

Contextual, lexical, and structural factors licensing Mention-Some embedded questions

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INTRODUCTION Embedded questions, such as the underlined segment of (1), permit multiple readings relative to knowledge of the answers to (2), as captured in (3).

(1) Mary knows where to find a good cup of coffee.

(2) Where can one find a good cup of coffee?

- (3) a. **Strong Exhaustive:** Mary can name both positive and negative answers.
b. **Weak Exhaustive:** Mary can name all of the positive answers.
c. **Intermediate Exhaustive:** WE + she has no false beliefs about the negative answers.
d. **Mention-Some (MS):** Mary can name (at least) one positive answer.

While previous theoretical accounts focused almost exclusively on (3a-c), more recent theoretical accounts have turned to factors licensing (3d). Three main claims arise from these recent investigations:

Claim 1 Contextual (pragmatic) licensing: [1,3,6-8] argue MS must be licensed by the context and should be available whenever it satisfies discourse goals. While (3a-c) are better if (2) is asked by a foodie reviewer for a magazine, (3d) is appropriate if (2) is asked by a tourist in town for a day.

Moreover, the felicity of any given MS answer also depends on its relevance to the speaker's goals. However, contextual goals may not be sufficient to license MS readings. MS is also claimed to be linguistically constrained. [3,4] observe that not all embedded questions allow MS. (4) with *who* and +FIN appears to resist MS. This observation leads to Claims 2 and 3.

(4) Mary knows who came to the party.

Claim 2 Lexical licensing: MS is claimed to depend on the semantics of the embedding verb and the *wh*-phrase. [2] claims MS is only licensed by 'psych verbs' like *know*, and not communication verbs like *predict*, which [1] argues should resist MS. While no clear reason why *who* would block MS, [8] argues that in needing contextual support to specify its granularity, *where* is more MS-compatible.

Claim 3 Modal licensing: [3,5, 9,10] argue that -FIN clauses, as in (1) and (4) are analyzed as carrying a covert existential modal, which allows MS, in contrast to +FIN clauses, which lack this modal component. On [10]'s analysis, this modal is licensed when contextual goals are achieved by an arbitrary action. [5] further argues that MS is only possible in 'modal/existential questions' with a singleton answer (Mention-One (MO)), and unavailable elsewhere.

RESEARCH QUESTIONS To address Claims 1-3, we designed a set of experiments in which we systematically varied these factors and their interaction, clearing the empirical ground for an adequate theory of question-answer interpretation and the licensing of MS readings. In doing so, we targeted the following research questions:

Q1 (Contextual): What is the influence of **discourse context**? We varied the type of context (speaker goals/intentions) and the ranking of the MS alternatives, predicting that non-exhaustive or 'low stakes' goals will make MS acceptable, while 'high-stakes' goals will have the opposite effect.

Q2 (Lexical): What is the influence of the **psych status** of the embedding verb and the type of embedded *wh*-phrase? We manipulated psych status (*know* vs. *predict*) and *wh* type (*who*, *where*), predicting MS to be less available with *predict* and with *who*.

Q3 (Modal): What is the influence of **finiteness** of the embedded clause? We manipulated (\pm FIN) status, predicting MS to be available with -FIN, not +FIN clauses.

Our results provide robust experimental evidence for the availability of MS both where it is expected based on these proposed factors licensing MS readings, *and* where it is unexpected. We argue that an under-specification account along the lines of [6] covers the most ground in meeting these desiderata.

EXPERIMENTAL DESIGN Across experiments with multiple trials each, participants read a scenario, including alternatives, and were asked about the acceptability of an embedded question report, as in (5).

(5) *The places that serve cappuccinos around the neighborhood are A, B, C, and D. E, and F do not. Mary usually gets her cappuccino at D. Jane is going to be in the neighborhood tomorrow. She loves cappuccinos, and texts Mary to ask where to get a cappuccino. Mary responds, "D." Jane reports, "Mary knows where to find cappuccinos." Is Jane right?*

There were four within-subject item types, based on the initial answer provided: All False Report (FR) of negative answers, WE+FR, WE/IE+no FR, and MS.

Experiment 1 (n=18) addressed Q1. Contexts presented either ‘low stakes’ (5) or ‘high stakes’ (6) situations. Participants were shown multiple response alternatives (among them EXH, MS, MO), which varied according to information entropy/relevance to goal (manipulated by ranking/frequency).

