

Mentions-some readings of plural-marked questions: Experimental evidence

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Basic \diamond -questions are known to admit both mention-some (MS) and mention-all (MA) answers (Groenendijk & Stokhof 1984), as exemplified in (1). This paper experimentally examines two issues on MS. **First**, is the distribution of MS restricted purely by pragmatics? The pragmatic view (Gr&S 1984, van Rooij 2004, and many others) argues that MS readings arise from purely pragmatic considerations on the goal of the question; while the semantic view (George 2011, Fox 2013, Xiang 2016) argues that the availability of MS in (1a) is primarily due to the presence of the weak modal *can*.

- (1) Where can we get an Italian newspaper?
^{OK}MS/^{OK}MA: Tell me one/every place where I can get an Italian newspaper

Second, why is that MS is unavailable in the plural-marked \diamond -question (2)? Comorovski (2006) claims that MS cannot be licensed in any D-linked *wh*-questions. Contrary to this view, we argue that plural-marked questions expect an answer that specifies a non-atomic individual (henceforth called a “non-atomic answer”), which usually conflicts with the atomicity of MS answers. For instance, (2) disallows MS because each MS answer names only one atomic place. Accordingly, if the predicate with which the *which*-phrase combines can take non-atomic arguments, MS answers could be available in principle. For example, (3a) would accept the MS answer (3b) which names the sum of two co-leaders.

- (2) In which places can we get an Italian newspaper? [#MS / ^{OK}MA]
Tell me #one/every place which sells Italian newspapers
- (3) a. Which children can co-lead the dance?
b. Anna and Chloe.

Experiment 1 compared the four question-types in (4), in four types of situations. In all situations there were two true answers (each a pair of children), but Mary’s memory could either be fully *true*, *over-affirming* (overly affirming a false answer), *under-affirming* (missing a true answer), and fully *false*. Crucially, accepting under the under-affirming condition reveals a MS reading of the question.

- (4) Mary remembers $\left\{ \begin{array}{l} [-\text{PI}] \text{ who} \\ [+ \text{PI}] \text{ which children} \end{array} \right\} \times \left\{ \begin{array}{l} [-\diamond] \text{ have one accessory in common} \\ [+ \diamond] \text{ can lead the dance} \end{array} \right\}$

Participants, Materials and Procedure: 30 participants were recruited on Mechanical Turk (age range: 19-73; native language: English), 5 were removed from the analysis because their error rate exceeded 23% (Mean+SD). The instructions stipulated that Mary was in charge of choosing one or two children to lead the dance, under the constraint that the dance can only be led by a child with a jester hat (which only appeared in control items) or by two children with an accessory in common. In each trial, participants were presented with a picture of four children and a short paragraph describing Mary’s memory. Then they had to judge the truth value of an indirect-question (for target trials, one of the combinations in 4). An example *under-affirming* trial is presented below. There were 72 target trials, 18 controls testing atomic MS answers (with distributive predicates) and 24 fillers with declarative complements. All items were presented in random order after 4 training items which familiarized participants with the task.





Results and Discussion: The first graph below shows the percentage of “True” responses for each type of question under each memory-type. Logit mixed models confirmed that [+ \diamond] were accepted more than [− \diamond] ($z = 2.6, p = .01$) under both over- and under-affirming (n.s. interaction, $z = .6$). The acceptance rates under *under-affirming* are significantly higher than *over-affirming* ($z = 2.0, p = .05$) and no significant difference was observed between [−PL] and [+PL]. Given that all indirect-questions are evaluated with the same goal, we conclude that the acceptance of MS is primarily determined by the presence of a weak modal in the question type, not the question goal. [+PL] questions seem to allow MS answers as frequently as [−PL] questions, but control items suggest that the participants didn’t pay enough attention to distinguish between the two, as they accepted atomic MS answers as frequently with [−PL] and [+PL].

Experiment 2 made the $[\pm PL]$ contrast a between-subject factor to avoid confusion between *who* and *which children*. Reducing the number of items allowed us to include cases where Mary overtly denied a true answer (*over-denying*), in order to test an independent hypothesis of Xiang (2016) on the asymmetry of sensitivity to false answers (details omitted). This time there were 48 target items, 12 control items and 24 fillers. 24 participants were recruited for each version of the experiment ($[-PL]$ and $[+PL]$), but 5 and 4 (respectively) were removed from the analysis because their error rates exceeded 30% (Mean+SD).

