Speed of Speech and Persuasion:
Evidence for Multiple Effects

Stephen M. Smith
North Georgia College

David R. Shaffer
University of Georgia

This study examined the possibility that increased speech rate can affect persuasion either by acting as an agreement cue or through its impact on message processing. Participants heard messages that were either moderate or high in personal relevance, consisted of weak or strong arguments, and were presented at either moderate (180 words per minute) or fast (220 wpm) rates of speech. Consistent with hypotheses derived from the elaboration likelihood model, fast speech served to inhibit participants’ tendency to differentially agree with strong versus weak message arguments under both moderate and high relevance. However, fast speech was associated with increased persuasion only for moderate involvement subjects, and this influence was mediated by perceptions of source credibility. Polarity of message-based elaborations predicted attitudes of both moderately and highly involved subjects. Thus, central and peripheral route processes appeared to co-occurring for moderately involved participants.

What effect does an individual’s rate of speech have on his or her audience? Several possibilities exist, and a number of them have received empirical support. First, a fast talker might be more persuasive than one who speaks more deliberately. Support for this hypothesis has been obtained by a number of researchers (e.g., LaBarbera & MacLachlan, 1979; MacLachlan, 1982; Miller, Maruyama, Beaber & Valone, 1976; see Woodall & Bourgoon, 1984, for a review). This finding is often described as a credibility cue effect. That is, fast speech is perceived as an indicator that the speaker is knowledgeable, intelligent, and/or expert (Miller et al., 1976). Another explanation is that fast presentations elicit greater interest and attention and hence are more effective at inducing attitude and/or behavior change (e.g., LaBarbera & MacLachlan, 1979).

Other theorists have suggested that fast speakers might be less effective than slower speakers. They note as an example that politicians, whose intent is presumably to persuade their audience, tend to speak more deliberately than “normal” adults when reading aloud (e.g., O’Connell, Kowals, Bartels, Mundt, & van de Water, 1989). Consistent with this notion, some studies have indicated that rapid presentation can undermine interest in the message (e.g., Lautman & Dean, 1983) or can make recipients more likely to judge the speaker as condescending (e.g., Schlinger, Alwitt, McCarthy, & Green, 1983).

A third possibility can be derived from the dominant models of persuasion. The two most frequently cited models are the elaboration likelihood model (ELM; Petty & Cacioppo, 1986a) and the heuristic-systematic model (HSM; Chaikhen, Liberman, & Eagly, 1989). These models propose that message-based persuasion can occur in either of two ways. According to the ELM, the central route to persuasion emphasizes information that a person already has or is able to generate about the attitude object as the primary mediator of attitude change. Central route persuasion occurs as a recipient encodes and elaborates the arguments in a persuasive appeal and integrates these cognitive elaborations into a coherent position. The peripheral route to persuasion

Authors’ Note: Preparation of this article was facilitated by National Institute of Mental Health fellowship #MH1011842 to the first author. We thank Richard Petty and three anonymous reviewers for their helpful suggestions. Address correspondence concerning this article to Stephen M. Smith, Department of Psychology, North Georgia College, Dahlonega, GA 30597.

PSPB, Vol. 21 No. 10, October 1995 1051-1060
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involves peripheral factors that are linked to the message or the context in which it is presented (e.g., source characteristics, pleasant mood states). This type of persuasion is thought to occur when active message elaboration is minimal or absent, and it is assumed to be more likely when (a) the recipient is not able or motivated to elaborate the message arguments and (b) some kind of peripheral cue is present that might induce the recipient to accept (or reject) the message conclusions.

An ELM analysis of speech rate phenomena suggests that fast speech may hinder a recipient's ability to process and elaborate message arguments. (Although it seems possible that fast speech may affect the recipient's motivation to process as well, it is less clear whether the effect would be to increase or decrease motivation.) Moore, Hausknecht, and Thamodaran (1986) provided empirical support for this reasoning, showing that subjects exposed to rapidly presented radio ads generated fewer cognitive responses and were less influenced by argument quality than subjects who heard ads that were presented at slower rates. Subsequent research (Smith & Shaffer, 1991a) has also provided evidence that fast speech enhances the persuasiveness of counterattitudinal appeals but decreases the persuasiveness of proattitudinal appeals. Like Moore et al. (1986), these authors assumed that the mediating process was a reduction in recipients' message elaboration. These studies seem to indicate that the influence of rapid speech on persuasion depends on the baseline nature of subjects' elaborative activities. If these elaborations tend to be positive (as when a message is proattitudinal and/or consists of strong arguments), then fast speech will inhibit persuasion by suppressing favorable thoughts (Smith & Shaffer, 1991a). Conversely, when elaborations tend to be negative (e.g., when the message is counterattitudinal and/or weak), fast speech will disrupt countergaruration and thus promote persuasion (Moore et al., 1986; Smith & Shaffer, 1991a). This analysis seems to imply that speech rate has no direct impact on persuasion: Its impact is mediated by recipients' message elaborations.