(6) *The Capitol Police have gotten word of a possible terrorist attack targeting specific stores in the area. An independent consultancy firm has calculated the risk of certain stores to be targeted. The firm has not yet released the study, but has ranked the stores from high risk to low risk: Store E is most at risk, with a .5 probability, Store B is next with .4 probability, Store A has a .25 probability, Store D, a .1 probability, Store F, a .05 probability, and Store C is least at risk, with a 0 probability. The Chief asks his three top advisors, "Where should we set up extra surveillance?" Advisor A says, "Store E." Advisor B says, "Stores, E, B, A, D, and F." Advisor C says, "Stores D and F."*

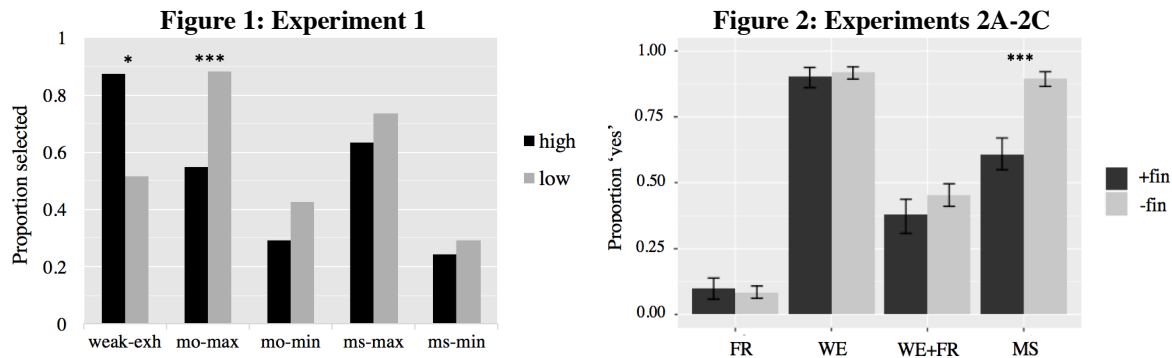
Who knows where to set up extra surveillance? (Choose all that apply.)

Results (see **Figure 1**) show that MS is more acceptable in low- vs. high-stakes scenarios. In contrast, Exhaustive responses are *more* acceptable than MS in high-stakes scenarios ($X^2(1)=6.743, p<.01$), *less* than MS in low-stakes scenarios ($X^2(1)=21.561, p<.0001$), and *less* in low- than in high-stakes situations. High-entropy/relevant alternatives are *more* acceptable in MS/MO than low-ranked ones. But contra [5], there was no significant difference between MO and MS.

Experiment 2A (n=68) addressed Q2, comparing *know* to *predict*. Results show *no difference* among the two verbs for MS, but unexpected acceptability for WE+FR items for *predict*, complementing findings reported in [11,12]. See **Figure 2**.

Experiment 2B (n=68) also addressed Q2, comparing *where* vs. *who* embedded questions. Results show slightly higher acceptance of MS for *where* than *who* ($X^2(1)=3.69, p=.055$), and the same difference surprisingly more robust in the WE+FR condition ($X^2(1)=15.058, p<.0001$).

Experiment 2C (n=68) addressed Q3, comparing \pm FIN status of the embedded clause. Results show MS is significantly more available in –FIN than +FIN clauses ($X^2=83.642, df=1, p<.0001$), confirming [3,4,5,9,10]. However, MS is not barred in +FIN clauses.



DISCUSSION Our findings clearly demonstrate the dynamic nature of question interpretation: MS is facilitated by the modal semantics of a –FIN clause, but can also be licensed in +FIN clauses by salient contextual goals. We further demonstrate that the relevance of alternatives to discourse goals drives acceptance of an embedded question report ([6,7]): exhaustive responses are preferable to MS in high-stakes scenarios, while MS responses preferable to exhaustive in low-stakes scenarios. Finally, we find that MS is constrained by both lexical and structural factors, but satisfaction of discourse goals may override representations which dis-prefer it. Our findings thus argue in favor of a theoretical approach along the lines of [6,7,8] where embedded clauses can only be specified for their exhaustivity relative to

the contextual goals which determine what counts as resolving the question.

REFERENCES [1] Karttunen (1977), [2] Groenendijk & Stokhof 1982, 1984, [3] George 2011, [4] Fox 2013, [5] Xiang 2016, [6] Malamud 2011, [7] van Rooij 2003, [8] Ginzburg 1995, [9] Dayal 2015, [10] Bhatt 1999 [11] Cremers & Chemla 2015, [12] Klinedinst & Rothschild 2011.