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Effects of Two Voice Characteristics on the Attitudes Toward Advertising Messages

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ABSTRACT. This study explored the effects of two prosodic variables, voice intonation and voice intensity, on the attitudes of a sample of Canadian students toward two messages advertising automated teller machines and student loans. The elaboration likelihood model (ELM) was used as a theoretical framework. The ELM proposes that peripheral cues such as voice characteristics should enhance the receiver's attitude only under low-issue involvement situations. A $2 \times 2 \times 2$ (Level of Intensity $\times$ Level of Intonation $\times$ Levels of Issue Involvement) experiment was used. The two advertising messages provided very different levels of issue involvement, measured in terms of the Zaichkowski scale (1985) by the 221 subjects. The results confirmed those proposed by the ELM—that the two voice characteristics are significant only under low-involvement conditions. The most efficient voice combined low-intonation and low-intensity features and was interpreted as efficient because its qualities bypassed the respondents' defense mechanisms.

LINKING THE FIELD OF PERSUASION with that of phonetic studies does not seem to have stimulated much research. On one hand, a few psychosocial studies have investigated the prosodic antecedents of credibility (Miller, Maruyama, Beaber, & Valone, 1976; Page & Balloun, 1978). Other, more numerous, phonetic studies have investigated the relationship of the receiver's mental image of the speaker to the voice of the speaker (Brooke & Hung Ng, 1986; Ekman, 1988; Pittam & Gallois, 1986; Ruscello, Lass, & Podbesek, 1988). On the other hand, many psychosocial studies have dealt with the classical problem of the effects of source credibility on the receiver's attitudes toward the message (Chebat, Filiatrault, Laroche, & Watson, 1986; Chebat,
Filiatrault, & Perrien, 1989; Mowen, 1980; Petty, Cacioppo, & Schumann, 1983). However, no research seems to have yet bridged the gap between the two research areas. The purpose of the present study was to show the effects of two voice characteristics, intensity and intonation, on the receiver’s attitude toward the message. This study was based on the elaboration likelihood model (ELM), which predicts the effects of credibility on message acceptance in low- versus high-involvement situations.

Although past investigations of the voice credibility-message acceptance relationship have been extremely abundant, dating at least from the works of Hovland, Janis, and Kelley (1953), the ELM marks an important milestone on the road to understanding this phenomenon. This model is essentially based on two theoretical proposals: the central-versus-peripheral routes to persuasion and the effects of receiver involvement on attitude change toward the message. Petty and Cacioppo (1979) identified two basic factors in persuasion: “a central route which occurs when the person is motivated and able to think about the issue and a peripheral route [italics added] which occurs when either motivation or ability is low” (Petty & Cacioppo, 1979, p. 849).

Petty and Cacioppo argued that a person does not follow a route randomly. Routes are essentially taken on the basis of the extent of the receiver’s involvement in the message’s issues (low versus high involvement). They maintained that “when a persuasive communication was on a topic of high personal relevance, attitude change would be governed mostly by a thoughtful consideration of the issue relevant arguments presented (central route)” (Petty, Cacioppo, & Goldman, 1981). When, on the other hand, the receivers did not perceive the message to be worthwhile, they evaluated peripheral non-message cues such as expertise (Stoltenberg & McNeil, 1984), competence (Chebat et al., 1989), expertness (Petty et al., 1981) and likeability (Petty et al., 1983), which they associated with the source and which they would process as substitutes for message arguments. This peripheral process demands less time and cognitive effort than scrutinizing the message arguments. In particular, in low-involvement situations, consumers tend to focus their attention more on the peripheral cues of an advertisement, such as its entertaining aspects, rather than on its substantive arguments.

The second tenet of the ELM pertains to the effects of issue involvement of attitude change. Issue involvement has been shown to enhance persuasion. The receiver’s attitudes are more likely to be positively enhanced when he or she regards the issue as relevant and perceives the time spent paying attention

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to and processing the arguments to be worthwhile in terms of time and cognitive efforts.

