

## The Role of Verbal Behavior in the Encoding and Decoding of Interpersonal Dispositions

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The role of verbal behavior in the encoding and decoding of eight interpersonal dispositions was investigated using the lens-mapping approach (Brunswik, 1956; Gifford, 1991). Sixty participants provided self-ratings on eight dispositional scales and, in groups of three, were videotaped in conversation. The conversations were transcribed and 10 verbal behaviors were scored from the transcripts. Observers read the transcripts and rated each of the original participants on the same eight dispositions. Encoding, analyzed conservatively, tended to be weaker than decoding but did account for up to 20 % of the variance in self-reported dispositions. Ten matched links were associated with self-other agreement correlations for extraversion and aloofness. The results suggest that the lens-mapping approach is a promising method for specifying the observable behaviors that underlie self-other agreement. © 1994 Academic Press, Inc.

In a recent article, Gifford (1994) presented a framework for understanding the encoding and decoding of interpersonal dispositions in non-verbal behavior. The framework, based on Brunswik's (1956) lens model and behavior mapping (Gifford, 1991), enables researchers to systematically compare actor and observer perspectives on the relation between behavior and dispositions. Perhaps more importantly, it also provides a behavior-based account of how self and other agree (or disagree) about self's qualities. In the present study, the lens-mapping framework is adopted to investigate the role of verbal behavior in the encoding and decoding of interpersonal dispositions.

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Special thanks to Kim Syer and Anne Hine for their assistance with videotape transcription and scoring, and to all those who served as observers. We also thank the Social Sciences and Humanities Research Council of Canada for their support. Address reprint requests to Robert Gifford at Department of Psychology, University of Victoria, P.O. Box 3050, Victoria, British Columbia, Canada V8W 3P5.

## ENCODING, DECODING, AND ACHIEVEMENT

Encoding is the process by which personal attributes are manifested in behavior. Its magnitude, for single behaviors, is typically described by the Pearson correlation coefficient ( $r$ ). A significant correlation between an attribute and behavior indicates that the attribute is encoded in the behavior. When more than one behavior encodes a personal attribute, the overall magnitude of the encoding is described by the multiple correlation ( $R$ ).

Common sense suggests that personality is strongly encoded in verbal behavior. Few would disagree with the propositions that extraverts talk more than introverts or that dominants initiate more acts than submissives. Some empirical evidence supports this notion; aspects of verbal behavior have been shown to correlate significantly with measures of ambiguity tolerance (Norton, 1976), locus of control (Fair & Lawlis, 1982), trait anxiety and curiosity (Peters, 1978), self-esteem (Fair & Lawlis, 1982; Glauser, 1984), and various interpersonal dispositions such as extraversion and agreeableness (Gifford & O'Connor, 1987).

Decoding is the process of using behavioral cues to infer others' attributes. Some research has examined observers' use of nonverbal and voice quality (e.g., vocal effort, nasality, and dynamic range) cues in personality inference (e.g., Gifford, 1991; Scherer, 1978). However, the role of verbal *content* cues in decoding has yet to be systematically evaluated.

Self-observer agreement is called, in Brunswikian terms, achievement. Achievement is assessed as the correlation between self-reported personality scores and judged scores. As decoders learn to attend to behaviors that encode dispositions, self-observer agreement should increase. We could locate only one study that investigated self-observer agreement about self's personality from verbal behavior. Hunt and Lin (1967) reported that judges could make personality inferences with greater-than-chance accuracy after listening to short segments of target speech. However, because all targets read prepared passages, listeners appear to have based their judgments on vocal qualities rather than verbal content.

### *The Lens-Mapping Approach*

In the present study, a modified Brunswik lens model (Brunswik, 1956) was combined with behavior mapping (Gifford, 1991) to assess the correspondence between observer decoding of participants' verbal behavior and participant encoding of self-reported personality attributes. The lens model (see Fig. 1) can be divided into three major components: self-reported personality, verbal behavior cues, and observers' perceptions of participant personality.

*Ecological validity.* The left (or encoding) half of the lens model de-

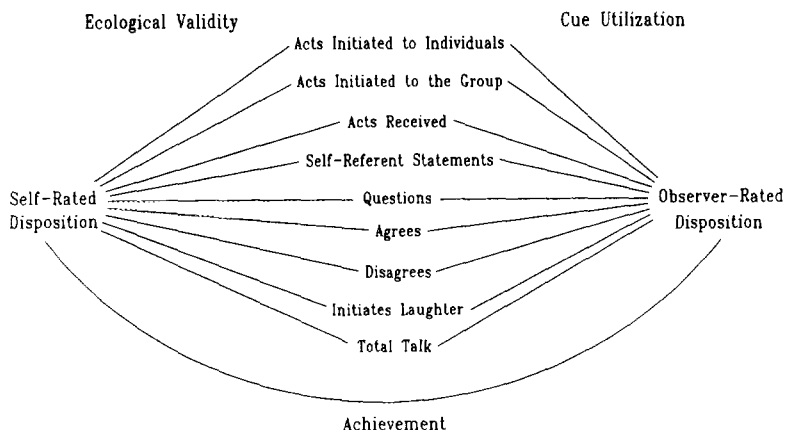


FIG. 1. The modified Brunswik lens model (Brunswik, 1956) used for this study.

scribes ecological validity, that is, an estimate of the true relations between self-reported personality and actual verbal behavior. Because validity is the main issue here on the left side of the lens model, special care must be taken in left-side analyses to avoid Type I errors.

