# Effects of Advertisement Speech Rates on Feature Recognition, and Product and Speaker Ratings

**Article** *in* International Journal of Listening · January 1999

DOI: 10.1080/10904018.1999.10499029

CITATIONS
8

READS
598

**5 authors**, including:

Christopher H. Skinner
University of Tennessee at Knoxville
**254** PUBLICATIONS **6,172** CITATIONS
SEE PROFILE

Daniel H. Robinson
The University of Texas at Arlington
**142** PUBLICATIONS **3,422** CITATIONS
SEE PROFILE

Heather Sterling
Louisiana Department of Health
**39** PUBLICATIONS **1,680** CITATIONS
SEE PROFILE

Mark Goodman
Mississippi State University
**60** PUBLICATIONS **86** CITATIONS
SEE PROFILE

# Effects of Advertisement Speech Rates on Feature Recognition, and Product and Speaker Ratings

CHRISTOPHER H. SKINNER
*The University of Tennessee - Knoxville*
DANIEL H. ROBINSON, SHERI L. ROBINSON
*The University of Texas - Austin*
HEATHER E. STERLING
*The University of Southern Mississippi*
MARK A. GOODMAN
*Mississippi State University*

*Analogue radio commercials were used to investigate the relationship between speech rates and listeners' recognition of message content, and judgements of products and speakers. In Experiment I, immediately after listening to a simulated radio advertisement (Ad) that presented 17 standard features of a fictitious car at one of three different rates (fast=212, medium=113, and slow=56 words per minute) listeners rated the car and speaker and completed a feature recognition task. Those who listened to the fast Ad rated the car significantly higher than those who listened to the medium Ad. In Experiment II, participants performed the feature recognition task and rated the product and speaker 10 minutes after listening to the advertisement. Participants who listened to the medium Ad rated the product significantly higher than those who listened to the fast Ad. Discussion centers around message source and content variables, sleeper effects, and information processing models of attention and memory which may explain the persuasive effects of rapid or compressed speech.*

Researchers across disciplines (e.g., advertising, public relations, communications, education) have been investigating the influence of verbal communication rates on learning, persuasion, recall, and listeners' perceptions of speakers, products, and message content (Beatty & Behnke, 1978; Behnke & Beatty, 1977; Bittner, Shamo, & Celorie, 1973; Goldhaber, 1970; King & Behnke, 1989; Rossiter, 1971; Skinner, Logan, Robinson, & Robinson, 1997; Sticht & Glasnapp, 1972; Street & Brady, 1982; Street, Brady, & Lee, 1984; Wheeless, 1971). This research may be particularly relevant to radio communications and radio advertisements. Although the average person listens to 8.5 hours of radio per week and advertisers spent 9.6 billion dollars on radio advertisements (Ads) in 1993, researchers have identified few variables that affect the success of radio

International Journal of Listening, Vol.13, 1999 97-110

Ads (Weinberger, Campbell, & Body, 1994).

## BACKGROUND

One variable that may affect the cost and persuasive impact of radio Ads is copy presentation rate (Apple, Streeter, & Krauss, 1979; LaBarbera & MacLachlan, 1979; Miller, Maruyama, Beaber, & Valone, 1976; Peng, Zebrowitz, & Lee, 1993). LaBarbera and MacLachlan (1979) used an electronic device to compress radio Ads by reducing pauses between words. Data analysis showed that the college students who listened to the compressed Ads rated the Ads as more interesting and had higher rates of recall (one fact from the advertisement) two hours later. MacLachlan and Siegel (1982) found similar results when they compressed television Ads. Thus, having copy read at faster rates or compressing speech may both increase the effectiveness of Ads and reduce the costs of Ads by making them briefer.

Several theories have been developed to explain why increasing speech rates or compressing Ads increases the persuasive value of a message. Researchers have found that American listeners associate rapid speech with higher levels of speaker competence, expertise, or power (Apple et al., 1979; Peng et al., 1993). Miller et al. (1976) experimentally manipulated speech rate (fast=191 words per min., medium=140 words per min., and slow=111 words per min.) and found that fast speakers were more persuasive than slow or medium speakers. Apple et al., (1979) also found that listeners rated faster speakers as having more expertise and that rapid speakers were more persuasive. These findings have led some to conclude that speech rate (message variable) causes increases in listeners' judgements of speaker expertise (source variable), which in turn causes the communication to be more persuasive (Apple et al., 1979; LaBarbera & MacLachlan, 1979; MacLachlan, 1979).

