

Humor and Cognitive Responses to Advertising Stimuli: A Trace Consolidation Approach

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Despite the predictions of several attitude change theories, most empirical research suggests that humorous communications are no more persuasive than their serious counterparts. The present study adopted a trace consolidation theory approach and tested the hypothesis that humorous appeals are more persuasive than serious appeals when time for trace consolidation is allowed. The trace consolidation theory hypothesis was supported most directly by shifts in cognitive responses. On some measures, sex differences were also observed. Specifically, males were found to be more susceptible than females to the humorous persuasive appeal.

Several justifications exist for making the hypothesis that the injection of humor into a communication will enhance the persuasiveness of that communication. For example, the counterargument disruption approach contends that humor distracts persons from generating negative thoughts (counterarguments). Consequently, resistance to persuasion is lowered [1, 8].

A second theoretical justification for the humor-persuasion hypothesis stems from McGuire's [21] information processing analysis of attitude change. In this analysis, a six-step Markov chain (exposure → attention → comprehension → yielding → retention → action) is proposed with each step dependent on the previous step as a necessary but not sufficient condition for attitude change. Humor-persuasion researchers who follow an information processing approach similar to McGuire's argue that since most people enjoy humor, the probability of attention is increased along with the subsequent probabilities of the remaining steps in the chain of attitude change [4, 5, 12].

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The authors thank Marilyn Wilkinson-Lammers for her help in preparing the manuscript.

A third justification comes from Berlyne's [2] arousal hypothesis that humor causes changes in arousal levels ("boosts and jags") which lead to positive affect. This positive affect, then, may generalize to the message itself, thus enhancing the persuasiveness of the message.

Despite the theoretical arguments for a positive humor-persuasion relationship, empirical research in this area has come up empty handed [7, 12, 13, 26]. However, the lack of significant findings may be due, in part, to the time at which the persuasion-related measures were taken in the experiments. The usual procedure in the humor-persuasion research is to expose subjects to a message which contains humorous or non-humorous material and then have the subjects immediately complete a questionnaire containing persuasion-related measures. There is reason to suspect, however, that this immediate measurement technique used in most humor-persuasion studies may not always allow for humor-persuasion effects to "take hold." Given enough time, a sleeper-effect of sorts may emerge with the humorous appeal winning out over the serious appeal. This humor-sleeper effect hypothesis—not to be confused with the sleeper effect which was almost laid to rest by Gillig and Greenwald [10]—is derived largely from trace consolidation theory [15].

According to trace consolidation theory, while neutral reverberation takes place under conditions of high generalized arousal, memory and cognition traces are relatively unavailable to the organism. However, in the long term, high generalized arousal during the associative processes results in a more intensely active trace process and a subsequent enhancement of cognitive processes. Support for trace consolidation theory has come from studies in which generalized arousal originated either from the stimulus terms themselves [15], from extraneous stimuli, e.g., white noise [3], or from social-setting sources, e.g., evaluation apprehension [9].

The present study started with the empirically based assumption that humor and arousal are positively correlated [11, 19]. This led to a trace consolidation theory hypothesis that a more humorous message would have a positive impact on persuasion-related (cognitive responses and attitude) measures *in the long term*. There was no direct attempt in the present study to differentiate among the three "traditional" theoretical approaches to humor-persuasion (counterargument disruption, information processing, and arousal). Rather, the intent of the present study was to incorporate dependent measures of interest and relevance to all three approaches while testing the trace consolidation theory hypothesis that humor effects on a persuasive appeal are more likely to be found in the long term than in the short term.

Finally, since sex differences have hardly been rare in humor-persuasion research [12], the present study was designed to test for the

extent to which the hypothesized effects may be accentuated or attenuated by the respondent's sex. Cupchick and Levental [7], for example, found that under self-observation conditions, females were significantly less positive than males in their evaluations of humorous stimuli. McGhee [20] found that boys showed more humor responsiveness than girls. Similarly, Shama and Coughlin [24] reported that females, more so than males, felt that the humor employed in Alka-Seltzer advertisements took away from the product rather than enhanced it. These findings led us to suspect that the trace consolidation hypotheses of the present study may be limited to males.