Behavior mapping (Gifford, 1991) is a technique for conservatively estimating whether, and to what degree, behaviors encode self-rated personality. Each behavior's pattern of correlations with the interpersonal circle or circumplex (Hofstee, de Raad, & Goldberg, 1992; Trapnell & Wiggins, 1990; Wiggins, 1979) is evaluated. The interpersonal circle describes two of the more social domains of the Big Five personality system, *dominance and warmth (and combinations thereof)*. A behavior is said to map onto the circle if (a) its correlations rise and fall around the circle in an ordered pattern; (b) the pattern includes positive and negative prime axes, that is, exhibits a significant positive correlation with a given disposition and a significant negative correlation with the disposition 180 degrees around the circle; and (c) the above holds true after any group dependencies in the data are taken into account. Behaviors that do not meet these criteria are assumed to be inadequately measured, to be relevant to other domains of personality, or not to be relevant to personality at all (Gifford, 1991).

*Cue utilization and achievement.* The right (or decoding) half of the model represents the relation between the verbal cues and observer ratings of personality. These correlations describe how judges make use of the available behavioral cues (Wiggins, 1973, p. 157), a process known as cue utilization. In this study, all of the measured verbal behaviors (not only those that map) are examined as potentially utilized cues. This is done

because on the decoding side of the model the goal is to identify which behaviors are *believed* by observers to reflect personality, not to identify *valid* personality-behavior connections, as on the encoding side of the lens model. This distinction is reflected in Brunswik's labeling of the left side of the lens as ecological validity and the right side as cue utilization.

Achievement (i.e., the correlation between self- and observer ratings of self's personality) should not be confused with observer accuracy. The problem of whether self- or observer ratings (or some other assessment method) should be construed as the criterion measure of personality is thorny and unresolved (see Gifford, 1994, for further elucidation of this point). Thus, we consider achievement to be an index of self-other agreement, rather than observer accuracy.

To summarize, the purpose of this study is to investigate the role of verbal behavior in the encoding and decoding of interpersonal dispositions. In particular, we hope to identify specific verbal behaviors that account for the agreement or lack of agreement between self and other. The lens-mapping approach will be utilized to describe: (1) the relation between verbal behavior and eight interpersonal dispositions, (2) the verbal cues used by observers making personality inferences, and (3) the self-other agreement about self's personality based solely on verbal behavior.

## METHOD

The videotaped conversations used in the present study are the same as those used by Gifford (1991; 1994) and Gifford and O'Connor (1987). In the original studies, verbal behavior was not studied because nonverbal behavior was the focus. The videotape did include an audio track, but it was neglected in the original analyses. This study required considerable effort to score the audio portion of the tapes.

### *Subjects*

The participants were 60 university students (30 males and 30 females) ranging from 18 to 25 years of age. They participated in 20 same-sex triads. Over 90% indicated that they had never met or were merely acquainted with the other members in their group. All of the participants were volunteers from the psychology department subject pool.

### *Procedure*

Upon arriving at the laboratory, the participants were introduced to the other members of their group, seated, and presented with a list of possible conversation topics. The suggested topics were general, such as favorite movies or worst classes. The purpose of supplying suggestions was to facilitate the initiation of conversations. However, to make the conversations as natural as possible, we did not restrict or assign topics. The goal was to be able to generalize the results to initial conversations among unacquainted young adults in everyday situations. The conversations proceeded for approximately 15 min, at which time the experimenter stopped videotaping and debriefed the group.

The conversations took place in a 5 m × 6.7 m room that was decorated to resemble an informal waiting area. The participants were seated in padded armless chairs that were

arranged in a semi-circle. They were informed that their conversation would be videotaped but, to minimize self-consciousness, the cameras were placed in smoked glass cabinets.

Approximately 1 week prior to the videotaped conversation, each participant completed Wiggins' (1979) Interpersonal Adjective Scales (IAS), which measure the interpersonal circle traits. The IAS consists of 128 adjectives and respondents are required to indicate, on 8-point scales, the degree to which each adjective accurately describes themselves. The interpersonal circle traits were selected because they measure interpersonal dispositions which have the greatest conceptual relevance to behavior that occurs in social conversations.

Five-minute segments of the videotaped conversations were transcribed. These segments were selected from the latter portions of the conversations in order to avoid the sometimes-awkward start-up phase of conversations among strangers. Transcripts were used instead of audio tapes in order to control for cues associated with voice quality because both Hunt and Lin (1967) and Scherer (1978) have shown that certain voice *quality* cues can be used to make better-than-chance personality inferences. The transcripts included indications of who was speaking to whom and whether or not speakers directed their comments to a specific other in the group or to the group as a whole.