Researchers investigating reading and speech have found evidence of other causal mechanisms that may explain why increasing speech rates or compressing Ads increases the persuasive value of a message (DeStefeno, Noe, & Valencia, 1981; King & Behnke, 1989; Samuels & Dahl, 1975; Schmitt 1983; Skinner, Robinson, Adamson, Atchison, & Woodward, 1998; Sterling, Robinson, & Skinner, 1997; Watts, 1983). For example, Skinner et al. (1998) manipulated speech rates in their listening-while-reading (LWR) study. In this study, students were instructed to listen and read silently as experimenters read aloud at different rates. Results showed that students scored slightly higher on inferential comprehension questions but signifi-

cantly lower on factual questions when experimenters read at rapid rates. King and Behnke (1989) compressed speech rates and measured comprehension in college students. Results showed that recall of facts or literal comprehension decreased as speech rates increased. However, interpretative listening (e.g., listeners' forming more global judgements' of speaker's meaning, attitude, or intent) did not significantly deteriorate until speech rates reached extremely high levels (60% compression).

In studies where speech rates were manipulated, slow presentation rates may have allowed students to focus their attention and perhaps even cognitively rehearse specific facts (e.g., King & Behnke, 1989; Skinner et al., 1998). However, under the more rapid LWR interventions, material may have been presented too fast for students to focus their attention on specific facts. Thus, the students may have attended to the global gist of the passage (Breznitz, 1987; Hall & Tinzmann, 1989; Rasinski, 1990; Watts, 1983). The results of these studies suggest that slow presentation rates may increase listeners' attentional focus to specific facts, but rapid copy presentation rates may cause listeners to focus their attention on forming more global impressions (DeStefeno et al., 1981; King & Behnke, 1989; Samuels & Dahl, 1975; Schmitt, 1983; Skinner et al., 1998).

The two theories reviewed that attempt to explain the causal mechanism(s) responsible for the effects of rapid or compressed speech have applied implications. If rapid speakers are more persuasive because listeners consider faster speakers to be more intelligent and/or more knowledgeable, then all advertisements would benefit from increasing copy presentation rates, regardless of the goal of the advertisement. However, if copy presentation rates influence listeners' cognitive behaviors differentially, with more rapid rates causing listeners to attend to more global characteristics of messages and slow rates causing listeners to attend to specific facts, then copy presentation rates should be adjusted depending upon the goal of the Ad. If this cognitive information processing theory accounts for the impact of rapid speech, then radio advertisements that attempt to provide listeners with specific facts (e.g., seven behaviors that put one at risk for acquiring HIV), may be more effective when copy is read at a slower rate.

## Statement of the Problem

The purpose of the current study was to use analogue radio commercials to begin investigating these different theories related to mediated copy presentation rates. In these experiments, we attempted to reduce the prob-

ability that listeners' judgements regarding message source (e.g., the speakers expertise) would impact their judgements of the product. Gender role stereotypes suggest that listeners would be more likely to rate a male speaker as having more expertise with respect to automobiles (Basow, 1986). Thus, a female read radio copy describing an automobile. In the first experiment, listeners' recall of facts, and their judgements about the product and the speaker were assessed immediately after hearing a radio advertisement read at different rates. In a second study, recall of facts and judgements were assessed after a 10 minute delay where participants completed an interpolated task.

## EXPERIMENT I

### Method

#### *Subjects and setting*

Ninety-eight undergraduate students at a university in the southern U.S. participated in Experiment I. Informed consent for participation was granted by every student in three sections of an undergraduate marketing class and one section of an undergraduate educational psychology class. Only participants who were absent from class when procedures were conducted were excluded. All procedures took place in the participants' classrooms.

