Effects of Time Compression on Attitudes and Information Processing
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Research on two television commercials found that time compression had only small effects on cognitive processing and postviewing attitudes. It appears that time compression can result in somewhat fewer ideas being played back in response to open-ended questions, inhibit both positive and negative attitudes toward the advertised brand, and depress positive emotional involvement with the execution. In this study time compression had no impact on consumer buying intentions.

TIME compression is a process for transmitting audiovisual material at a rate faster than the original rate of production. Research on time compression began in the 1940s and the majority of research to date falls into three categories: (1) development of mechanical devices for compression; (2) applied studies in education, which have focused on time compression as a tool for more efficient communication of information; and (3) basic research in which time compression has been manipulated to examine the nature of cognitive processing (Duker 1974a, Orr 1974). A three-volume anthology and bibliography, edited by Duker (1974b), cites, summarizes or reproduces the significant literature on time compression published through the early 1970s.

The available research suggests that word transmission can be increased mechanically to around 280 words per minute—about a 50% compression saving of time over the “normal” rate—with relatively small losses in the comprehension of factual material (Fairbanks, Guttman and Miron 1957; Foulke and Sticht 1974; and Wheeless 1971). After that point comprehension may decrease rapidly, both because of reduced intelligibility or word recognition and because of human limitations in information encoding and storage (Foulke and Sticht 1974).

A few studies have looked at relationships between speech rate, attributions and persuasion. These indicate that speech rates influence listener judgments about the speaker; specifically, slow talkers generate relatively negative evaluations, whereas normal to faster speakers sometimes are described as relatively fluent, persuasive and credible (Apple, Streeter and Krauss 1979; Miller et al. 1976; Smith et al. 1975). These studies typically used audio rather than audiovisual material, forced listening situations, motivated subjects, and messages on nonadvertising topics that sometimes were controversial or somewhat technical. Also, whereas the influence of time compression on intelligibility and comprehension has been measured repeatedly, affective responses (other than feelings about the source) have rarely been studied.

An exception is a study by Wheeless (1971) that looked at the influence of time compression on consumer behavior. He examined the effect of noncom-
pressed and 30%, 40% and 50% compressed taped advertising messages on the frequency of purchase orders for a “how to study” booklet and on student attitudes toward the message. The nonsignificant results indicated that varying levels of time compression had no negative or positive influence on the dependent purchase and attitude variables.

More recently MacLachlan and his colleagues have reported the results of several studies comparing reactions to radio and television commercials that have been time compressed by 25–30% with reactions to matching noncompressed versions (LaBarbera and MacLachlan 1979; MacLachlan and LaBarbera 1979, 1980; MacLachlan and MacLachlan 1978, 1979; MacLachlan and Siegel 1980). Data from these studies—all of which used student subjects in forced exposure classroom situations—are summarized in Table 1. They suggest that time compression of advertising does not usually penalize and sometimes may enhance brand name and commercial recall by respondents. They also suggest that different commercials will perform differently in time compressed versus ordinary time versions, e.g., certain commercials may become more “interesting” when shortened but others do not. Thus these data support evidence in the psychological and educational literature that the effects of time compression interact with characteristics of the stimulus (Apple, Streeter and Krauss 1979; Foulke and Sticht 1974).

To summarize, previous research suggests that a moderate amount of time compression will have a minimal effect on comprehension and possibly a favorable effect on attitudes regarding message content. However, these effects may well vary with the nature of the communication and the nature of the audience.

**Exploratory Study**

The present research is exploratory and intends to raise questions rather than provide definitive answers. However, three hypotheses about the effects of time compression on reactions to television commercials were tested. First, we hypothesized that the effects of time compression will be different for different commercials. Second, we hypothesized that, although overall comprehension of content is unaffected by a small amount of time compression, time compression may still affect the way information is processed. Since time compression quickens the pace of a commercial, it gives the viewer less time to assess and interpret the stimulus during exposure. This suggests a third hypothesis, that less detail will be remembered from a time compressed than from an ordinary time commercial.

The present study differs from previous research both in the type of respondents and in the response variables that are measured. Rather than students, respondents are female heads of households who were qualified as buyers of the advertised product. Response variables include not only cognitive reactions but also a wide range of attitudes toward the brand and the commercial, as well as buying intentions.