Method

Design and Subjects The design of the experiment was $2 \times 2 \times 2$ factorial with Humor (serious vs. humorous), Interval (immediate vs. delayed), and Sex of the respondent as the between-subjects factors. Sixty-four undergraduate volunteers (26 females and 38 males) from junior level business classes were randomly assigned to the Humor and Interval conditions and were run in groups of 15 to 20. All volunteer subjects had been told that a particular company (which remained unnamed) was conducting marketing research on campus. Such research activity on campus was not foreign to the business school students from which the sample was drawn. Although the use of a homogeneous group of subjects such as students may enhance the internal validity of the experiment [27], it should be noted that the generalizeability of the results is necessarily limited. The research problem at hand, however, demands that the focus be on achieving internal validity.

Procedure Subjects were greeted by a female experimenter who claimed she was conducting marketing research for a private concern. She explained to them that the study was a marketing survey of reactions to a new industrial-oriented advertisement for a particular brand of sound-sheets. She went on to tell the subjects that they would hear a tape-recording of the advertisement and that they would then complete a questionnaire concerning their responses to the advertisement. After informing the subjects of their rights to refuse to participate without retribution, the experimenter played the taped advertisement.

Industrial advertisements may be less involving for college students than advertisements directed at, say, the consumer level. However, hesitate before succumbing to the suggestion that the subjects were not interested in either the advertisement or the "marketing research survey," for when the subjects rated how interesting the ad was on a seven-point scale, they gave it a grand mean rating of 4.47—which indicates that the advertisement was at least moderately involving.

Subjects in the serious version condition heard a straightforward, no-nonsense version of an authentic advertisement for Evatone Soundsheets. This particular advertisement was chosen because the advertisement, the product, and the brand name were all found in pretesting to be highly unfamiliar. This serious version consisted of a male's voice which described the benefits and uses of soundsheets and gave examples of several companies which had adopted the product with success. In actuality, the serious version was created by splicing out a short segment from the original advertisement in which Dick and Bert, professional comedians, chimed in with a humorous example of a fictitious foghorn company which had adopted soundsheets as a promotional tool. The unedited Dick and Bert version constituted the humorous version of the advertisement. No subjects in the serious version conditions expressed awareness of the splicing.

There was an unavoidable confounding in this experiment. Specifically, humor was confounded with message length. However, other researchers who have attempted to isolate humor effects on persuasion have run in to the same paradox that we did—how can the humor level in a message be manipulated without affecting some other aspect of the message? Gruner [12, p. 303] observed that "It is difficult, perhaps even impossible to construct two messages completely alike except that one is entirely humorous and the other is not." Although Gruner's comments appear to be quite true, they are hardly consoling. However, we worked under the reasonable assumption that changing a message's length by less than 30 sec is a less serious violation than changing the actual information content of the nonhumorous message version [12]. This assumption is, without question, fair game for future experiments.

After listening to the advertisement, subjects either immediately, or after a 13-min filled delay, completed a questionnaire containing the dependent measures (cognitive responses, attitude, and recall) and manipulation check. Following Geen's [9] procedure, delay condition subjects worked on completing three personality inventories during the 13-min filled delay. (In verbal learning and memory research, 13 min is considered long term; see Ref. 14.) All subjects were debriefed. During the debriefing sessions, which ranged from 15 to 25 min, no subjects expressed awareness or suspicion of the true experimental procedures and hypotheses. Virtually all of the subjects were surprised, but not upset, when the true purpose of the study was revealed. Most of the subjects were interested enough to even request a copy of the results.

Dependent Measures and Manipulation Check *Cognitive Response Measures* Different types of persuasive appeals can affect cognitive

response generation [cf. 29]. In the present study, cognitive responses were measured by the thought-listing technique adapted from previous cognitive response research [16, 17, 22, 23, 27, 30, 31]. Subjects were given a limited amount of time (60 sec) in which to jot down their thoughts and ideas about the advertisement they had just heard. Then, the subjects were asked to rate each thought (on 7-point scales) according to how unfavorable–favorable a comment it was toward the advertisement. Those thoughts rated as favorable (5 to 7 on the seven-point scale) toward the advertisement were classified as proarguments, those thoughts rated as unfavorable (1 to 3) were classified as counterarguments, and those which were rated as neither favorable nor unfavorable (4) were classified as neutral/irrelevant thoughts.