#### *Materials*

Three different audio-cassette tapes (fast, medium, and slow) of a simulated radio advertisement were prepared. Each tape contained identical copy. A female graduate student read the following copy:

> The new Alante! Here are just a few of the features that are standard: power antenna, floor mats, tilt steering wheel, anti-lock brakes, cruise control, engine block heater, power seats, power steering, sun roof, heavy duty battery, leather seats, full spare tire, dual climate control, self sealing tires, rear window defroster, power windows, and dual air bags. The new Alante!

The graduate student read 212 words per minute on the fast Ad, 113 words per minute on the medium Ad, and 56 words per minute on the slow Ad. These rates differed from those used by Miller et al. (1979) who used 191, 140, and 111 for fast, medium, and slow respectively.

Assessment sheets used to test listeners' recognition levels contained 34 automobile features (17 features that were mentioned in the advertisement and 17 features that were not mentioned) presented in random order in two columns. The 17 features mentioned on the Ads were selected from 34 features generated from other advertisements and car stickers. First, researchers randomly selected three of the six power features to be included in the Ad. This stratified random assignment was done so recognition scores would not be artificially inflated or deflated by including most or none of the power features. Then, 14 of the remaining 28 features were randomly selected to be included in the Ad.

*Procedures*

Experimenters attended each class at their scheduled time and ran the following procedures. Participants were informed that the experimenters were conducting research on advertisements and that they would be asked to listen to a brief, simulated advertisement and then answer questions about the advertisement. In each class, participants were randomly assigned to one of three groups and each group listened to only one of the Ads (fast, medium, or slow). In each classroom, the fast, medium, and slow Ads were run in random order.

During procedures, participants were asked to move to the front of the classroom and bring a pencil or pen. Assessment sheets were handed out face down and participants were told not to turn the sheets over. Experimenters then played either the fast, medium, or slow audio cassette-tape. After the advertisement was over participants were instructed to turn the sheets over and answer questions as the experimenter read the questions aloud. Using a 1-10 scale, participants first rated the car and then rated the speaker's knowledge about automobiles. Next, participants used the list of 34 features to indicate each feature that had been mentioned in the Ad. Participants were given as much time as they needed to complete this task. Before participants left, they were instructed not to discuss the study with classmates. For each class, after the first group completed the experiment, the next group was told to enter. After that second group finished, procedures were repeated with the final group.

*Design, dependent variables, and data analysis*

A randomized post-test only design was employed to test for differences across the three Ads (fast, medium, and slow). This design controls

for most threats to internal validity (Campbell & Stanley, 1963). The dependent variables included the product ratings, speaker ratings, and accuracy levels on the recognition task. The product quality ratings and the speaker competence ratings were taken directly from each participant's assessment sheet. A total recognition score was calculated for each participant by adding the number of correctly identified features to the number of correctly excluded features.

Because speaker ratings and car ratings were ordinal data, a one-way Kruskal-Wallis ANOVA was used to test for differences across groups on each of these dependent variables. Follow-up Mann-Whitney U tests were used to determine which groups were significantly different from each other. Feature recognition scores were analyzed using a one-way ANOVA with Tukey follow-up tests. For every analysis, differences were considered significant at the alpha=0.05 level.

## Results and Discussion

The means and standard deviations across groups and dependent variables are presented in Table 1. For speaker rating the effect of rate was not significant, $x^2(2,N=98)=0.71$. However, for car rating there was a significant effect of rate, $x^2(2,N=98)=10.35$. Participants assigned to the fast Ad group rated the car significantly higher than participants in the medium Ad group, $U(66)=307.5$. For feature recognition a significant effect for rate was found $F(2,97)=12.89$, MSE=8.86. Participants who listened to the slow Ad scored higher on the feature recognition task than participants who listened to either the medium or fast Ads. No other significant differences were found.

