SPEECH RATE ACCEPTANCE RANGES AS A FUNCTION OF EVALUATIVE DOMAIN, LISTENER SPEECH RATE, AND COMMUNICATION CONTEXT

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Models of speech evaluation suffer from insufficient empirical foundations. Examining one noncontent speech form, speech rate, we proposed that listeners' impressions of a speaker were influenced by individual acceptance regions which are a function of the evaluative dimension employed and which may differ for various communication contexts. Three predictions were made. First, because of stereotypic conceptions associating faster rates with competence, actual and perceived speaker rates should be linearly related to listeners' competence judgments. Second, we proposed that judgments of social attractiveness would be mediated by the extent to which a speaker's rate was similar to a listener's. Thus, we expected listeners to find those speakers more socially attractive whose speech rates were relatively similar (actual and perceived) to their own than those speakers with relatively dissimilar rates. Because we thought listeners would have narrower acceptance regions for employment interviews than for conversational settings, a third hypothesis predicted a significant speaker rate-by-context interaction. The first prediction received strong support, the second partial support, and the third no support. The data are discussed in terms of the effects of speech stereotypes and speech rate similarity on both competence and social attractiveness judgments.

ONE of the most fundamental, yet least understood, processes of interpersonal communication systems concerns the manner by which interactants perceive and structure their speech patterns and rhythms; that is, behaviors regulating the intensity, frequency, duration, and tempo of sound-silence sequences. Speech behaviors contributing to these sequences are called "noncontent" because they make up "how" speech is produced rather than "what" is said.[1] Representative of this class are pause and vocalization duration, speech rate, vocal pitch and intensity, and pronunciation and intonation patterns.

Unfortunately, theoretical accounts of these processes remain relatively underdeveloped.[2] The problem is apparently due to little empirical work which tests and extends models of noncontent speech production and social evaluation. In this paper, we discuss the notion that interactants respond to the noncontent speech of interlocuters in terms of evaluative constructs delimiting preferred or accepted performance levels. We sought to identify determinants of preference or acceptance regions for one noncontent speech form, actual and perceived speech rate. Speech rate was chosen because it significantly influences interpersonal impres-

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[1]See Michael Natale, "Convergence of Mean Vocal Intensity in Dyadic Communication as a Function of Social Desirability," *Journal of Personality and Social Psychology*, 32 (1975), 798; Howard Giles and Philip Smith, "Accommodation Theory: Optimal Levels of Convergence," in *Language and Social Psychology*, ed. Howard Giles and Robert St. Clair (Baltimore, MD.: University Park Press, 1979), p. 54; Richard L. Street, Jr., "Evaluation of Noncontent Speech Accommodation," *Language and Communication*, 2 (1982), 13-31. (The authors wish to thank Joseph Cappella, Howard Giles, James Bradac, and two anonymous reviewers for helpful comments on earlier versions of this manuscript.)

[2]Stanley Feldstein and Joan Welkowitz, "A Chronography of Conversation: In Defense of an Objective Approach," in *Nonverbal Behavior and Communication*, ed. Aron W. Siegman and Stanley Feldstein (Hillsdale, N.J.: Lawrence Erlbaum, 1978), pp. 370-71

sions and, relative to other noncontent speech behaviors, has received modest research attention.

Noncontent Speech Acceptance Levels with Specific Application to Speech Rate

The notion that communicators have affective-cognitive constructs delimiting ranges of preferred noncontent speech levels has recently been forwarded by Cappella[3] and by Giles.[4] The concept of an acceptance *range* carries two implications. First, perceived behaviors falling within these zones tend to be favorably received; those falling outside generate negative responses.[5] Second, a range of acceptable behaviors suggests tolerance for noncontent speech variation provided the variation is still within appropriate levels. For example, one may prefer rates between 130–170 words per minute (wpm). Thus, speaker rates of 145 and 165 wpm are acceptable, whereas speech at speeds of 100 and 200 wpm are respectively too slow and too fast. Certainly this process is not static because the width of acceptance zones (that is, the range of acceptable noncontent speech levels) may fluctuate depending on several factors, including expected behaviors of another based on previous experiences, affective orientation toward the other, mood, personality characteristics,[6] goals, normative and situational constraints, and perceived social cost.[7] For example, Cappella and Greene posit that persons high in sensation-seeking will react more positively to a greater range of expressive behaviors than individuals low in sensation-seeking. Similarly, listeners appear to tolerate a wider range of behavior when the speaker is perceived to be of high rather than low social cost even if the speaker's speech is normally socially downgraded (e.g., a lisp).[8]

Conceptualizing the notion of acceptance levels hints at circular reasoning; for example, perceivers favorably evaluate faster rates because they prefer faster rates. Unfortunately, little research has been conducted seeking to describe and explain these constructs. A promising explanation is that noncontent speech preference regions (and subsequently the evaluations themselves) including rate, are mediated by three factors: (1) the evaluative domain, (2) the speech performance criteria for a favorable response, and (3) communication context.

Evaluative Domain

Evaluative responses are initially dependent upon the particular evaluative dimension invoked by a listener to assess a speaker. Though there are probably other evaluative structures,[9] we consider

[3]Joseph N. Cappella, "Mutual Influence in Expressive Behavior: Adult-Adult and Infant-Adult Dyadic Interaction," *Psychological Bulletin*, 89 (1981), 101–32; Joseph N. Cappella and John O. Greene, "A Discrepancy-Arousal Explanation of Mutual Influence in Expressive Behavior for Adult and Infant-Adult Interaction," *Communication Monographs*, 49 (1982), 89–114.

[4]Howard Giles, "Social Psychology and Applied Linguistics: Toward an Integrative Approach," *ITL: Review of Applied Linguistics*, 33 (1977), 27–42; Richard L. Street, Jr. and Howard Giles, "Speech Accommodation Theory: A Social Cognitive Approach to Language and Speech Behavior," in *Social Cognition and Communication*, ed. Michael Roloff and Charles Berger (Beverly Hills, CA.: Sage, in press).

[5]The notion of an acceptable range of behaviors has also been applied to personal space expectation and violations. See Judee K. Burgoon and Stephen B. Jones, "Toward a Theory of Personal Space Expectations and Their Violations," *Human Communication Research*, 2 (1976), 131–46.

[6]Cappella and Greene.

[7]Giles and Smith; Howard Giles, "Accommodation Theory: Some New Directions," in *Aspects of Linguistic Behaviors*, ed. S. de Silva (York: University of York Press, 1980).

[8]Knud S. Larsen, Harry J. Martin, and Howard Giles, "Anticipated Social Cost and Interpersonal Accommodation," *Human Communication Research*, 3 (1977), 303–8. See also Burgoon and Jones for a discussion of the impact of social cost on distance preferences.

[9]For example, source credibility studies have identified such dimensions as trustworthiness and dynamism in addition to competence and social attractiveness. Carl I. Hovland, Irving Janis, and Harold H. Kelly, *Communication and Persuasion* (New Haven, Conn.: Yale

only competence- (e.g., intelligent, able, knowledgeable, status, etc.) and social attractiveness-related (e.g., likeable, honest, sincere, pleasant, friendly, etc.) judgments. These two evaluative dimensions appear to be the most salient sources of person perception. Research has indicated that judgments of others based on their behavior in general[10] and speech in particular[11] primarily concern intellectual and social activity. In addition, factor analyses in speech rate evaluation studies reveal two similar evaluative structures, respectively labeled competence and benevolence.[12]

Speech Performance Criteria for Favorable Responses

The speech performance criteria employed for judgments of competence appear to differ from the criteria utilized for social attractiveness. For example, speakers with standard or prestigious accents,[13] short response latencies,[14] long speaking turns,[15] and faster speech rates[16] are generally viewed most positively on dimensions of competence. However, informal or regional accents,[17] moderate response latencies,[18] medium speaking turns,[19] and moderate rates[20] are perceived more likeable, trustworthy, sociable, and friendly.

