THE IMPORTANCE OF NONVERBAL CUES IN JUDGING RAPPORT

Jon E. Grahe and Frank J. Bernieri

ABSTRACT: This study examined the relative impact different channels of communication had on social perception based on exposure to thin slices of the behavioral stream. Specifically, we tested the hypothesis that dyadic rapport can be perceived quickly through visual channels. Perceivers judged the rapport in 50 target interactions in one of five stimulus display conditions: transcript, audio, video, video + transcript, or video + audio. The data demonstrated that perceivers with access to nonverbal, visual information were the most accurate perceivers of dyadic rapport. Their judgments were found to covary with the visually encoded features that past research has linked with rapport expression. This suggests the presence of a nonverbally based implicit theory of rapport that more or less matches the natural ecology, at least as it occurs within brief samples of the behavioral stream.

Our impressions of others undoubtedly are formed primarily during our initial encounters with them. First impressions influence a perceiver's desire to interact with another (Zebrowitz, 1990). Confirmation and belief perseverance biases then can maintain these initial impressions over time (Fiske & Taylor, 1991). In order to understand fully how such things as relationship formation, satisfaction, and interactant rapport develop, we must begin by learning the processes involved in the formation of our very first impression of another. What is responsible for that first impression? Is it formed initially and primarily through what is said during that initial encounter, or is it a result of the visual and nonverbal features we perceive? This report examines the contribution different channels of communication make in the expression, transmission, and perception of rapport.

This research was supported by a NSF Young Investigator Award (#DBS-9258686) to the second author. The authors wish to thank Michelle Curtis, Janet Davis, Keith Dempsey, Kathleen Gould, Lisa Slotnik, and Jeranna Younker for their assistance in the data collection and coding for this study.

Jon E. Grahe, Department of Psychology, Monmouth College; Frank J. Bernieri, Department of Psychology, University of Toledo.

Address correspondence to Jon E. Grahe, Department of Psychology, Monmouth College, Monmouth, IL 61462; e-mail: jgrahe@monm.edu.

Researchers examining the relative importance of verbal versus nonverbal information in person perception have offered inconsistent conclusions (Archer & Akert, 1977; Berry, Pennebaker, Mueler, & Hiller, 1997; Gifford & Hine, 1994; Mehrabian & Ferris, 1967; Mehrabian & Weiner, 1967). Mehrabian and colleagues (Mehrabian & Ferris, 1967; Mehrabian & Weiner, 1967) concluded that most interpersonal information was communicated nonverbally. However, Archer and Akert (1977) found that perceivers with access to verbal and vocal information made more accurate judgments. More recently, Berry et al. (1997) reported that verbal content conveyed as much information as nonverbal behavior. This inconsistency may reflect differences in the situational context within which the behavior was observed (Ambady & Rosenthal, 1992; Bernieri, Gillis, Davis, & Grahe, 1996) and the information content being judged (Ambady & Rosenthal, 1992; DePaulo, 1992; Noller, 1985). Noller (1985) argued, for example, that constructs containing affect are communicated more quickly through nonverbal channels.

Other construct domains including personality and communication motives (e.g., deception) may manifest themselves more strongly within the verbal channel. Gifford (1994) found that job candidates encoded their personality weakly in their nonverbal behaviors during their interview. Berry et al. (1997) found that key words in dyadic conversation (e.g., emotion words, the use of present tense, self-referents, etc.) communicated important information about the competency, dominance, and warmth of the target. Such studies indicate that the verbal channel can communicate much to the impression formed of another's traits and dispositions.

In contrast to personality constructs, certain social and affective-based constructs may be more readily communicated via nonverbal behaviors (De Paulo, 1992). For example, Babad, Bernieri, and Rosenthal (1989; 1991) found that teachers' biases and expectations towards their pupils were communicated immediately and primarily through nonverbal channels. Furthermore, Ambady and Rosenthal (1992) reported in a meta-analysis that social outcomes were predicted from very brief samples of behavior. Incredibly, they found that the predictive validity of a thin slice of an interaction did not increase when the length of the slice increased from 20 s to 5 min. The sheer amount of verbal content that is lost as one moves from a 5 min long segment of a conversation to 20 s is not trivial. Therefore, since validity does not decrease with exposure length, one may conclude that the critical information present in these thin slices of behavior could be chronic, expressive, and very likely nonverbal in nature. As DePaulo (1992) noted, nonverbal behaviors can occur very quickly and observer attributions in response are irrepressible.