**Table 1**
**Mean and standard deviation rating and recognition data across presentation rates**

| | | *Speaker Rating* | | *Car Rating* | | *Features Recognized* | |
|---|---|---|---|---|---|---|---|
| | *N* | *Mean* | *SD* | *Mean* | *SD* | *Mean* | *SD* |
| **Fast** | 31 | 5.29 | 2.52 | 8.13 | 1.28 | 23.16 | 2.83 |
| **Medium** | 35 | 4.77 | 1.97 | 7.03 | 1.38 | 24.34 | 2.94 |
| **Slow** | 32 | 4.94 | 2.63 | 7.50 | 1.37 | 26.88 | 3.15 |

Previous researchers found that listeners rate fast speakers as having more competence or expertise, and suggested that these judgements about speakers are what caused rapid or time compressed speech to be more persuasive (Apple et al., 1979; LaBarbera & MacLachlan, 1979; MacLachlan, 1979; MacLachlan & Siegel, 1982). In Experiment I, we found participants who listened to the fast Ad (212 words/min.) rated the product significantly higher than participants who listened to the medium Ad (113 words/min.). However, we found no statistically significant differences across the groups on ratings of the speaker competence. These data suggest that listeners' judgements regarding speaker competence or expertise may not have accounted for the fast Ad yielding higher product ratings than the medium Ad.

Although participants who listened to the fast Ad rated the product more positively, they performed worse on the feature recognition tasks than the participants who listened to the slow Ad. These results appear to support Skinner et al. (1998), who found that slower rate LWR resulted in significantly higher levels of factual comprehension. In the current experiment, feature recognition may have been higher under the slow speech rate condition because listeners may have used the additional time to cognitively process and rehearse specific features (Breznitz, 1987; Hall & Tinzmann, 1989; Skinner et al., 1997). However, when material was presented rapidly (fast condition), participants may have focused their cognitive resources on forming a global impression of the product rather than focusing on specific features.

In Experiment I, participants rated the speaker and product and performed the recognition task immediately after they listened to the advertisement. Researchers investigating attitude change have found what has been referred to as the sleeper effect. The sleeper effect is based on the premise that as time elapses listeners tend to be more influenced by the message content than their judgement of the message source because listeners tend to forget the source but remember the content (Hovland & Weiss, 1951; Pratkanis, Greenwald, Leippe, & Buamgardner, 1988). Thus, rapid copy presentation rates may be initially more persuasive because listeners' judgements of the message are influenced by their judgement of speaker expertise. However, as time passes, the persuasiveness of the message is based more on message content because the listeners are less likely to recall or access their judgements of the speakers' expertise. An alternative explanation is that as time passes, listeners tend to forget content when material is presented rapidly, but are more likely to remember specific con-

tent when material was initially presented at a slower rate. In Experiment II, we attempted to investigate the sleeper effect and the durability of our findings from Experiment I by having participants read passages and answer questions after listening to the advertisement, but before they rated the product and speaker and performed the recognition task.

## EXPERIMENT II

### Methods

#### *Subjects and setting*

Thirty undergraduate students from an educational psychology class at a southern U.S. university participated in this investigation. None of these students participated in Experiment I. Only two students who were absent from class on the day experimental procedures were conducted were excluded from this investigation. All procedures took place in the participants' classroom.

#### *Materials*

The fast and medium cassette-tapes used in Experiment I were used in Experiment II. Identical assessment sheets were also used. The slow Ad was excluded because Experiment I participants reported that it was very difficult to listen to a tape of someone talking so slowly. This is not surprising given that the average speech rate is about 150 words per minute (Foulke & Sticht, 1969). A passage containing over 600 words followed by eight multiple choice questions was used as an interpolated task.

#### *Procedures*

After obtaining informed consent from all students in the class, experimenters randomly assigned participants to one of two groups (fast and medium). Reading passages and questions were handed out face down on the participants' desks. Participants were then told that the experimenter was going to play a radio advertisement about a fictitious product. The first group listened to the medium Ad and the second group listened to the fast Ad. Immediately after hearing the Ad, participants were asked to read a passage and then answer the comprehension questions on the passage. Passages and questions were collected 10 min. after the advertisement was finished. Participants then completed assessment sheets which were iden-

tical to those used in the first study.

## Results and Discussion

The means and standard deviations across groups and dependent variables are presented in Table 2. Comparisons of feature recognition scores across the two groups were analyzed using a directional t-test. Directional Mann-Whitney *U* tests were used to analyze the car rating and speaker rating data. No differences across groups emerged for speaker rating, ($U$=101.0, $p$=0.31), but medium rate presentation did result in significantly higher car ratings than fast rate ($U$=99.5, $p$=0.029). Analysis of features recognition data revealed a significant difference, $t(28)$=-1.94, $SE$=1.13, with the medium Ad resulting in higher feature recognition levels than the fast Ad.

