

# Nonverbal Factors in Understanding and Remembering Indirect Requests

Dale Barr (DALEB@CCP.UCHICAGO.EDU)  
Spencer Kelly (KELLY@CCP.UCHICAGO.EDU)  
Department of Psychology, University of Chicago  
Beecher Hall, 5848 S. University Ave., Chicago IL 60637

## Abstract

The present studies investigated the degree to which a speaker's nonverbal behavior, specifically eye gaze and hand gesture, influences how people understand and remember indirect requests. In the first study, we examined whether people consider a speaker's eye gaze and/or gesture toward an object in the environment when deciding if a particular utterance is indirect or not. We presented a sequence of short, videotaped scenarios to participants in which two characters produced speech which could potentially be construed as indirect. We found that respondents took nonverbal behavior into consideration when making their judgments. In a second study, we investigated whether nonverbal information intrudes upon people's memory for speech. Results from a cued recall study suggest that nonverbal information is occasionally incorporated into memory for speech.

## Introduction

Speakers often mean more than the words that they say. When a speaker says, "It's cold in here," for example, the speaker is probably doing more than just stating a fact about the temperature of the room. Among other things, the speaker could be attempting to get an addressee to do something, such as close a window, adjust the thermostat, or pass over a blanket. In each case, the speaker is making an "indirect request" of the addressee—that is, the speaker is requesting something of the addressee without issuing an explicit command (e.g., "please give me the blanket").

On the other hand, it is possible that when a speaker says, "It's cold in here," the speaker merely intends to state a fact about the temperature in the room, and nothing further. This poses a problem for listeners: how to know when a speaker is making an indirect request as opposed to simply making a remark? Because there is nothing in the words themselves which differentiates between these two possibilities, listeners must appeal to contextual information in deciding how to interpret the speech. On what sorts of contextual information do listeners base their judgments?

Understanding indirect requests is a matter of understanding the intention behind a speech act. One valuable source of information about a speaker's intention is the degree to which the speaker, in the utterance of the speech, adheres to or departs from particular norms of conversation. This insight comes from Grice's theory of

conversational implicature (Grice, 1975). The theory consists of an assumption of cooperation known as the "conversational principle", and a set of conversational maxims, which are norms that speakers are presumed to follow. The theory states that listeners are able to derive conveyed meaning by evaluating the degree to which a speaker departs from these conversational maxims. When a speaker violates a maxim, but the underlying assumption of cooperation is preserved, then the listener derives a "conversational implicature"; that is, a meaning which is a function of the speech and the context in which it occurs.

Though the theory of conversational implicature is meant to be a generalized model of understanding indirect speech, researchers have identified other means by which listeners can identify indirect speech. Often, speakers will use linguistic forms that are conventionally associated with indirect speech—in particular, questions such as "Can you...?", "Will you...?", or "Must you...?". Gibbs (1986) noted that these forms are conventional inasmuch as they specify the greatest potential obstacle to the addressee's compliance (see also Francik & Clark, 1985). These obstacles include the addressee's willingness to comply, ability to comply, etc. On-line studies have found that in the appropriate situational context, listeners understand these conventional indirect requests immediately and without significant activation of the literal meanings of the expressions (Gibbs, 1983).

Recently, Holtgraves (1994) has identified an interpersonal factor which listeners are sensitive to in understanding indirect requests: social status. In particular, asymmetries in social status between interlocutors predispose listeners to interpret speech from a high-status individual toward a low-status individual as potentially indirect, because high-status individuals can typically place demands on lower status individuals. For example, when a manager asks an employee, "has the mail come yet?", a listener is more likely to interpret this as a request to check the mail than the case in which an employee utters the same sentence to a fellow employee.

In addition to the influence of these variables on the construal of indirect speech, nonverbal variables are likely to play a role. For example, consider the role that nonverbal behaviors might play in the utterance, "It's cold in here." Suppose that as the speaker said these words, she was pointing to a blanket that was next to the addressee.

Suddenly, the meaning is clear—the speaker is requesting a blanket because she is cold.

