ABSTRACT

The reported experiment tested predictions made by the elaboration likelihood model (ELM). Manipulations of message processing involvement, argument strength, and favorability of source information were used to examine predicted effects on cognitive response activity and attitude change. Major study findings reveal general support for ELM predictions concerning cognitive response activity, as well as support for central and peripheral attitude change predictions. In addition, central route attitude change was influenced by message cognitions, while peripheral route attitude change was determined by both message cognitions as well as simple perceptions of the source. A theoretical interpretation of the results and implications for advertising practice are offered.

Effects of Involvement, Argument Strength, and Source Characteristics on Central and Peripheral Processing of Advertising

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How consumers are persuaded and how they resist being persuaded are fundamental issues in understanding consumer behavior. Consumer persuasion studies have progressed slowly, however, due in large part to the unavailability of a unified theory of the overall persuasion process. A step in this direction has been achieved with the formulation of the elaboration likelihood model (Petty & Cacioppo, 1981a; 1983; 1986).
The elaboration likelihood model, or ELM, postulates a continuum of theoretical persuasion processes anchored by its central and peripheral persuasion routes. The model's *central route* is theorized to occur under conditions where a message receiver is both motivated to process message content (e.g., due to the personal relevance of the issue) and has the ability to process the content. These conditions are said to foster a high level of elaboration, activate cognitive responses, and lead ultimately to a significant impact on the message processor's attitude toward the communicated topic. When these processing conditions do not hold, the possibility remains for attitude formation or change via the *peripheral route*. Here, the message recipient is theorized not to focus on the primary message arguments, but instead upon background cues (music, scenery, source characteristics, the number of message arguments, etc.) that are peripheral to the main message content.

The purpose of the present research is to test the ELM's central and peripheral route predictions in an experimental advertising/consumer behavior context, similar to that found in initial ELM research conducted by Petty, Cacioppo, and Schumann (1983). Although the ELM has been widely referenced as having potential application in a variety of consumer behavior settings (Alba & Marmorstein, 1987; Allen & Madden, 1985; Bitner & Obermiller, 1985; Gardner, 1985; Kahle & Homer, 1985; MacKenzie, Lutz, & Belch, 1986; Obermiller, 1985; Park & Young, 1986; Yalch & Elmore-Yalch, 1984), relatively few studies (Petty & Cacioppo, 1981b; Petty, Cacioppo, & Schumann, 1983) have been designed to experimentally test both central and peripheral route predictions in a consumer behavior context.

**EXTENDING PREVIOUS ELM RESEARCH IN CONSUMER BEHAVIOR**

The present research provides not only a conceptual replication of central and peripheral tests in consumer behavior, but features several improvements to previous ELM research. First, consistent with theoretical predictions, the research assesses both attitude change *and* the direction and intensity of cognitive responses evoked by the experimental messages. A notable limitation of previous ELM research in consumer behavior has been the absence of efforts to analyze subjects' cognitive responses (Petty, Cacioppo, & Schumann, 1983). Second, manipulation checks are used that tap the perceived *state* of each manipulated variable (e.g., the state of involvement in a message) as opposed to antecedents (e.g., risk) or consequences (e.g., brand recognition and/or recall) (cf., Andrews, 1988). Finally, the experimental involvement manipulation has been "purified" to ensure that *each individual* has been properly exposed and induced via central and peripheral processing routes.
Overview of Experiment

In the experiment, a $2 \times 2 \times 2$ between-subjects design manipulated three factors fundamental to ELM research: message processing involvement (high versus low), message argument strength (strong versus weak), and peripheral-cue valence (favorable versus unfavorable source characteristics). Dependent measures of subjects' cognitive response activity and attitudes toward the experimental product were obtained following their exposure to an advertisement for the product.

Cognitive Responses

Each hypothesis to be presented is theoretically grounded in explicit ELM postulates. For example, the second postulate of the ELM (Petty & Cacioppo, 1986 p. 5) states that, "the amount and nature of issue-relevant elaboration in which (people) are willing or able to engage (in) to evaluate a message varies with individual and situational factors." These factors include one’s increased involvement in processing a message that serves to enhance the likelihood of message elaboration. Petty and Cacioppo (1986 p.12) predict that, “When the elaboration likelihood is high, there should be evidence for the allocation of cognitive resources to the issue under consideration. Hence, central processing is . . . directed at evaluating the merits of the arguments for a recommendation.” In this regard, the following hypotheses make predictions concerning the relative effects that central and peripheral routes have on message processors’ cognitive responses.

