The Effects of Speech Rate Similarity on Compliance: Application of Communication Accommodation Theory

DAVID B. BULLER and R. KELLY AUNE

This experiment tested a communication accommodation theory (CAT) explanation for the effects of speaker speech rate on compliance with a request for help. It was predicted that communicators' speech rate similarity increases social attractiveness and creates relational obligations to comply. Nine speech rates were presented to assess preferences for speech rate and speech-rate similarity. Four requests for help, varying from unacceptably slow to unacceptably fast, were presented. As predicted, speech rate similarity was associated with greater intimacy, immediacy, and sociability/character interpretations. Speech-rate similarity was not directly related to compliance, but enhanced immediacy ratings were linked to greater compliance. Nonverbal cues that indicate relational involvement or immediacy may be more instrumental in creating obligations to comply than cues which communicate sociability and character.

RESEARCH ON SOCIAL INFLUENCE via nonverbal communication has revealed that one of the more important channels is the tone of voice, referred to variously as paralanguage, vocalics, and speech style. Its preeminence may stem from the integral association with verbal content, which carries the majority of the meaning in persuasive encounters and garners a great deal of the persuadee's attention (Burgoon, 1985; Burgoon, Buller, & Woodall, 1989; Philpott, 1983).

In research on speech style and social influence, speech rate has received considerable attention (cf. Gunderson & Hopper, 1976; Mehrabian & Williams, 1969; Miller, Maruyama, Beaber, & Valone, 1976; Smith, Brown, Strong, & Rencher, 1975; Woodall & Burgoon, 1983); however, the role of speech rate in social influence has been inconsistent. Recently, Buller and Aune (1988) suggested that the type of influence outcome determined the rate of speech that improved persuasion. Working from Giles' Communication Accommodation Theory (CAT) (Giles, Mulac, Bradac, & Johnson, 1987), Buller and Aune predicted that

DAVID B. BULLER (Ph.D., Michigan State U.) is associate professor of Communication at the University of Arizona. R. KELLY AUNE (Ph.D., U. of Arizona) is assistant professor of Speech Communication at the University of Hawaii. The authors would like to thank the students from Communication 415 at the University of Arizona who assisted with this project. Requests for reprints should be sent to Dr. David Buller, Dept. of Communication, University of Arizona, Tucson, AZ 85721.
when a speaker seeks compliance with a request for help, rather than pursuing attitude change through a logical appeal, the similarity of the speaker's speech rate relative to the listener's rate improves compliance because it makes the speaker more socially attractive.

Buller and Aune (1988) provided indirect confirmation of this prediction by showing that listeners who were better decoders of vocal behavior (according to the Profile of Nonverbal Sensitivity [PONS] [Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979]), spoke faster and complied more with a faster request which listeners perceived as more intimate and immediate. Conversely, listeners who were poorer decoders spoke slower and complied more with a slower request that they interpreted as more intimate and immediate. However, similarity in speech rate did not directly increase compliance (e.g., fast-speaking listeners did not comply more with the fast voice). Buller and Aune suggested that perceived similarity in speech rate might have greater influence on relational interpretations (i.e., perceptions of a source's implicit verbal and nonverbal messages about the nature of the interpersonal relationship [Burgoon & Hale, 1987]) and compliance than actual similarity.

The present experiment provided a second test of the CAT-based predictions. Perceived similarity, as well as actual similarity, in speech rate was examined. In addition, latitudes of preferred speech rates were measured to describe their relationship with perceived similarity in speech rates and to ensure that the experimental speech rates included both similar and dissimilar speech styles.

Social Influence in Nonverbal Communication

Social influence is one of several functions of nonverbal messages along with impression formation and management, expression of emotion, conversational management, and relational communication. Successful influence depends on achieving one or more of these latter functions, usually through nonverbal cues, while presenting the verbal persuasive message. For instance, verbal appeals gain persuasive force when the speaker creates images of authority and credibility, highlights relational obligations, or is attractive (Burgoon et al., 1989).

The relative importance of these nonverbal functions in a persuasive attempt is determined by the outcome sought. When attitude change is the goal, an image of credibility is important (Bettinghaus & Cody, 1987; Buller & Aune, 1988, Burgoon et al., 1989). When compliance with a request for help is desired, the attractiveness of the speaker and the relationship between the speaker and listener are instrumental (Bettinghaus & Cody, 1987; Kelman, 1961; Roloff, 1987), because intimacy is based on the exchange of favors and actions that fulfill partners' needs, which increases obligations to accommodate requests (Roloff, 1987; Roloff, Janiszewski, McGrath, Burns, & Manrai, 1988). Consequently, strangers must go to greater lengths, providing more elaborations in requests
like apologies, explanations, and inducements, to secure compliance than must friends (Roloff et al., 1988). It is possible that strangers also can achieve compliance if they create an impression of greater intimacy by manipulating vocal cues to communicate immediacy, social attractiveness, and intimacy. While the obligation to comply created in this manner will not equal that in established friendships, it may be sufficient to improve compliance with a modest request for help.

