Speaker Attitudes Predict Epistemic Biases in Polar Questions: Evidence from Farsi

Introduction. The literature has distinguished between two kinds of bias in non-canonical polar questions, often called Original Belief (OB) and Contextual Evidence (CE), where OB reveals the prior belief of the speaker regarding the true answer and CE reveals the shared evidence in the speech context for/against a possible answer (Ladd 1981; Büring & Gunlogson 2000; Romero & Han 2004; Sudo 2013). These two kinds of bias stand out most clearly when they oppose each other, as in English polar questions with (epistemic) *really*. For example, *Did Sara really win?* conveys the speaker's belief that Sara did not win (OB) as well as the presence of shared evidence (say, a preceding utterance) implying that Sara won (CE). Notably, both of these biases are 'epistemic' in a broad sense, being about belief (OB) or knowledge (CE).

It has been pointed out that polar questions may also convey non-epistemic bias flavors, such as deontic, bouletic or teleological (Huddleston & Pullum 2002; van Rooy & Šafářová 2003; Reese 2007; AnderBois 2019). For example, *Aren't you ashamed of yourself?* would register not just the presence of evidence suggesting that the addressee is not ashamed of herself (CE) but also that, according to the speaker's moral rules, the addressee should be ashamed of herself (deontic bias).

Building on the observation that epistemic and non-epistemic biases may co-occur within the same form, we argue that the familiar epistemic biases (OB and CE) need not be native to the question but constitute its use conditions and fall out from a single source: an Attitude Implication (AI) conveying the speaker's (potentially non-epistemic) attitude towards the question prejacent. We provide evidence for this claim from polar questions in Farsi with three discourse particles (*ke*, *dige*, *mage*), showing that the AIs triggered by these particles predict the correct OB/CE settings in which the pertaining questions may felicitously occur.

Data from Farsi. Canonical declaratives and canonical polar interrogatives in Farsi only differ in intonation, where the former employ a final fall (↘) while the latter employ a final rise (↗), see (1)–(2). Since Farsi polar interrogatives incorporate a declarative word order plus a final rise, they are similar in form to English rising declaratives (cf. *You are the new boss?*). However, while Farsi polar interrogatives receive a neutral interpretation by default, English rising declaratives come with an obligatory bias effect (Gunlogson 2008; Malamud & Stephenson 2015; Rudin 2022).

(1) Ali umad.↘
Ali came
'Ali came.' (canonical declarative)

(2) Ali umad?↗
Ali came
'Did Ali come?' (canonical polar interrogative)

Against this backdrop, we make two key observations about Farsi polar interrogatives with discourse particles as in (3)–(5). **(i)** On top of its regular polar question semantics, each form conveys an AI. Specifically, *ke*-questions signal the speaker's belief-based desire that the question prejacent is the true answer (3); *dige*-questions convey the speaker's tentative/indirect inference that the prejacent is true (4); *mage*-questions (cf. Mameni 2010) express the speaker's violated expectation that the prejacent is false (5). (Adding negation only affects the prejacent in all forms.) **(ii)** Each of (3)–(5) may occur in specific OB/CE settings, as summarized in Table 1 (we omit the relevant data for reasons of space). We argue that (ii) follows from (i).

(3) Ali umad ke?↗
Ali came KE
'Did Ali come?'
⇝ *S hopes that Ali came.*

(4) Ali umad dige?↗
Ali came DIGE
'Did Ali come?'
⇝ *S infers that Ali came.*

(5) Mage Ali umad?↗
MAGE Ali came
'Did Ali come?'
⇝ *S didn't expect that Ali came.*

CE \ OB	p	neutral	$\neg p$
p	*p-dige?*	*p-dige?*	*mage-p?*
neutral	*p-dige?*, *p-ke?*		
$\neg p$			

Table 1: Distribution of Farsi polar questions with *ke*/*dige*/*mage* across different OB and CE contexts.

Semantics for *ke/dige/mage*. We start by pointing out that the AIs specified in (3)–(5) are conventionally encoded and are not cancelable. That is, the speaker cannot felicitously follow up by saying things like *I don't care* in (3), *I have no idea* in (4), or *I didn't know what to expect* in (5). Moreover, the AIs take widest scope: adding negation to the question would negate the prejacent and not the attitude. Finally, an AI typically presents fresh information that cannot be asserted prior to uttering the question without some sense of redundancy. For these reasons, we assume that the AI is a conventional implicature (in the sense of Potts 2005) triggered by our targeted discourse particles. Specifically, we propose the bidimensional entries for *ke/dige/mage* in (6)–(8), employing the meaning format *at-issue* • *non-at-issue*.