**H1:** High-involvement (central route) subjects will produce a greater number of total cognitive responses (i.e., message-oriented and source-oriented thoughts) than will low-involvement (peripheral route) subjects.

**H2:** High-involvement subjects will produce a greater number of message-oriented thoughts than will low-involvement subjects.

**H2a:** High-involvement subjects exposed to strong, as opposed to weak, message arguments will produce a greater number of favorable message-oriented thoughts.

**H2b:** High-involvement subjects exposed to weak, as opposed to strong, message arguments will produce a greater number of unfavorable message-oriented thoughts.
EFFECTS OF INVOLVEMENT

To protect against the possibility that fewer source-oriented thoughts were generated by low-involvement subjects simply because that group generated fewer thoughts of any type, a net index was constructed consisting of source-oriented thoughts minus message-oriented thoughts. The predictions for this net index and other peripheral-route cognitive-response effects are given in the following hypothesis.

**H3:** Low-involvement subjects will produce a greater number of source-oriented minus message-oriented thoughts than will high-involvement subjects.

**H3a:** Low-involvement subjects exposed to favorable, as opposed to unfavorable, source characteristics will produce a greater number of favorable source-oriented thoughts.

**H3b:** Low-involvement subjects exposed to unfavorable, as opposed to favorable, source characteristics will produce a greater number of unfavorable source-oriented thoughts.

**Attitude Change**

Petty and Cacioppo's (1986 p. 5) fourth ELM postulate states that, "Variables affecting motivation and/or ability to process a message in a relatively objective manner can do so by either enhancing or reducing argument scrutiny." In this context, argument quality is predicted to influence attitude change under high involvement conditions. Specifically,

**H4:** High-involvement subjects exposed to strong, as opposed to weak, message arguments will experience greater attitude change.

Attitude change can also result due to peripheral factors found in the message, as indicated by Petty and Cacioppo's (1986 p. 5) sixth ELM postulate which states, "As motivation and/or ability to process arguments is decreased, peripheral cues become relatively more important determinants of persuasion." This sixth ELM postulate suggests the following hypothesis:

**H5:** Low-involvement subjects exposed to favorable, as opposed to unfavorable, source characteristics will experience greater attitude change.
METHOD

Subjects

A total of 187 undergraduate subjects participated in the experiment. These subjects were relevant (cf., Ferber, 1977) to the experimental product selected in the study for several reasons. First, because the experimental product was a new brand of low alcohol beer (see next section), the study was limited to students who were either occasional or regular beer drinkers. Second, only those students who were of legal drinking age (at the time of the study) were included in the sample. Third, company representatives for the brand used in the experiment indicated that college students represented one of their primary target markets for this low-alcohol beer.

Experimental Product

Several considerations guided the selection of low-alcohol beer as the experimental product. First, it was important that the experimental product be only "moderately familiar" to the subject population. Since no brand of low-alcohol beer was available in the local region at the time of the experiment, it represented a product subcategory whose evaluation could not be ruled by subjects' past experiences and product usage. However, the general idea of low-alcohol beer was not so radically different from the parent product category (i.e., beer versus low-alcohol beer) so as to preclude the formation of cognitive responses and higher order effects. Second, it was important that the product be relatively simple to reduce the overall number of attributes that subjects would be required to evaluate (cf., Gardner, 1983). Finally, in order to avoid problems of ceiling or floor effects, it was essential that subjects not have strongly pro-attitudinal nor counter-attitudinal positions toward the product concept. Although the student population was favorably predisposed toward beer, pretesting indicated they held some reservations about purchasing low-alcohol beer.

