/K'$ 's context, *i* input, *o* output, *Q* the question)

(8)  $Nandao(K_o) = K'_o$  such that: ( $T/T'$  stack,  $push(e, T)$  a new stack with *e* added to *T*)  
 (i)  $QUEST(Q, s, K_i) = K_o$  such that: (*s* speaker,  $top(T)$  the top item of the stack *T*)  
 a)  $T_o = push(\langle [[Q]]_H, [[Q]] \rangle, T_i)$ ; b)  $ps_o = ps_i \sqcup [[Q]]$  (cf. Farkas & Bruce's (2009) PQ conditions)  
 (ii)  $T'_o = T'_i = T_o$ ;  $top(T_o) = \langle [[Q]]_H, [[Q]] \rangle$   
 (iii)  $DC'_{s,o} = DC'_{s,i} \cup \left\{ \left( \lambda \langle A, B \rangle : \exists_1 p (p \in A \wedge \sim p \in B) . \sim \mathbf{t} p \in A \succ_{g(w)}^s \mathbf{t} p \in A \right) (top(T'_i)) \right\}$ .

According to (8), *nandao* picks out the **unique** highlighted answer in  $[[Q]]_H$  and updates that the complement answer has better possibility than the unique highlighted answer into the speaker's DC set.

**Pragmatics of *Nandao*.** As a *nandao-p*? expresses  $\sim p \succ_{g(w)}^s p$ , we can expect an occasion where  $\sim p$  has the best possibility while *p* has the least. In this case, the speaker fully believes  $\sim p$  to be the correct answer (e.g. when  $\sim p$  is a mutual belief or even commonsense knowledge) (1). Hence, a *nandao*-Q becomes a rhetorical question. When there is counter-evidence in the context against the speaker's belief, the degree of the speaker's belief of  $\sim p$  decreases (2). Thus, the speaker asks the *nandao*-Q to seek confirmation from others. In this case, the *nandao*-Q is an information-seeking biased question. To summarize, both the rhetorical and the information-seeking bias uses are within the spectrum of the semantics of *nandao*-Q. Whether it has a rhetorical or an information-seeking biased reading depends on how the context affects the degree of the speaker's belief.

**Further Predictions.** The analysis of *nandao*-Q given above makes some further predictions about its distribution. As *nandao* orders the unique highlighted answer and its complement answer in terms of Better Possibility, it is predicted that *nandao* will only be compatible with Y/N-Qs (Xu 2012). Because WH-Qs do not have highlighted answers (Farkas & Roelofsen 2012), and Alt-Qs (e.g. A-not-A Qs) have more than one highlighted answers (Roelofsen & van Gool 2010), the uniqueness presupposition of *nandao* (bold part in (8)) would be violated if *nandao* was combined with those questions.

**Selected References:** Caponigro & Sprouse. 2007. Rhetorical questions as questions. *SuB* 11. Farkas & Bruce. 2009. On reacting to assertions and questions. *JoS* 27. Gunlogson. 2001. True to form: Rising and falling declaratives as questions in English. PhD Diss. Krifka. 2001. Quantifying into question acts. *NLS* 9. Lyons. 1977. *Semantics*, Vol 2. CUP. Roelofsen & van Gool. 2010. Disjunctive questions, intonation, and highlighting. *LLM*. Rett. 2016. The semantics of attitude markers and other illocutionary content. Ms. Romero & Han. 2004. On negative yes/no questions. *L&P* 27. Xu. 2012. *Nandao*-Question as a special kind of Rhetorical Question. *Proc. SALT* 22.