Rapport and Its Perception

The construct of rapport differs slightly from those previously discussed because it is defined at the dyad or group level. Rapport is unlike affect or a disposition in that it refers to a quality of an interpersonal relationship and does not exist within any individual. Despite this difference in the unit of analysis that is being considered, the perception of rapport appears to occur very much like other person specific constructs.

Bernieri and colleagues have reported a number of studies documenting that passive observers can assess the rapport between target interactants from very brief video clips (30–50 s) extracted from a much longer interaction (Bernieri & Gillis, 1995; Bernieri et al., 1996; Gillis, Bernieri, & Wooten, 1995). More recently, Bernieri and Grahe (1999) demonstrated that a significant degree of target-observer agreement in rapport assessment was attainable with exposures limited to a mere 10 s. One conclusion made throughout these studies was that interactant rapport must have been expressed and communicated nonverbally rather than verbally in order for observers to detect it in such brief exposures (Bernieri et al., 1996).

Tickle-Degnen and Rosenthal (1990) formulated a purely nonverbal construct of rapport after a meta-analysis of the existing literature. They identified three distinct components of rapport that when taken together best represent what psychologists and lay people are referring to when using the term rapport. Each of the three components—mutual attention, coordination, and positivity—was found to have established nonverbal correlates for their expression (Tickle-Degnen and Rosenthal, 1987; 1990). Ultimately, one must acknowledge that the rapport between two individuals is influenced by: (a) the entire behavioral stream, verbal and nonverbal, (b) prior expectations and cognitive schemas, and (c) the attribution of relevant actions and events. Tickle-Degnen and Rosenthal did not argue that rapport should be defined exclusively as a nonverbal behavior, but rather that rapport was encoded strongly within, and communicated throughout, the visual nonverbal channels. Thus, the best place to look for and assess rapport would be within the visual features of the behavioral stream.

Bernieri et al. (1996) identified behaviors predictive of self-reported rapport by examining the behavioral cues present within two social contexts. Gesturing, interactional synchrony (i.e., coordination), and proximity were particularly potent indicators. The variance in these cues occurring within the time frame sampled, which was less than 60 s, predicted about half of the criterion variance of target self-reports that were collected after the completion of the entire 5–30 min long dyadic interaction. Clearly,

within the contexts examined interactant rapport was encoded strongly within the behavioral stream.

In that study, the authors also reported that outside observers made use of this encoding. Naïve judgments made after watching 30–50 s video clips were correlated with the target criterion of self-reported rapport (Bernieri et al., 1996). Observer judgments of rapport were remarkably consistent and unchanging across situations, suggesting a relatively stable implicit nonverbal social perception theory of rapport that may be applied universally across different social context. This resulted in observers being more accurate in assessing cooperative, as opposed to adversarial, interactions because target expressivity, a cue on which they relied so heavily, was statistically more predictive of self-reported rapport in that context.

Although these findings suggest that rapport is transmitted nonverbally, they do not preclude the possibility that rapport is also transmitted verbally. No direct test has been made comparing perceivers with access to verbal versus nonverbal channels of communication. Aside from general talkativeness, the cues measured by Bernieri and colleagues were nonverbal in nature. Unlike other related studies (e.g., Gifford & Hine, 1994) verbal content was never assessed explicitly in any of their reported studies (Bernieri & Gillis, 1995; Bernieri et al., 1996; Gillis et al., 1995). In other words, these studies were biased methodologically towards finding nonverbal primacy in the encoding and perception of rapport due to their deficient analysis of information contained within the verbal channel of communication.

Overview and Hypotheses

The objective of the current investigation was to determine the relative importance of verbal versus nonverbal information in the perception of rapport employing thin slices of the behavioral stream. In the current experiment, perceivers were limited to information provided in a given channel or selected composite channel of communication (transcript, audio, video, video + transcript, video + audio). They were asked to judge the rapport that existed between 50, unacquainted, mixed-sex dyads. Perceiver judgment policies were also examined.

It was predicted generally that perceivers would rely primarily on the nonverbal information present within thin slices and would be relatively insensitive to variations in verbal content across target stimuli given this methodology (i.e., brief exposure times). Within each presentation channel condition, mean correlations were computed between judgments and tar-

get criterion. Planned contrasts performed on these effect sizes found within each channel condition allowed us to evaluate what contribution verbal content made to observer judgments of rapport (see Rosenthal & Rosnow, 1985). For example, we expected perceivers who were exposed to the visual channel to judge rapport more accurately—employing target self-reports as the criterion for accuracy—than perceivers who were presented with only the audio channel.