The ELM analysis also suggests that the credibility cue hypothesis is plausible but may hold true only under circumstances that were not present in the studies cited above. When might fast speech have a direct impact on persuasion? The ELM suggests that credibility cue (i.e., peripheral route) effects become more likely as recipients become either less motivated or less able to elaborate a message. (Careful scrutiny of the merits of a message is referred to as systematic processing in the HSM. Inferring message validity from perceived credibility of the source would qualify as heuristic processing in the HSM scheme.) Although the ELM-inspired studies cited above (Moore et al., 1986; Smith & Shaffer, 1991a) did not suggest any credibility cue effects of speech rate, design features may have biased these studies against finding such effects.

First, the design used by Moore et al. (1986) included a manipulation of source credibility (i.e., the persuasive appeal was associated with a Princeton professor or a high school student). This source credibility manipulation may have superseded speech rate as a basis for drawing credibility inferences. Moreover, the Smith and Shaffer (1991a) study employed an issue that was arguably more highly involving issue (the 21-year-old drinking age, as evaluated by a recently disenfranchised college population) than had been used in previous studies that supported the credibility cue hypothesis (e.g., the dangers of hydroponic gardening; Miller et al., 1976). Perhaps when subjects are not highly motivated to process a message and no other agreement cues are salient, rapid speech will serve as a credibility cue. But when subjects are highly motivated to process a message, the ELM predicts that accelerated speech will no longer act as a peripheral cue. As suggested in the studies described above, rapid speech might then act primarily to reduce the extent of recipients' message processing.

What does the ELM predict if the issue is of moderate or questionable relevance to participants? First, the model assumes that as recipients become less motivated to process, they will be relatively less likely to base their attitudes on message features and relatively more likely to base their attitudes on peripheral factors (such as simple heuristics). Thus, compared with highly involved subjects, we would expect less involved subjects to be less influenced by argument quality (central influence) and more influenced by speech rate as a peripheral cue (or, in HSM terms, a heuristic cue). However, this does not mean that argument quality will have no effect on the attitudes of the latter participants. Although argument quality should have less impact as relevance decreases, it would still be expected to influence persuasion to some extent unless the message is largely irrelevant to subjects.

In sum, the ELM suggests that both central and peripheral route influences are possible (i.e., they can co-occur), particularly when processing involvement is moderate. The ELM would also predict that highly involved subjects would be less influenced by the cue, and more influenced by the quality of message arguments, than less involved subjects. As cues go, fast speech is somewhat unusual in that it can act as an agreement cue if someone is not inclined to attend to the arguments but may potentially act as a disagreement cue for someone who is motivated to process a message. Indeed, the latter recipients may actually be annoyed by a person who speaks rapidly, particularly if they are aware that this accelerated delivery is disrupting their processing of what is being said. Such an effect would be unlikely.
among uninvolved recipients, who are less interested in processing the message.

The present experiment was designed to further explore the ELM analysis of speech rate effects on persuasion. Subjects heard a message composed of relatively strong or weak arguments that was highly personally relevant or less personally relevant and was delivered at a normal or rapid rate of speech. Personal relevance was manipulated using a variant of the “senior comprehensive exams” issue (cf. Petty & Cacioppo, 1979, Experiment 2; Petty, Cacioppo, & Goldman, 1981), with some subjects led to believe that such exams would be implemented the following year (i.e., highly relevant) and others led to believe that the policy would take effect in 6 years (less relevant). It was difficult to know a priori how relevant the messages would be in an absolute sense, particularly the latter, less relevant message. Subjects might view this message as either moderately relevant or completely irrelevant. However, note that Petty et al. (1981) used a 10-year lag to operationalize low relevance, and Petty and Cacioppo (1979, Experiment 2) suggested that the exams were being considered for a distant institution. If the less relevant message is perceived to be moderately relevant, then the ELM would predict that both argument quality and peripheral (speech rate) cue effects would emerge. If the less relevant message is seen as irrelevant, then only cue effects would be expected. However, past use of the 6-year-lag manipulation with the same subject population used in the present study has suggested that this manipulation induces moderate relevance (Smith & Shaffer, 1991b). The high issue relevance should induce systematic processing of the persuasive messages, so that participants’ postmessage attitudes depend primarily on the strength of the arguments they have evaluated. Any effects of speech rate on persuasion should be indirect, as rapid speech might be expected to undermine processing and elaboration of the message arguments. For example, when arguments are weak, elaborations are likely to be negative, so that fast speech may increase persuasion by reducing participants’ ability to counterargue the message. But when issue relevance is reduced and people are less inclined to scrutinize message arguments, speech rate should affect attitudes independently of message elaborations, so that fast talkers are judged more credible (and their messages more persuasive) than those who speak at a normal pace.