All behaviors were scored in terms of the frequency with which they occurred in the transcript. Six behaviors (total acts initiated, acts initiated individual, acts initiated group, acts received, agrees, and disagrees) were derived from Bales' (1970) Interaction Process Analysis paradigm. Four others (questions, initiates laughter, self-referent statements, and total talk) were based on measures previously used by Gifford and O'Connor (1987).<sup>1</sup> In general, the behaviors were selected for their potential for reliable scoring and their apparent relevance to everyday conversations. Other systems were considered, but rejected because they emphasized clinical diagnostic or abnormal verbal cues. Certainly these behaviors are not the only verbal behaviors that might be related to personality, but they were selected as a basic, objective set with which to begin study in this area.

Total acts initiated refers to the number of verbal units expressed by an individual. A verbal unit is equivalent to a single simple sentence. For complex sentences that expressed more than one complete thought, each dependent clause was scored as a separate act. Verbal units directed at a specific individual (acts initiated individual) were distinguished from those directed at the group as a whole (acts initiated group). Acts received indexes the number of occasions that an individual was the target of another's verbal output.

Questions refer to the number of questions asked by an individual. Initiates laughter is the number of occasions an individual elicited laughter from at least one other participant. The number of verbal units that included references to self (e.g., I, me, myself) was tallied as self-referent statements. Total talk is the number of words that were spoken by an individual.

Disagrees refers to the number of verbal units that explicitly suggest that a statement made by another group member is unacceptable (e.g., statements such as "I don't think so," "I disagree," and "But . . ."). Following the conventions suggested by Bales (1970), milder forms of dissension were also coded as disagrees (e.g., statements suggesting temporary disbelief or astonishment such as "No way," and "You're kidding!"). Finally, agrees was coded as the number of instances that an individual confirmed a statement made by another group member (e.g., statements like: "I think you're right," "That's true," and "I

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<sup>1</sup> A number of the verbal behaviors reported by Gifford and O'Connor (1987) are conceptually and nominally similar to those reported in this study. However, a modified coding system, which bears a closer resemblance to that proposed by Bales (1970), is used in the present study. Furthermore, Gifford and O'Connor examined only behavior mapping; they did not investigate decoding or achievement.

agree."'). Attempts to aid and facilitate the conversation (e.g., statements like "Oh really," "Yes," and "Mhmn") were also coded as agrees.

### *Decoding*

In the final phase of the study, 10 observers<sup>2</sup> independently read transcripts of the videotaped conversations and completed an abbreviated (40-item) version of the IAS for all 60 targets. That is, on a scale ranging from 1 (extremely inaccurate word) to 8 (extremely accurate word), the observers rated how well each of 40 adjectives described each of the original participants. To control for practice effects, transcripts were presented to observers in a counterbalanced order.

## RESULTS

### *Reliability of Coders, Measures, and Observers*

Inter-coder reliabilities for the scoring of the verbal behaviors from the transcripts were computed as follows. Two coders each scored all 10 verbal behaviors for 15 targets (i.e., for 5 of the 20 groups). Intraclass correlations were computed, to provide a preliminary estimate of coder consistency for each behavior. These estimates ranged from .79 for disagrees to .99 for initiates laughter and self-referent statements. The correlations were then adjusted using the Spearman-Brown formula (Guilford, 1956, p. 452) to provide projected reliabilities had both judges scored all 60 targets. After the adjustment, all reliabilities were above .96, suggesting near-objective scoring. Therefore, a single coder scored the 15 remaining groups.

Wiggins (1979) reported internal consistencies for the 8 IAS scales ranging from .74 to .92 (median = .86). The values for the present study were slightly lower, ranging from .67 to .90 (median = .84). The internal consistencies for the abbreviated IAS scales used by the observers ranged from .83 to .95 (median = .92).<sup>3</sup>

Inter-observer reliabilities were computed to determine the internal consistency of observer inferences on the eight IAS scales. As Guilford (1956, p. 459) observes, internal consistency may be computed across

<sup>2</sup> Originally, six observers provided ratings for the eight IAS scales. A preliminary analysis revealed that the inter-observer reliabilities were low for four of the scales. To increase the reliabilities, three additional observers were recruited to provide ratings for the warm-agreeable scale, five additional observers provided ratings for the unassuming-ingenuous scales, and four additional observers provided ratings for the cold-quarrelsome and arrogant-calculating scales. The observers consisted of nine females and two males and represented a broad spectrum of occupations (including undergraduate and graduate students, teachers, nurses, and retail employees).

<sup>3</sup> It may seem odd that the reliability coefficients for the abbreviated scales are higher than those for the full scale. However, given that (1) each data point for the abbreviated scale is the average of multiple observer ratings, and (2) combined ratings typically produce higher reliabilities, this result is not surprising.

judges as well as across items. Cronbach's  $\alpha$  ranged from .66 for cold-quarrelsome (10 observers) to .86 for ambitious-dominant (6 observers). The median  $\alpha$  was .73. This indicates quite adequate agreement among the observers' ratings of participant dispositions.

### *Behavior Mapping*

Each verbal behavior was examined to determine whether it mapped on the interpersonal circle. To do so, a winnowing process is undertaken. Each behavior must exhibit an ordered pattern of the correlations with the interpersonal circle traits, with a positive and negative prime, and must do so after potential group influence is considered. It also must not be highly redundant with other behaviors.