**Method**

Two 30-second commercials, one for each of two new packaged goods products, were tested. Commercial “A” was a live action, slice-of-life execution that was folksy and good-humored in tone. “B,” which was an extension of a long running campaign, featured animated characters and settings with product photographs at the end. “A” had been exposed previously in the Chicago test area, whereas “B” was unexposed prior to this study. Although the two commercials were intended to be entertaining, both were information oriented (that is, they described attributes of new products).

The two test commercials were time compressed by 20% using an electronic procedure that retains normal voice pitch and the balance between pauses and speech but compresses the audio and visual channels (MacLachlan and Siegel 1980). Four stimuli resulted:

**TABLE 1**

Reactions to Pairs of Time Compressed versus Noncompressed Radio and Television Commercials

<table>
<thead>
<tr>
<th>Response Variables</th>
<th>48-Hour Unaided Brand Name Recall (n = 15 pairs)</th>
<th>48-Hour Aided, Proven Commercial Recall (n = 8 pairs)</th>
<th>Commercial Interest Rating (n = 11 pairs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Compressed Version Scored Higher</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>No Difference (p &gt; .05)</td>
<td>9</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Ordinary Time Commercial Scored Higher</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Sources: LaBarbera and MacLachlan (1979), MacLachlan and LaBarbera (1978), and MacLachlan and Siegel (1980).
ordinary time "A" and "B" and time compressed "TCA" and "TCB."

**Exposure**

In each of four treatment conditions, respondents were shown a ten-minute videotaped program excerpt from a television series about animals called "Friends of Man." Three commercials were embedded at a natural break between two program episodes. The first and last were test commercials; the middle, which remained constant across treatments, was a live action commercial for a household product. To control for order effects, the test commercials were presented as follows: A, TCB; B, TCA; TCB, A; and TCA, B. For each of these treatment conditions, half of the respondents were interviewed about the first commercial and half about the last. Since the test stimuli were separated by the live action commercial in ordinary time, every respondent saw one time compressed and two ordinary time commercials. This surrounding of ordinary time commercials and program material simulates the likely real life environment of time compressed commercials shown on television.

**Sample**

Respondents were 240 women recruited and individually interviewed at a Leo Burnett Company research facility located in a Chicago suburban shopping mall. The women were assigned to one of eight cells determined by the four treatment conditions and whether they were interviewed about the first or last commercial shown. As each cell was quota controlled and matched for age and education, the assignment was not random, but every effort was made to avoid obvious or intentional bias. There were 30 respondents per cell.

**Questionnaire**

Respondents were interviewed immediately after viewing the program and commercials. The post-exposure questionnaire included open-ended questions about the test commercial; the Viewer Response Profile, a set of 52 standard statements rated by respondents on a six-point disagree-agree scale (Schlinger 1979a and b); an intention-to-buy scale; and several direct questions aimed at determining whether or not respondents were aware of time compression.

**Findings**

To find out if respondents noticed differences between the time compressed and regular time commercials, they were asked (at the end of the interview) if there was anything different or unusual about the test commercial and if so, what was different. Only three respondents mentioned speed of the commercial, and their comments were inconsistent with the stimuli (one respondent said that a regular time commercial seemed quick and "faster" than ordinary commercials, for instance). Such few and inconsistent comments indicate that there was no top-of-mind awareness of time compression.

Respondents also were asked if the test commercial seemed faster, the same, or slower than "other commercials you've seen." The resulting data are shown in Table 2. Chi-square analysis of the ratings for "B" and "TCB" produced no significant difference. For "A" and "TCA" speed ratings were significantly different only at the p < .10 level, with the time compressed version described as relatively faster and the ordinary time version more often rated the same as other commercials. This result suggests the possibility that some respondents may have been latently aware of time compression after seeing the time compressed version of the exposed "A" advertisement. It also suggests that animated commercials such as "TCB" may be less obviously changed by time compression than other formats.

**Idea Coding**

The pace of a commercial is faster when it is time compressed, which gives a viewer less time to process information from the message. As mentioned earlier, it was hypothesized that viewers would recall less detail from a time compressed than from an ordinary time commercial.