There are good reasons to believe that nonverbal behaviors such as eye gaze and hand gesture play a role in understanding indirect requests. For one thing, nonverbal behaviors such as these convey the very information that an addressee needs to comprehend indirect requests. In order to understand an indirect request, an addressee needs to identify pertinent aspects of the context with respect to a speaker's intentions (Searle, 1975; Grice, 1975). For example, the addressee in the above example needed to figure out that the speaker was intending him to focus on the blanket. Eye gaze and hand gesture are good at highlighting pertinent aspects of the context and often serve as a window into a speaker's intentions (Argyle, 1973; Baldwin, 1993; Bruner, 1984; McNeill, 1985, 1987, 1992).

People are very good at picking up information conveyed through eye gaze and hand gesture. For example, researchers have shown that children (Baldwin, 1993) and adults (Argyle, 1973; Boyle, Anderson, and Newlands, 1994) use information conveyed through eye gaze to make sense out of the accompanying speech. There have also been a few studies that have shown that children (Kelly and Church, 1996; Thompson & Massaro, 1994) and adults (Goldin-Meadow, Wein, & Chang, 1992) are good at detecting important conceptual information conveyed through spontaneous hand gestures.

Though many researchers recognize the potential importance of nonverbal behaviors on understanding indirect speech, there have been no studies that have empirically tested this idea. This has been the endeavor of the present pair of studies. In the following studies, we investigate this question by showing prerecorded videotapes to participants. We use this methodology primarily because it allows for an investigation of how visual cues to speaker intention, specifically nonverbal behaviors produced *simultaneously* with speech (as they are naturally), might influence the construal of spoken information.

### Experiment 1

In this study, we investigated the extent to which speakers' nonverbal behavior influences the way that listeners respond to potentially indirect speech. In particular, we examined the influence of two kinds of nonverbal information: eye gaze and gesture. Our hypothesis is that listeners use nonverbal information in interpreting speech. We predicted that in the presence of these nonverbal behaviors, listeners would be more likely to interpret speech as indirect than in cases where there were no relevant nonverbal behaviors.

#### Methods

**Participants.** Sixteen University of Chicago undergraduates (8 males and 8 females) participated in the study for payment.

**Materials.** A video stimulus tape consisting of 12 scenarios was used as the experimental stimulus. All of the scenarios were comprised of two professional actors acting out scripted interactions between two roommates (Adam and

Bill) in an apartment setting. Each scenario ended with a target sentence which could possibly be construed as an indirect request. Each request encouraged action on a particular object in the environment, which we refer to as the target object. An example of the verbal dialogue from one of the scenarios can be seen in Table 1, in which the character Bill is attempting to get Adam to lend him his bicycle.

Table 1: Sample Scenario.

Scene	
Adam and Bill are returning home, and meet in the street in front of their apartment. Adam is on his bicycle, and Bill is walking.	
Dialogue	
Adam:	Hey, did you get the burgers?
Bill:	Oh no, I forgot!
Adam:	Well, the guests are going to be here soon. You better go get the burgers.
Target Sentence	
Bill:	<i>But the store is clear across town!</i>
Condition	Nonverbal Behavior
baseline	normal eye-contact
eye gaze	looks at Adam's bike
gesture	points to Adam's bike
eye gaze + gesture	looks at and points to Adam's bike

The scenarios depicted everyday events in the lives of Adam and Bill. Each scenario included one requested action. Some examples of these actions are: closing the door ("the flies are out", while looking and/or pointing at a wide-open screen door), returning a rented videotape ("are you in a hurry?", while looking and/or pointing at to the video), and requesting the bottle opener ("this isn't a twist off", while looking and/or pointing at the bottle opener).

As shown in Table 1, there were four different kinds of nonverbal behavior which could accompany the target sentence. In the **baseline** condition, the actors made normal eye contact and kept their hands at their sides while the target sentence was delivered. In the **eye gaze** condition, the actor speaking the target sentence kept his hands at his sides but looked at the target object (e.g., the bicycle). The actor who was being addressed in this condition focused on the speaker's eyes (not the target object) so as not to contribute to the overall effect. In the **gesture** condition, the speaker made eye contact with the addressee and pointed at the target object. The addressee focused on the extended finger of the speaker. Finally, in the **eye gaze + gesture** condition, speaker looked and pointed at the target object. The addressee focused on the extended finger of the speaker.