Communication Accommodation Theory

Buller and Burgoon (1986) and Buller and Aune (1988) showed that changes in speech style (i.e., overall tone of voice or just speech rate) alter listeners’ interpretations of the speaker’s intimacy and immediacy. Moreover, these interpretations corresponded with listeners’ decisions to comply with a request for research participation, prompting these researchers to suggest a CAT explanation for the compliance produced by changes in speech style.

CAT assumes that “communicators are motivated to adjust their speech styles with respect to one another as a means of expressing values, attitudes, and intentions” (Street & Giles, 1982, p. 205; see also Giles et al., 1987). They may converge—make their style more similar to the partner’s—or diverge—make their style more dissimilar to the partner’s. A listener’s perceptions of changes in speech style are a function of (a) recognizing a change in speech style, (b) evaluating the change relative to the listener’s own style, and (c) attributing intent to the change. These perceptions determine evaluative and behavioral responses to speech style changes. Favorable evaluations result when a change is optimally similar to a listener’s own speech style.²

Buller and Burgoon (1986) noted the similarity between CAT’s predictions and the curvilinear effect of speech styles on intimacy interpretations. They surmised that intimacy arose from similarity in speech styles, because CAT research had shown that similarity enhances social attractiveness judgments which include intimacy evaluations (see Putman & Street, 1984, and Street & Brady, 1982, for examples of these effects).

Studies of speech rate changes had provided some of the most consistent support for CAT (Putman & Street, 1984; Street, 1984; Street & Brady, 1982; Street & Giles, 1982). Consequently, Buller and Aune (1988) focused on the influence of speech rate when initially applying CAT to Buller and Burgoon’s compliance patterns. They reasoned that when a speaker adopted a speech rate similar to the listener’s speech rate, higher intimacy and immediacy interpretations would result than when the speaker adopted a dissimilar speech rate. They also posited that favorable relational interpretations of the speech rates (i.e., greater intimacy and immediacy) would increase compliance with requests for help, on the belief that compliance with requests for help are contingent on the relationship between the persuader and persuadee.
Buller and Aune's predictions about the persuasive superiority of speech rate similarity were borne out in their analysis of listeners who differed in vocal decoding ability. Good decoders who spoke faster complied more with the fast voice, because they perceived more intimacy and immediacy in this similar fast voice. Poor decoders who spoke slower complied more with the slow voice, because they perceived more intimacy and immediacy in the similar slow voice.

Replicating and Extending the Model

Differences in speech rate and rate preferences. While CAT seems to provide a satisfying explanation of these effects, several issues require further investigation. First, the assumption that the differences in decoders' speech rate caused them to prefer different speaking rates in the compliance messages needs to be tested. So far, the data merely suggests these preference differences; no evidence directly supports this assumption. Further, it is necessary to map speech rate preferences, because convergence with preferences may be more important to interpretations than convergence with actual speech rates. Buller and Aune (1988) found that even though good decoders generally spoke faster than poor decoders and a convergence effect existed in the relational interpretations, actual convergence between the speaker's speech rate and the listener's speech rate did not affect intimacy and immediacy. One plausible explanation for these findings is that good and poor decoders differ more in their speech-rate preferences than in their actual speech rates and convergence with preferences (perhaps reflected in the decoding ability score), rather than with actual speech rates, determined relational interpretations and compliance.

Actual versus perceived similarity. More importantly, Buller and Aune were unable to show that speech-rate similarity in general improved compliance. Similarity increased compliance only when decoding ability differences were taken into account. Actual similarity between the speaker's and listeners' speech rates (i.e., a fast presentation to fast-speaking listeners or a slow presentation to slow-speaking listeners) did not improve compliance. Buller and Aune (1989) suggested that the lack of general similarity effects occurred because evaluations of speech style similarity correspond imperfectly to the degree of actual change (Giles, 1980; Giles et al., 1987; Street & Brady, 1982; Street & Giles, 1982). In CAT, the perception of a change in speech style is a prerequisite for alterations in relational evaluations, not just the actual adjustment in speech style. By relying on actual similarity, Buller and Aune assumed that perceptions of similarity in rate coincided closely to actual similarity, a questionable assumption at best.