An important objective for theorists and researchers entails explication of the evaluative criteria composing noncontent speech preference regions. Based on our review of the speech evaluation literature, we propose that impressions of competence are formulated through speech stereotypes and that social attractiveness judgments result from perceptions of relative speech similarity.

Speech Stereotypes. Several researchers have recently claimed that perceivers have stereotypes which associate a "voice of competence" with certain speech forms such as standard or prestigious accents and fast speech.[21] As a result,

University Press, 1953); Kenneth E. Andersen, "An Experimental Study of the Interaction of Artistic and Non-Artistic Ethos in Persuasion," Diss. University of Wisconsin 1961.

[10]Seymour Rosenberg, C. Nelson, and P. S. Vivekanan, "A Multidimensional Approach to the Structure of Personality Impressions," *Journal of Personality and Social Psychology*, 9 (1968), 283–94; Seymour Rosenberg and Andrea Sedlack, "Structural Representations of Implicit Personality Theory," in *Advances in Experimental Social Psychology*, VI, ed. Leonard Berkowitz (New York: Academic Press, 1972).

[11]Howard Giles and Peter F. Powesland, *Speech Style and Social Evaluation* (London: Academic Press, 1975), 66–89; see also Giles and Smith; Street.

[12]Bruce L. Brown, William J. Strong, and Alvin C. Rencher, "Perceptions of Personality from Speech: Effects of Manipulations of Acoustical Parameters," *Journal of the Acoustical Society of America*, 54 (1973), 29–35; Bruce L. Brown, William J. Strong, and Alvin C. Rencher, "Fifty-four Voices from Two: The Effects of Simultaneous Manipulations of Rate, Mean Fundamental Frequency, and Variance of Fundamental Frequency on Ratings of Personality from Speech," *Journal of the Acoustical Society of America*, 55 (1974), 313–18; Bruce L. Smith, Bruce L. Brown, William J. Strong, and Alvin C. Rencher, "Effects of Speech Rate on Personality Perception," *Language and Speech*, 18 (1975), 145–52.

[13]Howard Giles, "Accent Mobility: A Model and Some Data," *Anthropological Linguistics*, 15 (1973), 87–105; Giles and Powesland, pp. 66–89.

[14]Klaus R. Scherer, H. London, and Garret Wolf "The Voice of Competence: Paralinguistic Cues and Audience Evaluation," *Journal of Research in Personality*, 7 (1973), 31–44; C. H. Lay and B. F. Burron, "Perceptions of the Personality of the Hesitant Speaker," *Perceptual and Motor Skills*, 26 (1968), 951–56; Street

[15]Donald J. Stang, "Effects of Interaction Rate on Ratings of Leadership and Liking," *Journal of Personality and Social Psychology*, 27 (1973), 405–8; Klaus R. Scherer, "Voice and Speech Correlates of Perceived Social Influence in Simulated Juries," in *Language and Social Psychology*, ed. Howard Giles and Robert St. Clair (Baltimore, MD.: University Park Press, 1979), 88–120

[16]Brown, Strong, and Rencher, "Perceptions of Personality"; Brown, Strong, and Rencher, "Fifty-four Voices"; Smith, Brown, Strong, and Rencher

[17]Joshua Fishman, *Sociolinguistics* (Rowley, MA.: Newbury House, 1970); Giles and Powesland, pp. 67–89; Richard L. Street, Jr. and Robert Hopper, "A Model of Speech Style Evaluation," in *Attitudes Toward Language Variation: Social and Applied Contexts*, ed. Ellen Bouchard Ryan and Howard Giles (London: Edward Arnold Press, 1982), p. 179.

[18]Gerald D. Baskett and Roy O. Freedle, "Aspects of Language and the Social Perception of Lying," *Journal of Psycholinguistic Research*, 3 (1974), 117–30.

[19]Stang; Donald P. Hayes and Leo Meltzer, "Interpersonal Judgments Based on Talkativeness: Fact or Artifact," *Sociometry*, 35 (1972), 538–61

[20]Brown, Strong, and Rencher, "Perception of Personality"; Smith, Brown, Strong, and Rencher.

[21]Jitendra Thakerar and Howard Giles, "They

speakers with prestigious and standard-accent speech tend to be perceived more competent than those with informal, nonstandard-accented speech regardless of the listeners' typical dialect or pronunciation patterns.[22] Relatively fast, fluent[23] speech appears to be a particularly salient criterion for competence judgments. In addition to consistent findings reporting a linear relationship between rate and competence,[24] some research has indicated that interactants believed to have status and be knowledgeable are perceived to talk faster than they actually do.[25] To claim that moderate speech levels stereotypically index a "voice of social attractiveness" remains equivocal. For one thing, "moderate" speech performance is an ambiguous, uninformative conception which must be assessed relative to other speech levels. Second, some research has indicated that long speaking turns,[26] short response latencies,[27] and standard accents[28] may also be considered socially attractive. It appears that these results may more accurately be attributed to actual and perceived speech similarity.

Speech Similarity. That interactants favorably respond to similarity among one another's speech styles represents a fundamental tenet of speech accommodation theory.[29] The accommodation model, largely grounded in Byrne's similarity-attraction paradigm,[30] predicts that speech similarity along a variety of dimensions (including language choice, lexical choice, and noncontent speech behaviors such as accent, rate, and pauses) fosters positive judgments and cooperative responses because it reflects social affiliation, approval, and a shared communication code. Likewise, Cappella has suggested that appropriate involvement levels between interactants may be signaled by relative similarity among objective (i.e., noncontent) speech characteristics.[31] However, we emphasize the "relativity" of noncontent speech similarity because these behaviors often fluctuate somewhat during interaction[32] and because the notion of an acceptance range allows for some speech discrepancy without evaluative penalty. Several studies have provided support for our claim that noncontent speech similarity enhances social attractiveness impressions. Though most listeners upgrade prestigious and standard-accented interactants, they also find those that speak in a like manner more likeable, trustworthy, warm, friendly, etc. than those who do not.[33] If our analysis is accurate, a

Are—So They Spoke: Noncontent Speech Stereotypes," *Language and Communication*, 1 (1981), 255–61; Jitendra Thakerar, Howard Giles, and Jenny Cheshire, "Psychological and Linguistic Parameters of Speech Accommodation Theory," in *Advances in the Social Psychology of Language*, ed. Colin Fraser and Klaus R. Scherer (Cambridge: Cambridge University Press, in press); Bruce L. Brown, "Effects of Speech Rate on Personality Attributions and Competency Evaluations," in *Lanuage: Social Psychological Perspectives*, ed. Howard Giles, William P. Robinson, and Philip M. Smith (New York: Pergamon, 1980), p. 294; Scherer, London, and Wolf; Street and Hopper, pp. 179–81.

[22]Giles and Powesland, pp. 66–89.

[23]Fast speech which is relatively disfluent (i.e. filled with errors, hesitations, and frequent pauses) can generate negative outcomes as it tends to be associated with nervousness and anxiety. David C Murray, "Talk, Silence, and Anxiety," *Psychological Bulletin*, 75 (1971), 244–60.

[24]See Brown; Smith, Brown, Strong, and Rencher.

[25]Thakerar and Giles; Thakerar, Giles, and Cheshire.

[26]William Putnam and Richard L. Street, Jr., "The Conception and Perception of Noncontent Speech Performance: Implications for Accommodation Theory," *International Journal of the Sociology of Language*, in press; Street.

[27]Street.

[28]Giles and Powesland, p. 151–52.

[29]Giles and Powesland, pp. 155–81; Giles, "Social Psychology"; Giles, "Accommodation Theory."

[30]Donn Byrne, *The Attraction Paradigm* (New York: Academic Press, 1971).