The scenarios were filmed in typical apartment settings (e.g., living room, kitchen, porch, front yard). While filming the vignettes, we attempted to make the four conditions as similar as possible except for the nonverbal

behavior accompanying the target sentence.<sup>1</sup> To make the interactions seem realistic, we hired two professional actors from the University of Chicago community. In the three conditions in which a gesture or eye gaze accompanied the target sentence, we instructed the actors to introduce the behaviors while speaking and to attempt to perform them in the way that felt most "natural" to them.

The experimental stimulus was set up based on a within-subjects design. That is, each participant saw all four conditions across all 12 of the scenarios (three scenarios per condition). Four stimulus tapes were created so that participants would view each scenario in only one condition. In all four versions, the order of the scenarios was always held constant, but the order in which participants received the experimental conditions was staggered. The tape lasted approximately 10 minutes.

**Design and Procedure.** We told participants that the study concerned how well people understand everyday social interactions. They were informed that they would be watching a sequence of videotaped scenarios about events in the everyday lives of two characters, Adam and Bill, and that they should pay close attention to the scenarios, because we would ask questions about them. Each scenario ended with a target sentence, in which one character (the speaker) said something to the other (the addressee). We told participants to take the perspective of the addressee and write down an action and/or a verbal response to this last line of dialogue. Furthermore, we emphasized that there were no right or wrong answers; they should simply write what they would say or do in the addressee's place.

Each group watched one of the four videotapes, which had the same sequence of vignettes. Each group of participants saw each vignette in only one of its four conditions (baseline, eye gaze, gesture, eye gaze + gesture).

After all of the data were collected, we coded each response to determine whether or not it indicated that the respondent had taken the speech as indirect. That is, we noted whether the respondent wrote down a behavior which indicated compliance with the request. For example, if the final utterance was "the store is clear across town", and the respondent said, "I'd let him borrow my bike", this would be coded as an indirect request attribution.

**Results and Discussion.** The results are summarized in Figure 1. We submitted the arcsine transformed values of the data to a one-way ANOVA, treating participants as a random factor. The overall analysis was significant ( $F(3, 45) = 7.32, p < 0.001$ ). Additionally, we performed planned comparisons (t-tests) between the different nonverbal conditions and the baseline condition. In the eye gaze condition, this value was 48%; however, this was not significantly different from the baseline condition, at 40% ( $t(1, 15) = 0.98, n.s.$ ). In the gesture condition, this value was 71%, and was significantly different from baseline ( $t(1, 15) = 3.18, p < 0.01$ ). In the eye gaze + gesture condition, participants were most likely to construe the speech as

<sup>1</sup> We ran a control study on 20 additional participants which showed that the only reliable differences among the four conditions were the nonverbal behaviors accompanying the indirect requests.

indirect, occurring 75% of the time, which was also significantly different from baseline ( $t(1, 15) = 3.65, p < 0.01$ ).

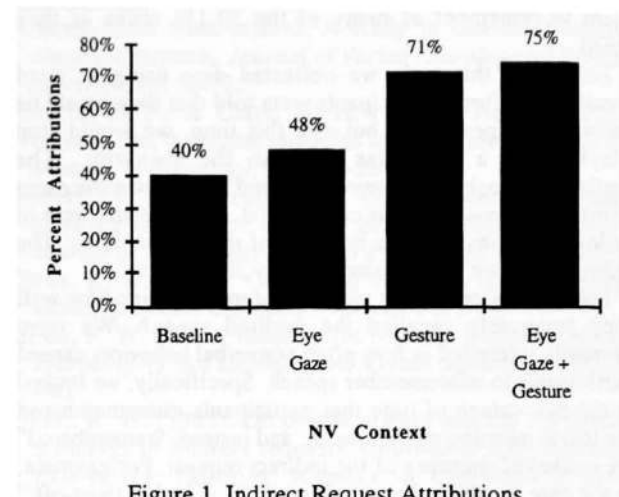


Figure 1. Indirect Request Attributions

Our main prediction was that nonverbal behavior would influence the degree to which listeners made indirect request attributions to speakers. This prediction was confirmed for the gesture and eye gaze + gesture conditions, but not for the condition in which there was eye gaze without accompanying gesture. It should be noted, however, that the video paradigm is likely to underestimate the effect that eye gaze would have in real settings, because the poor resolution of the videotape makes the direction of the characters' eye gaze difficult to discern.