One of the primary purposes of the present study was to investigate the role of perceived similarity in compliance. This was done in two ways. First, listeners' preferences for nine different speaking rates in a
persuasive message were measured along with listeners' perceptions of how similar or dissimilar the nine rates were. This permitted testing the relative contribution of perceived and actual similarity in speech rate to listeners' speech-rate preferences. In addition, interpretations of the intimacy and immediacy communicated by the different speech rates were measured to compare the effect of actual and perceived similarity on these relational interpretations. Second, perceptions of speech-rate similarity of the experimental compliance messages were measured to see whether they predicted compliance better than actual similarity.

**Number of experimental speech rates.** A limitation of Buller and Aune's experiment was that they included only two speech rates, preventing a test of the curvilinear similarity patterns predicted by CAT. CAT posits that speech styles within the latitude of preferred styles will result in favorable relational interpretations (i.e., higher intimacy and immediacy), while styles outside this latitude will lead to unfavorable relational interpretations⁴ (Giles, 1980; Giles et al., 1987; Street, 1982; Street & Brady, 1982; Street & Giles, 1982). Testing this curvilinear prediction requires various speech rates including ones that are slower than, within, and faster than the latitude. The present study manipulated four levels of speech rate, so that fast- and slow-speaking listeners each encountered dissimilar-slow, similar, and dissimilar-fast speech rates.

**Hypotheses.** To guide this second test of the CAT explanation, the following hypotheses were derived from the foregoing synthesis of research on relational obligations, CAT, and speech rate:

- **H1:** Good decoders prefer faster speech rates than poor decoders.
- **H2:** As the speaker's speech rate becomes similar to the listener's speech rate, interpretations of intimacy and immediacy increase.
- **H3:** As interpretations of the intimacy and immediacy communicated by the speaker increase, compliance with a request for help increases.

**METHOD**

**Participants**

Three hundred twenty (320) undergraduate students from a large southwestern university were recruited to take part in an experiment on the association of nonverbal sensitivity and vocal patterns. Recruitment was performed using a tape-recorded message (244 syl./min.) to set a precedent for the subsequent rate manipulation.⁴ Participation was voluntary and rewarded with extra class credit. Two hundred sixty-three (263) students attended both the individual and group sessions and were primary participants.
Speech Rate Pretest

In the individual sessions, listeners’ speech rate was measured with a procedure developed by Street and Brady (1982). Listeners were instructed to familiarize themselves with a 250-syllable paragraph and read the paragraph in a conversational style into a tape recorder. The spoken paragraphs were timed to calculate the listeners’ syllable-per-minute speech rates. Participants were classified as fast or slow speakers by median-split (median = 292.4 syl./min.).

Nonverbal Sensitivity Test

In subsequent small group sessions, listeners completed a decoding ability test and received the two experimental manipulations of speech rate. The decoding ability test contained the 40-item vocal portion of the Profile of Nonverbal Sensitivity (PONS) (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979), the most widely used test of sensitivity to vocalic (or paralinguistic) cues. Unfortunately, it was extremely unreliable in this experiment (Kuder-Richardson-20 reliability = — .12) and therefore invalid. Implications of the unreliability and issues related to the development of a valid test are discussed later.

Speech-Rate-Preference Test

The speech-rate-preference test was based on the “return potential curve” (Jackson, 1960; Strom, 1963) and measured the range of speech rates listeners preferred and the intensity of these preferences. A 250-syllable message was recorded at nine speech rates (93, 138, 190, 252, 293, 334, 382, 467, 581 syl./min) by a male confederate, who had professional acting experience. The initial 63-syllables from each version were transferred to a master tape and arranged in random order. Participants rated each of the nine voices on bi-polar scales, ranging from +4 to —4. Two items, “I approve of this voice” and “I prefer this voice,” measured speech-rate preferences. A curvilinear pattern of ratings (i.e., the return potential curve) was expected, with positive ratings occurring in the latitude of preferred rates but outside this latitude it was expected that negative ratings occur primarily (Jackson, 1960; Strom, 1963). A third item assessed perceived similarity between the speaker’s and listener’s speech rates, “Compared to the way I talk, the speaker spoke slower than me/spoke faster than me.” The midpoint, “0,” was transformed to reflect the greatest similarity, whereas “—4” (spoke slower) and “+4” (spoke faster) were treated as indicating the greatest dissimilarity. An item was included that measured perceived similarity in pausing rates to divert attention from the speech-rate manipulation. Two items tapped interpretations of intimacy (—4 [not intimate]; +4 [intimate]) and immediacy (—4 [created a sense of distance]; +4 [created a sense of closeness]).
Compliance Manipulation

A message requesting participants to volunteer for a fictitious mass communication experiment (Buller & Aune, 1988) was recorded at four speech rates [very slow (159 syllables/min.), moderately slow (208 syl./min.), moderately fast (343 syl./min.), and very fast (425 syl./min.)] by a second male confederate who had extensive training in oral interpretation and professional experience creating radio and television voice-overs. The very fast rate exceeded Street and Brady’s (1982) fastest acceptable rate (376 syl./min.) and the very slow rate was slower than their slowest acceptable rate (197 syl./min.).