In addition, it was expected that perceiver judgments would correlate more strongly with cues coded within the channel they were experiencing. Because most cues coded in this study were nonverbal in nature, it was expected that perceivers' judgments would covary more with our coded visual cues when they had access to the visual channel compared to perceivers whose judgments were made from audio or transcripted verbal information. The purpose of these predictions was to begin to document empirically and concretely the nature of the interpersonal perception process that occurs with thin-slice exposure. This is, after all, the very basis of initial impression formation in face-to-face interaction.

Method

Participants and Design

A total of 115 participants (43 male, 70 female) received extra credit for their participation. Two did not report their gender. These participants were excluded from analyses involving gender. Participants were assigned randomly to one of five conditions in a 2 (sex of participant) × 5 (transcript, audio, video, video + transcript, and video + audio) between-subjects design.

Judgment Stimuli[1]

Videotaped interactants were 120 high school students and undergraduates (60 male and 60 females) participating in a study of face-to-face social interaction (Bernieri, Davis, Rosenthal, & Knee, 1994) who were formed randomly into 60 unacquainted mixed-sex dyads. Target interactants were seated at a table with a world map and 20,000 dollars of play money. The experimenter instructed them to plan a trip around the world. Conditions of the interaction were that they needed to agree on the travel locations, and to continue their discussion until they spent their trip money. The interactants determined discussion length, which varied from 4 to 15 minutes. Following the discussion, interactants filled out a 29-item

self-report measure describing themselves and the interaction. Items were derived to measure the three domains of rapport identified by Tickle-Degnen and Rosenthal (1990). They included: (a) positivity, assessed with items such as "friendliness" and "positivity"; (b) attention, assessed with items such as "focused" and "interesting"; and (c) coordination, assessed with items such as "smooth" and "harmonious." All items on the questionnaire were highly correlated. The 29-item rapport scale yielded a Cronbach's alpha of .94. The mean of the self-reports generated by the two targets served as our target criterion for dyad rapport.[2]

Of the 60 original unacquainted dyads, 50 were randomly selected for the stimulus tape. A 30 s video clip was taken from the second to last minute of the interaction. The end of the interaction was sampled so that perceivers' judgments were made at a time very close to when the interactants made their self-reports. The interaction clips were assembled randomly onto the stimulus tape.

Twenty-five potential feature cues to rapport were coded within the thin-slice being analyzed. Appendix A contains a complete list of the cues coded for this study. These cues were coded by a set of independent raters not involved in the video taping or rapport ratings of the targets. The mean of the raters' scores was computed to form the value of the behavioral cues. Effective reliabilities of the cues ranged from .85 to .98 (see Rosenthal & Rosnow, 1991).

Judgment Task

Participants judged the stimuli in groups ranging from one to eight and were told to work independently and to avoid commenting during the rating session. Participants received the following definition of rapport at the beginning of the judgment task:

> Rapport is a term used to describe the combination of qualities that emerge from an interaction. These interactions are characterized by such statements as 'we really clicked' or 'we experienced real chemistry.' When you come away from a conversation that was two hours long and you feel invigorated, you have experienced an interaction high in rapport. Terms like engrossing, friendly, harmonious, involving, and worthwhile[3] describe interactions high in rapport.

Participants made their judgments on an 8-point Likert type scale with "no rapport" and "rapport" serving as anchors.

Participants were assigned randomly to one of five stimulus conditions: transcript, audio, video, video + transcript, or video + audio. In the

audio condition, participants were positioned so that they could hear, but not view, the television screen. In the video condition, participants viewed the video clips without sound. In the transcript condition, participants read typed transcripts of the verbal content present during the 30 s clip of the interaction. For the video + transcript condition, participants read the typed transcripts of the verbal content, and then viewed the video clip of that interaction without sound.

The transcripts were written in a dialogue fashion such that the speech of one interactant was typed on one side of the paper while the speech of the other interactant appeared on the other side. This was done to better represent the turn-taking aspect of the conversation.

Accuracy[4] Measure

An accuracy coefficient was computed for each perceiver by correlating the perceiver's judgments of rapport on each of the 50 video clips with the self-reported rapport of the target interactants. This score was transformed to Fisher *Z*'s for statistical analyses (Rosenthal & Rosnow, 1991). Correlations were computed also between each perceiver's judgments and the twenty-five behavioral cues. These correlations indicated the extent to which a particular behavior or cue covaried with a perceiver's judgments of rapport. We will refer to these as cue dependencies that reflect the degree to which an individual perceiver appears to use a behavior or cue in making their judgments. For example, a strong positive cue dependency for smiling would suggest that rapport was judged higher when there was more smiling in a video clip.