**Table 2**
**Mean and standard deviation rating and recognition data across presentation rates**

| | | *Speaker Rating* | | *Car Rating* | | *Features Recognized* | |
|---|---|---|---|---|---|---|---|
| | *N* | *Mean* | *SD* | *Mean* | *SD* | *Mean* | *SD* |
| **Fast** | 15 | 6.67 | 2.13 | 7.53 | 0.72 | 21.27 | 1.39 |
| **Medium** | 15 | 6.00 | 2.59 | 8.33 | 0.72 | 23.47 | 4.17 |

Because group sizes were small ($n$=15), post hoc power analyses were run to control for Type II error rate. Effect sizes cannot be computed for a Mann-Whitney *U* test. Therefore, Cohen's *d* estimate for the parametric counterpart, the independent samples t-test was used to measure effect size. The effect size was .28, small according to Cohen (Kirk, 1982). Consequently, although our group sizes were small, inadequate power or failure to find statistically significant differences for speaker rating were most likely caused by small effect size.

The feature recognition findings are consistent with Experiment I which showed that slower speech rates results in higher levels of recognition. The failure to find a difference on speaker ratings is also consistent with Experiment I. The inconsistent findings on product rating, (i.e., higher product rating for rapid presentation in Experiment I, but higher product rating for the slower presentation rate in Experiment II) are similar to those

found in research investigating the "sleeper effect" (Hovland & Weiss, 1951). However, when the data from both studies is examined, the data do not support the causal mechanism (reduction in speaker expertise as time passes) thought to be responsible for the sleeper effect.

## GENERAL DISCUSSION

The results of the present study have theoretical implications related to speech rates and the persuasive impact on listeners. Previous researchers found that rapid or compressed speech tends to increase the persuasive value of the message and improve the listeners' judgement of the speaker's expertise. Researchers have suggested that the rapid or compressed speech (message variable) causes listeners to perceive the speaker (source variable) as having more expertise, which in turn causes the message to be more persuasive (Apple et al., 1979; LaBarbera & MacLachlan, 1979; MacLachlan, 1979). Findings of the current study suggest that this causal model may not be accurate. In both experiments, average competence ratings were highest for the rapid speech Ad, but there was no significant difference in speaker competence ratings across speech rates.

In the current study, when listeners rated the product immediately after listening to the Ad, (i.e., Experiment I), those who listened to the rapid Ad rated the product more favorably. When there was a delay between hearing the Ad and rating the product, (i.e., Experiment II), those who listened to the medium Ad rated the product more favorably. Although this finding is consistent with the sleeper effect, comparisons of data across both experiments do not support the causal mechanism thought to be responsible for the sleeper effect. According to the sleeper effect as time passes listeners tend to forget the message source (e.g., the perceived expertise of the speaker) which allows for message content to have a greater persuasive influence (Hovland & Weiss, 1951). However, when data from the rapid and medium rate Ads are compared across Experiments I and II, it is clear that imposing a delay with an interpolated task did not cause much change in listeners' perceptions of speaker competence (i.e., message source). In Experiment I, listeners' of the rapid Ad rated the speakers' expertise 9.02% higher than listeners to the medium Ad (i.e., 5.29 for rapid Ad and 4.77 for medium Ad, thus 4.77/5.29 x 100 = 9.02). In Experiment II, listeners' of the rapid Ad rated the speakers' expertise 9.00% higher than listeners to the medium Ad (i.e., 6.67 for rapid Ad and 6.00 for medium Ad; 6.00/6.77 x 100 = 9.00). This suggests that a reduction in the influence of the message

source variable (i.e., reduction in perception of speaker competence) did not cause the sleeper effect (i.e., a relatively lower product rating from those who listened to the rapid Ad when ratings were delayed in Experiment II). Again this fails to support a causal connect between message source and persuasive influence (i.e. product rating).