To examine that hypothesis responses to the open-ended questions were subjected to a simple idea coding procedure described in the Appendix to this paper. An idea is defined as a proposition about the content of the commercial, including the narrative, product, brand and sales messages. An idea might consist of a word, part of a sentence or a sentence. There may be several ideas in a sentence: ideas about an action,
between the two versions of "B." One reason for this result may be that the "B" commercial extends a campaign that is familiar to many consumers. Less cognitive effort may be needed to follow the familiar format when it is compressed than is needed to follow the unfamiliar "A" commercial. Also, as previously noted, "A" may have been seen as faster in the time compressed condition; "A" was also more complex in that the script contained more copy points than "B."

To summarize, whether because of unfamiliarity, complexity or other factors, fewer ideas are played back for the "A" commercial when it is time compressed. This result suggests that the time compression of television commercials can interfere in certain circumstances or executions with encoding or memory.

**Attitudinal Responses**

Table 4 shows scores obtained for those individual items that significantly differentiated between ordinary time and time compressed commercials. Overall, only six, or 12% of the 52 Viewer Response Profile statements showed significant differences between the ordinary time and time compressed stimuli. These differences reflect favorable feelings generated by the

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**TABLE 3**

Average Number of Ideas Recalled from Test Commercials

<table>
<thead>
<tr>
<th></th>
<th>Commercial</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Ordinary Time</td>
<td>5.08(^b)</td>
<td>5.12</td>
<td></td>
</tr>
<tr>
<td>Time Compressed</td>
<td>4.13(^b)</td>
<td>4.88</td>
<td></td>
</tr>
</tbody>
</table>

\(^a60\) respondents per cell

\(^bF(1,116) = 4.23, p < .04\)

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**TABLE 4**

Between Mean Ratings of Attitude Items that Significantly Differentiate Ordinary Time and Time Compressed Commercials

<table>
<thead>
<tr>
<th>Statement</th>
<th>Overall</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A + B(^a)</td>
<td>TCA + TCB(^b)</td>
</tr>
<tr>
<td>I know that the advertised brand is a dependable, reliable one</td>
<td>5.03(^c)</td>
<td>4.76</td>
</tr>
<tr>
<td>The commercial showed me the product has certain advantages</td>
<td>4.20(^c)</td>
<td>3.80</td>
</tr>
<tr>
<td>I liked the commercial because it was personal and intimate</td>
<td>3.26(^c)</td>
<td>2.91</td>
</tr>
<tr>
<td>Playful</td>
<td>4.20(^c)</td>
<td>3.83</td>
</tr>
<tr>
<td>Saw before</td>
<td>3.29(^c)</td>
<td>2.85</td>
</tr>
<tr>
<td>I felt the commercial talked down to me</td>
<td>2.48</td>
<td>2.81(^c)</td>
</tr>
<tr>
<td>I felt that the commercial was acting out what I feel like at times</td>
<td>2.82</td>
<td>2.62</td>
</tr>
<tr>
<td>I found myself disagreeing with some things in the commercial</td>
<td>2.64</td>
<td>2.51</td>
</tr>
</tbody>
</table>

\(^a\)Ordinary time

\(^b\)Time compressed

\(^c\)values show that ordinary time versus time compressed scores were significantly different at p < .05

\(^d\)values show that ordinary time versus time compressed scores were significantly different at p < .01
ordinary time executions, which were described as relatively more “playful” and “personal and intimate.” Time compressed executions, on the other hand, were seen as “talking down to me.” With regard to the advertised brands, viewers of the ordinary time commercials were more likely to agree that the “commercial showed me the product has certain advantages” and that the advertised brand is dependable.

Table 4 also indicates that the two commercials performed somewhat differently. For brand “A” respondents were more likely to indicate that they had been exposed previously to the ordinary time version than to the time compressed version. Since “A” had been exposed, it may be that more respondents in the ordinary time sample actually had seen the commercial on television, or it may be that the ordinary time version was more readily recognized than the speeded-up stimulus. In the case of brand “B” it appears that the ordinary time commercial may have generated relatively more empathy (i.e., feelings that the commercial is intimate and acting out “what I feel like”) and also more counterarguing (i.e., relatively more agreement with the item, “I found myself disagreeing with some things . . .”).

In short, the attitudinal data suggest that the condensed viewing time may lessen emotional involvement with the execution and may reduce both positive and negative attitudes toward the brand.