The compliance measure consisted of the number of half-hour television programs (up to five) a listener volunteered to view on the post-test. (Listeners did not actually view any programs.) A 24-item version of Burgoon and Hale’s (1987) Relational Communication Scale measured the respondents’ perceptions of the speaker’s implicit verbal and nonverbal messages about the nature of the interpersonal relationship, on four orthogonal relational themes (Burgoon & Hale, 1984): intimacy, Cronbach’s $\alpha = .81$; immediacy, $\alpha = .77$; dominance, $\alpha = .72$; emotional arousal, $\alpha = .63$. McCroskey’s (McCroskey, Hamilton, & Weiner, 1974; McCroskey, Jensen, & Valencia, 1973) 15-item credibility scale also measured perceptions of the speaker’s credibility: sociability/character ($\alpha = .83$), competence ($\alpha = .77$), composure ($\alpha = .81$), and extraversion ($\alpha = .75$). Four bi-polar items from the preference test were included to measure preferences for the speech rate and perceived speech-rate similarity.

Procedure

Listeners first attended individual sessions where their speech rates were measured. Following this session, listeners were assigned to one of four group sessions, each containing a nearly equal number of fast- and slow-speaking listeners. The experimenter first announced that listeners would be completing two tests of nonverbal sensitivity. Then, the experimenter noticed that he did not have the correct test forms and sent an assistant to retrieve them.

During the wait, participants were invited to listen to a recruiting tape for another experiment. One of the four versions of the compliance manipulation was played. The experimenter then distributed booklets containing the relational messages and credibility scales. On the first page, participants were asked how many half-hour television programs they volunteered to watch. Participants were told that the tape-recorded recruitment messages were a new method for recruiting research participants and the subsequent questions would help the department decide whether to continue using taped messages.

While the participants were completing the posttest, the experimental assistant returned with the correct test forms. After all participants had completed the posttest, the experimenter conducted the decoding ability test and the speech-rate-preference test.
RESULTS

Hypothesis One: Decoding Ability

The first hypothesis predicted that good decoders would prefer faster speech rates than poor decoders. This hypothesis was not tested because of the extremely low reliability of the audio PONS.

Speech-Rate-Preference Test

The speech-rate preference test provided information on the effect of speech-rate similarity on listeners' preferences for speech rates and perceptions of similarity. A 2 (listener's rate) x 9 (speaker's rate in speech-rate preference test) repeated-measures ANOVA on the two-item preference scale was performed, with polynomial contrasts on speaker's speech rate. There were no effects in listeners' rate preferences due to actual similarity. Moderate rates were preferred by all listeners, quadratic $F(1, 236) = 2019.42, p < .05$ (Table 1). However, a 2 x 9 ANOVA on perceived similarity revealed that slow-speaking listeners perceived more similarity by the slower voices, whereas fast-speaking listeners perceived more similarity by the faster voices, consistent with CAT, quadratic $F(1, 247) = 7.08, p < .05$ (Table 1). Moreover, listeners' preferred rates that they thought were similar to their own rates, $r(2360) = .73, p < .05$. This seems to confirm Buller and Aune's (1988) speculation that perceived similarity is more strongly related to listeners' latitudes of preferred rates than actual similarity. The analyses also confirmed that the speech rates in the compliance message represented rates slower than, within, and faster than listeners' latitudes of acceptable speech rates, as required to test the CAT predictions.

Perceived similarity also appeared to be more important to listeners' interpretations of intimacy and immediacy than actual similarity.

<table>
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<tr>
<th>Preference</th>
<th>-6.80</th>
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<th>4.95</th>
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<th>-2.77</th>
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<td>.71</td>
<td>1.74</td>
<td>3.07</td>
<td>3.40</td>
<td>2.63</td>
<td>2.35</td>
<td>.82</td>
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<td></td>
<td>Fast Listener</td>
<td>.08</td>
<td>.63</td>
<td>1.36</td>
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<td>Total</td>
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NOTE: The analysis was based on responses from 240 participants: Slow listeners N = 123, fast listeners N = 117. Residuals are in brackets and calculated following Keppel (1982) and Rosenthal and Rosnow (1985).
Perceived similarity was associated with enhanced intimacy, \( r(2359) = .65, p < .05 \), and immediacy interpretations, \( r(2359) = .68, p < .05 \), but actual similarity was not. The quadratic speaker’s rate by listener’s rate interaction, multivariate \( F(16, 230) = 1.13, p > .05 \), from a 2 X 9 repeated-measures MANOVA on the intimacy and immediacy ratings was nonsignificant.