Procedure

Subjects were first presented with a booklet that provided an introduction to the study and also indicated that a national advertising agency was interested in college students' views toward various new products marketed by the agency's clients. All subjects then received brief descriptions of three allegedly test-marketed products, one of which was low-alcohol beer. For example, the low-alcohol beer description informed subjects that: (1) low-alcohol beer contains less than one-half (1.6% to 2.0%) the alcohol by weight than does regular beer (3.2% to 4.0%); (2) the ingredients in...
low-alcohol beer are the same as used in regular beer; but that (3) a special brewing process causes less fermenting resulting in less alcohol. Nothing at this particular time was mentioned about the taste or other attributes of low-alcohol beer vis-à-vis regular beer. Attitude measures then followed for the purpose of investigating attitude change (versus formation; Carnegie Mellon University Marketing Seminar, 1978) to determine if experimentally manipulated advertisements for low-alcohol beer worked according to ELM predictions.

A second booklet contained the advertising stimuli. Each subject had five minutes to peruse a booklet of nine advertisements: three ads for the previously mentioned products plus six additional advertisements for sun-dry food and beverage items. Four of the advertisements were real magazine ads and five were mock advertisements. The real ads enhanced the professional appearance of the booklet, whereas the use of mock ads prevented undue attention being drawn to the experimental ad for "Break" low-alcohol beer, which itself was a mock ad.* Besides the introductory description of the low-alcohol beer category, the only information available to subjects on low alcohol beer was provided by the "Break" advertisement.

After examining the advertising stimuli, subjects received a questionnaire including manipulation checks, measures of cognitive response activity, attitude measures, and questions concerning brand and message argument recall. The manipulation checks appeared first due to the possibility that induced states (e.g., involvement) would be of an ephemeral nature (cf., Perdue & Summers, 1986). The subjects were also queried as to the purpose of the study, debriefed, and thanked for their participation.

Independent Variables

Message-Processing Involvement

Four pretests were required to arrive at a suitable manipulation that influenced the relevance that low-alcohol beer held for our subjects. The final version varied three involvement-influencing elements (cf., Petty, Cacioppo, & Schumann, 1983). Specifically, high-involvement subjects were informed (on the page preceding the Break advertisement) that: (1) they were to choose between Break and another brand of low-alcohol beer

* Three actual low-alcohol beer brands (L.A., Break, and Pace) being test marketed in regions distinctly removed from the experiment, were first added to a list of six plausible, yet fictitious names and pretested for likability on a separate pool of subjects. A neutral evaluation was deemed necessary to remove the brand name per se as a positive or negative factor in the effects generated by the experimentally manipulated advertisements. The name "Break" was chosen because (1) it was evaluated in the middle position of nine brand names, and (2) the availability of a marketed brand facilitated the construction of experimental stimuli.
as a gift for participating in the study, (2) there was a possibility they would be selected to participate in a paid interview concerning Break beer, and (3) Break beer would soon be available in the local market area. Low-involvement subjects were not promised a choice between two brands of low-alcohol beer, did not expect any interview concerning Break beer, and were told that Break would be introduced in a far-removed region of the U.S. A pretest with 21 students who occasionally or regularly drink beer supported this manipulation.

**Argument Strength**

The salient consequences of consuming low-alcohol beer were elicited by instructing a pretest sample of 109 students to list “the product features or benefits that would be really important to you in choosing a low-alcohol beer.” A pool of twenty potential message arguments was then constructed from the most frequently mentioned features/benefits. Two additional pretest groups then rated the arguments after reading an introductory description about low-alcohol beer. One group \((n = 19)\) rated a random selection of half of the arguments, while a second group \((n = 21)\) rated the other 10 arguments. (Splitting the argument pool in half was necessary to reduce the length of the evaluation instrument.) Respondents evaluated the arguments on six, nine-point bipolar scales (e.g., persuasive/unpersuasive, believable/not believable). These items were summed for each argument into an overall argument-strength scale, with resulting coefficient alphas ranging between .90 to .97. The five arguments with the highest mean scores and the five with the lowest mean scores were selected to represent, respectively, “strong” (see right-hand side of Figure 1) and “weak” (see right-hand side of Figure 2) sets of message arguments. It will be noted that the “weak” arguments are not absolutely weak, just relatively pallid compared to the “strong” arguments.*

**Source Characteristics**

The source manipulations for the Break advertisement included a male and female couple rather than a lone individual in order not to appeal primarily to only one of the sexes who participated in the final experiments. The manipulation combined credibility and attractiveness characteristics and was designed to be an impactful peripheral cue without concern for whether the impact was created by credibility or attractiveness features per se. The peripheral cue was designed such that it could not be construed as a product-relevant argument (cf., Petty & Cacioppo, 1981b; Petty, Cacioppo, & Schumann, 1983).