No study to date seems to have investigated the antecedents of the source's characteristics within the framework of the ELM. The purpose of the present study, therefore, was to point out how two prosodic characteristics, voice intensity and voice intonation, influence attitude change and play the role of peripheral cues as defined by the ELM.

Previous marketing studies that analyzed voice characteristics were undertaken in a theoretical context totally different from ours in this study. Voice analysis has been applied in various ways but especially to predict consumer preference of a product brand (Brickman, 1980) or to evaluate consumers' emotional responses to advertising (Nelson & Schwartz, 1979; Stout & Leckenby, 1986). Those studies have emphasized the analysis of voice pitch, presuming that acoustic characteristics of speech were among the most sensitive indicators of emotion. However, the analysis of voice pitch is not as straightforward as it might seem, and technological and methodological concerns have been pointed out (Nighswonger & Martin, 1981). For example, for many years researchers felt that further research was needed to define the capabilities and limitations of the voice pitch method before applying it with confidence to the marketing discipline. Other researchers (Barak, Shapiro, & Fisher, 1988; Harris, Sturm, Klassen, & Bechtold, 1986; Wright, 1981) have established the theoretical basis for linking advertising and phonetics. Their efforts, however, did not lead to empirical studies.

Our study presents a very different viewpoint. We focused on the prosodic characteristics of two different voice characteristics as indicators of their source credibility as judged by consumers.

We investigated prosodic characteristics of voice to pinpoint vocal characteristics that would indicate the speaker's identity (Dutoit-Marco, 1985; Laver, 1968; Nolan, 1983; Pittam, 1987a; Traunmüller, 1984), emotion (Andreasen, 1981; Arnold, 1961; Knapp, 1963; Williams & Stevens, 1972), and personality (Laver, 1968; Long, 1988; Redfield & Friedrich, 1978). More precisely, speakers who speak slowly or less frequently proved to be less influential (Brooke & Hung Ng, 1986) and more introverted (Berger & Kellerman, 1989). We also investigated prosodic characteristics of voice to identify a speaker's prosodic patterns of personality and emotion (Fónagy, 1983; Léon, 1970, 1971; Sherer, 1986). Contributions of German (Helfrich & Wallbott, 1986) and Australian (Millar & Clark, 1987) researchers also focused on the analysis of the speaker's voice.

Some studies on voice revealed information about listeners' perceptions of a speaker's voice (Becker, Kimmel, & Bevill, 1989; Page & Balloun, 1978; Sherer, 1988), social status (Bradac, Mulac, & House, 1988; Pittam, 1987b; Pittam & Gallois, 1986; Ruscello, et al., 1988), persuasive cognitive capacity (Halberstadt, 1983), or ability to make plausible arguments (Ekman,
A most interesting study (Hall, 1980) showed that speakers’ persuasiveness depended on their ability to manipulate their voices: Speakers who succeeded in transforming their natural voices into highly persuasive voices were perceived as warm, expressive, and calm. More precisely, voice intensity and tone were investigated, as they related to the listeners’ mental images of the speaker. These investigations showed that both voice intensity and tone are major factors in producing variations in the positive or negative perception of the speaker (Ruggieri & Fondoaroli, 1989) and that they have a major influence on the attention the listeners give to the message (Harris, et al., 1986).

Our first hypothesis was related to the central concept of ELM that involvement enhances attitude changes: We hypothesized that the level of involvement in the message’s issues would significantly enhance a receiver’s attitude toward the message.

Our second hypothesis was derived from the reviewed literature. Voice characteristics such as intonation and intensity create a mental image of the speaker’s qualities, particularly in terms of prestige, persuasive capacity, and emotion. We are led to the essence of the second hypothesis by another concept of the ELM, that vocal cues such as intonation and intensity are relevant to the message acceptance process only when the receiver has a low involvement in the issues conveyed by the message: We hypothesized that a receiver’s low involvement in the issue’s message would enhance the effects of voice characteristics on his or her attitude toward the message; (a) voice intonation would have significantly more impact on attitudes in low-involvement situations than in high-involvement situations, and (b) voice intensity would have significantly more impact on attitudes in low-involvement situations than in high-involvement situations.