Results

Rapport Judgment Accuracy

The mean accuracy coefficients for each condition are displayed in Table 1. As predicted the transcript condition produced the least accurate judgments whereas the video condition produced the most accurate. Interestingly, when either the sound track or just the verbal content provided in the form of a transcript was *added* to the visual display, the accuracy in judging self-reported rapport appeared to decline, though not significantly.

Gender was employed as a blocking variable because research has demonstrated that females are better at social perception than males (Ambady & Rosenthal, 1992), especially when it involves decoding nonverbal behavior (Hall, 1978; Rosenthal & DePaulo, 1979). However, a two-way

TABLE 1

Accuracy of Participants by Channel of Communication Presented

Contrast weights testing H_1	H_2	Condition	*M*	*SD*
−4	0	Transcript	.09	(.12)
+1	−1	Audio-Only	.14	(.16)
+1	+1	Video-Only	.32	(.15)
+1	0	Transcript + Video	.24	(.11)
+1	0	Video + Audio (Normal Display)	.24	(.11)

Note. H_1: Observers will be less accurate within the transcript condition than in the other four conditions containing some amount of nonverbal information.
H_2: Observers will be more accurate when assessing visual information than they will be assessing auditory information.

(sex by presentation condition) ANOVA yielded only a main effect for condition, $F(4, 103) = 17.41$, $p < .0001$.

Two nonorthogonal planned contrasts were performed on the data to test the more general hypothesis that the perception of rapport in thin slices of the behavior stream is determined primarily by expressive nonverbal behavioral cues. The first tested the hypothesis that observers would be more accurate in their judgments whenever they had access to a nonverbal channel including tone of voice. This contrast compared the transcript condition against the mean of the other four conditions. The planned contrast was statistically significant, $t(1, 103) = 5.11$, $p < .0001$, $r = .21$. The second planned contrast tested the hypothesis that judgments would be more accurate when working from visual as opposed to audio information. This contrast compared the video condition to the audio condition. The planned contrast was statistically significant, $t(1, 103) = 3.95$, $p < .0001$, $r = .19$. The differences in these results are not as important as their convergence. They clearly show that perceiver accuracy was associated with access to nonverbal channels and particularly the visual channel.

Judgment Policies

The correlations between the behavioral cues and the interactants' self-reports of rapport are presented on left side of Table 2. These correla-

TABLE 2

Average Cue Dependencies by Condition

Encoding[a]	Behavioral Cue	Transcript n = 24	Audio *n* = 25	Video *n* = 24	Video + Transcript *n* = 20	Video + Audio *n* = 22
.26	Expressivity	.11	.38**	.33*	.47**	.60***
.40**	Synchrony	.10	.14	.32*	.36*	.26
−.10	Money monopolization	.02	.21	.23	.19	.31*
.22	Female gestures	.11	.28*	.25	.40**	.42**
.08	Male gestures	−.03	.12	.07	.10	.20
−.23	Posture shifts	−.05	.12	.10	.28*	.30*
.32*	Proximity	.05	.04	.23	.17	.20
.03	Map focus	.01	−.10	−.12	−.27	−.20
.13	Smiling	.13	.22	.31*	.38**	.17
−.06	Forward lean	−.04	−.16	−.04	−.18	−.17
.06	Mutual eye contact	.07	.16	.10	.26	.22
−.25	Racial similarity	−.09	−.02	.02	−.03	.05
−.03	Pointing frequency	−.10	−.06	.00	−.05	.05
−.16	Female adaptors	.01	−.02	.05	.02	.05
.15	Male adaptors	.09	.08	.01	.03	.06
.10	Mean physical attractiveness	−.02	−.01	.07	.02	.01
−.21	Attractiveness discrepancy	−.05	−.08	−.12	−.07	−.06
−.11	Orientation	−.04	−.05	−.03	−.02	−.00
.21	Female money spending suggestions	.01	.14	.09	.06	.14
−.01	Male money spending suggestions	.03	.04	−.00	−.03	.02
−.01	Female back channel responses	−.05	.01	−.05	−.07	.11
.13	Male back channel responses	.03	.12	.13	.15	.15
−.19	Nervous behavior	.07	−.07	−.08	−.10	−.25