* While it is possible that the weak argument version may have strained credulity, it was important to provide a maximum separation of argument strength levels in order for the argument strength manipulation to successfully operate.
Introducing the new breakthrough in beer.

There are times when you want the taste and refreshment that only beer can provide, without the alcohol content of regular beer-- now you have that choice with BREAK beer.

- Break contains one-half the amount of alcohol of regular beers, and therefore, has less calories than regular beer-- both important in today's health conscious world.
- Unlike regular beer, Break's lower alcohol and lower calorie content allow you to have a great tasting beer while keeping physically and mentally fit.
- Break is a smart choice for those times when you want to relax without becoming intoxicated.
- If you're thinking about switching from regular beer, Break is the one to try.
- So enjoy yourself with Break, a great tasting beer that won't slow you down.

John and Becky Fitzgerald enjoying the great taste of Break.

EDUCATION: recent graduates of a major university.

PROFESSION:
  John, orthopedic surgeon.
  Becky, corporate lawyer.

HOBBIES: running, raquetball, photography, and travel.

For the good times, without the bad times.

FIGURE 1
"Break" low alcohol beer advertisement: Strong argument and favorable source treatment levels.
Introducing the new breakthrough in beer.

There are times when you want the taste and refreshment that only beer can provide, without the alcohol content of regular beer—now you have that choice with BREAK beer.

- Break is just as good as any other regular beer.
- You really can't tell the difference between Break and regular beer.
- Break has been designed with the beer drinker in mind.
- If desired, one can obtain the full strength effect of a regular beer by drinking a few more Break beers than one would normally drink.
- So enjoy yourself with Break, the beer of the future.

John and Becky Fitzgerald enjoying the great taste of Break.

EDUCATION: high school graduates.
PROFESSION:
  John, sales clerk for a department store.
  Becky, toll booth operator.
HOBBIES: bowling, TV, movies, and stock-car races.

For the good times, without the bad times.

FIGURE 2
“Break” low alcohol beer advertisement: Weak argument and unfavorable source treatment levels.
A pretest with 59 students identified appropriate verbal descriptions for manipulating credibility. A couple, "John and Becky Fitzgerald," was then selected in a pretest with 44 additional students to manipulate the attractiveness portion of the source effect. It should be noted (in Figures 1 and 2) that although John and Becky Fitzgerald are the same people in both figures, their attractiveness has been varied rather dramatically by the manner in which they are dressed, their nonverbal expressions, and their posturing. The couple depicted in Figures 1 and 2 was selected due to the desired extremity in the attractiveness scores obtained—$M = 38.00$, $SD = 9.32$ when portrayed in an attractive pose (Figure 1), and $M = 19.82$, $SD = 9.24$ when portrayed unattractively (Figure 2).

**Manipulation Purification**

In order to provide a rigorous test of ELM predictions, a procedure was employed to ensure that each subject did in fact satisfy the motivational requirement for being centrally or peripherally induced. Specifically, subjects assigned to the high- (low-) involvement treatment were retained only if their standardized mean on the involvement manipulation check was significantly greater (less) than a 90% confidence interval around the overall standardized mean for all 187 subjects. This procedure eliminated seventy subjects.

**Dependent Measures**

**Cognitive Responses**

Shortly following exposure to the experimental stimuli, subjects were directed, in a self-paced format, to list any thoughts they may have had in response to the Break beer advertisement. The thoughts were generated in a procedure adapted from Cialdini et al. (1976):

We would now like you to list your thoughts about the low-alcohol beer advertisement. Simply write next to the first number the first idea that comes to your mind about the low-alcohol beer advertisement, the second idea that comes to your mind about the low-alcohol beer advertisement next to the second number, etc. Please put only one idea or thought next to each number. Your ideas about the low-alcohol beer advertisement may be favorable, unfavorable, or neutral. Remember: Your thoughts listed should be about the low-alcohol beer advertisement, not the product.

Thoughts were then classified into nine possible thought categories: favorable, unfavorable, or neutral thoughts in each of message-, source-, or
other-oriented categories (cf., Chaiken, 1980). "Other-oriented" thoughts were not included in the analysis of total thoughts generated because the experimental advertisement included only the message content and source manipulations. A two-judge panel independently categorized the thoughts and agreed on 90.3% of the 822 total thoughts from the experiment. All conflicting classifications were resolved following agreement of both judges.