*Redundancy.* Pearson correlation coefficients were computed among the 10 verbal behaviors (see Table 1). High redundancy was defined as a correlation exceeding .90. total acts initiated and total talk were correlated .93, so the first of these variables was dropped from further consideration. Although a few other correlations exceeded .70, they involved behaviors that were conceptually distinct, so no further variables were dropped. A correlation of .70 indicates that the variables share only 50 % of their variance.

*Mapping.* Of the nine remaining behaviors, five showed an ordered pattern of correlations with the interpersonal circle and exhibited positive and negative prime axes (see Table 2). These were acts initiated to individuals, acts initiated to the group, self-referent statements, initiates laughter, and total talk.

*Group influence.* To determine whether the individuals' verbal behav-

TABLE 1  
INTERCORRELATIONS AMONG VERBAL BEHAVIORS

Verbal behaviors	2	3	4	5	6	7	8	9	10
1. Acts initiated indiv.	.20	.90**	.81**	.34**	.46**	.54**	.16	.61**	.76**
2. Acts initiated group		.61**	.15	.16	.70**	.02	.17	.56**	.71**
3. Acts initiated total			.72**	.34**	.69**	.45**	.20	.74**	.93**
4. Acts received				.45**	.37**	.52**	.13	.43**	.58**
5. Questions					.22	.16	-.14	.08	.21
6. Initiates laughter						.09	.00	.51**	.69**
7. Agrees							.04	.35**	.26*
8. Disagrees								.25	.29*
9. Self-referent statements									.74**
10. Total talk									

\*  $p < .05$ .

\*\*  $p < .01$ .

TABLE 2  
CORRELATIONS BETWEEN INTERPERSONAL DISPOSITIONS AND MAPPABLE VERBAL BEHAVIORS

	Acts initiated: Individual	Acts initiated: Group	Self-referent statements	Initiates laughter	Total talk
Dominant-ambitious	.23	.22	.19	.20	.23
Gregarious-extraverted	.29*	.38**	.29**	.39**	.39**
Warm-agreeable	.19	.22	.01	.27*	.19
Unassuming-ingenuous	-.03	-.01	-.06	.11	-.08
Lazy-submissive	-.21	-.20	-.13	-.19	-.23
Aloof-introverted	-.27*	-.31**	-.26*	-.29*	-.37**
Cold-quarrelsome	-.29*	-.23	-.08	-.22	-.30*
Arrogant-calculating	-.01	.02	.25	-.01	.07

\*  $p < .05$ .

\*\*  $p < .01$ .

iors were independent of group influence, intraclass correlations were computed using Kenny and Stigler's (1983) LEVEL Program.<sup>4</sup> None of the five remaining verbal behaviors produced intraclass correlations that approached significance (i.e., none of the probabilities was less than .20), suggesting no appreciable group influence. Thus, all subsequent correlations reported in this study reflect simple, unpartialled, individual effects.

#### *Encoding, Decoding, and Achievement*

Detailed summaries of the significant encoding and decoding links, the overall magnitude of encoding and decoding for each disposition, and achievement are presented in Figs. 2 to 9. The means and standard deviations associated with the major measures used in this study are presented in Table 3.

*Encoding.* To investigate the encoding (or left) side of the lens model,

<sup>4</sup> Until recently, many small group researchers have adopted a group level of analysis and ignored the role of the individual effects. Although theory often underlies the decision to study group effects, statistical considerations are also often relevant. In small groups, interactions among group members may or may not significantly influence individual scores. If individuals' scores are affected by group membership, the statistical assumption of independent observations is violated and the integrity of individual level analyses is destroyed. Kenny and La Voie (1985) have argued that statistical non-independence is an empirical issue that can be addressed through intraclass correlation techniques. If individual scores are found to be independent of group influence, the analysis of individual effects is statistically justifiable. If, on the other hand, non-independence is observed, two options are available. First, a group level of analysis may be adopted. A second alternative is to examine individual effects with group influence partialled out. The focus of the present study is on the relation between verbal behavior and *individual* dispositions. Thus, in cases of non-independence, analysis at the level of the group is not necessary and the second option will be adopted.

TABLE 3  
MEANS AND STANDARD DEVIATIONS OF SELF-REPORTED DISPOSITIONS, VERBAL CUES, AND JUDGED DISPOSITIONS

Disposition	Self	Observer
Ambitious-dominant	4.30 (.86)	4.68 (1.06)
Gregarious-extraverted	4.82 (.81)	4.91 (.83)
Warm-agreeable	5.20 (.48)	4.72 (.51)
Unassuming-ingenuous	3.54 (.60)	4.66 (.50)
Lazy-submissive	2.73 (.84)	3.23 (.72)
Aloof-introverted	2.57 (.90)	3.07 (.95)
Cold-quarrelsome	1.50 (.57)	2.41 (.49)
Arrogant-calculating	2.69 (.80)	2.62 (.56)
	Verbal behavior	
Acts initiated: Individual	30.25 (14.25)	
Acts initiated: Group	6.71 (7.87)	
Acts initiated: Total	36.96 (17.58)	
Acts received	30.35 (14.19)	
Questions	3.13 (2.56)	
Laughs	2.97 (3.36)	
Agrees	5.58 (3.98)	
Disagrees	.55 (.93)	
Self-referent statements	10.38 (7.80)	
Total talk	292.22 (183.14)	