This first study clearly demonstrates that listeners indeed make use of nonverbal information in understanding indirect requests. Given that they are sensitive to this information, how does it affect listeners' memory for the speech event? The next study addresses this question.

## Experiment 2

This experiment investigates the influence on eye gaze and hand gesture on peoples' memory for the spoken portion of indirect requests. Based on theories that verbal and nonverbal behaviors make up an integrated system of meaning expression (McNeill, 1985, 1987, 1992; Poggi, 1996), we hypothesized that information conveyed through eye gaze and hand gesture would be incorporated into peoples' memory for speech. Specifically, we predicted that the greater number of relevant nonverbal behaviors a person saw (eye gaze + gesture), the more their memory would be influenced.

## Methods

**Participants.** Sixteen University of Chicago undergraduates (8 males and 8 females) participated in the study for payment.

Participants were told that they were going to watch videotaped scenarios about the lives of two roommates. They were told that they should pay close attention to the scenarios, because after they viewed them, they would be

asked questions about what they saw. The tape that they viewed was identical to the one described in Experiment One. After participants saw one of the four versions of the tape, they were given a five minute distractor task asking them to remember as many of the 50 US states as they could.

Following this task, we collected data using a "cued recall" procedure. Participants were told that they would be shown the tapes again, but that this time, we would stop playback at a particular point in the scenario. The participants' task was to remember and write down the exact words that came after this cutoff point. Participants were to follow these instructions for each of the 12 scenarios. The entire procedure lasted approximately 30 minutes.

Participants' responses were coded to determine how well they accurately recalled the omitted speech. We were primarily interested in how often nonverbal behaviors caused participants to misremember speech. Specifically, we looked at the percentage of time that participants misremembered the literal meaning of the speech, and instead, "remembered" the conveyed meaning of the indirect request. For example, in the case in which the speech was, "This isn't a twist-off," a participant would have been coded as having remembered the conveyed meaning if she thought Bill had said, "Can I have the bottle opener?"

## Results and Discussion

Our results are summarized in Figure 2.

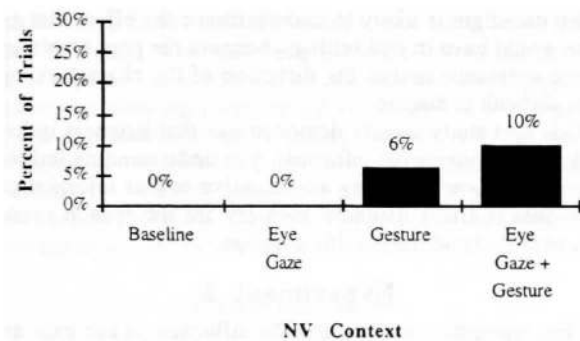


Figure 2. Intrusion of Conveyed on Memory for Literal Meaning

Participants remembered the conveyed meaning, on average, 0% of the time in the baseline condition, 0% of the time in the eye gaze condition, 6% of the time in the gesture condition, and 10% of the time in the eye gaze + gesture condition. We performed an ANOVA on these data and found a marginally significant main effect of nonverbal condition ( $F(3, 45) = 2.51, p < .07$ ). A planned comparison between the baseline condition and the three nonverbal context condition revealed that these conditions were reliably different from baseline ( $F(1, 19) = 8.224, p < .01$ ). This pattern of results demonstrates that information conveyed through hand gesture (with and without eye gaze) is occasionally incorporated into people's memory for what they heard.