[31]Cappella and Greene; Joseph N. Cappella, "Approaching and Avoiding Others: Involvement in Dyadic Interaction," in *Nonverbal Communication: Theory and Research on Non-Language Aspects of Interaction*, ed. John M. Wiemann and Randall P. Harrison (Beverly Hills, CA: Sage, in press).

[32]Frieda Goldman Eisler, *Psycholinguistics: Experiments in Spontaneous Speech* (New York: Academic Press, 1968), pp. 19–28; Putnam and Street.

[33]Howard Giles, "Ethnicity Markers in Speech," in *Social Markers in Speech*, ed. Klaus R. Scherer and Howard Giles (Cambridge: Cambridge University

reason why moderate noncontent speech levels are often deemed socially attractive is because these levels may more closely resemble listeners' typical speech characteristics than do more extreme levels. Indeed, response latency similarity has been judged more attractive than dissimilarity.[34]

Previous research indicates that speech rate similarity may also mediate social attractiveness judgments. A study by Putman and Street using fact-finding interviews found the favorableness of participants' social attractiveness scores was positively correlated with the degree of actual and perceived speech rate similarity.[35] Though slow speech is usually downgraded on a variety of dimensions,[36] two studies have reported favorable results from slowing one's speech if such an adjustment closely approximates the listeners' typical speech rate levels. Giles and Smith note that when a relatively faster-talking Canadian speaker (140 wpm) slowed his rate to make it more similar to that of a slower-speaking English audience (100 wpm), he was viewed as more cooperative and effective than when he maintained his normal rate.[37] Yet, the relationship between social attractiveness and speech rate similarity is not necessarily linear. Street's study points directly to the existence of an acceptance *range* surrounding a listener's normal rate. In that study, subjects observed a fact-finding interview in which the interviewer maintained a 150 wpm speech rate. The interviewee, initially speaking at 200 wpm, was favorably evaluated as long as his rate stayed within the 150–200 wpm range. However, when adjusting rate to 225 wpm, the interviewee was viewed significantly less socially attractive.[38]

Actual and Perceived Speech Rate. Up to this point, we have fused two ways to approach the interface between a speaker's rate and a listener's rate. Both warrant attention. First, a comparison can be made between communicators' *actual* rates through the use of objective measures such as computers, stop watches, and transcripts. For example, does degree of actual rate similarity between listeners' own rates and the speakers' rates affect social attractiveness judgments? On the other hand, we can compare listeners' *perceptions* of similarity between their own and speakers' rates. Thus, the question could be asked whether degree of perceived similarity influences social attractiveness judgments.

The perceived message/observed message distinction is important for several reasons.[39] First, several theorists agree that noncontent speech performances (including rate) are produced and perceived at low levels of awareness.[40] If so, how can listeners evaluatively differentiate among varying rate levels? Nisbett and Wilson have noted that receivers may not be aware of higher-order inferential processing of environmental information; that is, perceivers may not be actually aware of the stimuli (speech style) that elicited their responses.[41]

Press, 1979), 268–80; and Ellen Bouchard Ryan, "Why Do Low-Prestige Language Varieties Persist?" in *Language and Social Psychology*, ed. Howard Giles and Robert N. St. Clair (Baltimore, MD.: University Park Press, 1979), 150–51.

[34]Street.

[35]Putnam and Street.

[36]See Brown for a review.

[37]Giles and Smith.

[38]Street.

[39]For reviews of research related to these issues, see Fredrick Williams, *Explorations in the Linguistic Attitudes of Teachers* (Rowley, MA.: Newbury House, 1976); and Street and Hopper.

[40]Natale; Cappella, "Mutual Influence"; Giles, "Accommodation Theory"; James T. Webb, "Interview Synchrony," in *Studies in Dyadic Communication*, ed. Aron W. Siegman and Benjamin Pope (Oxford: Pergamon Press, 1972).

[41]Richard E. Nisbett and Timothy D. Wilson, "The Halo Effect: Evidence for the Unconscious Alteration of Judgments," *Journal of Personality and Social Psychology*, 35 (1971), 250–56; Richard E. Nisbett and Timothy D Wilson, "Telling More Than We Can Know: Verbal Reports on Mental Processes," *Psychological*

Zajonc has recently argued that perceivers often respond affectively to environmental stimuli prior to making a conscious perceptual judgment about the stimuli.[42] Thus, one might argue that the issue of communicator awareness in speech evaluation studies is irrelevant.

However, some research indicates that *perceived* message characteristics may not correspond to *actual* message characteristics. For example receivers may have stereotypic schemas[43] or goals[44] which allow for biased interpretation of stimuli, distortion of stimuli characteristics, or "seeing" things not actually in the stimulus field. We have already referred to Thakerar's research in which dyadic partners and neutral observers believed that, in mixed-status dyads, high status partners talked faster and low status partners talked slower than in actuality.

In sum, the distinction between perceived and actual message characteristics is an important one, especially because the notion of individual preference levels is grounded in affective-cognitive activity as evaluative features of perceptual constructs. Though most speech rate studies assume actual rates are indeed those perceived, evidence cited above may render this assumption suspect. Certainly the impact of communicator awareness of noncontent speech behaviors such as rate warrants empirical attention.

Communication Context. Though communication theorists have emphasized the importance of context on receivers' interpretations of messages,[45] most noncontent speech evaluation studies do not consider its potential effects. For example, Brown's speech rate studies were conducted under rather contextually sterile conditions in which listeners judged recordings of speakers reciting sentences. However, elements of context can have a significant impact on evaluative responses to a communicator's speech style.[46] For example, some interaction settings are more highly evaluative than others. Bradac, Konsky, and Davies observed that perceivers judged messages in formal settings less favorably than similar messages in informal contexts.[47] Apparently, the standards for effective performance were higher in the formal setting. In addition, for some situations and topics, listeners may impose narrower acceptance regions for noncontent speech behaviors. Thus, receivers may be less tolerant of varying rate levels in some contexts than in others. Such an explanation may account for the inconsistent findings regarding speech rate and persuasiveness.

Review, 84 (1977), 231–59. For an in-depth discussion of the issues as they relate to communication, see Charles R. Berger and Michael E. Roloff, "Social Cognition, Self-Awareness, and Interpersonal Communication," in *Progress in Communication Sciences*, II, ed. Brenda Dervin and Melvin J. Voigt (Norwood, N.J.: Ablex Publishing, 1980).

[42]Robert B. Zajonc, "Feeling and Thinking: Preferences Need No Inferences," *American Psychologist*, 35 (1980), 151–75.

[43]David L. Hamilton, "A Cognitive-Attributional Analysis of Stereotyping," in *Advances in Experimental Social Psychology*, XII, ed. Leonard Berkowitz (New York: Academic Press, 1979); Henri Tajfel, "Social Stereotypes and Social Groups," in *Intergroup Behavior*, ed. John C. Turner and Howard Giles (Oxford: Basil Blackwell, 1981), 144–67.

[44]Larsen, Martin, and Giles; Street and Hopper.

[45]See, for example, Susan M. Ervin-Tripp, "Sociolinguistics," in *Advances in Experimental Social Psychology*, IV, ed. Leonard Berkowitz (New York: Academic Press, 1969); Dell Hymes, "Models of the Interaction of Language and Social Setting," in *Directions in Sociolinguistics: The Ethnography of Communication*, ed. John J. Gumperz and Dell Hymes (New York: Holt, Rinehart, and Winston, 1972).

[46]For example, if listeners have access to information justifying why a speaker might be using slow speech, such as to help a naive audience understand an unfamiliar topic, then slow speech will *not* have negative consequences. Howard Giles, Bruce Brown, and Jitendra Thakerar, "The Effects of Speech Rate, Accent, and Context on the Attributions of a Speaker's Personality Characteristics," unpublished paper, University of Bristol, 1981. Though not examined in our research, in some settings such information may be important (e.g. adult-child interaction).

