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Background

Ambiguous speech occurs because it is easier to produce. However, this results in comprehension problems for the listener (Rayner, Carlson & Frasyer, 1983).

Speakers may disambiguate utterances via using complementizers (e.g., “that”, “which is”).

Haywood, Pickering, and Branigan (2004) found priming participants with complementizers during a turn taking instructional task will increase the probability that participants will attempt to disambiguate their utterances.

The current study is a replication and extension of the Haywood, Pickering, and Branigan (2004) study. The purpose is to show that dialogue can be studied just as effectively under an even more tightly controlled situation where a “skin” confederate might normally create unwanted variability.

Method

Participants

17 undergraduates with no diagnosed hearing, visual or speech impairments (11 female; mean age 22.8 years).

Stimuli

Auditory:

- 4 types of statements about objects to be moved were recorded by the pseudo-confederate at 44.1kHz, 16bit sampling rate with equated RMS amplitude to prevent unwanted cues to deception.

- Container + Object (not that) “Put the paperclip in the cauldron on the stop sign.”
- Container + Object (that) “Put the paperclip that’s in the cauldron on the stop sign.”
- Container “Put the cauldron on the stop sign.”
- Object “Put the paperclip on the stop sign.”

Visual

- Picture Images
 - Container + Object
 - Container
 - Object
 - 8 geometric shapes
- Video
 - 48 videos representing the pseudo-confederates mouse movements of the objects described by the participant.

Procedure

• 2 Conditions

- One Referent
- Two Referent (more ambiguous)