METHOD

Subjects and Design

Participants were 94 undergraduates (43 males, 51 females), each of whom was approached on the campus of a large southeastern university and asked by a fellow student (the experimenter) to assist with a survey for a class project. After consenting to do so and learning that the survey topic was either highly relevant or less relevant, the participant was exposed to one of four audiotaped messages created by the orthogonal manipulations of argument quality (strong vs. weak) and communicator’s speech rate (normal vs. rapid). Thus, the design was a 2 (Relevance) × 2 (Argument Quality) × 2 (Speech Rate) factorial.

Target Issue and Experimental Manipulations

Persuasive messages argued in favor of a requirement that seniors pass a comprehensive exam in their majors to obtain their bachelor’s degree. Issue relevance was manipulated by informing participants that, should the Board of Regents act favorably on the proposed requirement, all university seniors would have to pass a comprehensive exam, beginning either next year (high relevance) or after a 6-year grace period so as not to “change the requirements in midstream” for students currently enrolled (moderate relevance). We created two versions of the persuasive communication to manipulate argument quality. The strong arguments communication consisted of five points to support the implementation of comprehensive exams, each of which had been rated as a cogent argument in previous research (e.g., students who pass comprehensive exams obtain better jobs; undergraduate instruction improves once schools implement the exam requirements; cf. Petty & Cacioppo, 1979, Experiment 2). The weak arguments communication consisted of five points that previous research participants have rated as rather specious support for the exam proposal (e.g., because graduate students must pass comprehensive exams, undergraduates should as well; by not administering the exams, we violate a tradition dating back to the ancient Greeks). Though differing in the quality of their supporting argumentation (verified with an independent sample; Smith & Shaffer, 1991b), the two messages were equivalent in length. Finally, the messages were delivered by a male spokesperson who initially recorded each at a rate of 180 words per minute (normal speech rate). The communications were then rerecorded at 220 words per minute (rapid speech).

Procedure

Participants seated alone at various locales on campus were approached by an undergraduate experimenter who requested assistance with some survey research she was conducting for her undergraduate journalism class. She asked the participant to assist by “speaking out on a current issue.” Participants were told that they would be given an opportunity to record their opinions anony-
mously and that even if they did not desire to record a statement, they could assist by helping to provide ratings of a previous participant’s comments. This procedure provided a rationale for playing the tape-recorded message to the participant.

After consenting to partake in an anonymous tape-recorded interview, the participant was informed that “today’s topic concerns the proposal currently before the Board of Regents that all seniors be required to pass a comprehensive exam in their majors before obtaining a bachelor’s degree.” The interviewer then introduced the relevance manipulation by stating that, if enacted, the comprehensive exam requirement would begin next year (high relevance) or after a 6-year grace period (moderate relevance). Participants were then asked to listen to “the statement made by the last participant in our survey.”

Having already randomly assigned each participant to an experimental condition, the experimenter then played the appropriate stimulus tape (i.e., either the strong or the weak arguments version recorded at 180 or 220 wpm). When the tape ended, the experimenter gave the participant a brief questionnaire, ostensibly to assess his or her impressions of the quality and clarity of the previous interview. Five items on the questionnaire called for responses on 7-point scales. The first item was our primary attitudinal dependent measure, which asked participants to indicate the extent to which they agreed with the previous speaker’s statement (for each measure, higher ratings indicated more of an attribute). One item was intended as a check on the clarity of the message (“How clear was the previous speaker’s statement?”); a second served as a check on the personal relevance manipulation (“How relevant was this topic to you personally?”). Two additional items assessed participants’ assessments of the speaker’s credibility (“Did the previous speaker (a) seem like a credible spokesperson on this topic?; (b) . . . have any expertise on this topic?”). The questionnaire concluded with two open-ended items: (a) a thought-listing measure that asked participants to list the thoughts they had while listening to the interview and (b) a recall measure that asked participants to list the points the speaker had made to support his opinion.