Method

Research Design

A $2 \times 2 \times 2$ (Involvement Level $\times$ Voice Intensity $\times$ Voice Intonation) factorial design was used. Randomly selected sophomore students of business administration participated in the experiment.

Dependent and independent variables. A questionnaire consisting of 16 7-point Likert scales measuring the attitudes toward the message was administered. These scales measured the degree to which respondents assessed interest, clarity, understanding, pleasantness, usefulness of the message, and so forth. A factor analysis was performed on these 16 scales; the first factor accounted for 42% of the total variance and was used to explain the attitude toward the message. It was mainly composed of the following five variables:
comprehensibility, clarity, interest, usefulness, and informativeness. The three independent dichotomic variables were involvement level, voice intensity, and voice intonation.

Low versus high involvement and advertising messages. We designed two messages, one for the low-involvement experimental condition and one for the high-involvement experimental condition. The subjects in both situations were exposed to the same number of arguments (namely, four). In the low-involvement message, subjects were invited to come to a branch of a certain (mock name) bank to pick up their automatic teller machine (ATM) cards. In the high-involvement message, the subjects were also invited to come to a branch of the same bank to inquire about loans specifically designed for students. It was assumed that a financial loan was of much more importance to the students than an ATM card. This was verified in a pretest, as discussed later.

The two messages for the low- versus high-involvement situations were as similar as possible from a linguistic point of view: They were composed of 168 and 163 lexical units, respectively; the average word lengths were 4.7 and 4.8 letters, respectively; the average sentence lengths were 26.3 and 24.6 words; and the Gunning legibility index (Gunning, 1952) was 14.6 and 14.5. Furthermore, the two messages had the same syntactic construction and complexity, with 24 prepositions for the high-involvement message and 23 for the low-involvement message. The two messages were different at the lexical level: The low-involvement message focused on ATM cards, whereas the high-involvement message concentrated on student loans.

Voice cues: High versus low intonation and intensity. A professional male actor was directed by the main author to produce four different voices for each of the two (low- versus high-involvement) advertising messages. In fact, five different versions of each message were recorded in a professionally designed recording studio. In addition to the four experimental conditions, a fifth version was also recorded with natural intensity and a neutral-voice intonation. Each of these five versions was recorded twice to make sure that at least one of the two versions was satisfactory.

Subjects

Two hundred seventy-nine university students in different sections of the same business administration course during the same semester were randomly assigned to the four experimental conditions: 135 were assigned to the low-involvement message condition and 144 were assigned to the high-involvement message condition. Only 221 questionnaires were fully com-
pleted. Each cell of the factorial research design contained an average of 27.6 subjects.

**Manipulation Checks**

**Issue involvement:** The issue involvement variable was validated by using the Zaichkowski (1985) involvement test. Zaichkowski and other researchers have favorably assessed the reliability and validity of this test, and it has been widely used; moreover, it has escaped the criticisms directed at previous psychosocial experiments by Petty, et al. (1983) for their lack of internal and external validity and theoretical foundations. The high- versus low-involvement conditions were controlled in the following way. Each of the two groups was exposed to one high- or low-involvement message. One group (n = 135) listened to a banking electronic teller advertising message, and the other group (n = 144) listened to an advertisement on a special program of student loans: The subjects were students, so it was presumed that they would be more interested in the second message. The first group (exposed to the ATM card message) scored significantly lower in terms of issue involvement that the second group (exposed to the message on student loans). A $t$ test showed very significant differences between the two groups in terms of Zaichkowski’s scale: $t(220) = -4.09, p = .000$.