On the surface, the results from this study are not overwhelming. Indeed, other studies (e.g., Ackerman, 1978) show that context has a stronger influence on memory for indirect requests. However, our study is different from these studies in an important way. Our study placed very strict constraints on what we required participants to remember: the exact words of the indirect request. We did this because any effect we found using these very strict instructions would suggest a possible integration of verbal and nonverbal information at encoding. In contrast, if we had simply asked participants to remember in general what was conveyed, we would not be able to make claims about verbal and nonverbal integration. For example, suppose that we did ask a general memory question and found that participants recalled the conveyed meaning of the indirect request at a higher rate. This higher rate of recall may only reflect retrieval effects and say nothing about integration of verbal and nonverbal information at encoding.

## General Discussion

The two studies presented here demonstrate that a speaker's nonverbal behavior, specifically the speaker's eye gaze and gesture, can influence how listeners understand and remember indirect requests. In particular, we found that listeners were more likely to construe speech as indirect when accompanied by a gesture and the combination of eye gaze and gesture. Furthermore, people will occasionally integrate information conveyed nonverbally into their memories for the actual speech that they heard.

We believe these results are interesting for several reasons. First, it is clear from these studies that listeners are extremely sensitive to eye gaze and hand gesture. In Experiment 1, when speakers uttered the target sentence with an accompanying gesture and eye gaze, respondents were nearly twice as likely to construe the speech as an indirect request. Furthermore in Experiment 2, respondents incorporated information encoded in eye gaze and gesture in their memories for the speech about 10% of the time. This number is small, but we believe that had we used less strict memory instructions (that is, had we asked them to remember gist information) or brought participants back after a long delay (say 48 hours), we would have obtained a much larger effect. Taken together, these results cast doubt on claims that hand gestures do not play a significant communicative role during social interactions (see Krauss, Morrel-Samuels, & Colante, 1991).

However, it is not clear from our results just what role nonverbal behaviors played. For example, perhaps eye gaze and hand gesture were used only in cases in which the speech was not sufficient enough to make the meaning of the indirect requests clear. In other words, they may have been used as fall back substitutes for speech. On the other hand, the relationship between verbal and nonverbal behaviors may have been much more complex. For example, perhaps verbal and nonverbal behaviors interacted dynamically to create meaning that went beyond the individual contributions of each. We are currently involved in studies that look in more detail at the relationship between verbal and nonverbal behaviors for listeners (watchers) during communication.

One theory which guides our current research is that gesture and eye gaze form an integrated system for the speaker (McNeill, 1992). Analogously, it is possible that speech and nonverbal information are also unified in perception. If this is the case, then a speaker's nonverbal behavior is not "just another" contextual cue to speaker intention, but is just as much part of the communicative act as the speech itself. Using on-line methodologies, we hope to begin to address these issues.

Finally, the video methodology which we used in these studies differs from traditional text-based methods in fundamental ways which may have consequences for language processing. The inclusion of two different stimulus modalities (visual and auditory) allows for the simultaneous presentation of contextual information with speech, as occurs in natural face-to-face situations. In contrast, text studies require information to be presented sequentially, forcing the reader to hold this information in working memory before it can be integrated with speech. Thus, the kind of processing which occurs in reading studies may be incommensurable with the kind that occurs in listening/watching studies. In addition, the predominance of text-based studies in the field needlessly limits its scope to nonvisual cues to speaker intention, when visual cues are bountiful.

In conclusion, we think that much can be gained by taking nonverbal information seriously. Although in this pair of studies we focused only on eye gaze and gesture, there exist a variety of nonverbal cues to speaker intention, including body posture and facial expression. These cues are also likely to have a function in the processing of pragmatic information. We hope that future research on language comprehension will consider these factors.

### Acknowledgments

This research was supported by a National Science Foundation Graduate Research Fellowship and a University of Chicago Department of Psychology Graduate Student Research Grant to Dale Barr, and a University of Chicago Department of Psychology Graduate Student Research Grant to Spencer Kelly. We would like to thank Susan Goldin-Meadow, Boaz Keysar, David McNeill, Howard Nusbaum, and Tom Trabasso for their helpful input on this project.