TABLE 2 (*Continued*)

Encoding[a]	Behavioral Cue	Transcript n = 24	Audio *n* = 25	Video *n* = 24	Video + Transcript *n* = 20	Video + Audio *n* = 22
.24	Interruptions	.05	.26	.21	.27	.40**
− .02	Mutual silence	− .02	− .20	− .03	− .13	− .32*

Note. * $p < .05$, ** $p < .01$, ***$p < .000$

[a]The encoding coefficients represent the predictive relationship between the cues measured and the rapport criterion consisting of interactant self-reports (adapted from Bernieri et al., 1996).

tions represent the encoding of rapport and show the degree to which each of the individual cues predicts self-reports of rapport. The encoding correlations were previously reported by Bernieri et al. (1996), and are presented here to aid in the overall interpretation of how observers judged rapport. Closer agreement between the encoding correlations and the cue dependencies represent more ecologically valid perception processes. The mean cue dependencies across each sample of perceivers for each condition are presented on the right side of Table 2.

To test for differences in specific cue dependencies between the four conditions, the data were subjected to one-way ANOVA's with each of the behavioral cues used as a dependent measure. The omnibus *F*'s for each of the behavioral cues are presented in Table 3. Although computing so many individual ANOVA's increases Type I error, our interpretations are based on the large number and overall pattern of significant results.

The planned contrasts discussed earlier were applied to the cue dependencies as well and are presented in Table 3. We reasoned that a perceiver's judgments of rapport would correlate only with those cues contained within the perceiver's stimuli regardless of the cue's predictive validity of rapport. For example, we predicted that rapport judgments derived exclusively from pure verbal content (i.e., transcripts) would be less correlated with the set of visual cues than rapport judgments of perceivers who had access to the full audio or visual channel. This hypothesis was tested by performing a contrast analysis on the cue dependency coefficients across the five conditions employing the following contrast weights: transcript condition (−4), audio condition (+1), video condition (+1), video + transcript condition (+1), video + audio (+1). Positive *t*-tests from such an analysis indicate that rapport judgments from perceivers with ac-

TABLE 3

Significance Tests of the Difference between Cue Utilizations Across Stimulus Conditions

Behavioral Cue	Omnibus F	Nonverbal Presence t_1	Video vs. Audio t_2
Expressivity	19.53***	6.72***	−0.78
Synchrony	19.47***	5.76***	4.33***
Money monopolization	16.24***	7.15***	−0.14
Female gestures	16.25***	6.10***	−0.54
Male gestures	8.85***	4.46***	−1.18
Posture shifts	15.56***	5.73***	0.14
Proximity	7.20***	3.22**	3.69**
Map focus	6.84***	3.76**	0.00
Smiling	6.29***	2.74**	0.93
Forward lean	5.57***	2.47*	−2.31*
Mutual eye contact	5.59***	2.88**	−1.48
Racial similarity	4.43**	−3.35**	−0.66
Pointing frequency	3.82**	−2.91*	−1.84
Female adaptors	1.63	0.34	2.28*
Male adaptors	1.51	1.18	−1.99*
Mean physical attractiveness	1.29	0.97	2.25*
Attractiveness discrepancy	1.08	1.21	0.37
Orientation	.53	0.67	−0.33
Female money spending suggestions	4.72**	2.96**	1.44
Male money spending suggestions	1.27	1.20	1.13
Female back channel responses	9.06***	1.78	1.71
Male back channel responses	3.61**	3.62**	0.26
Nervous behavior	12.30***	5.40***	1.03
Interruptions	13.97***	5.76***	−1.25
Mutual silence	15.13***	3.75**	−3.03**

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

cess to any type of nonverbal information would be influenced more by a given cue than rapport judgments made by perceivers processing verbal content exclusively. Of the 25 tests performed, 16 were statistically significant in the predicted direction.

The second set of contrasts tested the hypothesis that a cue was utilized more heavily when judging video stimuli than when judging audio stimuli. The data on Table 2 demonstrated that perceivers in the video condition compared to those in the audio condition relied more heavily on synchrony, proximity, mean attractiveness, and female adaptors, all of which are contained within the visual display. On the other hand, perceivers in the audio condition compared to those in the video condition relied more heavily on mutual silence that was conveyed through the verbal channel. Contrary to expectations, male adaptors and forward lean were correlated more strongly with perceivers in the audio-only condition, but the absolute magnitudes of these cue dependencies were small.