**Intonation and intensity:** A group of 20 phonetics students served as judges to select the experimental recordings. They were exposed to 20 different versions of the messages: eight (for high and low intonation, high and low intensity, and high and low involvement) messages, which were recorded twice (i.e., in two different takes); two neutral intonation and intensity versions for the low-involvement message; and two neutral intonation and intensity versions for the high-involvement message. Judges rated the 20 recordings on a phonetic scale of 1 to 10 to measure perceived intonation and intensity. Eight takes were selected, the intonation and intensity of which were either the lowest or the highest; in particular, the eight selected takes were rated significantly lower or higher than the neutral voice.

**Results**

An analysis of variance (ANOVA) was performed on the effects of the three experimental variables (i.e., issue involvement, voice intensity, and voice intonation) on the receiver’s attitude toward the message. Results are presented in Table 1.

Hypothesis 1, which was related to the effects of voice involvement on attitudes toward the message, was supported: The main effects of issue involvement on the receiver’s attitude toward the message were significant, $F$
TABLE 1
ANOVA: Attitude Toward the Advertisement by Issue Involvement, Voice Intensity, and Intonation

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involvement (X)</td>
<td>41.416</td>
<td>1</td>
<td>41.416</td>
<td>14.372</td>
<td>.000</td>
</tr>
<tr>
<td>Intonation (Y)</td>
<td>.290</td>
<td>1</td>
<td>.290</td>
<td>.101</td>
<td>.751</td>
</tr>
<tr>
<td>Intensity (Z)</td>
<td>.750</td>
<td>1</td>
<td>.750</td>
<td>.260</td>
<td>.610</td>
</tr>
<tr>
<td>2-Way interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X × Y</td>
<td>24.596</td>
<td>3</td>
<td>8.199</td>
<td>2.845</td>
<td>.039</td>
</tr>
<tr>
<td>X × Z</td>
<td>8.600</td>
<td>1</td>
<td>8.600</td>
<td>2.984</td>
<td>.086</td>
</tr>
<tr>
<td>Y × Z</td>
<td>9.244</td>
<td>1</td>
<td>9.244</td>
<td>3.208</td>
<td>.075</td>
</tr>
<tr>
<td>3-Way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X × Y × Z</td>
<td>14.410</td>
<td>1</td>
<td>14.410</td>
<td>5.000</td>
<td>.026</td>
</tr>
<tr>
<td>Explained</td>
<td>81.384</td>
<td>7</td>
<td>11.626</td>
<td>4.034</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>613.810</td>
<td>213</td>
<td>2.882</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>695.195</td>
<td>220</td>
<td>3.160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= 14.372, p = .000, and the slope was positive (beta = .24). Hypothesis 2, which was related to the effects of two voice characteristics on the receiver’s attitude toward the message under high-versus low-involvement conditions, was also supported: The two voice characteristics had a significant effect on the receiver’s attitude only under low-involvement conditions. For Hypothesis 2a, we found no significant main effects for voice intensity on the receiver’s attitude toward the message, $F = .260, p = .610$, but the combined effects of voice intensity and involvement were significant, $F = 2.984, p = .086$. More precisely, additional ANOVAs showed that the influence of voice intensity was more significant in low-involvement than in high-involvement conditions: For low involvement, $F = 1.784, p = .184$; for high involvement, $F = .430, p = .514$ (see Figure 1).

For Hypothesis 2, whereas voice intonation had no significant main effects, $F = .101, p = .751$, the combined effects of intonation and involvement were significant, $F = 3.50, p = .063$. More precisely, additional ANOVAs showed that in low-involvement situations, the effects of voice intonation were more significant than in high-involvement situations: For low involvement, $F = 2.149, p = .146$; for high involvement, $F = .722, p = .397$ (see Figure 2).

We found a very significant three-way interaction, $F = 5.000, p = .026$. Additional ANOVAs showed that under high-involvement conditions, the combined effects of voice were not significant, $F = .060, p = .807$, whereas they were found to be very significant in low-involvement situations, $F =
FIGURE 1. Combined effects of involvement and intensity.