[47]James Bradac, Catherine Konsky, and Robert Davies, "Two Studies of the Effects of Linguistic Diversity Upon Judgments of Communicator Attributes and Message Effectiveness," *Communication Monographs*, 43 (1976), 70–79.

A study by Miller, Maruyama, Beaber, and Valone observed a *linear* relationship between persuasiveness and rate such that faster rates were most effective.[48] The messages in this study consisted of a 400 word passage on harms of caffeine and a 300 word message on problems with hydroponic gardening methods. Because most listeners are probably uninformed on these issues, it seems conceivable that attitude change would in large part depend on the speaker's perceived competence. Thus, it is not surprising that faster rates generated greater attitude change. On the other hand, Apple, Streeter, and Kraus reported a *curvilinear* relationship between rate and attitude change.[49] These messages included students' spontaneous answers to two questions, one asking their opinions of college admission quotas designed to favor minorities and another asking what they would do upon inheriting a large sum of money. Apple et al. observed that for the former question, fast and moderate rate conditions were judged relatively equally and more favorably than the slow rate condition. For the money question, the moderate rate was considered more persuasive than both the fast and slow rates. Perhaps for these topics, and more so the money than the quota question, judgments of likeability, trustworthiness, sincerity, etc. were more salient criteria for convincing listeners and thus resulted in the relative upgrading of a moderate speech tempo. Therefore, the effectiveness of a persuasive attempt may depend on the relative importance receivers place on appearing competent and/or socially attractive as a function of the topic, audience, and message.[50]

Elements of context appear to have a significant effect on listener judgments of speakers with varying rate levels. In some situations, such as casual conversation, interactants may employ less stringent evaluative criteria and thus accept a wider range of rates than in other settings, such as employment interviews. As a result, listeners may respond differently to the same behavior depending on the context.

Hypotheses

Speech rate appears to be an important communicative dimension upon which interactants evaluate the speech of others. The present investigation identified two factors which may influence listeners' responses to speech rate variations: (1) individual acceptance levels (as a function of the evaluative dimension [competence and social attractiveness] and listeners' own rate level), and (2) communication context.

We proposed that receivers have stereotypic conceptions which relate certain noncontent speech levels (e.g., faster rates, standard accents, etc.) to competence judgments. Because of the evaluative implications in cases where perceptions of speakers' rates may not coincide with actual rates, the first hypothesis was formulated in two parts:

H_{1a}: There is a linear relationship between listeners' competence judgments and a speaker's actual speech rate level.

H_{1b}: There is a linear relationship between listeners' competence judgments and their perceptions of a speaker's speech rate.

For H_{1a}, the faster the speaker's rate, the more s/he will be rated competent. For H_{1b}, listeners perceiving the speaker as speaking faster than themselves will

[48]Norman Miller, Geoffrey Maruyama, Rex Julian Beaber, and Keith Valone, "Speed of Speech and Persuasion," *Journal of Personality and Social Psychology*, 34 (1976), 618–21.

[49]William Apple, Lynn A. Streeter, and Robert M. Kraus, "Effects of Pitch and Speech Rate on Personal Attributions," *Journal of Personality and Social Psychology*, 37 (1979), 722–25.

[50]Howard Giles, "Communicative Effectiveness as a Function of Accented Speech," *Speech Monographs*, 40 (1973), 330–31 has made a similar claim.

judge him most competent, followed by listeners perceiving him as speaking at a speed similar to their own rate, followed by listeners perceiving him speaking slower than their own rate.

Regarding social attractiveness judgments, we argue that listeners' judgments will be mediated by preferences centered around their own typical rate levels. Thus the following predictions.

H_{2a}: A speaker's actual speech rate interacts with listeners' typical speech rates to influence listeners' judgments of a speaker's social attractiveness, such that faster-speaking listeners evaluate a faster-talking speaker more favorably and a slower-talking speaker less favorably than do slower-speaking listeners.

H_{2b}: Listeners perceiving a speaker's rate as similar to their own consider the speaker more socially attractive than those listeners perceiving the speaker's rate as either relatively faster or relatively slower than their own.

If receivers' speech rate acceptance regions are narrower for some contexts than for others, we would expect this difference to be most pronounced for speakers talking extremely fast or extremely slow. Thus, a third prediction was forwarded:

H_{3a}: A speaker's actual speech rate level interacts with the communication context such that the fastest speaker rate and the slowest speaker rate are viewed less favorably in the employment interview context than in the conversation context.

H_{3b}: Listeners' perceptions of a speaker's speech rate interacts with the communication context such that individuals perceiving the speaker's rate as faster or slower than their own rate view the speaker less favorably in the employment interview context than in the conversation context.

METHOD

Subjects

Subjects were 261 (124 male and 137 female) undergraduates enrolled in basic communication courses at a medium-size southern university. All were volunteers and received course credit for participating.

Experimental Design and Stimulus Preparation

To examine hypotheses dealing with actual speaker and listener rates (H1a, H2a, and H3a), a 5 (levels of speaker rate) × 2 (levels of listener rate) × 2 (levels of context) design was employed. Three monologue passages were constructed which could be considered "excerpts" from either a conversation or an employment interview. The content was intended to be evaluatively neutral. The three passages consisted of an individual discussing a recent family move, academic goals, and employment experience. Because the passages were to be recorded at varying rates, minor content extensions were necessary to prevent passages at faster rates from being noticeably briefer than those at slower tempos. For example, a passage might be 30 seconds in duration at the slowest rate while only 12 seconds at the fastest. Thus, the passages for the two fastest conditions contained two additional sentences that were evaluatively insignificant.[51] For example, the employment experience passage was modified as follows:

During the summer I worked in a shoe store in my hometown. This gave me some good experience for working with people and seeing first hand how a business operates. But this job didn't allow for part-time work and going to school. So when I was at school, I worked for food service on campus. (End of passage for slower rate condition). This gave me an opportunity to meet alot of new people. It certainly fit well into my class schedule since I could work during some meal times. (End of passage in faster rate conditions).

As a manipulation check for the appropriateness of the passages for either an employment interview or conversation

[51]This technique is similar to one employed by Street.

context, 34 undergraduates enrolled in communication courses (not subjects in the experiment) received copies of the excerpts. Half believed the excerpts were from a conversation and half from an interview. After evaluating the items on Brown et al.'s competence and benevolence scales,[52] t-tests indicated no significant differences between contexts for either competence ($t[32] = .59$) or benevolence ($t[32] = 1.21$).

Typically, manipulations for speech rate evaluation studies take one of three forms. First, after acquiring a sample of a natural voice passage, a computer or speech compressor speeds up or slows down the speech to various levels.[53] While this technique has an advantage of experimental control, it may reduce believability and naturalness.[54] Another method consists of obtaining speakers' natural responses to questions and then assigning them to rate conditions. Thus, listeners make evaluations of natural rates of different speakers.[55] Unfortunately, this procedure does not allow control for speech content.[56] The method chosen for this study entails having the same speaker encode the same passage at varying rates. Listeners then hear only one of the stimulus rate conditions.[57] Although rate manipulations are achieved by employing one speaker's voice, having the speaker intuitively vary his or her voice has the advantage of naturalness and believability and offers control similar to machine-manipulated speech.

A male graduate student in communication with a relatively standard Midwestern accent volunteered to produce the stimulus passages.[58] After becoming familiar with the passages, he was instructed to produce each in a conversational manner at the slowest rate he judged realistically natural, at the fastest rate, and at three levels in between. After a period of sufficient practice, he recorded the passages on high-quality audio-cassette tapes. In the slowest condition, speech rate averaged 140 syllables per minute (spm), with subsequent conditions containing rates of 197, 253, 324, and 376 spm, respectively. Each tape consisted of the "family move" excerpt, followed by the "academic objectives" and "employment experience" excerpts. A three-second period of silence was interspersed between each excerpt.