Total and net scores for each type of cognitive response were computed for each subject. Although both scoring procedures are commonplace in the cognitive response literature and appear to have construct validity [22, 28], they do not always yield similar results [16].

Total Cognitive Response Scores Four total cognitive response scores were computed for each participant: total proargumentation (the total number of thoughts classified as proarguments), total counterargumentation (the total number of thoughts classified as counterarguments), total neutral argumentation (the total number of thoughts classified as being neutral), and total argumentation (the total number of thoughts).

Net Cognitive Response Scores Each subject also received three net argumentation scores: net proargumentation (the total proargumentation score minus the total counter- and neutral argumentation scores), net counterargumentation (the total counterargumentation score minus the total pro- and neutral argumentation scores), and net neutral argumentation (the total neutral argumentation score minus the total pro- and counterargumentation scores). Each of these net argumentation scores represents a linear combination of thoughts yielding a composite, directional cognitive response activity index [16, 22, 30, 31].

Attitude Attitude toward the advertisement was measured by having subjects rate on four seven-point scales how “bad–good” (evaluation scale), “slow–fast” (activity scale), “weak–strong” (potency scale), and “unpersuasive–persuasive” (persuasiveness scale) the advertisement was. Although neither attitude toward the brand nor brand choice was measured in the present study, a strong theoretical and empirical case for considering attitude toward the advertisement as a likely mediator of brand choice has been developed by Shimp [25].

Recall Subjects were also asked to recall the brand name (incorrect = 0; correct = 1), the product class (incorrect = 0; correct = 1), and the

product uses/benefits mentioned in the advertisement (maximum possible score = 5). These bits of information were common to *both* the humorous and serious versions of the advertisement.

Manipulation Check The humor manipulation was checked by having subjects rate how funny the advertisement was on a seven-point scale.

Results

The data were analyzed by $2 \times (\text{Humor}) \times 2 (\text{Interval}) \times 2 (\text{Sex of Subject})$ univariate analyses of variance (ANOVAs). Post hoc multiple comparisons of significant interaction effects were done with Duncan's Multiple Range Tests.

Manipulation Check on Humor The humorous version, $M = 5.03$, was rated as being more funny than the serious version of the advertisement, $M = 2.69$, $F = 42.44$, $1/56 \text{ df}$, $p < 0.001$. No other effects on this variable were significant. Thus, the manipulation of humor level was successful.

Cognitive Response Activity *Total Cognitive Response Measures* A Humor \times Interval interaction ($F = 9.24$, $1/56 \text{ df}$, $p < 0.004$) on the total number of cognitive responses (proarguments plus counterarguments plus neutral arguments) supported trace consolidation theory in that the humorous message, but not the serious message, enhanced total cognitive response output in the long term, but not in the short term (see Table 1 for means). Furthermore, this effect was largely due to the interactive effects of Humor and Interval on total proargumentation, $F = 4.26$, $1/56 \text{ df}$, $p < 0.044$. This latter interaction effect indicated that total proargumentation was enhanced by the humor appeal in the long term, but not in the short term (see Table 1 and Figure 1 for means). No other effects on the total cognitive response scores were significant.

Net Cognitive Response Scores A Humor \times Sex interaction on net counterargumentation ($F = 4.22$, $1/56 \text{ df}$, $p < 0.045$) showed that humor increased the net counterarguing of females while decreasing the net counterarguing of males (see Table 2 and Figure 2 for means). No other effects on the net cognitive response scores were significant.

Attitude Measures On the evaluation dimension rating scale ("bad-good"), a significant Humor \times Sex interaction ($F = 5.56$, $1/56 \text{ df}$, $p < 0.022$) showed that humor significantly increased males' liking of the message, but humor tended to decrease the females' liking of the message (see Table 2 for means). Importantly, these data correspond closely to the Humor \times Sex interaction found on the cognitive response measure just reported.

On the activity dimension response scale ("slow-fast"), a Humor \times Interval interaction ($F = 4.06$, $1/56 \text{ df}$, $p < 0.05$) indicated that the

Table 1: Cognitive Response and Activity Scale Means as a Function of Humor and Measurement Interval

Dependent Variable	Serious Message		Humorous Message	
	Immediate	Delay	Immediate	Delay
Total cog responses	2.64 _{ab}	2.22 _a	1.87 _a	3.29 _b
Total proargs	0.93 _{ab}	0.83 _{ab}	0.47 _a	1.35 _b
Activity scale	5.07 _a	5.83 _b	5.87 _b	5.06 _a

Note: Cell *ns* range from 14 to 18. For each dependent variable, means with no common subscripts differ at $p < 0.05$ by Duncan's Multiple Range Test.