Results confirmed that MS readings are more likely to be licensed with the presence of a weak modal (higher acceptance in the under-affirming condition), with no main effect of *wh*-phrase type. However, there was an unexpected interaction between the two factors ($z = 2.3, p = .02$), so that the effect of the modal was reduced for $[+PL]$ questions. On control items, we found that this time $[-PL]$, but crucially not $[+PL]$, allowed atomic MS answers. Since the main difference between Experiments 1 and 2 is the fact that the $[\pm PL]$ contrast was made a between-subject factor, we can conclude that the absence of difference between $[\pm PL]$ in the Experiment 1 was indeed due to participants ignoring this contrast.

Conclusion: Our study supported the semantic view of MS: the availability of MS does not only depend on pragmatic factors, but does require the presence of a weak modal. Yet, we showed that the type of *wh*-phrase (*which*-NP vs. bare *wh*-word) was not as important as what Comorovski (2006) assumed. Specifically, we showed that the usual unavailability of MS readings with plural *which*-phrases may simply be due to an incompatibility with atomic answers, which can be derived as an anti-presupposition of the plural *wh*-phrase (*à la* Sauerland et al. 2005): a plural-marked question implies that its singular counterpart is undefined, which therefore expects a non-atomic answer.

How children are dressed up:

Ann Bill Chloe Diana

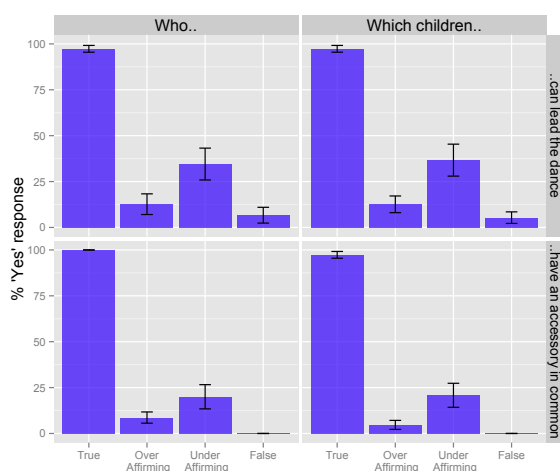
Mary's memory:

Bill and Chloe wear the same bow tie, Chloe wears a hat. Therefore Bill and Chloe can lead the dance.

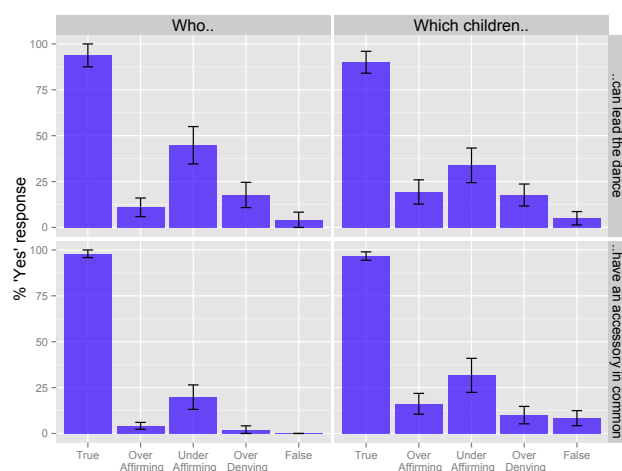
“Mary remembers which children can lead the dance.”

False

True



Results for Experiment 1



Results for Experiment 2

REFERENCES Comorovski, I. 2006. *Interrogative phrases and the syntax-semantics interface*. Fox, D. 2013. Mention-some readings of questions. George, B. R. 2011. *Question embedding and the semantics of answers*. Groenendijk, J. & M. Stokhof. 1984. *Studies in the semantics of questions and the pragmatics of answers*. Van Rooij, R. 2004. Utility of mention-some questions. Sauerland, U. et. al. 2005. The plural is semantically unmarked. Xiang, Y. 2016. Complete and true: a uniform analysis of mention-some and mention-all.