Listeners' rates were assessed by audio-recording subjects' descriptions of a friend and then computing the average rate for individual descriptions. These descriptions were 45 seconds to a minute in length. Our rationale for having relatively long passages concerns the instability of interactants' speech rate performances. As Goldman Eisler has observed,[59] speech rates fluctuate greatly depending on the length of utterances (short utterances are usually produced at greater speed and usually fluctuate more than long utterances) and the frequency and duration of internal pausing. However, some stability for rate measures can be obtained for utterances longer than 100 syllables, and longer measures also tend to reflect individual differences among interactants' rate levels. Thus, one way to increase reliability of measur-

[52]Brown, Strong, and Rencher, "Fifty-four Voices."

[53]Brown, Strong, and Rencher, "Fifty-four Voices"; Smith, Brown, Strong, and Rencher.

[54]Brown, pp. 294–95; Giles, Brown, and Thakerar.

[55]Apple, Streeter, and Kraus.

[56]Brown; Giles, Brown, and Thakerar.

[57]See, for example, Giles and Smith; Street; Giles, Brown, and Thakerar.

[58]Male voices were employed because the vast majority of speech rate studies have done so and assumed generalizability to female voices as well. Future research should empirically test this assumption. For example, Richard L. Street, Jr., Robert M. Brady, and Raymond Lee, "Speech Rate Evaluation of Women Speakers," unpublished paper, University of Arkansas, 1980, reported that, when using a female stimulus voice, increases in rate led to increases in competence ratings similar to those findings of previous research. However, stimulus rate levels did not significantly influence social attractiveness judgments, a finding inconsistent with earlier research.

[59]Goldman Eisler, p. 15.

ing communicators' rates is to have them produce samples of relatively long duration.

The two levels of listener rate consisted of classifying those subjects with rates above the median as having "fast" rates and those subjects with rates at the median or below as having "slow" rates. Subjects' rates were computed by first transcribing subjects' descriptions and then dividing the number of syllables in each description by the time it took to produce the description. This figure was then converted into a syllables/minute score.[60] Pauses longer than two seconds were excluded from the time score because such periods of silence tend to indicate reflection on what to say next[61] and thus are not actually part of the speech rate. Reliability for speech rate coding was established by having another coder recompute rates for eight randomly chosed descriptions. The intraclass correlation was .88 and deemed suitable. The median for subjects' rates was 188.52 syllables per second.

To test hypotheses dealing with *perceived* speaker and listener rates, a 2 × 3 factoral design was utilized. In addition to the two context levels, three levels of perceived rate were formulated depending on whether subjects perceived the stimulus speaker's rate as faster, about the same, or slower than their own.

Dependent Measures. Evaluative items consisted of seven-point semantic differential scales from Brown et al.'s benevolence (sociable, dependable, likeable, happy, sincere, kind, religious, just, friendly, and polite), and competence factors (active, ambitious, intelligent, good-looking, and confident),[62] and Street's social attractiveness measure (effective communicator, good, nice, leaves a favorable impression, and pleasant).[63] Based on previous research, we expected a two-factor solution to emerge from a factor analysis of these evaluative items. In particular, the competence items should load highly on one factor. Furthermore, because the benevolence items appear to tap into social attractiveness judgments, we expected the remaining items to load highly on a second factor.

Procedure. The experiment was conducted in a communication laboratory containing audio-recording and playback booths with partitions between each seat. Subjects were informed that they were participating in an impression formation study which consisted of several tasks. After receiving operating instructions for the recording equipment, subjects were given the experimental booklet. The first task was designed to obtain an estimate of their typical rate of speech. Subjects were instructed to describe the qualities, features, and characteristics of a friend as they would to a stranger. They were instructed to talk for approximately a minute after which the experimenter would tell them to stop.

In the second task, subjects were told to listen to excerpts of either a conversation or an employment interview. These remarks were attributed to a person named Joe C. who recorded them at another university. After listening to the tape, subjects filled out the semantic differential items assessing their impressions of Joe C.

Finally, subjects filled out two post hoc questions. The subjects answered the first question, "How does Joe C.'s speech rate compare to yours?" by checking either "faster," "about the same," or "slower." Secondly, subjects were asked, "How would you assess Joe C.'s speech rate?" with possible responses including "too fast," "about right," and "too slow."[64]

[60]See, for example, Webb.
[61]Goldman Eisler, pp. 23–26.
[62]Brown, Strong, and Rencher, "Fifty-four Voices."
[63]Street.

[64]To insure the accuracy of assessing listeners' rates,

Results

Factor Analysis

The evaluative scales were initially submitted to a principal components factor analysis with varimax rotation.[65] Using the Scree-test method,[66] the optional solution consisted of two factors accounting for 50 percent of the total variance. As expected, the two factors appeared to tap into dimensions of social attractiveness and competence (see Table 1). After rotation, Factor I explained 27 percent of the variance (eigenvalue = 5.29) and was labeled competence. The competence measure was computed by summing items loading primarily on Factor I including confident, intelligent, ambitious, good-looking (Brown's competence scale), sincere (Brown's benevolence scale), and effective communicator (Street's social attractiveness measure). Alpha reliability for this measure was .89.[67] Factor II explained a remaining 23 percent of the variance (eigenvalue = 4.61) and was labeled social attractiveness. The social attractiveness measure was scored by summing those items loading primarily on Factor II including pleasant, good, nice (Street's social attractiveness scale), dependable, friendly, and kind (Brown's benevolence measure). Cronbach's alpha for this measure was .88. As can be seen from Table 1, some items did not load as expected. For example "sincerity" and "effective communicator" primarily loaded on the competence factor. Also six benevolence items (sociable, happy, religious, likeable, just, and polite) and one competence item (active) did not unambigiously load on the first and second factors, respectively.

TABLE 1

VARIMAX ROTATION OF FACTOR PATTERN MATRIX FOR EVALUATIVE ITEMS

Item	Factor I Competence	Factor II Social Attractiveness
confident	.79	.14
intelligent	.75	.11
effective communicator	.85	.16
good-looking	.55	.00
ambitious	.66	.25
sincere	.58	.20
friendly	.30	.64
pleasant	.30	.71
good	.19	.73
nice	.30	.76
dependable	.26	.64
kind	.21	.75
likeable	.59	.46
sociable	.36	.51
leaves a favorable impression	.66	.44
happy	.45	.47
just	.45	.42
religious	.09	.47
active	.54	.39
polite	.41	.41

Note: Underlined loadings define items contributing to the factor

Competence

For the *actual* rate data, a 5 × 2 × 2 unweighted means analysis of variance was performed on the competence measure. Joe C.'s speech rate had a significant effect on listeners' judgments ($F[4,241] = 18.42$, $p < .0001$, 24 percent of the total variance). However, the effects for listener rate ($F[1,241] = .04$), the context × listener rate interaction ($F[1,241] = .19$), and the speaker rate × listener rate × context interaction ($F[4,241] = .42$) were insignificant.

at the end of the experiment subjects were asked to describe another friend with instructions similar to the first description. The correlation between both assessments was .76, $p < .001$.