**Hypothesis Two: Intimacy and Immediacy Interpretations**

Hypothesis two predicted that speech-rate similarity would produce more favorable intimacy and immediacy interpretations of the compliance message. Examination of the correlation between the relational interpretations and credibility evaluations showed that the sociability/character dimension of the credibility scale was strongly correlated with the intimacy, \( r(250) = .64, p < .05 \), and immediacy interpretations, \( r(250) = .66, p < .05 \), suggesting that sociability/character may be a third measure of social attractiveness (intimacy and immediacy also were strongly correlated, \( r(252) = .58, p < .05 \)). Therefore, hypothesis two was tested on sociability/character along with intimacy and immediacy. To take into account the correlations between the dependent variables, the three measures were summed into a single scale for the analysis of their relationship with perceived speech-rate similarity and the three measures were submitted to MANOVA (Bartlett’s test of sphericity = 173.62, \( p < .05 \), with 3 d.f.) for the test of their relationship with actual speech-rate similarity.

As hypothesized, perceived speech-rate similarity was positively correlated with intimacy, immediacy, and sociability/character interpretations: combined interpretations, \( r(249) = .24, p < .05 \); intimacy scale, \( r(252) = .19, p < .05 \); immediacy scale, \( r(252) = .19, p < .05 \); sociability/character scale, \( r(252) = .26, p < .05 \). Buller and Aune (1988) appeared to be correct when speculating that perceived similarity is more influential on intimacy and immediacy judgments than actual similarity. The 2 (listener’s rate) X 4 (speaker’s rate) MANOVA did not reveal actual similarity effects on intimacy, immediacy, or sociability/character interpretations, speaker’s speech rate by listener’s speech rate multivariate \( F(9, 705) = 1.09, p > .05 \). The only significant effect in the MANOVA was a main effect for speaker’s speech rate, multivariate \( F(9, 705) = 12.83, p < .05 \). Moderately slow \( (M = 23.52) \) and moderately fast \( (M = 23.37) \) rates were considered more immediate than the very slow \( (M = 15.51) \) and very fast \( (M = 19.42) \) rates, linear \( F(1, 235) = 12.45, p < .05 \), quadratic \( F(1, 235) = 63.45, p < .05 \). Similarly, moderately slow \( (M = 22.15) \) and moderately fast \( (M = 21.55) \) rates were considered more intimate than the very slow \( (M = 15.59) \) and very fast \( (M = 15.17) \) rates, linear \( F(1, 235) = .45, p > .05 \), quadratic \( F(1, 235) = 68.21, p < .05 \). This same curvilinear pattern was even more pronounced in sociability/character evaluations: very slow \( M = 19.19 \), moderately slow \( M = 26.68 \), moderately fast \( M = 27.02 \), very fast \( M = 20.10 \), linear \( F(1, 235) = .90, p > .05 \), quadratic \( F(1, 235) = 108.20, p < .05 \).
Additional evidence of similarity effects was offered by speech-rate preferences. Preferred rates were considered more intimate, $r(252) = .47$, $p < .05$, and immediate, $r(253) = .61$, $p < .05$, and higher in sociability/character, $r(251) = .69$, $p < .05$ ($r(249) = .68$, $p < .05$ for combined interpretations). These relationships probably stem from perceived similarity, as listeners preferred rates which they considered similar to their own, $r(254) = .33$, $p < .05$.

**Hypothesis Three: Compliance**

Contrary to hypothesis three, neither actual similarity, speaker's rate by listener's rate $r(3, 235) = .60$, $p > .05$, nor perceived similarity, $r(254) = .03$, $p > .05$, affected compliance (i.e., the number of programs which listeners volunteered to watch). Speech-rate preferences also were not associated with compliance, $r(254) = -.04$, $p > .05$.

A limitation to the foregoing tests, as well as to those in past experiments, is that they do not directly test the relationship between interpretations and compliance. Instead, conclusions rest on the correspondence between relational interpretations and compliance. To provide a better test of the CAT predictions, listeners' compliance was regressed on the relational and credibility interpretations. Compliance in the present experiment increased when immediacy interpretations increased (beta = .20, $p < .05$) and sociability/character evaluations decreased (beta = -.21, $p < .05$, overall $R^2 = .02$). These results were surprising, given the positive correlation between immediacy and sociability/character and the similarity of their association with speech style similarity. The collinearity between the two predictors might have accounted for these opposing findings. However, neither variable's unstandardized regression coefficient (immediacy $b = .05$, sociability/character $b = -.09$) exceeded its zero-order correlation with the dependent variable (immediacy $r = .05$, sociability/character $r = -.09$), nor did they differ in direction from the correlations. Thus suppression due to the collinearity was not evident (Cohen & Cohen, 1975, p. 91).