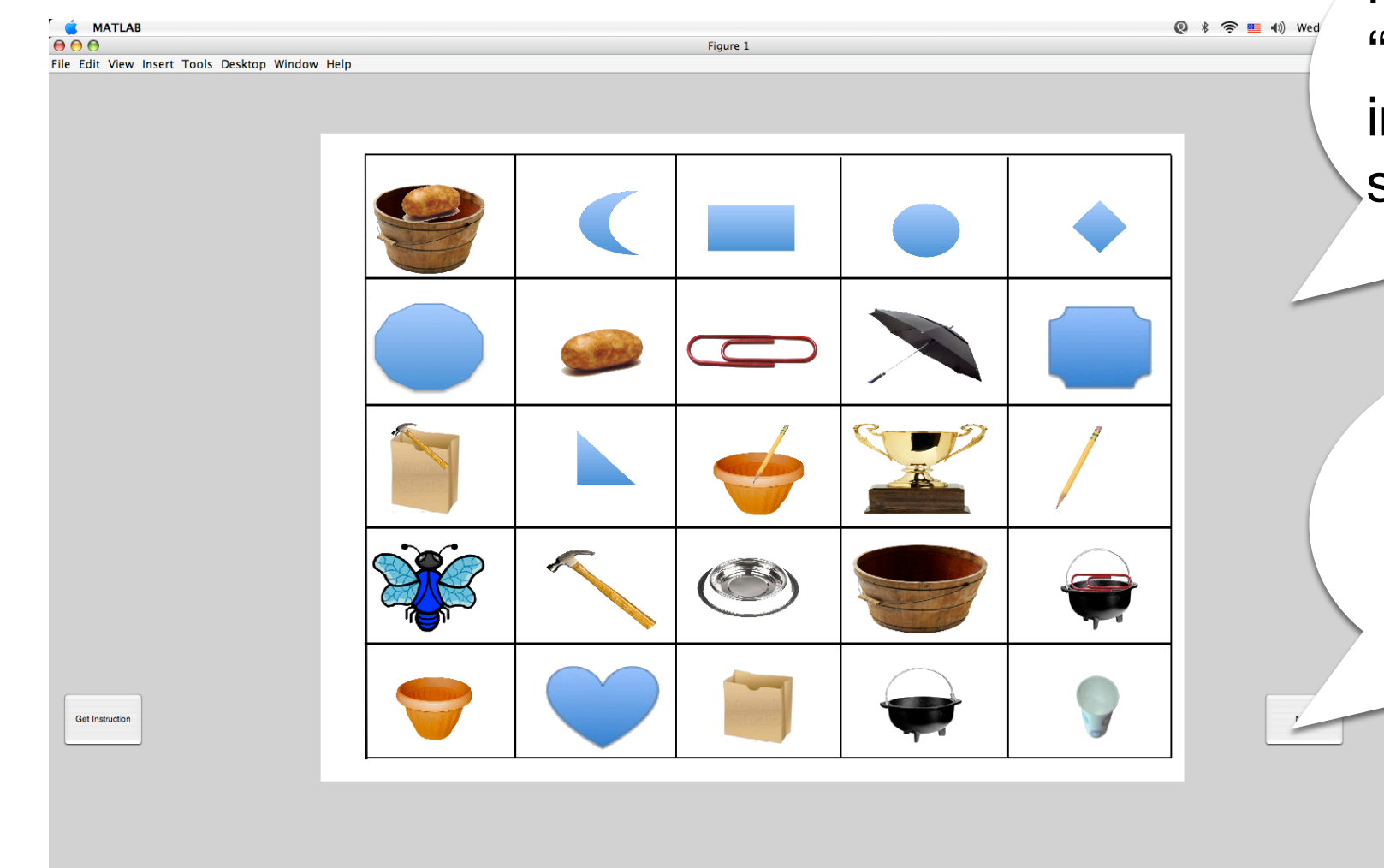


Figure 1. Image of the first experimental screen that includes all objects for that trial.

• 12 rounds

- 8 statements (4 participant, 4 confederate)

Pseudo-Confederate:
“Put the paperclip **that’s**
in the cauldron on the
stop sign.”

Pseudo-Confederate:
“Put the paperclip in the
cauldron on the stop
sign.”