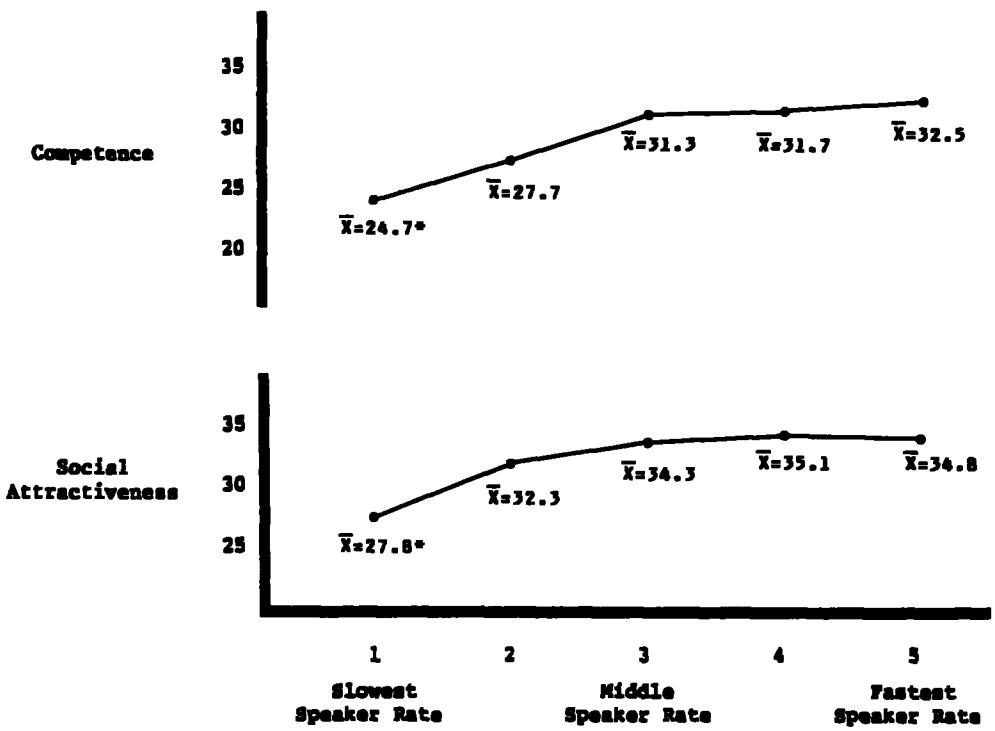
[65] Norman H. Nie, C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner, and Dale H. Bent, *Statistical Package for the Social Sciences*, 2nd ed. (New York: McGraw-Hill, 1975).

[66] Jae-On Kim and Charles W. Mueller, *Factor Analysis: Statistical Methods and Practical Issues* (Beverly Hills, CA: Sage, 1978), pp. 44-45. See also Raymond B. Cattel, "Factor Analysis: An Introduction to Essentials," *Biometrics*, 21 (1965), 405-35.

[67] G. F. Kuder and M. W. Richardson, "The Theory of the Estimation of Test Reliability," *Psychometrika*, 2 (1937), 151-60.

To test H_{1a}, which predicted a positive linear relationship between actual speaker rate and competence scores, a trend analysis was performed across speaker rate levels. As expected, the linear term was highly significant ($F[1,256] = 61.97$, $p < .0001$). However, the quadratic term was also significant ($F[1,256] = 7.79$, $p < .006$). The two terms combined accounted for 98 percent of the explained variance (24 percent of the total variance). Of that 98 percent, 87 percent was explained by the linear component and 11 percent by the quadratic component. As can be seen in Figure 1, increases in actual speaker rate led to increases in perceived competence up to the third level. At this point, the mean scores leveled off and were relatively similar for the middle through the fastest rate levels.

To test H_{1b}, which predicted a linear relationship between *perceived* rate and competence scores, a trend analysis was utilized across listeners' perceptions of Joe C.'s rate relative to their own (i.e., slower, about the same, faster). The linear term was significant ($F[1,258] = 23.24$, $p < .0001$) and accounted for 99 percent of the perceived speech rate effect. The deviation from linearity was insignificant ($F[1,258] = .099$). As expected, subjects perceiving Joe C. as speaking faster than themselves considered him most competent ($\bar{X} = 31.30$), followed by those perceiving his rate as similar to ($\bar{X} = 28.83$) and slower than ($\bar{X} = 27.19$) their own.



*The higher the score, the more positive the judgment.

FIGURE 1

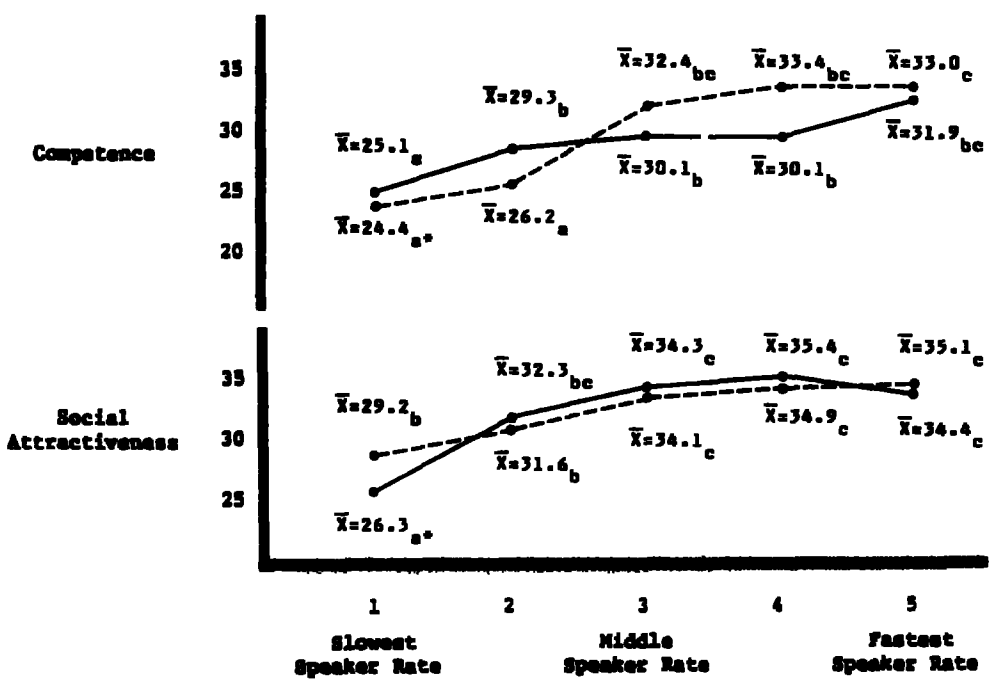
MEAN RATINGS OF COMPETENCE AND SOCIAL ATTRACTIVENESS AS A FUNCTION OF SPEAKER RATE LEVEL

Thus, the first hypothesis received strong support. Perceived speaker rate was linearly related to competence judgments. For actual speaker rate, the linear term accounted for a substantial amount (87 percent) of the actual speech rate effect. However, impressions of competence increased only to the third level and remained relatively the same for the two fastest speaker rates. This would indicate that preference regions for confidence entail moderate to faster speech rates.

An expectedly significant speaker rate × listener rate interaction emerged for the competence measure ($F[4,241] = 2.47, p < .05$, 4 percent of the total variance). Though both groups of listeners upgraded moderate and faster speaker rates, there was a tendency for faster-talking listeners to consider slower speaker rates less competent and faster speaker rates more competent than did slower-talking listeners (see Figure 2). However, the differences between listener groups within individual stimulus rate levels were statistically significant only for the second speaker rate level. This pattern for listeners' responses was predicted for the social attractiveness measure and not for competence. This finding is analyzed more thoroughly in the discussion section of the paper.