FIGURE 2. Combined effects of involvement and intonation on message acceptance.
8.772; \( p = .004 \). In low-involvement situations, an interesting profile became evident: When voice intensity was high, the effects of intonation were not significant, \( F = 1.954, p = .168 \); conversely, when voice intensity was low, we found that low intonation was more effective than high intonation, \( F = 8.467, p = .005 \) (see Figure 3a).

In high-involvement situations, the effects of intensity–either low intonation, \( F = .518, p = .475 \), or high intonation, \( F = 1.740, p = .192 \)–were not significant; that is, in high-involvement situations, the two voice characteristics were inoperative (see Figure 3b).

**FIGURE 3.** Combined effects of intensity and intonation under low-involvement (a) and high-involvement (b) conditions.
The two subhypotheses of Hypothesis 2 were supported: Voice characteristics had significant effects on receiver's attitudes toward the message in low- but not in high-involvement situations.

Discussion

Our results support the two basic hypotheses derived from the ELM: High-issue involvement enhanced the acceptance of message arguments, and voice characteristics enhanced attitudes significantly more in low-involvement situations than in high-involvement situations. The studies of some European phoneticians (Goldbeck, Tolkmitt, & Scherer, 1988) "confirm the hypothesis that vocal cues are powerful signals of a speaker's emotional state" (p. 129). The findings of our study agree with this finding and also confirm their hypothesis that there are "interactions between (intonation) contour type and text in communicating aspects of speaker affect" (Goldbeck et al., 1988, p. 129). A low-involvement message enhanced the effects of voice characteristics and related the phonetic causes to the psychosocial effects through the use of the ELM.

Our results basically confirm previous research (Gardner, Mitchell, & Russo, 1985; Petty, et al., 1981; Petty, et al., 1983). Voice characteristics are peripheral cues that prove to be effective mainly under low-involvement conditions when cognitive activity is low and when they are likely to be processed in an automatic, almost effortless way. Gardner et al. (1985), for instance, pointed out that, under low-involvement conditions, consumers process information in the following way: "Perceiving an advertisement for its entertainment reward may be undeliberate, but the entertainment reward is what maintains the recurring behavior" (Gardner et al., 1985, p. 586). In our case, when the receivers were not interested in the message, the voice characteristics played the role of maintaining the consumers' attention.

In this study, one speaker played all of the different roles. The receivers were given no clues about the speaker, and it was only the voice that conveyed a mental image to the subject. The literature review showed that the perceived characteristics of the speaker are conveyed by voice. What our research confirms is that this is the case primarily under low-involvement conditions: Even if they cover a very limited scope of the vocal spectrum, intonation and intensity convey enough information to enable the receiver to assess the speaker's credibility in terms of the ELM. In low-involvement situations, a low-intensity voice was more efficient—although not significantly—than a high-intensity voice. Similarly, under the same conditions, low intonation was more effective—although not significantly—than high intonation. Moreover, the combination of low intensity and low intonation produced the most effective combination of voice characteristics.
Such results are not exceptional. As mentioned earlier, Hall (1980) found that, in some specific cases, "more stiff and less warm" voices were more persuasive. She explained that receivers whom she classified as "poor decoders of nonverbal cues have responded more defensively to more expressive, emotional qualities of the high persuasion calls" (Hall, 1980, p. 932). We suggest here that a similar phenomenon may have occurred in our low-involvement situations: When cognitive activity was low, respondents were less likely to be easily persuaded because they were not only less responsive to proposed arguments but also reacted more defensively. Speakers whose voices exhibit a high-intensity, high-intonation profile could enhance this defense mechanism. There is the typical example of the used car salesman whose forceful vocal efforts repel his potential customers and undermine his influence. On the other hand, speakers who present a low-intensity, low-intonation voice profile may bypass this defense mechanism. These speakers might also be the most suitable for financial advertisements, as their voices may be effective in conveying the mental image of a cold and businesslike character.

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