**Attitudes**

Attitudes toward personally drinking low-alcohol beer (in the target advertisement) were measured with five, seven-point bipolar scales: good/bad, harmful/beneficial, worthless/valuable, unpleasant/pleasant, wise/foolish. Responses to each scale were scored from $-3$ (negative responses) to $+3$ (positive responses). The average coefficient alpha across two separate administrations of the Aact items was .845, ranging from .84 to .85.

**RESULTS**

**Overview**

While full ANOVAs are provided for cognitive response and attitude change results, the analysis of predictions found in the hypotheses are in the form of planned comparisons. The statistical tests are one-tailed in accordance with the directional hypotheses.

**Manipulation Checks**

**Message-Processing Involvement**

The summation of six, nine-point items formed the message-processing involvement manipulation check (coefficient alpha = .95). Subjects indicated their level of agreement/disagreement associated with the amount of attention, degree of concentration, level of thought, degree of focus, level of effort, and extent to which they carefully read the low alcohol beer advertisement. In the manipulated conditions, high-involvement subjects were significantly more involved in the advertisement ($M = 48.75, SD = 3.90$) than low-involvement subjects ($M = 26.36, SD = 9.06; F(1,115) = 48.39, p < .001$). As desired, a full ANOVA on the check showed no significant interactions of the involvement treatment with the source or argument treatments. In order to assess whether central or peripheral processing had been induced by the involvement treatment, subjects' relative concentration (cf., Wright, 1973) in processing the Break advertisement was examined via responses to a nine-point scale anchored
by “I concentrated most on the claims in the ad” and “I concentrated most on the people in the ad.” The relative concentration on claims in the advertisement (versus people) was significantly greater for high-involvement subjects ($M = 6.97, SD = 2.19$) than for low-involvement subjects ($M = 5.19, SD = 2.51; F(1,115) = 16.67, p < .001$). High-involvement subjects also recalled a significantly greater number of message arguments from the Break advertisement ($M = 2.12, SD = 1.22$) than did low-involvement subjects ($M = 1.16, SD = .97; F(1,115) = 22.34, p < .001$). Further, unaided recall of the experimental brand, Break beer, was significantly greater for high-involvement (95%) than for low-involvement subjects (71%; $\chi^2 = 10.46, p < .001$).

**Argument Strength**

The argument-strength manipulation check consisted of four, nine-point bipolar items anchored by strong/weak, persuasive/unpersuasive, convincing/not convincing, and good arguments/bad arguments (coefficient alpha = .91). As indicated by a full ANOVA on the argument strength check, the interaction between the argument strength and source conditions was nonsignificant. However, a significant interaction existed on the check between the argument strength and involvement conditions ($F(1,113) = 9.12, p = .003$). This interaction actually reflected a desired situation whereby high-involvement subjects differed in their argument strength perceptions, whereas low-involvement subjects did not. As a measure of the effectiveness of the manipulation, high-involvement subjects, who should have focused diligently on message content, perceived the strong argument manipulation as significantly “stronger” ($M = 29.96, SD = 4.81$) than the weak argument manipulation ($M = 23.97, SD = 6.92; F(1,57) = 14.10, p < .001$).

**Source Characteristics**

The source characteristics manipulation check consisted of ten, nine-point items designed to measure attractiveness (four items), expertise (three items), and trustworthiness (three items). Factor analysis indicated that a single factor, representing general source characteristics, accounted for over 70% of the total variance and that all items loaded higher than .70 on that factor, which justified treating the ten items as a single scale (coefficient alpha = .96). The treatment indicated that the favorable source manipulation was perceived as significantly more positive ($M = 63.63, SD = 13.62$) than the unfavorable manipulation ($M = 40.53, SD = 15.81; F(1,184) = 111.91, p < .001$). As desired, a full ANOVA on the source check did not indicate any significant interactions of the source treatment with either the involvement or argument strength treatments.
Cognitive Response Results

Consistent with the ELM's central route and hypothesis H1, a full ANOVA revealed that significantly more total thoughts were generated by high ($M = 3.36$, $SD = 1.45$) than low-involvement subjects ($M = 2.07$, $SD = 1.47$; $F(1,109) = 20.89$, $p < .001$). Consistent with hypothesis H2, significantly more message-oriented thoughts were generated by high- ($M = 1.81$, $SD = 1.21$) than low-involvement subjects ($M = .91$, $SD = .90$; $F(1,109) = 21.51$, $p < .001$). As desired, no other significant main or interaction effects emerged from the data.