Social Attractiveness

Speaker rate levels had a significant impact on listeners' social attractiveness judgments ($F[1,241] = 33.06, p < .0001$, 35 percent of the total variance). As can be seen in Figure 1, increases in actual



*Common subscripts indicate these means are not significantly different
- - faster speaking listeners
— slower speaking listeners

FIGURE 2

MEAN RATINGS OF COMPETENCE AND SOCIAL ATTRACTIVENESS FOR SLOW AND FAST SPEAKING LISTENERS AS A FUNCTION OF SPEAKER RATE LEVEL

speaker rate were associated with higher attractiveness scores up to the fourth level or second fastest rate. The fastest rate was judged almost identically to the middle rate. This strong effect for speaker rate would indicate that listeners also have stereotypic conceptions of socially attractive others who speak at moderate to relatively fast clips. The linear term was significant ($F[1,256] = 97.04$, $p < .0001$) as was the quadratic component ($F[1,256] = 30.57$, $p < .0001$). The two terms together accounted for 99 percent of the actual speech rate effect. Of that 99 percent, 76 percent was explained by the linear term and 24 percent by the quadratic. Finally, the effects for listener rate ($F[1,241] = .64$), the context x listener rate interaction ($F[1,241] = .76$), and the speaker rate x listener rate x context interaction ($F[4,241] = .61$) were insignificant.

For H_{2a}, which addresses the *actual* rate data, a significant speaker rate x listener rate interaction was predicted. From the second slowest through the fastest speaker rate levels, faster-speaking listeners tended to view slower rates less and faster rates more socially attractive than did slower-speaking listeners (see Figure 2). However, this interaction only approached significance ($F[4,241] = 1.87$, $p = .11$) and hence, in a strict sense, no support was given to H_{2a}. Interestingly, the pattern was opposite for the slowest stimulus rate. The slow-talking listeners downgraded the slowest rate significantly more ($p < .02$) slowest rate significantly more ($p < .02$) than did fast-talking listeners. One intriguing explanation for the negative judgments of the slowest speaker by the slow-speaking listeners concerns similarity of negative attributes. The positive linear relationship between attraction and similarity may not appear if the similar characteristic has socially or psychologically negative connotations.[68] Given the rather consistent downgrading of slow speakers on both competence and attractiveness dimensions, communicators with characteristically slower rates, who perhaps have experienced the evaluative consequences of slow speech, are more sensitive to slower rates and subsequently find such speakers socially unattractive.

For *perceived* rate, we predicted (H_{2b}) that listeners perceiving Joe C.'s rate as similar to their own would find him more socially attractive than those subjects perceiving him as relatively faster or slower. A one-way analysis of variance revealed a significant perceived rate effect ($F[2,255] = 20.08$, $p < .0001$, 14 percent of total variance). As predicted, listeners' believing Joe C.'s rate was similar to their own ($\bar{X} = 34.07$) viewed him more socially attractive than those perceiving him slower ($\bar{X} = 29.82$) and faster ($\bar{X} = 33.36$). However, *a priori* contrasts only denoted significant differences between the similar rate and slower rate conditions. Thus, only marginal support was provided for the second hypothesis.

Context

With the third hypothesis, we speculated that listeners have narrower speech rate acceptance regions for some contexts, such as the typically evaluative employment interview, than for others, such as informal conversation. Thus, we predicted a speaker rate x content interaction in which significant differences between contexts would emerge for the slowest and fastest rate levels. This claim received no support as neither the *actual* speaker rate x context interactions for competence ($F[4,241] = .38$) and social attractiveness ($F[4,241] = .47$) nor the *perceived* speaker rate x context interac-

[68] John A. Daly, Virginia Peck Richmond, and Steven Leth, "Social Communicative Anxiety and the Personnel Selection Process: Testing the Similarity Effect in Selection Decisions," *Human Communication Research*, 6 (1979), 19.

tions for competence ($F[2,255] = .57$) and social attractiveness ($F[2,255] = .04$) were significant.

However, a main effect for context was evident as listeners considered Joe C. significantly less competent ($F[1,241] = 10.18, p < .002$, 4 percent of total variance) and less socially attractive ($F[1,241] = 9.72, p < .002$, 4 percent of total variance) in the employment interview than in the conversational setting. This result occurred even though the manipulation check for the stimulus passage based on verbal content alone revealed no preferences for either context. This finding is discussed later in terms of the possible additive effects of context rather than its interaction with speech behavior.

Discussion

At the outset, we predicted that competence judgements were the result of receivers' stereotypes which called for specific speech performance criteria such as relatively fast speech rates. We posited that impressions of social attractiveness were primarily influenced by the degree of similarity among participants' noncontent speech behaviors, including rate. Our data indicate that *both* speech stereotypes and speech rate similarity can mediate competence and social attractiveness evaluations. While such effects on both measures were not entirely anticipated, research in source credibility has implicated this possibility. Burgoon has argued that the "ideal" source may have stereotypically extreme qualities (e.g., most honest, most knowledge, most trustworthy, most objective, etc.) or may have moderate levels of various attributes which would indicate the source was more similar to most perceivers.[69] The results of her study indicated that for some characteristics (e.g., honest, just, and cooperative) the extreme was favored but for the others (e.g., virtuosity and expertness) more moderate levels were preferred. Our results provide some support for this notion as listeners favorably and similarly evaluated moderate through relatively fast rates of speech. These trends in turn were mediated by some preference for speech rate similarity. In short, these findings would suggest that speech rate acceptance regions favor an interlocutor's rate levels which are moderate to relatively fast and, to some degree, somewhat similar to one's own. We elaborate on this general conclusion by discussing specific fundings.

First, our findings for the competence measure replicated those of previous studies—faster rates (actual and perceived) elicited higher competence ratings. However, the data also indicated a ceiling effect; the faster stimulus rate did not improve competence ratings relative to the middle or second fastest stimulus rate. While it remains tenuous to conclude that communicators prefer moderate to faster rates for creating and maintaining competence-related impressions, there is certainly evidence that these rate levels foster such judgments in the absence of other explanatory information which could account for the speaker's rate (e.g., slowing speech for an audience unfamiliar with the topic). The relationship between rate and perceived competence points to the existence of stereotypic conceptions associating relatively faster speech with ability. Indeed, in providing post-experiment impressions, many subjects described Joe C. at the faster rates as sounding "knowledgeable," "like he knew what he was talking about," "sure of himself," etc.

Second, listeners' speech rate acceptance ranges for socially attractive others also indicate preferences for moderate (and perceived similar) and moderately

[69] Judee K. Burgoon, "The Ideal Source: A Reexamination of Source Credibility Measurements," *Central States Speech Journal*, 27 (1976), 200–6.

faster (actual and perceived) rates. While the reactions to slower rates were consistent with previous findings, the attractiveness of the faster speech is somewhat incongruous with other research in which fast speech rates are denigrated relative to moderate rates. Though a slight decline in perceived social attractiveness was observed for the fastest stimulus rate level, this condition was still judged more positively than the two slowest rate levels (see Figure 1). Findings by Miller et al. within persuasive settings have similarly shown that fast speech can enhance perceptions of trust,[70] a common item in social attractiveness scales. The incongruity between these findings can possibly be attributed to speech fluency; that is, speech relatively free of errors, hesitations, false starts, etc. As Cappella has noted, fast speech (short of normal extremes) may index involvement and responsiveness in social interaction and thus may enhance social evaluation.[71] However, fast speech which is relatively disfluent may be unpleasant as well as create comprehension problems.[72] In our investigation and in Miller et al.'s study, speakers were relatively fluent when evoking prepared and familiar messages. Yet, in research by Brown and his associates and by Apple, fast speech was respectively downgraded on benevolence and emphaticness. These experimenters used unmanipulated speech for normal rate levels and expanded or compressed those samples to create slower and faster rate conditions. Thus, the speech became more artificial as it approached the fast and slow extremes. Additionally, in Apple et al.'s speech samples, we can perhaps assume at least moderate amounts of hesitations and disfluencies given that subjects were providing spontaneous answers to complex topics (opinions of minority quota systems and what they would do upon inheriting a large sum of money).[73] As a result, increasing rate through speech compressions would also increase the frequency of any speech disturbances present in the original sample. Indeed, subjects in that study perceived speech in the fast rate condition as more disfluent than the normal rate condition.[74] The extent of disfluencies and artificiality co-occurring with speeded speech may determine the extent to which fast speaking clips are perceived socially attractive.