In both experiments, the increased levels of recognition found when material was presented more slowly supports the hypothesis that slow presentation may increase listeners' attention to specific facts and allow them more time to cognitively process or rehearse these facts (Breznitz, 1987; Hall & Tinzmann, 1989; Skinner et al., 1997). The rapid presentation rate may have caused listeners to focus on forming a general impression of the product. However, even if rapid presentation rates do cause listeners to focus more of their cognitive resources on forming a more general or global impressions, results from Experiment II suggest that these improved general global impressions occasioned by the fast rate presentation may not be sustained over time. Rather, as time passes perceptions of the message may be primarily influenced by the specific information they recall from that message.

The current findings may have applied value, as they suggest that rapid or compressed speech may save advertising dollars and increases the persuasiveness of the advertisement. However, the durability of these findings was not supported in Experiment II which showed product ratings where higher when the medium speech rate tape was played and participants were required to complete an interpolated task (i.e., reading and answering comprehension questions) before rating the product. From an applied perspective, this suggests that rapid speech rates may result in the greatest initial increase in persuasion, but slower speech rates may result in greater recall and greater levels of persuasion over time. Thus, slower speech rates may be preferred when the goal is for listeners to learn and maintain several pieces of information (e.g., seven behaviors that put one at risk for acquiring HIV). Fast rates of speech may be preferred when the goal is to alter listeners' global or general impressions (e.g., general opinion of a product line).

From a theoretical perspective, the current study suggests that the message source (i.e., judgements regarding speaker expertise) may not be the intervening variable that accounts for rapid speech having greater immediate persuasive value, but less persuasive value over time (i.e, sleeper effect). Furthermore, from an applied perspective, the current findings suggest that copy presentation rates should be adjusted depending upon the

goal of the communication. However, before any strong conclusions can be drawn or applied recommendation made, future researchers should address several limitations of the current study. In the current study, the radio Ads were played in a classroom to a group of students who were instructed to listen to the Ad. Their listening behavior under these conditions is likely to be different than their typical radio Ad listening behavior. The Ad was not prepared by professionals. Therefore, it lacked many characteristics of typical radio Ads including music, sound effects, a professional copy reader, and so forth. The copy was intentionally written in list form. The only adjective used to describe the product was "new". This was done to test our theory about attentional focus on facts versus gist and to provide cleaner alterations in rates of presenting positive features across Ads. However, this sterile copy and presentation prevents generalizing these results to typical radio advertisements. In the current study, the automobile Ads were read by a female, no data was collected on college student participants' experience listening to radio Ads, and copy was presented at only three different rates. Future researchers should determine if speakers' gender (message source variable) interacted with copy presentation rates and impacted listeners' ratings and recognition. Future researchers also may want to determine if listeners' age and/or experience listening to radio Ads or compressed speech may impact their response when copy is read at different rates.

## REFERENCES

Apple, W., Streeter, L. A., & Krauss, R. M. (1979). Effects of pitch and speech rate on personal attributes. *Journal of Personality and Social Psychology, 37,* 715-727.

Basow, S. A. (1986). *Gender stereotypes: Traditions and alternatives* (2nd Ed.). Monterey, CA: Books/Cole.

Beatty, M. J & Behnke, R. R. (1978). Effects of compressed speech on learner anxiety. The *Southern Speech Communication Journal, 43,* 296-301.

Behnke, R. R. & Beatty, M. J. (1977). Effects of time-compressed speech on confidence-weighted comprehension scores. *The Southern Speech Communication Journal, 42,* 309-317.

Bittner, J. R. Shamo, G. W., & Celorie, D. J. (1973). Compressed speech by mnemonic joining: A negative implication for broadcasting. *Journal of Broadcasting, 17,* 459-464.

Breznitz, Z. (1987). Increasing first graders' reading accuracy and comprehension by accelerating their reading rates. *Journal of Educational Psychology, 79,* 236-242.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for*

*research*. Dallas, TX: Houton Mifflin.

DeStefeno, P., Noe, M., & Valencia, S. (1981). Measurements of the effects of purpose and passage difficulty on reading flexibility. *Journal of Educational Research, 73,* 602-606.

Foulke, E., & Sticht, T. C. (1969). Review of research on the intelligibility and comprehension of accelerated speech. *Psychological Bulletin, 72,* 50-62.