Pearson correlations were computed between the self-reported personality scores on the IAS scales and the five mappable verbal behaviors. As noted earlier, a significant correlation suggests that the disposition is encoded in the behavior. Figure 2 indicates that self-reported ambitiousness-dominance is not encoded in any of the verbal behaviors examined in this study. In Figure 3, self-reported gregariousness-extraversion manifests itself in all five mappable behaviors: more acts directed at individual others and the group as a whole, initiating more laughter, more self-referent statements, and more talking overall.

Figure 4 shows that persons who describe themselves as more warm-agreeable initiate more laughter. Figures 5 and 6 indicate no significant correlates of self-reported unassuming-ingenuousness or lazy-submissiveness. Figure 7 (aloof-introverted) shows the same links as gregarious-extraverted, but (as expected) with opposite signs. Cold-quarrelsome (Figure 8) is correlated with less total talk and fewer acts initiated to individuals. Arrogant-calculating (Fig. 9) was not encoded in any of the five remaining verbal behaviors.

The magnitude of encoding was computed as the multiple correlation ( $R$ ) between the self-reported disposition and the ecologically valid be-

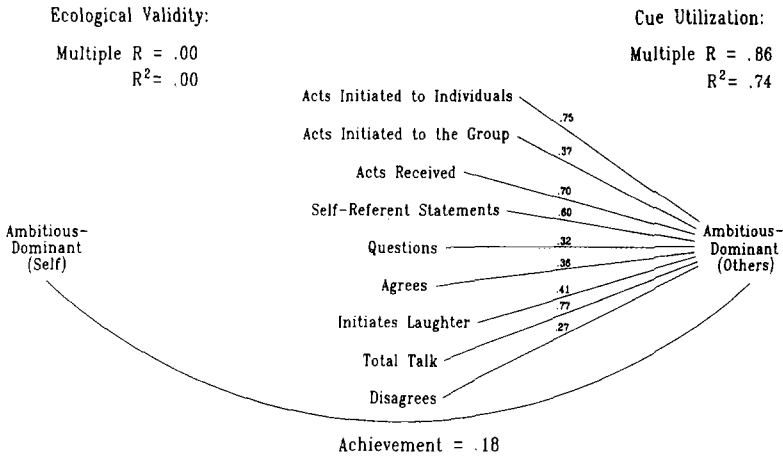


FIG. 2. The lens model for Ambitious-Dominant.

havioral cues (i.e., the verbal behaviors that were significantly correlated with the dispositions). Encoding varied across dispositions, ranging from  $R = 0$  (for ambitious-dominant, unassuming-ingenuous, lazy-submissive, and arrogant-calculating) to  $R = .45$  (for gregarious-extraverted).

*Decoding.* More decoding than encoding links were significant. One reason is that decoding scores are probably more reliable because they are based on the ratings of multiple observers. Another reason may be that more behaviors were investigated; behaviors were not winnowed as they were on the encoding side. Recall that the emphasis on the encoding

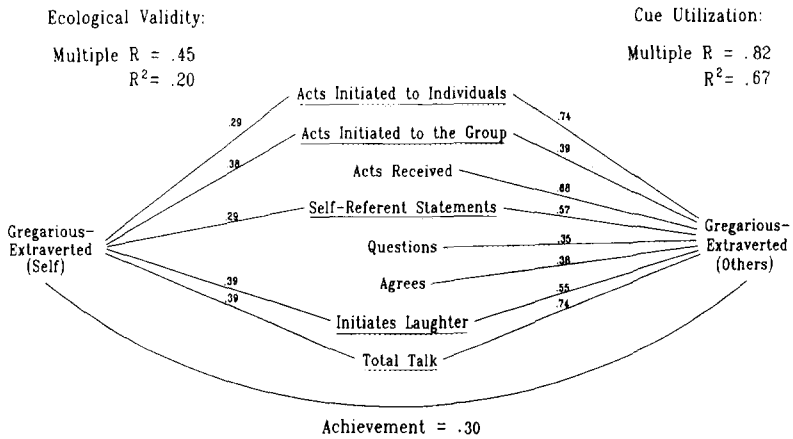


FIG. 3. The lens model for Gregarious-Extraverted.

Ecological Validity:  
Multiple R = .27  
R<sup>2</sup> = .07

Cue Utilization:  
Multiple R = .00  
R<sup>2</sup> = .00

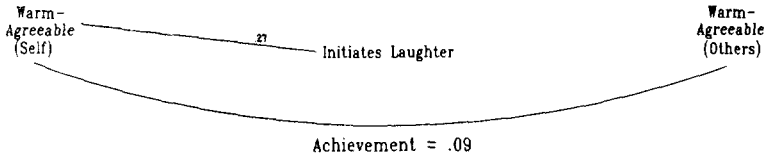


FIG. 4. The lens model for Warm-Agreeable.

side is on validity (or ecological validity in Brunswik's terms), whereas the emphasis on the decoding side is on which cues are employed (cue utilization in Brunswik's terms) regardless of validity. Thus, all nine verbal behaviors were considered on the decoding side, not only the five that validly map dispositions.