It is this difference between the judgment policies that accounts for the great increase in accuracy in the video condition. Though the perceivers in the video condition did not utilize the mutual silence, male adaptors, or forward lean behaviors; these three cues accounted for little variance in predicting self-reported rapport, Multiple R^2 (3, 46) = .03. Therefore the perceivers in the video condition were not hindered by their lack of reliance on these cues. However, perceivers in the audio condition could not directly utilize synchrony, attractiveness, female adaptors, or proximity. These cues accounted for a fair amount of predictive variance for targets' self-reports of rapport, Multiple R^2 (4, 45) = .22. This suggests why the perceivers in the audio condition performed worse than the perceivers in the video condition.

Discussion

Observers of thin-slice samples of dyadic interactions judged rapport more accurately when they had access to the nonverbal and visual channels of communication. In fact, adding verbal content to these channels showed no evidence of improving their judgment and may have even worsened it. We found that the behavioral cues apparently employed by the video-only participants were more ecologically valid than the cues apparently employed by the audio-only participants. Accurate judges were the ones whose judgments covaried with synchrony, proximity and expressivity. When judges got a good look at the targets, their judgments correlated more strongly with these valid cues.

In this experiment, judgments made from transcripts did not covary

significantly with a single coded cue. However, research by Berry et al. (1997) demonstrated conclusively that the verbal channel could be an extremely important channel of communication. Why the apparent discrepancy? One possibility is that, unlike the observers in that study, ours may not have had enough exposure to detect any of the valid verbal predictors present within the complete verbal discourse. Perhaps their rapport judgments would have improved if the entire conversation was accessible.

In the present case, however, we doubt that increasing the exposure to the verbal stream would matter much. Bernieri et al. (1996) reported that a set of three nonverbal behaviors coded within a 30 s segment explained over 50% of the rapport criterion variance. It is difficult to imagine that any additional explanatory power can be achieved beyond such a high level. In addition to this, Bernieri and Grahe (1999) found that rapport judgments made by observers who watched the entire interaction sequence showed no greater accuracy than observers of thin slices lasting less than 50 s. In fact, although not tested statistically, the accuracy coefficients of fully informed perceivers who were privy to the entire interaction were not any greater than perceivers in the current study who were restricted to a 30 s segment of only the visual channel. Overall, we have found little evidence to suggest that conversation content improves judgments of rapport over and above those judgments that are made immediately through the decoding of nonverbal behavior.

A question arises as to why visual information was so important for rapport when other researchers have found auditory and verbal cues to be so influential in person perception. The most parsimonious reason may be that rapport is primarily a physically manifested construct; it is a construct that is visible at the surface and readily apparent. Studies have established a robust association between perceived rapport and such features as interpersonal proximity, synchrony, and forward lean (Tickle-Degnen & Rosenthal, 1990). In other words, rapport simply may be visible.

One remaining question involves the interpretation of a large cue dependency if the cue was not accessible within the stimuli presented to a given participant. For example, judgments in the audio condition covaried with forward lean more than perceivers' judgments in the video condition, and the cue dependency for female gestures was statistically significant. How could participants have utilized cues they did not see? They obviously did not. A reasonable explanation is that some perceptible feature within the flow of speech was related to forward lean and/or gestures. Thus, the observed correlations were mediated through some accessible third variable.

It is important to note that we are not arguing a position of universal primacy for the nonverbal channels of communication. Obviously, verbal

content is critical for the expression and communication of a vast array of psychological constructs and relationships (e.g., Archer & Akert, 1977; Berry et al., 1997). Instead, we are investigating how various psychological constructs, social contexts and stimuli presentations relate to verbal/nonverbal expression and transmission.

Taken together with past research, the present findings suggest that nonverbal behavior may be relatively more important than verbal behavior in the following areas: (a) in the expression and communication of spontaneous affect (e.g., Argyle, Salter, Nicholson, Williams, & Burgess, 1970), (b) in the assessment of self-presentation and communication motives (e.g., DePaulo, 1992), (c) in the expression and communication of rapport and the related trait of extraversion (e.g., Funder & Colvin, 1998; Levesque & Kenny, 1993), and (d) when perceptions are based on thin-slices of behavior (Ambady & Rosenthal, 1992). The data presented here demonstrated that perceivers with access to nonverbal, visual information were the most accurate perceivers of dyadic rapport when viewing brief slices of an interaction. This suggests the presence of a nonverbally based implicit theory of rapport that matches reasonably well the natural ecology, at least within brief samples of the behavioral stream.