The immediacy relationship is consistent with predictions that social attractiveness increases compliance with requests for help, but the indirect relationship between sociability/character is not. Perhaps the degree of conversational involvement is important to compliance decisions, but how likeable or personable the speaker appears is not.

A similar secondary analysis performed on Buller and Aune's (1988) data showed that compliance increased when composure increased (beta = .18, $p < .05$) and competence decreased (beta = -.08, $p < .05$, $R^2 = .02$). Perceived similarity was associated with more favorable evaluations of the speaker's composure in the present experiment, $r(253) = .18$, $p < .05$, and if the same was true in Buller and Aune's experiment it might indicate support for the predictions about speech style and compliance. However, it was not anticipated that composure was part of social attractiveness at the outset of this experiment, so this analysis...
does not support the prediction that compliance with requests for help are based on social attractiveness and the obligation to comply which it may create.

Additional Analyses

Credibility evaluations. A 2 (listener’s rate) X 4 (speaker’s rate) MANOVA on the credibility (without sociability/character) and dominance interpretations (Barlett’s test of sphericity = 119.00, $p < .05$, with 6 d.f.) supported the CAT proposition that faster speech rates appear more credible and dominant. As the speaker’s rate increased, dominance, multivariate $F(12, 714) = 16.03, p < .05$, linear $F(1, 239) = 26.01, p < .05$, and extraversion ratings increased, linear $F(1, 239) = 67.14, p < .05$ (dominance: very slow $M = 21.11$, moderately slow $M = 25.74$, moderately fast $M = 26.86$, very fast $M = 26.26$; extraversion: very slow $M = 12.00$, moderately slow $M = 13.87$, moderately fast $M = 15.44$, very fast $M = 16.83$).

The credibility evaluations also were nonlinear, suggesting that the stereotype of faster speakers being more credible is limited to rates under approximately 400 syl./min. Competence (very slow $M = 13.05$, moderately slow $M = 16.24$, moderately fast $M = 15.40$, very fast $M = 14.09$) and dominance evaluations improved when the speaker adopted faster speech rates but this enhancement peaked at the moderately fast voice, competence quadratic $F(1, 239) = 22.03, p < .05$, dominance quadratic $F(1, 239) = 12.70, p < .05$. Ratings on composure peaked at the moderately slow voice, quadratic $F(1, 239) = 78.22, p < .05$ (very slow $M = 13.13$, moderately slow $M = 16.17$, moderately fast $M = 14.49$, very fast $M = 8.60$).

Arousal ratings. As perceived similarity increased, the speaker was considered less aroused, $r(252) = -.26, p < .05$. Moreover, the very slow ($M = 22.66$) and very fast rates ($M = 25.26$) were considered more arousing than the moderately slow ($M = 17.25$) and moderately fast rates ($M = 18.72$), linear $F(1, 240) = 4.99, p < .05$, quadratic $F(1, 240) = 75.45, p < .05$.

DISCUSSION

This study showed that perceived speech-rate similarity may be linked to changes in social attractiveness of the speaker reported in past experiments by Buller and Burgoon (1986) and Buller and Aune (1989). Moreover, the social attractiveness of the speaker, particularly how much involvement, immediacy and psychological closeness is communicated by the speaker, may improve compliance by increasing listeners’ obligations to comply with a request for help.

Perceived Similarity

A consistent finding in this experiment was the importance of perceived speech-rate similarity in listeners’ interpretations of speech-rate
changes. Results from the speech-rate-preference test showed that actual speech-rate similarity did not directly affect rate preferences. Instead, perceived similarity appeared to be the mediating variable. In addition, perceived similarity was strongly associated with more favorable relational interpretations of the compliance message (i.e., greater intimacy and immediacy), confirming Buller and Aune’s (1988) reasoning that perceived speech-rate similarity is more important to evaluations of a speaker than actual similarity in speech rate.10

It is possible, though, that the use of a median-split technique to classify fast and slow listeners obscured some effects of actual similarity. Fast and slow listeners with speech rates near the median may have had overlapping preference zones. In that case, they would have considered the same voices to be similar, thereby reducing the effects of actual similarity. Street and Brady (1982) encountered such a phenomenon.