Figures 2 through 9 suggest that observers used almost all of the measured verbal behaviors to decode the ambitious-dominant and gregarious-extraverted dimensions (and their opposites lazy-submissive and aloof-introverted). Arrogant-calculating and unassuming-ingenuous were decoded by four and five behaviors respectively. Warm-agreeable had no significant decoding links and cold-quarrelsome had two.

The magnitude of decoding was computed as the multiple correlation between the observer-rated dispositions and the verbal behaviors that

Ecological Validity:  
Multiple R = .00  
R<sup>2</sup> = .00

Cue Utilization:  
Multiple R = .56  
R<sup>2</sup> = .32

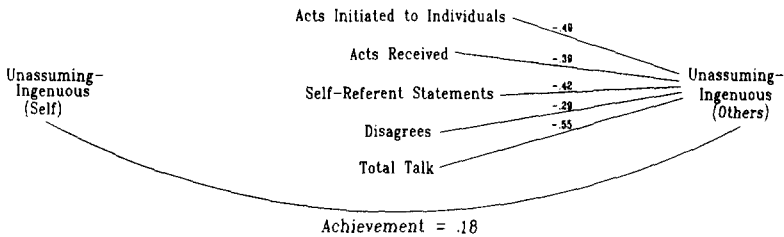


FIG. 5. The lens model for Unassuming-Ingenuous.

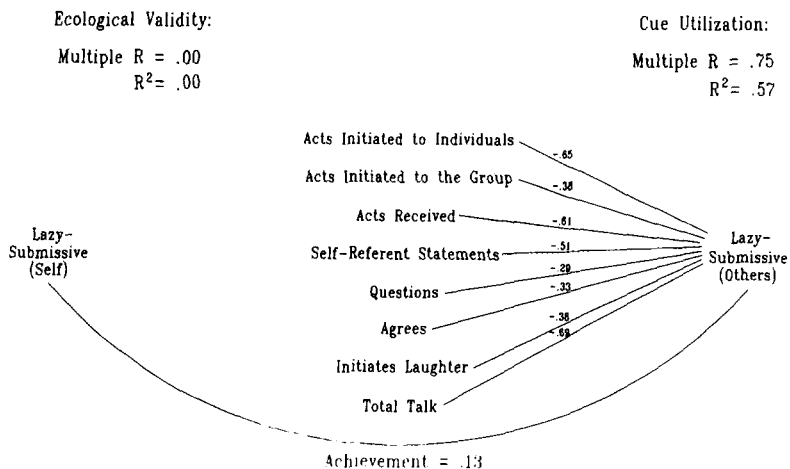


FIG. 6. The lens model for Lazy-Submissive.

displayed significant correlations on the right side of the lens model. Decoding ranged from  $R = 0$  to  $R = .86$  and was generally stronger than encoding. In only one instance (for warm-agreeable) did encoding exceed decoding.

*Achievement.* Self-observer agreement ranged from  $-.04$  to  $.30$ . Significant achievement coefficients were obtained for 3 of the 8 dispositions (gregarious-extraverted,  $r = .30$ ,  $p < .01$ , two-tailed; aloof-introverted,

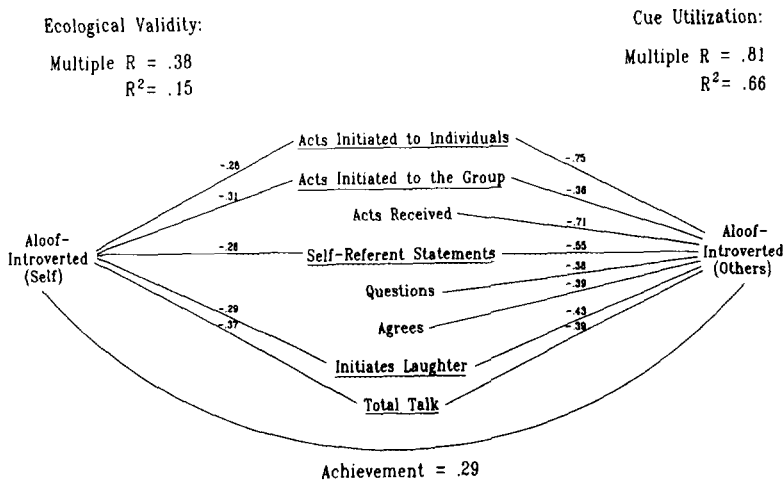


FIG. 7. The lens model for Aloof-Introverted.

Ecological Validity:  
Multiple R = .31  
R<sup>2</sup> = .10

Cue Utilization:  
Multiple R = .32  
R<sup>2</sup> = .10

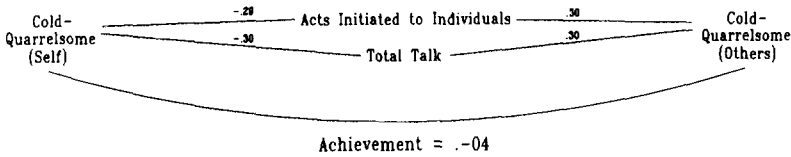


FIG. 8. The lens model for Cold-Quarrelsome.