### References

Ackerman, B. P. (1978). Children's understanding of speech acts in unconventional directives, *Child Development*, 49, 311-318.

Argyle, M. (1973). The syntaxes of bodily communication. *International Journal of Psycholinguistics*, 2, 71-91.

Baldwin, D. A. (1993). Early referential understanding: Infants' ability to recognize referential acts for what they are. *Developmental Psychology*, 29(5), 832-843.

Boyle, E. A., Anderson, A. H., & Newlands, A. (1994). The effects of visibility on dialogue and performance in a cooperative problem solving task. *Language and Speech*, 37(1), 1-20.

Bruner, J. (1984). Interaction, communication, and self. *Journal of the American Academy of Child Psychiatry*, 23(1), 1-7.

Clark, H. H., & Lucy, P. (1975). Understanding what is meant from what is said: A study in conversationally conveyed requests. *Journal of Verbal Learning and Verbal Behavior*, 14, 56-72.

Francik, E. P., & Clark, H. H. (1985). How to make requests that overcome obstacles to compliance. *Journal of Memory & Language*, 24, 560-568.

Gilbert, D. T., & Krull, D. S. (1988). Seeing less and knowing more: The benefits of perceptual ignorance. *Journal of Personality & Social Psychology*, 54, 193-202.

Gibbs, R. W. (1979). Contextual effects in understanding indirect requests. *Discourse Processes*, 2, 1-10.

Gibbs, R. W. (1981). Memory for requests in conversation. *Journal of Verbal Learning and Verbal Behavior*, 20, 630-640.

Gibbs, R. W. (1983). Do people always process the literal meanings of indirect requests? *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 9, 524-533.

Gibbs, R. W. (1986a). What makes some indirect speech acts conventional? *Journal of Memory & Language*, 25, 181-196.

Gibbs, R. W. (1986b). Comprehension and memory for nonliteral utterances: The problem of sarcastic indirect requests. *Acta Psychologica*, 62, 41-57.

Goldin-Meadow, S., Wein, D., & Chang, C., (1992). Assessing knowledge through gesture: Using children's hands to read their minds. *Cognition and Instruction*, 9, 201-219.

Grice, H. P. (1975). Logic and conversation. In P. Cole and J. L. Morgan (Eds.), *Syntax and Semantics*, vol. 3. New York: Academic Press.

Holtgraves, T. (1994). Communication in context: Effects of speaker status on the comprehension of indirect requests. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 20, 1205-1218.

Keenan, J. M., MacWhinney, B., & Mayhew, D. (1977). Pragmatics in memory: A study of natural conversation. *Journal of Verbal Learning and Verbal Behavior*, 16, 549-560.

Krauss, R. M., Morrel-Samuels, P. & Colasante, C. (1991). Do conversational hand gestures communicate? *Journal of Personality and Social Psychology*, 61, 743-754.

Kelly, S. D., & Church, R. B. (1997). Can children detect conceptual information conveyed through other children's nonverbal behaviors? *Cognition and Instruction*, 15(1), 107-134.

McNeill, D. (1985). So you think gestures are nonverbal? *Psychological Review*, 92, 350-371.

McNeill, D. (1987). *Psycholinguistics: A new approach*. New York: Harper and Row.

McNeill, D. (1992). *Hand and mind: What gesture reveals about thought*. Chicago, IL: University of Chicago Press.

Murphy, G. L., & Shapiro, A. M. (1994). Forgetting of verbatim information in discourse. *Memory & Cognition*, 22, 85-94.

- Poggi, I., & Magno C. E. (Oct, 1996). A score for the analysis of gesture in multimodal communication. In L. Messing (Ed.), *Proceedings of the Workshop on the Integration of Gesture in Language and Speech*. Newark and Wilmington, Del., Applied and Engineering Laboratories.
- Searle, J. R. (1975). What is a speech act?. In M. Black (Ed.), *Philosophy in America*. Ithaca: Cornell University Press.
- Thompson, L. A., & Massaro, D. W. (1994). Children's integration of speech and pointing gestures in comprehension. *Journal of Experimental Child Psychology*, 57, 327-354.