**Buying Intentions**

Purchase interest was measured on a five-point scale from “definitely not buy” (1) to “definitely buy” (5). No significant mean score difference was found between viewers of the ordinary time and the time compressed versions of the two commercials. Average interest in purchasing the “A” brand was 3.28 for ordinary time viewers and 3.05 for time compression viewers, and average interest in purchasing the “B” brand was 4.29 versus 4.31.

**Conclusion**

This paper describes the results of copy research on two new product commercials in ordinary time versions and in versions that were time compressed by 20%. The data suggest that although there was no top-of-mind awareness of time compression, some viewers may have recognized the speed difference between versions of one commercial. As hypothesized, it appears that time compression can interfere with the way a viewer attends to, encodes or recalls information from a commercial so that fewer ideas are played back in response to postviewing open-ended questions. It also appears that time compression can inhibit both positive or negative attitudes toward the advertised brand and can suppress emotional involvement with the execution.

Also as hypothesized, the study supports previous research showing that the effects of time compression vary for different commercials, probably depending upon such factors as the executional tone and format (e.g., cartoons may be less affected by time compression), the type of product advertised, the “newness” of the brand, audience familiarity with the campaign, or the complexity and comprehensibility of the communication.

Effects of time compression on commercials also may depend on the surrounding environment. Our unpublished analyses of variance identified a number of interactions between order of commercial presentation and effects measured in this research. Similarly, individual differences between respondents—specifically, degree of product usage and age—were found to have a small influence on reactions to time compressed versus ordinary time versions.

Perhaps the most important conclusion to be drawn from the present data is that the impact of time compression on viewer responses was not very great. Thus it appears that the risk of employing time compression for television commercials may be relatively negligible if it is used with common sense and judgment. The major disadvantage may be the temptation to cram more ideas or selling points into a limited time, which could reduce comprehension or ruin the executional mood and tone.

Two areas have practical or theoretical implications for further research. First is the question of why time compression may cause certain effects. For example, if, in some instances persuasion is actually enhanced by time compression of a message, unexpected effects may arise from perceptual and evaluative factors (e.g., attribution of greater credibility to the source) or from information processing factors (e.g., the disruption of counterarguing) (Apple, Streeter and Krauss 1979, Miller et al. 1976). Second, advertisers may want to know how the impact of time compression interacts with commercial formats or executions. The published literature implies that time compression may be advantageous for stand-up presenter commercials. BBDO (1980) has suggested that time compression is better suited to information oriented commercials than image oriented ones.

Finally, it is important to emphasize again that generalizations from the research reported here are constrained by the fact that only two commercials and one level of time compression were tested. However, despite the exploratory nature of the study, it has initiated research on two areas in which time compression may affect reactions to television advertising: the way information is processed and attitudes toward the message.

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Appendix

Idea Coding

The purpose of idea coding is to analyze objectively recall of details from commercials. The approach is to count the number of different ideas recalled by each respondent about the content of the commercial. Detailed responses include more ideas and reflect better recall of the advertising.

An idea is defined as a proposition about the content of the commercial including the narrative, product, brand and sales messages. A sentence may contain several ideas. For example, it may contain ideas about an action, who performed the action, the object or recipient of the action, or the locale. An idea answers the questions who, what, whom, when, where, why and how, and might consist of a word, part of a sentence or an entire sentence. An idea is counted only once regardless of how many times it is repeated. Each respondent protocol was coded by counting the total number of ideas expressed in such open-ended questions as, “In your own words, please describe what went on and what was said in the commercial,” or “Do you remember anything else that was said or shown?”

REFERENCES


——— (1979b), “A Profile of Responses to Commer-

This approach to analyzing recall of events in a commercial is a highly simplified version of one aspect of discourse structures such as those discussed by Kintsch and van Dijk (1978). A more elaborate adaptation of this approach to discourse structures has been described by Thorson and Snyder (1980).

Two hypothetical examples of idea coding follow.

Recall Protocol 1

The man walked in on the cook. The cook showed him how they made the dough by kneading it. I remember the package, and they named it “Brand Name.” I also remember the oven, and they showed three varieties. I remember the picture and the special flavor.

Recall Protocol 2

I can’t remember where the guy was from. He was French and he talked to the cook. He said he just came back from France and the cook said he had a new product, and they showed how they made it in the oven, and they showed three varieties. I remember the picture and the special flavor.

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