An Experimental Investigation of Mention-Some Readings of Embedded Questions
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Embedded questions (EQs) such as in (1) *Mary knows <u>where to find coffee</u>* are claimed to be ambiguous between a Mention-Some (MS) reading, where (1) is true iff Mary can name, or has knowledge of, at least one true answer to (2) *Where can one find coffee?*, and a (weak) Mention-All (MA) reading, where (1) is true iff she can exhaustively name all (contextually salient) true answers (putting aside the strong MA reading).

(1) is sensitive to discourse goals [1]: if Jane wants a place to escape from the rain, an MS answer is sufficient, but not if she is a coffee distributor, and wants to know all places to distribute coffee. An MA answer patterns opposite: an exhaustive list is inappropriate in the first case but not the second. A hearer must calculate how much information is appropriate, adhering to the Quantity Maxim [11], when choosing between an MS or MA answer. Further, when the discourse goals change, then so does the question asked: Mary the coffee distributor would probably not ask the question (2) but a different one, e.g. *Where are the coffee shops here?*

The existence of multiple readings of EQs gives rise to the question whether EQs are semantically ambiguous between readings, or whether one is a default from which others may be derived. The availability of MA reading is well-established in the theoretical literature, and experimental research [9,10] confirms its availability with adults and preschoolers. However, the MS reading is less well understood given a lack of systematic investigation into its distribution and licensing factors relevant to its meaning and its pragmatic role, with the exception of [3,5].

As [5] notes, in addition to contextual factors described above, the MS reading is claimed to be affected by syntactic/semantic and lexical factors. In particular, we examine the *wh*-word, finiteness and (covert) modality in the embedded clause, and the embedding verb. [2,3,6,7] note differences between only *where* and *who*, however [5] suggests that with proper context, MS readings can be available with *who*. [3,5] note the significance of infinitival clauses having covert modal semantics as posited by [8]. Finally, embedding verbs differentially allow strengths of MA, but [1] claim only psychological verbs allow MS readings.

> *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 get a cappuccino." Is Jane right?*
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> **Figure 1**: Schematic of stimuli test story, showing MS condition

The series of experiments here investigate the lexical and syntactic/semantic factors, while holding the pragmatic factors fixed. Given the confluence of unknown factors, the current project aims (a) to collect data to inform a theory of MS readings, and (b) to reveal not only adult's knowledge, but the developmental trajectory of sensitivity to these factors.
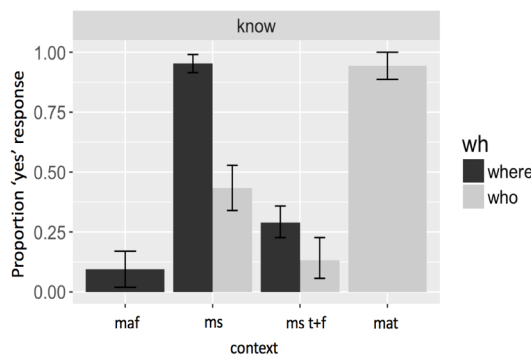
Figure 2: EX1A Results. 'Yes' responses to MS-where significantly higher than MS-who (p<.001)

Experiment 1A: EQs as underlined in (1) reportedly allow more MS readings than in (3) *Jane knows <u>who came to the party</u>* [2],[3],[5]. This difference was confirmed in an acceptability judgement task (n=52), with four conditions differing based on the type of answer provided: MAF, MAT, MST, MS T+F. In the MS condition (schematic in Fig. 1), the answerer gives a (true) MS answer. In the MAT (true control) condition, the answerer gives an MA answer. In MAF (false control), the answerer gives only false answers.

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Participants pattern as expected WRT controls.

In Fig.2 we see participants accepted (1) significantly more than (3) (U=2,703, z=8.173, p<001). However embedded clause finiteness and *wh*-word are confounded in EX1A stimuli. EX1B addresses this confound.