Notes

1. This procedure was described also in Bernieri et al. (1996).
2. For more thorough discussions of the reliability and validity issues related to our use of this particular criterion for rapport, see Bernieri and Gillis (1995); Bernieri et al. (1996); and Gillis, Bernieri, and Wooten (1995).
3. These were adjectives that comprised the self-report measure completed by the target interactants immediately after their session.
4. The term accuracy is used here more loosely than the usage prescribed by some others (e.g., Funder, 1995; Kruglanski, 1989). A discussion of the epistemological prerequisites necessary for employing the term accuracy is beyond the scope of the present paper. We use the term here for convenience because it clearly and efficiently communicates that we are dealing with the quality of a judgment that is assessed via a reasonable and justifiable, if not *the* only true, criterion. We would like to note also, that previous discussions and criticisms surrounding the use of the term accuracy pertained more directly to the literature dealing with personality perception and causal attribution, neither of which is addressed in the present report.

References

Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin, 111*, 256–274.

Archer, D., & Akert, R. M. (1977). Words and everything else: Verbal and nonverbal cues in social interpretation. *Journal of Personality and Social Psychology, 35*, 443–449.

Argyle, M., Salter, V., Nicholson, H., Williams, M., & Burgess, P. (1970). The communication of inferior and superior attitudes by verbal and nonverbal signals. *British Journal of Social and Clinical Psychology, 9,* 222–231.

Babad, E., Bernieri, F., & Rosenthal, R. (1989). Nonverbal communication and leakage in the behavior of biased and unbiased teachers. *Journal of Personality and Social Psychology, 56,* 89–94.

Babad, E., Bernieri, F., & Rosenthal, R. (1991). Students as judges of teachers' verbal and nonverbal behavior. *American Educational Research Journal, 28,* 211–234.

Bernieri, F. J., Davis, J. M., Rosenthal, R., & Knee, C. R. (1994). Interactional synchrony and rapport: Measuring synchrony in displays devoid of sound and facial affect. *Personality and Social Psychology Bulletin, 20,* 303–311.

Bernieri, F. J., & Gillis, J. S. (1995). The judgment of rapport: A cross-cultural comparison between Americans and Greeks. *Journal of Nonverbal Behavior, 19,* 115–130.

Bernieri, F. J., Gillis, J. S., Davis, J. M. & Grahe, J. E. (1996). Dyad rapport and the accuracy of its judgment across situations: A lens model analysis. *Journal of Personality and Social Psychology, 71,* 110–129.

Bernieri, F. J., & Grahe, J. E. (1999). Thin-slice samples of the behavioral stream: Validating their use in social psychological research. Manuscript in Preparation. University of Toledo.

Berry, D. S., Pennebaker, J. W., Mueller, J. S., & Hiller, W. S. (1997). Linguistic bases of social perception. *Personality and Social Psychology Bulletin, 23,* 526–537.

Depaulo, B. M. (1992). Nonverbal behavior and self-presentation. *Psychological Bulletin, 111,* 203–243.

Fiske, S. T., & Taylor, S. E. (1991). *Social Cognition* (2nd Ed). New York: McGraw-Hill, Inc.

Funder, D. C. (1995). On the accuracy of personality judgment: A realistic approach. *Psychological Review, 102,* 652–670.

Funder, D. C., & Colvin, C. R. (1988). Friends and Strangers: Acquaintanceship, agreement, and the accuracy of personality judgment. *Journal of Personality and Social Psychology, 55,* 149–158.

Gifford, R. (1994). A lens-mapping framework for understanding the encoding and decoding of interpersonal dispositions. *Journal of Personality and Social Psychology, 66,* 398–412.

Gifford, R., & Hine, D. W. (1994) The role of verbal behavior in the encoding and decoding of interpersonal dispositions. *Journal of Research in Personality, 28,* 115–132.

Gillis, J. S., Bernieri, F. J., & Wooten, E. (1995). The effects of stimulus medium and feedback on the judgment of rapport. *Organizational Behavior and Human Decision Processes, 63,* 33–45.

Hall, J. A. (1978). Gender effects in decoding nonverbal cues. *Psychological Bulletin, 85,* 845–857.

Kruglanski, A.W. (1989). The psychology of being "right": On the problem of accuracy in social perception and cognition. *Psychological Bulletin, 106,* 395–409.