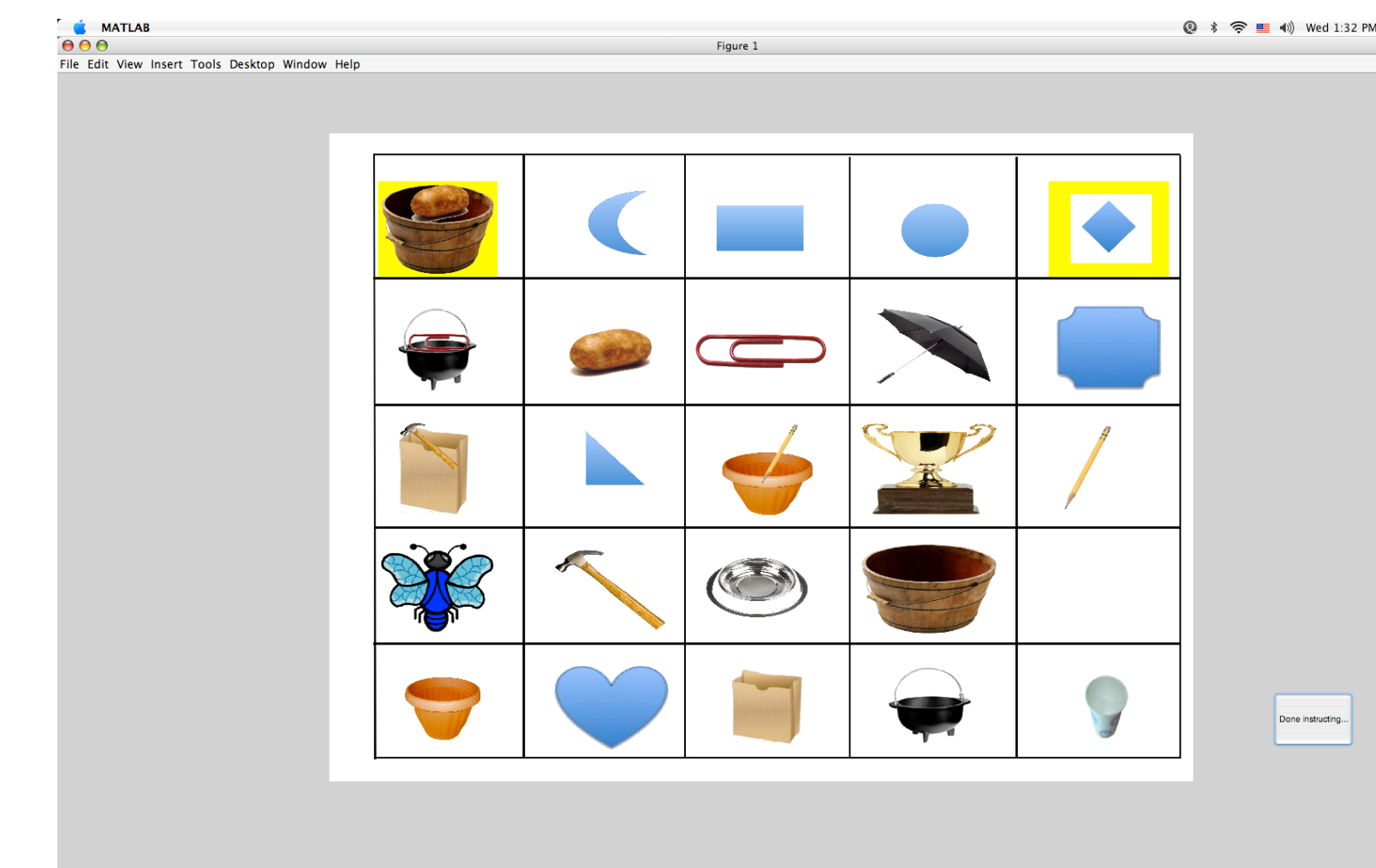


Figure 2. Participant instruction screen. The object to be moved (yellow background) onto the geometric shape (yellow highlight).