$r = .29, p < .05$ , two-tailed; arrogant-calculating,  $r = .25, p < .05$ , two-tailed).<sup>5</sup> Achievement is related to the number of matched links (significant correlations for the same behavior on both the encoding and decoding halves of the lens), except when decoders use key behaviors

Ecological Validity:  
Multiple R = .00  
R<sup>2</sup> = .00

Cue Utilization:  
Multiple R = .55  
R<sup>2</sup> = .30

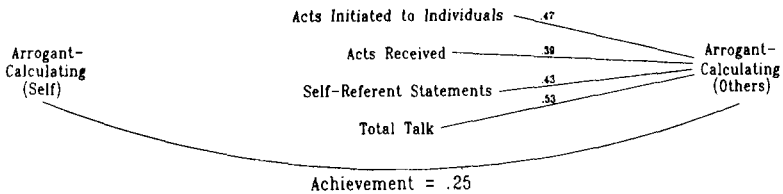


FIG. 9. The lens model for Arrogant-Calculating.

<sup>5</sup> The large number of significant matched encoding-decoding links for the gregarious-extraverted and aloof-introverted dispositions indicates that the observers based their dispositional inferences on ecologically valid verbal cues. Given this accurate cue utilization, one might expect to find higher achievement than was found. High intercorrelations among some of the verbal behaviors probably limited the magnitude of the achievement coefficients. For example, in the case of gregarious-extraverted, five matched links were identified. However, acts initiated to individuals and total talk were highly intercorrelated, so two of the four links were largely redundant and therefore not likely to substantially increase achievement. A decision *not* to combine the strongly correlated behaviors into a single composite measure was made because, given that verbal cues measured were derived from past research, we believed that most readers would be interested in how each cue operates.

that were not included in the study. In Figs. 2 through 9, matched links are underlined.

## DISCUSSION

Virtually all studies of self–other agreement have ignored the analysis of self’s behaviors that may help explain agreement. To understand self–other agreement, it is essential that the cues used by observers be assessed. Cues should boost agreement if they have ecological validity (i.e., if they are correlated with self-assessed personality) and are employed by observers to decode personality.

This study investigated ecological validity, cue-utilization, and achievement for one relatively specific but common activity: initial conversations among small groups of previously unacquainted young adults. More specifically, it examined the role of verbal content in the encoding and decoding of interpersonal dispositions. The study had three major goals:

(1) To determine the extent to which self-rated interpersonal dispositions are encoded in initial conversations of young adults and to identify specific behaviors that significantly encode them.

(2) To examine the implicit decoding strategies employed by observers who have been asked to provide ratings of encoder personality.

(3) To provide a behavior-based account of self-observer personality rating agreement, based on the verbal content of conversational behavior.

The implications of the results for each of these goals will be discussed

### *Encoding*

The results suggest that the encoding of interpersonal dispositions in verbal behavior is variable. Encoding (multiple  $R$ ) was moderate for gregarious–extraverted (.45), warm–agreeable (.27), aloof–introverted (.38), and cold–quarrelsome (.31) and non-existent for ambitious–dominant, unassuming–ingenuous, lazy–submissive, and arrogant–calculating. Of course, both the magnitude of encoding and the specific behaviors that encode dispositions may vary across contexts. For example, conversations among intimate friends or labor–management negotiations may elicit different encoding patterns than those reported here. Encoding magnitude will also change depending on the specific verbal behaviors examined.

The dispositional measures used in the present study were the same as those employed in Gifford’s (1994) study of nonverbal behavior. Comparisons of encoding in the two studies reveal that dispositions that were *not* encoded in verbal behavior (i.e., ambitious–dominant, lazy–submissive, unassuming–ingenuous, and arrogant–calculating) *were* encoded in nonverbal behavior. The reverse was also true: Cold–quarrelsome, which was not encoded in nonverbal behavior *was* encoded in verbal behavior. These results, unless they depend entirely on the verbal behaviors chosen

for analysis in this study, suggest an interesting hypothesis: for a number of interpersonal dispositions, encoding may be channel-specific. It also raises the hope that by examining both verbal and nonverbal behavior, researchers could obtain a more complete picture of how disposition-related information is encoded.

Further comparisons show that encoding tends to be stronger for nonverbal behavior than for verbal behavior. This trend may reflect true differences in encoding, that is, interpersonal dispositions may be encoded more strongly in nonverbal behavior than in verbal behavior. Alternatively, this difference may have occurred because only 10 verbal behaviors were examined in the present study, whereas 27 nonverbal behaviors were investigated in Gifford (1994). When more verbal behaviors are included (e.g., vocal quality or other verbal content cues), a greater number of ecologically valid cues may be identified, and encoding may increase. It remains for future research to determine, however, whether a more complete model will elevate the encoding of verbal behavior to the levels observed for nonverbal behavior.