Hypotheses H2a and (H2b) proposed that a greater amount of favorable (unfavorable) message-oriented thought would be produced by high-involvement subjects exposed to strong (weak) message arguments compared to subjects exposed to weak (strong) arguments. A full ANOVA revealed a main effect for involvement ($F(1,109) = 10.75$, $p < .001$) in which high-involvement subjects generated more favorable message-oriented thoughts ($M = .58$, $SD = .95$) than low-involvement subjects ($M = .14$, $SD = .40$). In support of H2a and comparable to Petty and Cacioppo's (1979) results, a planned comparison revealed that high involvement subjects, exposed to strong message arguments, generated significantly more favorable message-oriented thoughts ($M = .81$, $SD = 1.06$) than those exposed to weak arguments ($M = .39$, $SD = .83$; one-tailed $t = 1.69, 57$ df, $p = .048$). In comparison, low-involvement subjects did not generate significantly more favorable message-oriented thoughts for strong (versus weak) message arguments ($p = .94$), as expected.

A full ANOVA revealed a significant involvement $x$ argument strength interaction for unfavorable message-oriented thoughts ($F(1,109) = 4.04$, $p = .047$). Supporting H2b, a planned comparison indicated significantly more unfavorable message-oriented thoughts produced by subjects exposed to weak ($M = 1.09$, $SD = 1.16$) as opposed to strong message arguments ($M = .42$, $SD = .90$; one-tailed $t = 2.42, 57$ df, $p = .01$). For comparison and as expected, low-involvement subjects did not generate significantly more unfavorable message-oriented thoughts when exposed to weak (versus strong) message arguments ($p = .671$). In sum, the results concerning total and message-oriented cognitive response activity suggest that the experimental manipulations operated in a manner consistent with ELM predictions.

Hypothesis 3 predicted that low-involvement subjects would produce a greater number of source-oriented minus message-oriented thoughts than high involvement subjects. Separate involvement ($F(1,109) = 3.84$, $p = .053$) and source ($F(1,109) = 4.97$, $p = .028$) main effects emerged from a full ANOVA indicating greater source-oriented minus message-oriented thoughts generated by low- (versus high-) involvement subjects, as well as
by favorable (versus unfavorable) source subjects. In support of H3, greater source-oriented minus message-oriented thoughts were generated by low-involvement subjects ($M = .24, SD = 1.30$) than by high-involvement subjects ($M = -.27, SD = 1.88$; one-tailed $t = 1.71, 115 \text{ df}, p = .045$).

Hypothesis H3a and (H3b) proposed that more favorable (unfavorable) source-oriented thoughts would be produced by low-involvement subjects exposed to favorable (unfavorable), as opposed to unfavorable (favorable), source characteristics. Contrary to predictions in H3a, an involvement $\times$ source interaction ($F(1,109) = 2.80, p = .097$) revealed that high-involvement subjects generated significantly more favorable source-oriented thoughts when exposed to favorable ($M = .37, SD = .85$), as opposed to unfavorable sources ($M = .03, SD = .19$; two-tailed $t = 2.06, p = .044$). Turning to low-involvement subjects, hypothesized differences in H3a between favorable ($M = .051, SD = .32$) and unfavorable source conditions ($M = .052, SD = .23$) did not materialize (one-tailed $t = .02, 56 \text{ df}, p = .464$).

A full ANOVA indicated a significant source main effect for unfavorable source-oriented thoughts ($F(1,109) = 4.81, p = .03$). Greater unfavorable source-oriented thoughts occurred for those exposed to unfavorable ($M = 1.31, SD = 1.27$) as opposed to favorable source characteristics ($M = .86, SD = 1.02$). In support of H3b, a planned comparison revealed greater unfavorable source-oriented thoughts for low-involvement subjects exposed to unfavorable ($M = 1.32, SD = 1.06$) as opposed to favorable source characteristics ($M = .85, SD = 1.01$; one-tailed $t = 1.63, 56 \text{ df}, p = .054$). In comparison, high-involvement subjects did not generate significantly more unfavorable source-oriented thoughts when exposed to unfavorable, as opposed to favorable, source characteristics ($p = .175$).