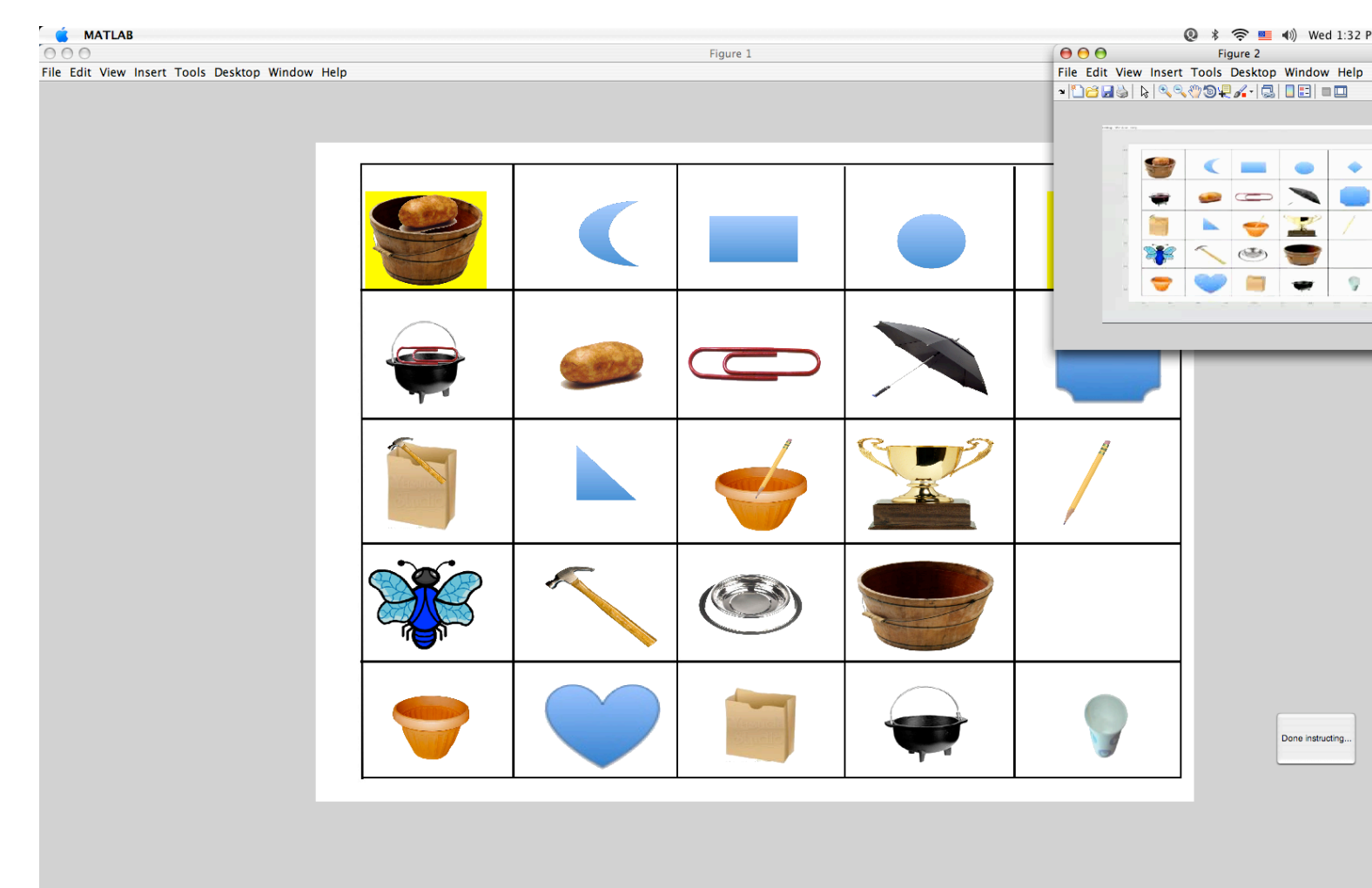


Figure 3. Participant screen with the video of the pseudo-confederate’s response to the participant’s instruction.

- MATLAB PsychToolbox-3 controlled and collected all stimuli and participant vocal recordings (Brainard, 1997).

Results

• A 2 (Ambiguity: that or no that) x 2 (referent: 1 or 2) mixed repeated measures fixed effects model was used to test the proportion of “that” produced by participants when primed by the pseudo-confederate.

- Ambiguity Main Effect: $F(1,15) = 14.80, p < .005$
 - Overall, “that” was produced significantly more often than “not that” (9%, $p < .005$; see Figure 4).
- Ambiguity x Referent Interaction: $F(1,15) = 4.77, p < .05$

- One referent x Ambiguity: no difference ($p = .244$)
- Two referent x Ambiguity: “that” was produced significantly more often than “not that” (15.6%, $p < .001$; see Figure 5.)
- “That” x Referent: “that” was produced significantly more in the two referent condition than the one-referent condition (18.4%, $p < .05$)

		Helpful(that)	Unhelpful(not that)
"that"	Two Referent	0.35(.21)	0.19(.14)
	One Referent	0.16(.16)	0.12(.12)
"other"	Two Referent	0.11(.14)	0.14(.12)
	One Referent	0.16(.16)	0.12(.08)

Table 1. Means and standard deviations of the probability of producing “that”.