(6) $[\![\text{ke}]\!]^{c,w} = \lambda p\,.\,p \bullet \forall w' \in \bigcap Dox_{s_c,w} : p \succ_{s_c,w'} \neg p$ (belief-based desire)

(7) $[\![\text{dige}]\!]^{c,w} = \lambda p\,.\,p \bullet Epi_{s_c,w} \mathrel{|\!\approx} p$ (defeasible inference)

(8) $[\![\text{mage}]\!]^{c,w} = \lambda p\,.\,p \bullet Dox_{s_c,w} \models \neg p \wedge CG^{*}_{c,w} \models p$ (violated expectation)

Starting with (6), *ke* conventionally implicates that the speaker s finds the question prejacent p to be more desirable (marked as $\succ$) than $\neg p$ in all of her doxastic worlds. This emotive doxastic semantics makes Farsi *ke* akin to English *hope*, which (in addition to its preferential component) has a doxastic component and is incompatible with knowing p or knowing $\neg p$ (Anand & Hacquard 2013; Portner & Rubinstein 2020). Moving on to (7), *dige* conventionally implicates that the question prejacent p is defeasibly entailed (marked as $\mathrel{|\!\approx}$) by the speaker's knowledge, meaning that p follows from the speaker's evidence under some normality assumptions. This inferential semantics for *dige* is reminiscent of similar proposals put forward for English *must* (Kratzer 1991; Stone 1994; Mandelkern 2019; Waldon 2021). Finally, (8) attributes to *mage* two opposing pressures: what has been proposed to enter the Common Ground (reflected in the projected Common Ground CG^{*}) entails that the question prejacent p is true, while the speaker's belief state entails that p is false (even though the speaker may not have been aware of it prior to obtaining the contextual evidence).

Deriving OB/CE restrictions from AIs. The proposed lexical meanings in (6)–(8) correctly predict the use conditions in Table 1 as follows. ***ke*-questions:** The AI conveys a hope-like attitude (a preference based on what the speaker believes/considers likely), hence the requirement that OB support the question prejacent. Moreover, since hope is incompatible with actual knowledge about the prejacent, the CE must be neutral. ***dige*-questions:** The AI states that the question prejacent defeasibly follows from the speaker's knowledge, and so the evidence for this inference may come from the speaker's prior experience (OB) or the current context (CE) (or both). Notably, no contravening evidence is allowed because such evidence would defeat the inference to the prejacent. ***mage*-questions:** The AI encodes the use conditions quite directly. That is, the speaker's belief state entails that the prejacent is false while the shared evidence entails that the prejacent is true, hence the particular setup of OB/CE and the concomitant sense of violated expectation.

Implications. The idea of deriving epistemic biases from speaker's attitudes simplifies the analysis of question bias in two key respects. (Recent work has additionally explored the link between interrogative flip and epistemic bias in questions with evidentials; see Bhadra 2020.) For one, it helps maintaining the semantic coherence of certain question forms, like Farsi *dige*-questions, which exhibit a rich OB/CE distribution pattern. Conversely, AIs help keeping apart different question forms which display the same OB/CE distribution. For example, in Farsi, *ke*-questions appear in the same OB/CE contexts as tag questions (TQs) with particle *na*, and *mage*-questions appear in the same OB/CE contexts as verbal tag questions, even though these pairs of questions trigger different AIs. (The data are omitted due to space constraints.)

Looking beyond our target data, it is important to ask how the proposed general strategy reflects on other kinds of biased questions, including questions without (overt) discourse particles. One case in point are various positive and negative polar questions, whose epistemic bias patterns are robust across languages and should preferably be derived from general pragmatic principles. At the same time, our proposal suggests that at least some components of these patterns may in fact be semantic in nature.

References. Anand & Hacquard (2013). *Epistemics and attitudes.* Semantics and Pragmatics 6. • AnderBois, S. (2019). *Negation, alternatives, and negative polar questions in American English.* • Bhadra (2020). *The Semantics of Evidentials in Questions.* Journal of Semantics 37. Büring & Gunlogson (2000). *Aren't positive and negative polar questions the same?* • Gunlogson (2008). *A question of commitment.* • Huddleston & Pullum (2002). *The Cambridge Grammar of the English Language.* Ladd (1981). *A first look at the semantics and pragmatics of negative questions and tag questions.* • Malamud & Stephenson (2015). *Three Ways to Avoid Commitments: Declarative Force Modifiers in the Conversational Scoreboard.* Journal of Semantics 32. Mameni (2010). *Epistemic Implicatures and Inquisitive Bias: a Multidimensional Semantics for Polar Questions.* • Mandelkern (2019). *What 'must' adds.* Linguistics and Philosophy 42. • Portner & Rubinstein (2020). *Desire, belief, and semantic composition: variation in mood selection with desire predicates.* Natural Language Semantics 28. • Potts (2005). *The Logic of Conventional Implicatures.* Oxford University Press. • Reese (2007). *Bias in Questions.* • Romero & Han (2004). *On negative yes/no questions.* Linguistics and Philosophy 27. • Rudin (2022). *Intonational commitments.* Journal of Semantics 39. • Stone (1994). *The reference argument of epistemic must.* • Sudo (2013). *Biased polar questions in English and Japanese.* • van Rooij & Safarova (2003). *On polar questions.* Semantics and Linguistic Theory 13. • Waldon (2021). *Epistemic must and might: evidence that argumentation is semantically encoded.* CLS 56.