Goldhaber, G. M. (1970). Listener comprehension of compressed speech as a function of the academic grade level of the subjects. *The Journal of Communication, 20,* 167-173.

Hall, J. W., & Tinzmann, M. B. (1989). Sources of improved recall during the school years. *Bulletin of the Psychonomics Society, 27,* 315-316.

Hovland, C. I., & Weiss, W. (1951). The influence of source credibility of communication effectiveness. *Public Opinion Quarterly, 15,* 635-650.

King, P. E., & Behnke, R. R. (1989). The effects of time-compressed speech on comprehensive, interpretive, and short-term listening. *Human Communication Research, 15,* 428-433.

Kirk, R. E. (1982). *Experimental Design: Second Edition.* Belmont, CA: Brooks/Cole.

LaBarbera, P., & MacLachlan, J. (1979). Time-compressed speech in radio advertising. *Journal of Marketing, 43,* 30-36.

MacLachlan, J., & Siegel, M. H. (1982). Reducing the cost of TV commercials by use of time comprehension. *Journal of Marketing Research, 17,* 52-57.

MacLachlan, J. (1979). What people really think of fast talkers. *Psychology Today, 13,* 113-117.

Miller, N., Maruyama, G., Beaber, R. J., & Valone, K. (1976). Speed of speech and persuasion. *Journal of Personality and Social Psychology, 34,* 615-625.

Peng, Y., Zebrowitz, L. A., & Lee, H. K. (1993). The impact of cultural background and cross-cultural experience on impressions of American and Korean male speakers. *Journal of Cross-Cultural Psychology, 24,* 203-220.

Pratkanis, A. R., Greenwald, A. G., Leippe, M. R., & Buamgardner, M. H. (1988). In search of reliable persuasion effects: III The sleeper effect is dead. Long live the sleeper effect. *Journal of Personality and Social Psychology, 54,* 203-218.

Rasinski, T. V. (1990). Investigating measures of reading fluency. *Educational Research Quarterly, 14,* 37-44.

Rossiter, C. M. Jr. (1971). Some implications of compressed speech for broadcasters. *Journal of Broadcasting, 15,* 303-307.

Samuels, S. J., & Dahl, P. R. (1975). Establishing appropriate purpose for reading and its effect on flexibility of reading rate. *Journal of Educational Psychology, 67,* 38-43.

Schmitt, J. F. (1983). The effects of time-compression and time-expansion on attitudes and information processing. *Journal of Speech and Hearing Research, 26,* 373-377.

Skinner, C. H., Logan, P., Robinson, S. L., & Robinson, D. H. (1997). Myths and realities of modeling as a reading intervention: Beyond acquisition. *School Psychology Review, 26,* 437-447.

Skinner, C. H. Robinson, D. H., Adamson, K. L., Atchison, L. A., & Woodward, J. R. (1998).

The effects of different listening-while-reading rates on comprehension in secondary students with reading deficits. *Special Services in the Schools 13*(2), 54-64.

Sterling, H. E., Robinson, S. L., & Skinner, C. H. (1997). The effects of two taped words interventions on sight-word reading in students with mental retardation. *Journal of Behavioral Education, 7,* 25-32.

Sticht, T. G., & Glasnapp, D. R. (1972). Effects of speech rate, selection difficulty, association strength and mental aptitude on learning by listening. *The Journal of Communication, 22,* 174-188.

Street, R. L. Jr., & Brady, R. M. (1982). Evaluative responses to communicators: The effects of speech rate, sex, and interaction context. *The Western Journal of Speech Communication, 48,* 14-27.

Street, R. L. Jr., Brady, R. M., & Lee, R. (1984). Speech rate acceptance ranges as a function of evaluative domain, listener speech rate, and communication context. *Communication Monographs, 49,* 290-308

Watts, F. N. (1983). Strategies of clinical listening. *British Journal of Medical Psychology, 56,* 113-123.

Weinberger, M. G, Campbell, L., & Body, B. (1994). *Effective radio advertising: A guide to winning customers with targeted campaigns and creative commercials.* New York: Lexington Books.

Wheeless, L. R. (1971). Some effects of time-compressed speech on persuasion. *Journal of Broadcasting, 15,* 415-420.