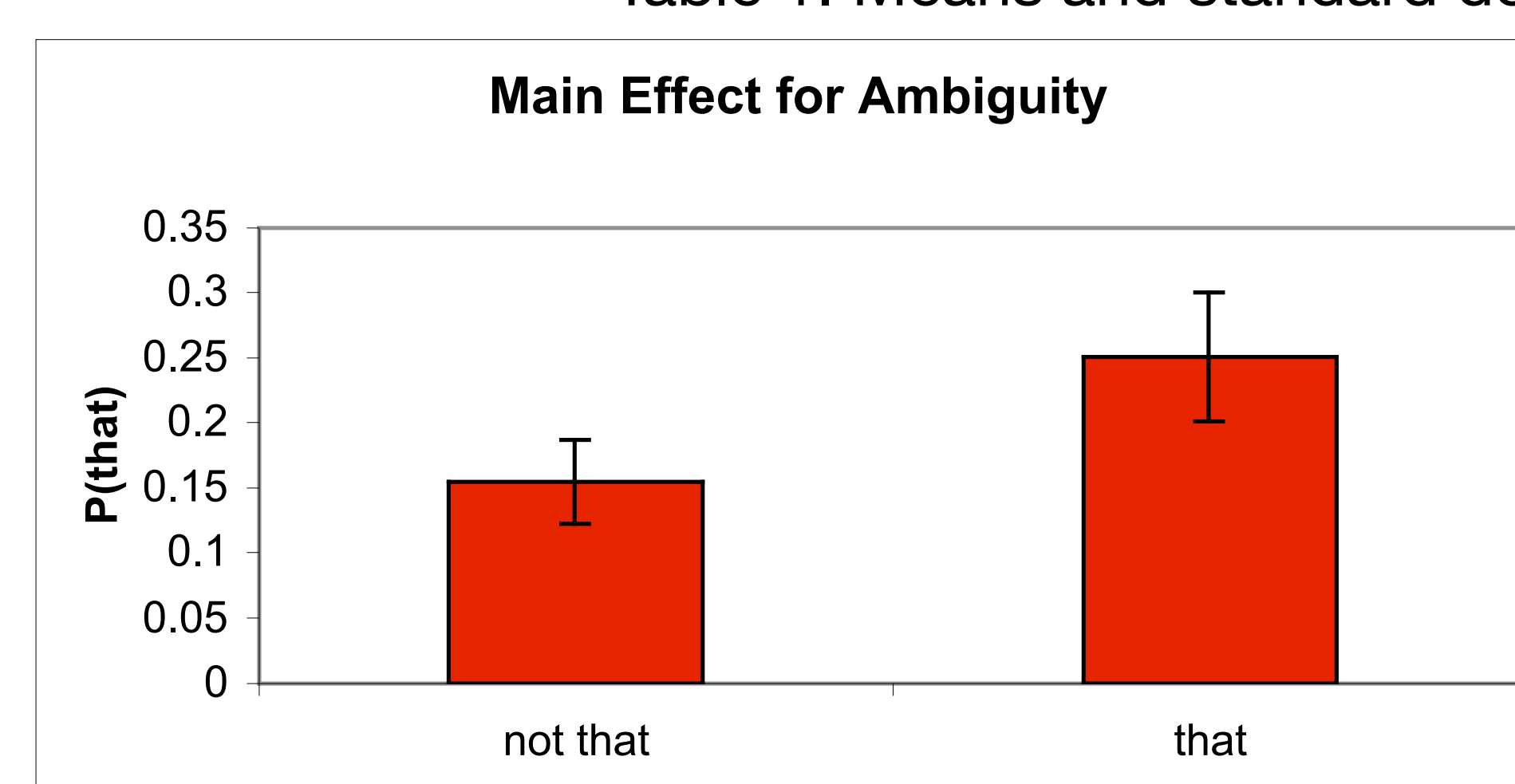


Figure 4. Means and standard errors for the main effect of ambiguity.