Levesque, M. J., & Kenny, D. A. (1993). Accuracy of behavioral predictions at zero acquaintance: A social relations analysis. *Journal of Personality and Social Psychology, 65,* 1178–1187.

Mehrabian, A., & Ferris, S. (1967). Inference of attitudes from nonverbal communication in two channels. *Journal of Consulting Psychology, 31,* 248–252.

Mehrabian, A., & Weiner, M. (1967). Decoding of inconsistent communication. *Journal of Personality and Social Psychology, 6,* 109–114.

Noller, P. (1985). Video primacy—A further look. *Journal of Nonverbal Behavior, 9,* 28–47.

Rosenthal, R., & DePaulo, B. M. (1979). Sex differences in accommodation in nonverbal communication. In R. Rosenthal (Ed.), *Skill in nonverbal communication.* Cambridge, MA: Oelgeschager, Gunn, & Hain.

Rosenthal, R., & Rosnow, R. L. (1985). *Contrast analysis: Focused comparisons in the analysis of variance.* Cambridge, Eng.: Cambridge University Press.

Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis, 2nd edition.* New York: McGraw-Hill.

Tickle-Degnen, L., & Rosenthal, R. (1987). Group rapport and nonverbal behavior. *Review of Personality and Social Psychology, 9,* 113–136.

Tickle-Degnen, L, & Rosenthal, R. (1990). The nature of rapport and its nonverbal correlates. *Psychological Inquiry, 1,* 285–293.

Zebrowitz, L. A. (1990). *Social Perception.* Pacific Grove, California: Brooks/Cole Publishing.

Appendix A

Definitions of Behavioral Cues

1. *Expressivity* refers to the extent to which interactants' total behavior was active, animated, and exaggerated.

2. *Synchrony* refers to the extent to which the behaviors and the behavioral stream of each interactant was similar to, and coordinated with, each other.

3. *Money Monopolization* refers to whether the play money was handled by one interactant or shared by both (i.e., neither or both held the money at some point). High values indicate monopolization of money by one interactant.

4 & 5. *Gestures* refers to nonverbal acts that had direct verbal translations (e.g., the "OK" sign) or were used to illustrate or punctuate speech (e.g., pointing and fist pounding).

6. *Posture Shifts* refers to the frequency with which the interactants changed their posture or appeared to shift their weight in the chair.

7. *Proximity* represents the average distance separating the interactants' noses, chairs, and closest knees.

8. *Map Focus* refers to the amount of time both interactants spent mutually attending to the map (as opposed to attending to each other).

9. *Smiling* refers to the total time spent by both interactants smiling.

10. *Forward lean* refers to the total time spent by the interactants maintaining a postural configuration where their head was forward of the upright vertical position relative to their hips.

11. *Mutual Eye-Contact* refers to the total number of seconds the interactants were gazing into each other's eyes.

12. *Racial Similarity* refers to the similarity of the racial composition of the interaction dyads. Although our sample contained African Americans, Asians, and Hispanics, racial similarity invariably meant both interactants were Caucasian. Racial mismatch typically meant one interactant was Caucasian and one was not.

13. *Pointing Frequency* refers to the number of times an individual directed his/her partner's gaze to a specific location on the map in front of them.

14 & 15. *Adaptors* refers to manipulations of one's own body such as rubbing, scratching, preening, and in the present study, rhythmically swiveling the chair back and forth.

16. *Mean Physical Attractiveness* refers to the dyad mean physical attractiveness as rated by a group of undergraduates.

17. *Attractiveness Discrepancy* refers to the absolute difference between the rated physical attractiveness of each interactant in the dyad, after standardizing within sex.

18. *Orientation* refers to the degree to which an individual's trunk was oriented directly toward his or her partner. Values for orientation increase as interactants both adopted a face-to-face orientation.

19 & 20. *Money Suggestions* refers to the number of statements made that suggested how the money should be spent (e.g., "Let's save some money to come home through China").

21 & 22. *Back Channel Responses* refers to those behaviors that maintained and regulated the flow of speech. Head nods and "Uh hmms" were common examples of regulators coded in the present study.

23. *Nervous Behavior* refers to any action or activity that suggested someone was scared, anxious, uncomfortable or nervous (e.g., fidgeting, shaking, knees knocking, quivering voice).

24. *Interruptions* refers to the number of times both interactants were talking at the same time or one of the two interactants stopped the other in mid-sentence in order to interject his or her own comment.

25. *Mutual Silence* refers to the total time spent where interactants were simultaneously silent for a period longer than 1.5 sec.