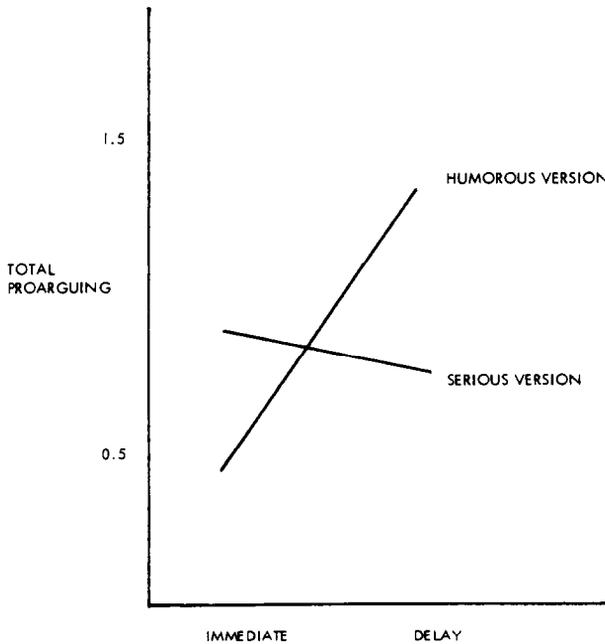


FIGURE 1. Total proargumentation as a function of message version and time of measurement.

Table 2: Cognitive Response and Evaluative Scale Means as a Function of Humor and Sex of Subject

Dependent Variable	Serious Message		Humorous Message	
	Female	Male	Female	Male
Total Proargs	1.40	0.64	0.75	1.13
Net Proarg	0.00	-0.96	-1.13	-0.38
Net Counterarg	-1.00 _a	0.32 _b	0.05 _b	-0.01 _b
Evaluative Scale	4.70 _{ab}	4.14 _a	4.06 _a	4.94 _b

Note: Cell *ns* range from 14 to 18. For each dependent variable, means with no common subscripts at $p < 0.05$ by Duncan's Multiple Range Test. Internal comparisons of the interaction means for total and net proarguing were not performed because the interaction *F*s were marginally ($p < 0.10$) significant.

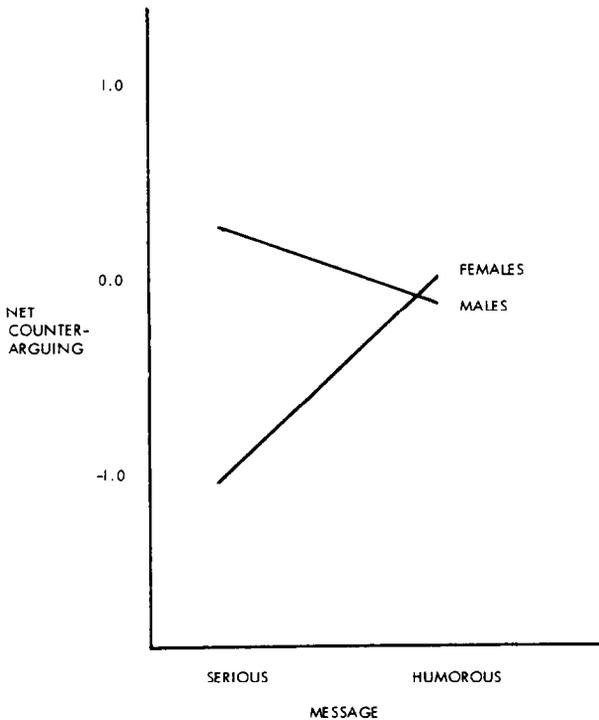


FIGURE 2. Net counterarguing as a function of message version and sex of subject.

humorous message was perceived to be less active after an interposed delay of measurement than after immediate measurement, whereas the serious message (which was perceived to be less active than the humorous message under immediate measurement conditions) was perceived to be more active after a delay of measurement than after immediate measurement (see Table 1 for means).