### *Decoding*

Strong decoding ( $R > .50$ ) was evident for all but two dispositions (warm-agreeable and cold-quarrelsome). Examination of inter-observer reliabilities revealed that observer agreement was relatively low (alpha was less than .70) for these two scales. To determine whether this relation was part of a larger trend, a correlation was computed, for all dispositions, between inter-observer reliability and decoding magnitude. The correlation was significant ( $r = .80, p < .01$ ), indicating that the more observers agree on targets' dispositions, the greater the magnitude of decoding.

Examination of the number of matched links (i.e., instances where a particular verbal behavior is significantly correlated with both self-reported personality and observed personality) in Figs. 2 to 9 reveals that the observers often utilized cues that were not significantly correlated with self-reported personality. For example, whereas observers believed that ambitious-dominant was encoded in nine verbal behaviors examined in this study, the left side of the lens model suggested that not one behavior encodes this disposition. Similar patterns of cue usage were also evident for extraverted-gregarious, unassuming-ingenuous, lazy-submissive, aloof-introverted, and arrogant-calculating.

One probable reason for the mismatches is that some correlations on the decoding side are significant because observer ratings are probably more reliable than self-ratings (multiple raters versus one rater). If self-ratings could be made more reliable, more matched links might occur. This, in turn, might also improve achievement correlations given that

correlations are limited by the reliabilities of the measures being correlated.

Another issue that requires more research is the strength and reliability of decoding as a function of observer motivation and purpose. The present results generalize best to situations in which observers do little except concentrate on decoding strangers via written materials. If the observers are part of the conversation, or are simultaneously engaged in other tasks, decoding magnitude may change (c.f., Patterson, Churchill, Faraq, & Borden, 1991–92). If observers are less motivated (e.g., decoding traits at the bus stop as opposed to decoding traits of a potential romantic partner), decoding magnitude should decline because less effort is invested in the task.

### *Achievement*

The achievement correlation indexes self–other agreement. As Kenny (1991) has observed, consensus (on the part of observers) is not the same as accuracy. The issue of the criterion in person–perception studies has often been passed over lightly or been subject to arbitrary choices (e.g., that self or peer or clinical ratings are valid). Until this issue is resolved, focusing on self–other agreement may represent the best (i.e., least assumption-laden) approach.

When achievement is high, numerous matched links (i.e., significant encoding and decoding correlations for the same behavior) will be in evidence, assuming that many of the ecologically valid cues are included in the model. These matched links apparently are the behavioral avenues along which valid information about the self flows toward observers. In general, these links should serve as hypotheses in future studies that investigate the links as causal paths. Thus, the lens-mapping approach is a theory-generating method.

Achievement was significant for three of the eight dispositions included in the study: gregarious–extraverted, aloof–introverted, and arrogant–calculating. The first two of these illustrate how the identification of valid cues helps explain achievement.

As in Gifford's (1994) study of nonverbal behavior, agreement was highest for gregarious–extraverted ( $r = .30, p < .01$ ) and aloof–introverted ( $r = .29, p < .05$ ). Together these dispositions form the “grexalin” axis of Wiggins' interpersonal circumplex (see Gifford & O'Connor, 1987). All 10 matched links in this study were along the grexalin axis. Grexalin's high legibility is likely related to the fact that gregarious–extraverted and aloof–introverted display more significant encoding links than the other IAS dispositions. The availability of more ecologically valid cues increases the probability that more matched links will be obtained and achievement will be increased.

Achievement for arrogant-calculating was also significant ( $r = .25$ ,  $p < .05$ ). This seems odd because achievement typically depends on the appropriate use of ecologically valid cues, but Fig. 9 indicates no valid cues exist for arrogant-calculating. A probable explanation is that observers were using valid cues that were not among the verbal measures in this study.

This demonstrates how the lens-mapping approach can point to "missing links" for future research. Observers appear to have used valid cues to infer self assessments on the arrogant-calculating dimension, but these cues were not among those investigated in this study. Perhaps interviews of decoders would uncover some hypothetical cues to arrogance, which then could be tested in a subsequent study.

Finally, achievement for cold-quarrelsome was (non-significantly) negative; observer ratings of cold-quarrelsome were in the opposite direction to the self-reported ratings. Figure 8 indicates that the observers identified the ecologically valid cues, but failed to utilize them in a manner that led to high agreement with the self-assessments. Whereas the observers believed that acts initiated individual, and total talk were all positively related to cold-quarrelsome, the encoding links suggest that the opposite was true. This finding is a reminder that self-other agreement depends not only on the recognition of valid cues, but also on the proper utilization of those cues (Wiggins, 1973, pp. 158-159).

In general, the lens-mapping approach appears to be a useful way of solving the ancient self-other agreement problem. If relevant behaviors that mediate self-other agreement can be identified, then the way is clear for an accounting of self-other agreement (or the lack of it) that employs objective acts. Both self-assessments and observer assessments are subjective, even when consensus is found, and therefore open to the usual criticisms applied to "merely" subjective measures. The lens-mapping approach grounds both in real behavior, which allows for explanations of exactly *how* agreement occurs or fails.

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