Participants were next asked to complete a survey measure, indicating on 7-point scales (1 = very much for, 7 = very much against) their attitudes toward each of the issues that the experimenter’s class would be targeting in its research. Embedded in this list of eight issues was an item pertaining to the comprehensive exam proposal.

Suspicion probes undertaken after participants had completed the questionnaires provided little reason to believe that any participant had seen through the cover story about survey research and guessed that the previous interview had been intended as a persuasive communication. In fact, the vast majority of participants (including those in the less relevant condition) immediately requested more details about the comprehensive exam proposal (e.g., exam format; number of allowable retakes after a failure) and, on learning the true purpose of the research, seemed genuinely relieved that such an exam requirement was not under active consideration.

RESULTS

Effectiveness of Manipulations

A 2 (Relevance) × 2 (Argument Quality) × 2 (Speech Rate) analysis of variance (ANOVA) of participants’ ratings of the personal relevance of the comprehensive exam proposal yielded but one significant outcome, a main effect for issue relevance, F(1, 86) = 7.00, p < .01. Participants in the high-relevance condition did indeed judge the target issue more personally relevant (M = 5.00) than those in the moderate-relevance condition (M = 4.05). Thus, consistent with our labeling of the latter condition as of moderate relevance (as opposed to irrelevant), subjects in this group rated the message’s relevance near the scale midpoint of 4.

Although a check question for the argument quality manipulation was inadvertently omitted from the postexperimental questionnaire, 85 participants from an earlier group testing each read either the strong or the weak message and judged the strength of this argumentation on a 7-point scale. Results indicated that the strong message was perceived to be significantly more cogent support for the comprehensive exam proposal (M = 4.97) than the weak message (M = 3.54), F(1, 82) = 20.21, p < .001. Moreover, the significant effects that emerged for strength of arguments on our other dependent measures clearly imply that our manipulation of argument quality was successful.

Credibility Assessments

Two items were designed to assess speaker credibility. These two items (i.e., asking subjects to assess the speaker’s credibility and expertise) were highly intercorrelated, r(94) = .81, and hence were averaged to form a single index. A 2 (Relevance) × 2 (Argument Quality) × 2 (Speech Rate) ANOVA of this index of the speaker’s credibility produced two significant effects. A main effect for argument quality, F(1, 86) = 11.55, p < .001, reflects the finding that subjects who heard the strong message judged the speaker to be more credible (M = 5.18) than those who heard the weak message (M = 4.30). For the hypotheses that guided this research, the more interesting finding was the significant main effect for speech rate, F(1, 86) = 5.51, p < .03. As is often reported in the literature, the speaker who talked more rapidly was
judged to be more credible \( (M = 5.04) \) than his counterpart who spoke at a normal pace \( (M = 4.43) \). The only other outcome to approach significance was a marginal Relevance \( \times \) Speech Rate interaction, \( F(1, 86) = 3.66, p < .09 \), which we mention here because it is pertinent to our interpretation of subjects’ postmessage attitudinal responses (see below). Subjects hearing the moderately relevant message rated the fast speaker as more credible \( (M = 5.46) \) than the normal speaker \( (M = 4.40) \), \( F(1, 86) = 7.84, p < .01 \); however, subjects exposed to the highly relevant communication rated the rapid \( (M = 4.63) \) and normal \( (M = 4.47) \) speakers as about equally credible, \( F(1, 86) < 1 \).

**Checks on Message Comprehension/Clarity**

It appeared that participants in all conditions thoroughly processed the message arguments, as evidenced by their ability to recall the majority of them \( (GM = 3.61 \) of 5.00 possible). A 2 (Relevance) \( \times \) 2 (Argument Quality) \( \times \) 2 (Speech Rate) ANOVA of the recall index yielded no significant outcomes, all \( F < 2.2 \). However, an analogous 2 \( \times \) 2 \( \times \) 2 ANOVA of participants’ ratings of the clarity of the message indicated a significant main effect of speech rate, \( F(1, 86) = 7.55, p < .01 \). Although participants judged the fast talker as more credible and higher in expertise, they nonetheless judged his statement to be less clear \( (M = 4.87) \) than that of the source who spoke more deliberately \( (M = 5.67) \).