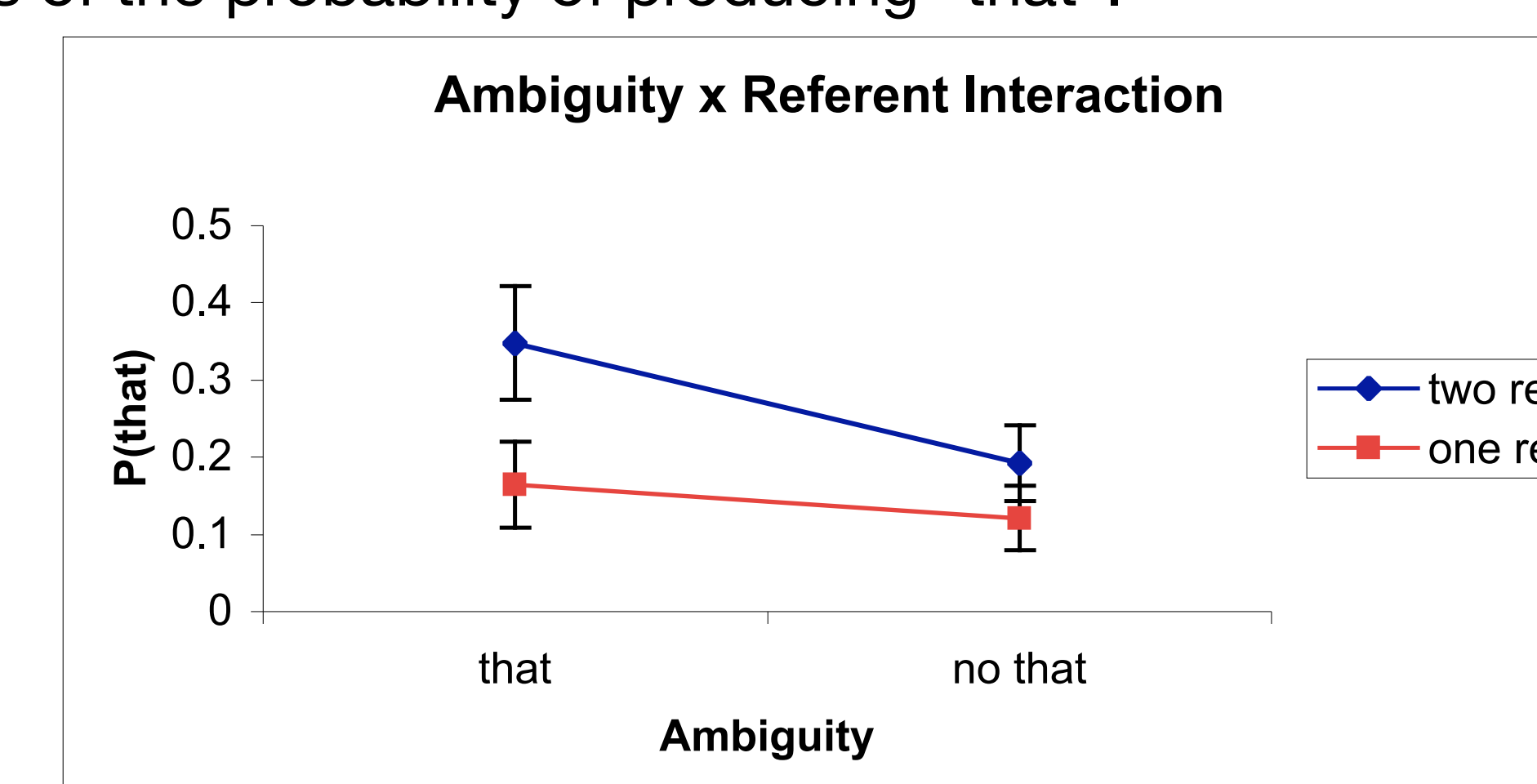


Figure 5. Means and standard errors for the Ambiguity x Referent Interaction.

• Follow-up question:

- Would you be surprised if I told you that you had not actually been speaking with the person sitting next to you?
- 83.4% said yes.

Discussion

The majority of participants thought they were having a real conversation. The 3 participants that did not believe still behaved in a similar manner as the other participants, probably because humans have a natural tendency to treat human like systems as being human, regardless of how unnatural they seem (Holtgraves, Waywadt, & Han, 2007). Therefore, we were able to use a more controlled environment, to assess the role of ambiguity during social communication.

Overall, participants were primed to use the complimentizer “that”.

More specifically, the effects of priming was strongest in the two referent condition because it was more difficult. Participants thus realized that it is easier to use an intrinsic strategy (i.e., non-egocentric) to prevent later miscommunication (Miller & Johnson-Laird, 1976).

More importantly, this replicates Haywood, Pickering & Branigan’s (2004) findings. This suggests that during conversation, individuals do provide disambiguating cues to help conversation.

References

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Acknowledgments

This project was supported by a grant from the National Science Foundation to Rick Dale (NSF HSD-0826825).