Experiment 1B: EX1B (n=68) crosses finiteness by *wh*-word, and extends to the psychological verb *predict*. If *where* contributes to MS more than *who* independently of non-finiteness, then we expect participants to accept *where*-clauses more than *who*-clauses in the MS context. If non-finiteness is the culprit, we expect participants to accept MS more in non-finite than in finite (data collection in progress).

Figure 2: EX1B Results. *Where*-clauses accepted more than *who*-clauses, marginally significant.

Preliminary results from the non-finite condition are in Fig. 2. A Kruskal-Wallis test reveals a marginally significant difference between *who* and *where* under *know* ($X2=3.39$, df=1, p=0.06) but not *predict* ($x_2=0.45$, df=1, p=0.5). These two studies show that the MS reading is robustly available.

Experiment 2: Given that, EX2 (n=51) examines preschoolers' competence with MS. As we hypothesize that MS is affected by both semantic/syntactic and pragmatic factors, EX2 establishes a baseline of preschoolers' interpretation of MS in non-finite *know*-clauses and an MS-supporting context.

EX2 is a child-friendly version of EX1A/B, involving visual presentation of stimuli, run with both children and adults. In line with results from [10], this experiment confirmed that children access MA (Fig.4). Further, they are more lenient with MS than adults. EX2 only tested reports with non-finite clauses so if MS is in part due to this, we again expect acceptance rates to decrease with finite clauses. Experimental design for this manipulation is in progress.

Figure 3: EX2 Results. Children are more lenient with MS in non-finite clauses.

Discussion: The results here support the role of lexical items and non-finiteness as a factor in MS licensing, due to high acceptability rates in EX1B. Furthermore, EX2 shows that children are more accepting of MS than adults. Another interesting result from EX2 is the MS T+F condition: these scenarios involve a violation of the Quality Maxim because an agent is giving false information. Children are sensitive to false reports, but are more lenient than adults in accepting them, as seen in the T+F condition in all three experiments. This finding warrants further investigation.

This project addresses several open issues in the semantics and pragmatics of MS EQs by following up empirically on claims made in the literature. The larger project examines the relationship between discourse goals and the semantic representation of EQs, as well as a speaker's ability to track an interlocutor's beliefs and evidence.

References: [1] Gronendijk & Stokhof 1984, [2] George 2011, [3] Fox 2013, [4] Pesetsky 1987, [5] Dayal 2015, [6] Comorovski 1996, [7] Ginzburg 1995a,b, [8] Bhatt 1999, [9] Cremers and Chemla 2014, [10] Cremers, 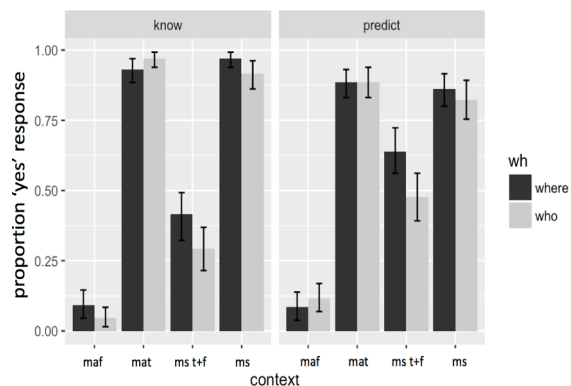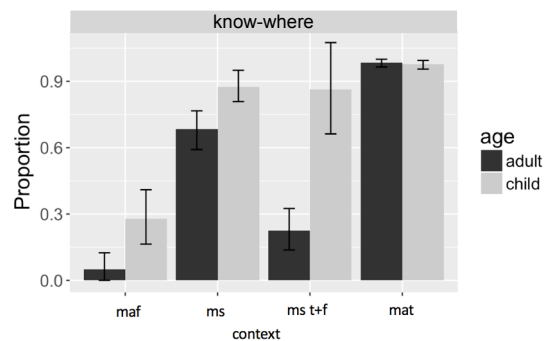Tieu and Chemla 2015, [11] Grice 1975.