**Attitudinal Responses**

Participants’ ratings of their agreement with the speaker’s message and their favorability/opposition to the comprehensive exam proposal were our two measures of message-based persuasion. Although the two measures were highly correlated, \( r(94) = .72 \), there is a valid argument against using the second assessment in the analyses: Its appearance after the questions on credibility may have biased this index toward revealing effects for speech rate, particularly among participants who had not been highly motivated to scrutinize the message (i.e., the moderate-relevance subjects). Therefore, we report analyses only for the initial attitude measure.\(^7\)

A 2 (Relevance) \( \times \) 2 (Argument Quality) \( \times \) 2 (Speech Rate) ANOVA on the attitudinal measure produced three significant outcomes, the main effect for argument quality, \( F(1, 86) = 4.95, p < .03 \), reinforcing our confidence in this manipulation. Strong arguments were more persuasive \( (M = 4.39) \) than weak ones \( (M = 3.71) \). Of course, the ELM would predict that this argument quality effect would be strongest among subjects for whom the target issue was more personally relevant—a trend that did not approach significance in this sample \( (F_{\text{for Relevance } \times \text{Argument Quality}} < 1) \), owing perhaps to the fact that subjects for whom the message was made less relevant nonetheless saw the message as having some (moderate) relevance to the self.\(^3\)

The remaining outcomes, however, provide stronger support for the ELM analysis. Consider first the significant Speech Rate \( \times \) Argument Quality interaction, \( F(1, 86) = 5.58, p < .03 \), depicted in Figure 1. Consistent with the notion that constraints on participants’ ability to process a persuasive message will minimize the impact of argument quality on attitudinal responses, participants exposed to the normal-speed message were more likely to agree with the strong message \( (M = 4.50) \) than the weak one \( (M = 3.09) \), \( F(1, 86) = 9.96, p < .01 \), but those receiving the accelerated delivery were persuaded equally by strong \( (M = 4.28) \) and weak \( (M = 4.33) \) messages, \( F < 1 \).

Moreover, the patterning of a nearly significant Relevance \( \times \) Speech Rate interaction effect, \( F(1, 86) = 3.22, p < .08 \) (see Figure 2), provides important additional support for our hypotheses. Recall that although participants rated the fast talker as more credible and higher in expertise than his more deliberate partner, these perceptions were more pronounced in the moderate-relevance condition. Indeed, the effect of speech rate on subjects’ attitudinal responses was also stronger among moderate-relevance participants. As predicted by the ELM, (a) the attitudinal responses of high-relevance participants were not affected by the speech rate manipulation, \( F < 1 \), whereas (b) moderate-relevance participants appeared to use rapid speech as a credibility cue and were influenced more by the fast-talking spokesman \( (M = 4.82) \) than the slower speaker \( (M = 3.79) \), \( F = 6.46, p < .05 \). We investigated these differences further using path analyses, which are reported under Supplementary Analyses, below.

**Message Elaborations**

Participants’ responses to the thought-listing exercise were placed into five categories. Elaborations of message arguments were classified as favorable (proarguments), neutral, or unfavorable (counterarguments) to their referents, whereas elaborations focusing uniquely on the source were classified as favorable or unfavorable to the source.\(^9\) Separate analyses were conducted on the number of favorable message elaborations, the number of unfavorable message elaborations, the number of favorable source elaborations, the number of unfavorable source elaborations, and the total number of all elaborations. We also constructed “net polarity” indexes for message elaborations (i.e., number of proarguments minus number of counterarguments a subject generated) and for source arguments (i.e., number of favorable minus number of unfavorable source comments).
A series of 2 (Relevance) × 2 (Argument Quality) × 2 (Speech Rate) ANOVAs of the elaborative indexes yielded few reliable outcomes. Indeed, the only significant findings were main effects of argument quality for the counterarguments measure, $F(1, 86) = 4.11, p < .05$, the polarity of message elaborations measure, $F(1, 86) = 4.62, p < .05$, and the polarity of source arguments index, $F(1, 86) = 6.11, p < .02$. Participants who heard the weak message generated more counterarguments ($M = 1.34$), elaborated the message less favorably overall (net polarity $M = -0.60$), and were less favorable in their overall commentary about the speaker (net polarity $M = -0.26$) than those who heard the strong message ($Ms = 0.83, 0.19, and 0.08$, respectively, for counterarguments, message polarity, and source polarity). \(^{10}\)

**Supplementary Analyses**

At first blush, the finding that our high- and moderate-relevance participants did not differ in either the number or the polarity of their message elaborations would appear at odds with the ELM assertion that issue relevance heightens one’s motivation to scrutinize message arguments. Yet it should be emphasized that the attitudinal responses of our high-relevance participants were influenced only by argument quality, implying that the persuasion (or lack thereof) shown by these individuals occurred by the central route. By contrast, the postmessage attitudes of our moderate-relevance participants were influenced both by argument quality (reflecting the central route to persuasion) and by rate of speech (a peripheral influence).