Another noteworthy finding was that speech-rate preferences, as well as perceived similarity, influenced listener’s interpretations. In fact, the relationship between rate preferences and listeners’ interpretations was stronger than between perceived similarity and interpretations. One might conclude from this that speech-rate norms are more important to interpretations than similarity. However, it is more likely that rate preferences mediate perceived similarity and listeners’ interpretations. Unfortunately, it was impossible to separate these alternative explanations in the present design and, for that matter, to test two other explanations: Rate preferences either result from interpretations engendered by similarity or are affected independently by similarity and spuriously related to relational and credibility interpretations.

While perceived similarity was not related directly to compliance, the immediacy interpretations associated with similarity were. As perceived similarity increased, immediacy interpretations increased and, in turn, were linked to greater compliance in the regression analyses. This supports the supposition that favorable relational interpretations, rather than credibility evaluations, promote compliance, because relational interpretations engender an obligation to accommodate the request (Roloff, 1987; Roloff et al., 1988).

Interestingly, higher sociability/character evaluations decreased compliance. Although not initially incorporated in hypothesis one, sociability/character evaluations may be a form of social attractiveness or at least have implications for social attractiveness. However, social attractiveness should have enhanced compliance. Perhaps perceptions of conversational involvement and psychological closeness (i.e., immediacy) are more likely to develop a sense of relationship between the speaker and listener and create obligations to comply with the speaker’s request than are perceptions of being a personable, trustworthy individual. Three common immediacy cues (Burgoon et al., 1989)—close distances (Baron, 1978; Baron & Bell, 1976; Smith & Knowles, 1979), increased eye contact (Ellsworth & Langer, 1976; Kleinke, 1977, 1980; Shotland
& Johnson, 1978), and touch—have produced greater compliance when present in other studies (Kleinke, 1977; Patterson, Powell, & Lenihan, 1986; Paulsell & Goldman, 1984; Willis & Hamm, 1980). Perceptions of friendliness and trustworthiness may not produce the impression of a favorable relationship needed to breed obligations to comply with requests for help, because these perceptions, in high degrees, may give the appearance of flattery, cajolery, and sweet talk. These results point up the possibility that not all dimensions of social attractiveness produce a sufficient sense of relationship with the listener to create obligations to comply with requests for help.

In sum, this experiment shows that compliance with requests for help is linked to the relational meaning assigned to the speaker’s speech style. Furthermore, speech-style similarity is associated with more favorable relational interpretations and interpretations that produce the appearance of a favorable relationship with the listener are related to greater compliance. While these conclusions are most applicable to changes in speech rate, Buller and Burgoon’s (1986) study suggests that other components of speech style which alter relational interpretations (e.g., pitch, fluency) also may alter compliance. A caveat to these interpretations is that the experiment manipulated only the speech rate of the speaker. Therefore, conclusions about the relationships among mediating variables in the theoretical process producing compliance (i.e., those between perceived speech-rate similarity and relational interpretations and between these interpretations and compliance) are more speculative than conclusions about the direct relationship of the speaker’s speech rates to perceived rate similarity, relational interpretations, and compliance.

Validity of the Audio PONS

One original goal of this experiment was to test further the interaction between decoding ability and speech rate on compliance reported by Buller and Burgoon (1986) and Buller and Aune (1988), and initially by Hall (1980). Unfortunately, the unreliability of the audio PONS prohibited this test.

It is clear that the audio PONS is an extremely unreliable and therefore an invalid measure of sensitivity to vocal cues. Researchers should not be misled by the apparently adequate reliability figures published by Rosenthal et al. (1979, p. 82) for the audio PONS, as their figures were adjusted upwards using the Spearman-Brown prophecy formula to equate the 40-item audio PONS with the entire 220-item PONS. Researchers should be skeptical of the data produced by the audio PONS and should avoid relying on data produced by this inaccurate instrument in the future.

Obviously, conclusions about the presence of, and explanation for, the anomalous interaction between decoding ability and speech style
on compliance also must be questioned. It is surprising that the decoding ability by speech style interaction occurred in three experiments, using the audio PONS. Perhaps, this interaction is very strong and emerges despite a high degree of measurement error. This possibility is bolstered by the fact that Hall (1980) used an additional test of nonverbal sensitivity, in which participants decoded the affect communicated by speakers reading a neutrally-worded statement, in her experiment that originally documented the decoding ability by speech style interaction (although she did not provide reliability estimates for this second sensitivity measure).

Unfortunately, an alternative vocal sensitivity test may be difficult to construct, because it requires standard meanings for vocalic cues to assess the accuracy of listeners’ interpretations. Standard meanings may not exist for some vocalic cues, because, as the CAT and our research show, standard interpretations related to social attractiveness do not exist. Instead, they depend on the listener’s own vocal style. Thus any alternative test that measures skill at decoding social attraction messages will need to account for the listener’s speech style when calculating accuracy. By contrast, standard interpretations of vocal cues communicating competence and dominance may be easier to derive given social stereotypes linking certain styles to these interpretations (Giles et al., 1987).