On the potency scale (weak–strong), a significant main effect of sex indicated that the males ($M = 4.42$) rated the advertisement as being stronger than did the females ($M = 3.62$; $F = 4.02$, $1/56$ *df*, $p < 0.05$).

Similarly, a marginal main effect of sex on the persuasiveness scale indicated that males ($M = 4.39$) felt the advertisement was more persuasive than did the females ($M = 3.81$; $F = 2.70$, $1/56$ *df*, $p < 0.10$). These results, along with the Humor \times Sex interactions on the evaluative scale and on the cognitive response measures, strongly suggest that females were more resistant to the persuasive appeal than were males.

No other effects on the evaluative, activity, potency, and persuasiveness scales were significant.

Recall An Interval main effect on brand recall indicated that brand recall was greater when the measure was taken immediately ($M = 0.38$) than when the measure was taken after an interposed delay ($M = 0.06$; $F = 9.22$, $1/56$ *df*, $p < 0.01$).

A main effect of Humor on the recall of product uses and benefits showed that humor significantly decreased recall [$M_s = 1.44$ and 0.084 for the serious and humorous versions, respectively; $F = 5.24$, $1/56$ *df*, $p < 0.05$]. This finding is consistent with the reports of other researchers who also found that humor had a negative impact on message comprehension, e.g., Ref. 5.

No other effects on the recall measures approached significance.

Discussion

A major purpose of the present study was to test the hypothesis derived from trace consolidation theory that humor effects on persuasion-related measures are more likely to be witnessed in the long term than in the short term. The strongest evidence to support this hypothesis came from the results on the cognitive response measures. These results showed that when such measures were taken immediately, there was little difference between the serious and humorous versions—precisely what the literature reviewers claimed is the common finding. However, when cognitive response measures were delayed (in order to allow for trace consolidation processes as prescribed by the theory), it was found that the humorous appeal was superior to the serious message in the total

number of cognitive responses elicited from the audience. Moreover, it was also found that most of the increased cognitive activity came in the form of proargumentation. This humor-sleeper effect suggests that humorous appeals may be more effective than serious appeals because they stimulate, in the long term, the generation of cognitive responses which are predominately favorable ones.

The measurement Interval manipulation also significantly affected the activity ratings of the humorous and serious messages. When the activity ratings were taken immediately after exposure to the message, the humorous message was, not surprisingly, rated as more active than the serious one. However, the activity ratings were significantly reversed when a delay of measurement occurred. The complete reversal of activity ratings with a delayed measurement was unexpected. A decrease in the activity ratings of the humorous message would be expected if neural reverberation from the humorous (arousing) message was settling. And, some increase in the activity rating of the serious message might have occurred because the saliency of the activity cues (in this case, cues which may have suggested the message was serious, dry, and even boring) was attenuated by the delay. Nevertheless, the exact mechanism which led to a complete reversal in activity ratings of the serious and humorous message over time is unclear.

With a delay in measurement, the humorous message showed a significant increase in proargument elicitation. It was also found that, regardless of measurement Interval, humor inhibited the counterarguing of males, but facilitated the counterarguing of females. A corresponding Humor X Sex interaction was observed on the evaluation ratings of the messages. Specifically, with increased humor, males liked the message more, while females liked it less. Apparently, the females reacted negatively to the injection of humor in a message which they considered to be basically weak and unpersuasive (see the sex main effects on the potency and persuasiveness scales). Perhaps the females were better than males at "seeing through" the humor as a persuasive ploy used by some advertisers to catch consumers with their guard down. Perhaps, too, females tend to be more critical of advertising stimuli than males. Such negativity has been, in part, brought on by the advertisers themselves who tend to cast women in unflattering roles [18]. Whatever the reason, the present study indicated that females were less persuaded than males, especially when the message contained humor.

Finally, the recall data simply showed that humor interfered with message comprehension. This finding is common in the literature [5, 6] and is usually presented as an argument for avoiding the use of humor in a persuasive appeal. However, the cognitive response data and the

attitude data suggest otherwise (at least for males). This lack of complete correspondence between recall measures and persuasion measures is nothing new to the literature [22]. The critical point to be made here, though, is that humor can have meaningful, positive influences on measures other than recall. Before one throws out the baby with the bath water, humor's influence on other measures ought to be considered. In particular, the cognitive response measures appear to be especially sensitive to humor manipulations.

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