To gain further insight into the relative influence of central and peripheral factors when the issue was highly or moderately relevant and the message was presented at a normal or fast rate of speech, we conducted path analyses using maximum likelihood estimates generated by RAMONA 3.8 (Browne & Mels, 1993) to assess mediational hypotheses suggested in the ANOVA results. Having already ascertained that both speech rate and argument quality were influencing the attitudes of our moderate-relevance participants, we were interested primarily in seeing to what extent these effects were mediated by subjects’ perceptions of the speaker’s credibility and their net message elaborations. We tested the notion that argument quality effects on these subjects’ attitudes were mediated by their message-based elaborations by
estimating paths between argument quality and attitudes, between argument quality and message elaborations, and between message elaborations and attitudes. We tested the hypothesis that speech rate effects were mediated by their perceptions of source credibility by estimating paths between speech rate and both attitudes and credibility ratings and between credibility ratings and attitudes. Paths from speech rate to message elaborations and from argument quality to credibility ratings were also estimated. The same model was estimated for high-relevance participants.

Figure 3 reveals that the impact of argument quality on the attitudinal responses of subjects in the moderate-relevance condition was at least partly mediated by the polarity of subjects’ message elaborations (reflecting the central route to persuasion). The figure also reveals that speech rate, which had had a significant impact on subjects’ attitudinal responses in the ANOVA, did not exert its effects directly or indirectly, through subjects’ elaborative activities. Instead, Figure 3 reveals that speech rate affected subjects’ impressions of speaker credibility, which, in turn, influenced subjects’ attitudinal responses (a credibility cue, or peripheral route influence).

We conducted the same path analysis for the high-relevance participants (see Figure 4). The results indicated that the effects of argument quality on the attitudinal responses of subjects in the high-relevance condition were mediated both by message-based elaborations and by perceptions of source credibility.

Most important for the present analysis, speech rate had no direct effect on the attitudinal responses, message elaborations, or source credibility ratings of high-relevance subjects, indicating that they engaged in central route processing but were not affected by speech rate as a peripheral cue. Their attitudes were not influenced by speech rate either in the positive direction suggested by the credibility cue hypothesis or in a negative fashion as would be the case if subjects were generally irritated by the fast speaker. However, as suggested by the Speech Rate × Argument Quality interaction shown in Figure 1, it appears that accelerated speech did make central route processing more difficult for these subjects.

DISCUSSION

A number of investigations have found that speech rate has a significant role in persuasion. However, a number of different conclusions have been reached regarding the true role of speech rate in persuasion processes. Some have hypothesized that speech rate serves as a credibility cue (Miller et al., 1976), enhancing overall persuasion. Others have concluded that fast speech acts to increase interest in the persuasive message (e.g., LaBarbera & MacLachlan, 1979); however, some have posited that it may have the opposite effect (e.g., Lautman & Dean, 1985). More recently, theorists have suggested that the primary influence of rapid speech is on the extent to which recipients elaborate a persuasive appeal (e.g., Moore et al., 1986; Smith & Shaffer, 1991a). By reducing people’s ability to elaborate a message, rapid speech can either enhance persuasion (e.g., when message arguments are weak or counterattitudinal) or reduce persuasion (e.g., when the arguments are strong or proattitudinal).

The ELM assumes that a variable can serve multiple roles in persuasion (cf. Petty, Gleichcr, & Baker, 1991). That is, a variable can serve as a persuasive argument or as a peripheral cue or can influence the extent or direction of message processing/elaboration. In the present study, we attempted to demonstrate that speech rate, like a plethora of other variables, could also serve multiple functions in persuasion settings. Rapid speech served to influence (undermine) the extent of message processing, as evidenced by subjects’ reduced tendency to discriminate between weak and strong messages and their diminished perceptions that the message was clear. Of course, these results are consistent with previous ELM-based analyses of speech rate effects (e.g., Smith &
Source’s credibility (cf. Miller et al., 1976). These results extend the literature by suggesting an important moderator of when credibility cue effects of rapid speech might emerge—namely, when processing motivation is only moderate. Of course, the ELM would predict similar (and perhaps stronger) reliance on speech rate as a credibility cue had subjects viewed the target issue as irrelevant and hence been unmotivated to process the message arguments.