Limitations

As with any experiment, design decisions created limitations. First, the manipulation of speech rate was non-interactive and may have reduced its generalizability. However, the first two experiments on this compliance effect (Buller & Burgoon, 1986; Hall, 1980) were interactive and showed similar results.

Second, the speech-rate-preference test used a persuasive argument rather than a request for help, making it less comparable to the compliance message. Similarly, participants may have been aware of the interest in speech rate preferences, given the repetitive design of this test. Steps were taken to reduce this, such as labeling it a test of nonverbal sensitivity and measuring similarity in pausing; however, the success of these distractors was not checked. Nevertheless, being aware of the interest in speech rate does not, in principle, invalidate listeners’ evaluations of changes in speech rate.

Third, some participants may have been suspicious of the “mistake” which caused the experimenter to recruit for the fictitious experiment ahead of the nonverbal sensitivity test. They also may have been suspicious when asked to complete scales following the compliance message. While participants’ reactance was not assessed, many participants asked their classroom instructors and the experimenters when
the fictitious experiment would take place and how much extra-credit they would receive, suggesting that the cover story was believed.

Finally, the measure of the listener's speech rate was actually a modified assessment of "reading" rate, employed to decrease time and effort in measuring speech rate. While a "reading" measure may imprecisely measure "speech" rate, previous CAT researchers (e.g., Street et al., 1983) have found that a passage read in a conversational style accurately discriminates slow speakers from fast speakers.

ENDNOTES

1. The term "speech style" will be used throughout this paper instead of "voice tone," in keeping with the terminology of CAT. In this paper, speech style refers to the noncontent speech characteristics that comprise tone of voice.

2. The favorable evaluations associated with similar voices are most evident in peer relationships and do not occur when the speaker interacts in such a way to enhance power or status differences.

3. The latitudes of acceptable speech rates have been labelled the performance zone by accommodation researchers. However, since these latitudes are comprised of rates preferred by listeners, we will refer to them simply as preferred speech rates.

4. The initial recruitment message was enacted by the same confederate who encoded the compliance message.

5. The following message was used in the speech-rate pretest:

"Parking and Transportation is setting its sights on university-owned buildings scheduled for demolition. They hope to regain the parking spaces lost this year to construction. The University of ______ has 10 construction projects planned for this academic year. Some of these projects will be built on what are presently parking lots. The construction will cut into about one thousand parking spaces. Officials are looking into alternative parking areas and are counting on the razing of vacated buildings to open up some additional spaces.

Officials explained that the university typically buys buildings just off campus, uses them as offices for about a year, and then tears them down. Parking and Transportation hopes that they will gain back spaces lost to construction projects during this past academic year. In addition, they are considering building parking lots where other houses scheduled for demolition stand along Speedway Boulevard."

6. The message employed in speech-rate preference test (with the 63-syllable excerpt highlighted) was:

"The drug abuse problem has been an ongoing focus of both local and national news, and not without good reason. Drug abuse is destroying families, ruining careers, and contributing to an ever-increasing crime rate. It shows no social or economic prejudice. It affects everybody, rich, poor, young, and old.

Drug abuse is a major concern in our educational institutions. The education of tomorrow's leaders must not be handicapped by the dangers of drug abuse. What can we do about this at the University of ______? Drug testing programs have shown themselves to be particularly effective at curtailing drug usage. We propose that students at the University of ______ be required to take a drug test each semester before admission to the University.

In this way we can ensure a drug-free student population, thus maximizing their contribution to society."

7. The immediacy scale was scored such that high ratings represented more immediacy and low ratings represented less immediacy. This is opposite to the scoring in Buller and Burgoon (1986) and Buller and Aune (1988).

8. Analyses including the listener's decoding ability did not support Buller and Aune's (1988) CAT explanation for the decoding ability by speech rate interaction on compliance, even though that interaction was again present. Specific findings are available from the senior author.
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9. Street, Brady, and Putman (1983) reported that competence ratings plateaued at approximately 350 syl./min. They surmised that the competence stereotype encompasses both moderate and fast speech rates; the current data show that extremely fast rates are less credible and dominant.

10. It would be wrong to conclude that actual similarity is irrelevant to relational interpretations. CAT assumes that perceptions of similarity moderate between actual similarity and interpretations of rate changes and therefore are dependent on actual similarity. This latter relationship was clearly demonstrated in the speech-rate-preference test. That actual similarity failed to affect relational interpretations may stem from the moderating role of perceived similarity.

REFERENCES