Third, speech similarity appeared to have a small, but marginally significant impact on competence and social attractiveness judgments. Faster-talking listeners tended to view faster speaker rates more positively and slower speaker rates more negatively than did slower-talking listeners. Additionally, listeners perceiving Joe C.'s rate as similar to their own responded to him more favorably than did those subjects believing Joe C. talked slower than themselves. However, means for both dependent measures did not significantly differ between the perceived similar and perceived faster conditions.

The results indicate that speech rate similarity has a secondary influence compared to the speech stereotype. Two explanations could account for this finding. One, given that speech rates fluctuate during interaction, interactants' speech rate acceptance regions may be relatively wide and primarily include preferences for moderate and relatively faster (up to a certain point) rates.

[70]Miller, Maruyama, Beaber, and Valone, pp. 616-17.

[71]Cappella, "Approaching and Avoiding."

[72]James MacLachlan, "What People Really Think of Fast Talkers," *Psychology Today*, (November, 1979), pp. 113-17. E. Foulke and T. G. Sticht, "A Review of Research on the Intelligibility and Comprehension of Accelerated Speech," *Psychological Bulletin*, 72 (1969), 50-62; Murray.

[73]Goldman Eisler, pp. 12-26, discusses the positive relationship between topic complexity and frequency of hesitations and pauses.

[74]Apple, Streeter, and Kraus, p. 723.

Because of listeners' latitudes for tolerance of speech rate variability, degree of rate similarity has only marginal impact on impressions of speakers and is perhaps most noticeable at more extreme speaker rate levels. Two, because it is not as salient a cue of ingroup identity, rate similarity may have less an impact on evaluations than accent or dialect similarity. Nevertheless, given our findings and that of previous research in which alleviation of speech rate discrepancies was positively received, some degree of speech rate similarity can enhance social judgments.

On the other hand, the design may have diluted the actual similarity effect. Because of the width of acceptance regions, the median distinction between "fast" and "slow" could have been too broad as many of the listeners in both groups possibly had overlapping preference ranges. Unfortunately, a direct comparison between Joe C.'s and the listeners' rates was not feasible. Because of the description task, subjects' speech was filled with more pauses and hesitations than was Joe C.'s speech. Thus, listeners' speech tended to be actually slower than Joe C.'s, especially for the middle to fastest stimulus rate conditions, even though many subjects perceived their rates as similar. The subjects' perceptions are probably accurate if one considers articulation time alone; that is, the phonation time and not the pauses between words, phrases, etc. Speech rate measures which include internal pauses are generally more popular but do not always correlate with articulation rate measures[75] (the latter typically require rather sophisticated measurement procedures). In future research, we hope (1) to enhance comparisons of measures of interactants' rates by providing consistency or control over the amount of internal pauses, and (2) to ascertain the relative contributions of speech stereotypes and speech rate similarity on interactants' impressions of one another.

Fourth, the perceived and actual rate data were for the most part comparable. Speakers with moderate (or perceived similar) and faster rates were considered more attractive and competent than slower rates. Nevertheless, the perceived message/objective message should be an important consideration in future research. Not only may perceptual constructs distort reception of actual speech features, but also receivers' judgments appear to be bound with their cognizance of others' behaviors. We have already mentioned that some theorists have suggested that interactants are relatively unaware of their partners' noncontent speech levels. However, there are exceptions which have evaluative implications. Of these subjects, 70.59 percent of those hearing the slowest stimulus rate believed the speaker talked more slowly than themselves and 80.4 percent considered it "too slow." Of those listeners hearing the fastest rate, 81.82 percent thought the speaker talked faster than they did and 78.19 percent viewed it "too fast." Though there was a slight tendency for listeners to judge the intermediate rate levels as faster than their own rates (48.5, 50, 56.6 percent, respectively) the greater portion of these listeners viewed the intermediate rates as "about right" (79.17, 73.08, 68.75 percent, respectively). It appears as though the slowest rate exceeded the threshold for acceptably slow speech, was clearly recognized as slow speech, and subsequently downgraded. Perhaps the fastest rate level just surpassed the acceptance boundary, was also noticeably fast, and was somewhat downgraded relative to the preceding rate level. These results are consistent with other findings in

[75] Murray, p. 245; Webb

which listeners were not highly aware of conversants' varying rate within normal ranges but nonetheless viewed them favorably. However, when rate exceeded acceptable levels, it was recognized and the speaker received negative responses.[76]

Interactants often do not make fine discriminations among speech behaviors when within some acceptable or expected range to one another. For speech rate, this range seems relatively wide, possibly because a speaker's tempo varies within a conversation or turn. As speech rate approaches or exceeds preferred ranges, communicators take heed and downgrade it. This claim is consistent with recent work on social cognition and verbal/nonverbal communication.[77] Berger and Roloff argue that noncontent speech production and perception may be governed by scripts or automated routines which operate at low consciousness levels during social interaction. However, when in violation of normal patterns, noncontent speech becomes noticed as would novel information within a stimulus field. When such violations occur outside the acceptance ranges for speech level, negative sanctions are elicited.

Fifth, context appeared to have an additive rather than an interactive effect on listeners' responses. That is, regardless of the speaker rate level, subjects considered the speaker more competent and socially attractive in the conversational situation than in the interview. Bradac et al. have provided a similar explanation for the influence on context. In that study, rather than the predicted lexical diversity x context interaction, a main effect for context emerged as listeners generally upgraded the speaker more in the informal context rather than in the formal one.[78] These studies suggest that receivers have more critical standards for speech behaviors in some situations than in others. Future research should aim for a richer explanation of the influence of context than is provided here. For example, by treating context as a single factor we have assumed that the *content* of the evaluative responses (as indicated in the factor analysis) are the same in both contexts though the *favorableness* of those responses may differ in each situation. This assumption may be questionable. One aim for future investigations concerns identifying whether there are structural differences in perceivers' evaluative reactions as a function of context, and the nature of these differences.[79]

In summary, noncontent speech behaviors are instrumental to the structure, management, and perception of social interaction. A major shortcoming of theory development in this realm concerns limited research incorporating propositions of proposed models. Our findings for speech rate indicated that rates at moderate through fast levels generated more favorable impressions of competence and social attractiveness than did slow speech. Additionally, these evaluative responses may be mediated by some degree of actual and perceived speech rate similarity. We suggested avenues for future research which would extend and improve our effort here. Given that non-

[76]MacLachlan, p. 116; Street.

[77]Berger and Roloff. See also Michael E. Roloff and Charles R. Berger, *Social Cognition and Communication* (Beverly Hills, CA: Sage, in press); and Charles R. Berger, "Self Consciousness and the Study of Interpersonal Attraction: Approaches and Issues," in *Language: Social Psychological Perspectives*, ed. Howard Giles, Peter W. Robinson, and Philip M. Smith (Oxford: Pergamon, 1980).

[78]Bradac, Konsky, and Davies.

[79]For example, by factor analyzing listeners' evaluations for each context individually, the second-order correlation comparing the item correlations of each was .45. This moderate correlation may reflect structural differences among receivers' evaluative constructs for each context. Of course, the score may also indicate relative instability between the correlation matrices due to the relatively small sample sizes.

content speech behaviors are typically performed concurrently, a pressing research need involves improved ecological validity by considering several behaviors simultaneously. For example, in addition to generally significant main effects for rate, some research has indicated speech rate may interact in complex ways with content, accent, speech latency, intonation patterns, turn duration, and vocal pitch.[80]

[80]Brown, p. 295; Stanley Feldstein and Ronald N. Bond, "Perception of Speech Rate as a Function of Vocal Intensity and Frequency," *Language and Speech*, (in press); Giles and Smith; Street; Apple, Streeter, and Kraus