We should add that credibility is not the only speaker characteristic that speech rate might affect. For example, recipients might infer that the speaker is purposely using rapid speech to disguise some hidden agenda (e.g., a reporting bias might be inferred; see Eagly, Wood, & Chaiken, 1978). Additionally, fast speech could elicit inferences about the communicator’s intelligence, open-mindedness, confidence, sociability, and a host of other variables.

Additionally, our results suggest that both central and peripheral effects can co-occur at moderate levels of processing motivation. Moderately involved subjects in the present experiment were influenced both by argument quality (this effect being mediated by the polarity of their message-based elaborations) and by speech rate (mediated by their perceptions of source credibility). The heuristic systematic model of persuasion (Chaiken et al., 1989) explicitly predicts that central (or “systematic”) and peripheral (or “heuristic”) factors can occur simultaneously.

Recent findings by Chaiken and her colleagues (e.g., Chaiken & Maheswaran, 1994; Maheswaran & Chaiken, 1991) have supported this prediction. Chaiken and Maheswaran (1994) exposed subjects to descriptions of a fictitious telephone answering machine and led them to believe the source was either Consumer Reports (high-credibility source) or K-Mart (low-credibility source). Processing involvement was manipulated by telling some subjects that they were part of a critical test market for the product (high involvement) and leading other subjects to believe that the product would be marketed elsewhere and their input was not particularly important (low involvement). When product attributes were of ambiguous strength (i.e., some important and some unimportant attributes were associated with the product), both low-involvement and high-involvement subjects were more favorable to the high-credibility description than the low-credibility description. Path analyses indicated that the valence of subjects’ attribute-related thoughts mediated this effect only for high-involvement subjects. This implies that both heuristic factors (i.e., source credibility) and systematic factors (i.e., attribute-related thinking) were related to persuasion and that they combined interactively, heuristic factors influencing systematic factors.

Shaffer, 1991a). Also consistent with the ELM, rapid speech did not appear to serve as a peripheral cue for our high-relevance participants.

The only result that was not consistent with the ELM predictions was the absence of a significant effect of speech rate on subjects’ total number of elaborations; however, several previous investigations have provided evidence for such effects (e.g., Moore et al., 1986; Schlinger et al., 1983; Smith & Shaffer, 1991a), and the overall pattern of results suggests strongly that fast speech can (and did) undermine processing. Perhaps the primary effect of fast speech in the present data was on subjects’ message reception rather than on their elaborative activities. This interpretation is consistent with our finding that attitudes were apparently unaffected by the quality of message arguments in the fast speech condition. Perhaps this failure to consider the merits of the proposal was due to subjects’ inability to elaborate. However, to the extent that message reception failed, its failure was not reflected in differential recall of message arguments. Of course, it is also possible that the range of speech rates used in the present study was too limited to elicit reliable differences in the quantity of subjects’ elaborative activities.

By contrast, rapid speech was shown to act as a peripheral cue in the moderate-relevance condition, increasing persuasion by enhancing subjects’ perceptions of the

![Figure 4 Path-analytic assessment of the mediational roles of source credibility and message elaborations on the attitudes of highly involved participants. Significant paths are in bold, standard errors in parentheses.* \( p < .05 \); ** \( p < .01 \).

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![Figure 4 Path-analytic assessment of the mediational roles of source credibility and message elaborations on the attitudes of highly involved participants. Significant paths are in bold, standard errors in parentheses.* \( p < .05 \); ** \( p < .01 \).

\[ \text{Source’s credibility (cf. Miller et al., 1976). These results extend the literature by suggesting an important moderator of when credibility cue effects of rapid speech might emerge—namely, when processing motivation is only moderate. Of course, the ELM would predict similar (and perhaps stronger) reliance on speech rate as a credibility cue had subjects viewed the target issue as irrelevant and hence been unmotivated to process the message arguments.} \]

We should add that credibility is not the only speaker characteristic that speech rate might affect. For example, recipients might infer that the speaker is purposely using rapid speech to disguise some hidden agenda (e.g., a reporting bias might be inferred; see Eagly, Wood, & Chaiken, 1978). Additionally, fast speech could elicit inferences about the communicator’s intelligence, open-mindedness, confidence, sociability, and a host of other variables.

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Maheswaran and Chaiken (1991) used the same target product information and an identical manipulation of involvement and also manipulated a heuristic cue. Specifically, subjects were led to believe that either a minority or a majority of consumers preferred the brand they were to evaluate. This consensus cue was found to have an additive impact on persuasion for highly involved subjects, who were also influenced by argument quality. Thus, both heuristic and systematic processes were evident, and they appeared to act in an additive fashion for these subjects.

The present results also suggest that heuristic (or peripheral route) factors and systematic (or central route) factors can simultaneously affect persuasion. In our study, however, the two routes appeared to operate independently (i.e., speech rate did not affect the polarity of subjects’ message elaborations). Thus, our results are more similar to those of Maheswaran and Chaiken (1991) than to those of Chaiken and Maheswaran (1994). Although our results are consistent with the HSM, we do not interpret them as providing differential support for the HSM or ELM. That is, according to the ELM, central and peripheral routes to persuasion are not mutually exclusive, a point made elsewhere by the architects of this model (cf. Petty, Kasmer, Haugtvedt, & Cacioppo, 1987). This co-occurrence would be especially likely at moderate levels of elaboration likelihood—which we believe were present in the moderate-relevance conditions of our experiment (e.g., see Petty, 1994). Thus, we find our results to be consistent with the co-occurrence assumptions of both the HSM and the ELM.

As a final note, both motivation and ability to process seem likely to be affected to some extent by accelerated speech. Indeed, the ELM’s multiple roles postulates (Petty et al., 1991) assume that this is true for most persuasion-relevant factors. As some theorists have noted (e.g., Kruglanski, 1989), separating motivational from ability effects is difficult, but this is nonetheless an important future direction for the present research.

NOTES

1. The models are essentially equivalent in many respects but employ different terminology. The ELM refers to central and peripheral routes, the HSM to systematic and heuristic processes. The differences between the models have been outlined elsewhere (e.g., Eagly & Chaiken, 1993; Petty, 1994) but are not important for the current research.

2. Vann, Rogers, and Penrod (1987) also examined the effects of speech rate on cognitive responses and reported that the total number of thoughts that subjects generated was not significantly affected by speed of speech (although there was clearly a trend toward less elaboration of faster speech). This result was for all responses, including source attributions. Their analyses are inconclusive regarding the effects of speech rate on the number of message elaborations that subjects generated, as they report only the ratio of message elaborations to total elaborations.

3. Specifically, on a manipulation check item where 1 = not at all relevant and 9 = very relevant, Smith and Shaffer (1991b) found that the “less relevant” message was rated much nearer the scale midpoint (M = 4.36) than the “irrelevant” endpoint. These findings suggest that the label moderate relevance is more appropriate than low relevance to describe these subjects.

4. Our two female experimenters each ran an approximately equal number of male and female participants in each of the eight experimental conditions. Preliminary analyses that included Experimenters and Sex of Participants as factors yielded no significant outcomes involving the experimenter variable and few significant effects (3 of 88 possible) involving sex of subjects. Because each of the latter effects was a higher-order interaction that appeared but once in the data set and did not aid in interpreting our results, we collapsed across both the Experimenters and the Sex of Participants factors in all subsequent analyses.

5. Pretesting (N = 79) with a sample drawn from the population used in our study indicated that senior comprehensive exams were perceived as a highly important issue (M = 7.09 on a 9-point scale with 1 = not at all important and 9 = extremely important).

6. These items were also analyzed separately, and results indicated identical patterns.

7. However, we should note that none of the conclusions we draw would have to be altered had we included the second attitude measure in the analyses. Analyses performed on the composite measure, including path analyses described below, are available on request from the first author.

8. Also consistent with our suggestion that subjects in the “less relevant” condition thought the message was moderately relevant, inspection of the thought-listing data revealed that a number of subjects were concerned about the effects the proposal might have on their younger siblings, and a few even expressed concern that they might not graduate within 6 years themselves. Other researchers using this paradigm have established low relevance by stating that the exams would be implemented in 10 years—a time frame that is more likely to brand the proposal as personally irrelevant (e.g., Petty & Cacioppo, 1979).

9. Classification of thoughts into the five categories was performed independently by two blind raters, who agreed in their classifications of individual thoughts 85% of the time (i.e., for 305 of the 359 thoughts that both raters classified). As one rater overlooked and thus failed to rate the thoughts of several participants, our analyses of the thought-listing data are based on the judgments of the second rater.

10. In response to a reviewer’s suggestion, we calculated a proportional index of message elaboration valence, dividing the number of positive elaborations plus 1 by the number of nonneutral elaborations plus 1 (see Anderson, New, & Speer, 1985). Analyses performed on this index yielded similar results to those for our net polarity measure and are available from the first author.

11. This point was recently reiterated by Petty (1994), who noted that “at most points along the elaboration continuum there is likely to be some co-occurrence of processes and some joint impact—that is the nature of a continuum” (p. 256).

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Received May 24, 1993
Revision received April 8, 1994
Accepted April 9 1994