To summarize the source-oriented thought data thus far, results for the source-oriented minus message-oriented and unfavorable source-oriented thoughts indicate that the experimental manipulations operated in accordance with ELM predictions. However, for favorable source-oriented thoughts, it appears that high-involvement subjects engaged in considerable cognitive activity about source-related information in the advertisement in addition to the message arguments presented. While contrary to prediction, this unexpected finding can be viewed as being consistent with recent thinking by Petty and Cacioppo (1986) on the ELM:

The important point is that when the elaboration likelihood is high, source information does not serve as a simple acceptance or rejection cue, but rather it is considered along with all other available information in the subject’s attempt to evaluate the true merits of the arguments and position advocated (p. 205).
EFFECTS OF INVOLVEMENT

While low-involvement subjects' source-oriented minus message-oriented and unfavorable source-oriented thoughts occurred as predicted, of primary importance is whether the source information will serve as a simple acceptance or rejection cue in effecting attitude change.

Attitude Change Results

As previously indicated, attitudes were measured both before and after subjects were exposed to the advertisement for low-alcohol beer. Difference scores ("after" minus "before") were calculated to examine shifts in attitudes toward the low-alcohol beer. In accordance with the ELM's fundamental postulates related to the central persuasion route, it was hypothesized that more positive attitude change would occur for high involvement subjects exposed to strong as opposed to weak message arguments. A full ANOVA revealed two main effects. An involvement main effect indicated that greater attitude change occurred for high- \( M = .95, SD = 3.51 \) as opposed to low-involvement subjects \( M = -1.11, SD = 2.57 \); \( F(1,108) = 17.94, p < .001 \). Secondly, an argument strength main effect revealed that exposure to the strong argument condition \( M = .48, SD = 3.42 \) had a greater impact on attitude change than under the weak argument condition \( M = -0.70, SD = 2.92; F(1,108) = 6.87, p = .01 \).

In support of H4, a planned comparison indicated that significantly greater attitude change occurred for high-involvement subjects exposed to strong \( M = 1.92, SD = 3.85 \) as opposed to weak message arguments \( M = .18, SD = 3.07 \); one-tailed \( t = 1.94, 57 df, p = .029 \). However, contrary to expectation, but similar to a finding by Petty, Cacioppo, and Schumann (1983), low-involvement subjects also exhibited greater (i.e., less negative) attitude change when exposed to strong \( M = -0.54, SD = 2.69 \) as opposed to weak message arguments \( M = -2.15, SD = 1.98; \) two-tailed \( t = 2.35, 55 df, p = .023 \).

In accordance with the ELM's fundamental premise related to the peripheral route, hypothesis H5 proposed that greater attitude change would occur for low-involvement subjects exposed to favorable rather than unfavorable source cues. In support of H5, a planned comparison revealed that low-involvement subjects experienced greater (i.e., less negative) attitude change when exposed to favorable \( M = -.076, SD = 2.51 \) rather

Subjects were informed that the "after" attitude measure was in reference to the product seen in the low-alcohol beer advertisement. Yet, the general attitude toward low-alcohol beer measure allowed an equal specificity of measurement on both the "before" and "after" occasions. It should be recalled that the only persuasive information available to subjects on low-alcohol beer at the time of the study was provided by the experimental low-alcohol beer advertisement.
than unfavorable source characteristics ($M = -1.79$, $SD = 2.62$; one-tailed $t = 1.44$, 55 $df$, $p = .078$). In comparison, high-involvement subjects did not exhibit greater attitude change when exposed to favorable ($M = .83$, $SD = 3.73$) as opposed to unfavorable source characteristics ($M = 1.07$, $SD = 3.33$; two-tailed $t = .26$, 57 $df$, $p = .799$). In sum, central (H4) and peripheral route (H5) attitude change predictions were supported.

**Determinants of Attitude Change**

Even though attitude change was shown to be influenced as predicted under central (H4) and peripheral (H5) processing, a question remains as to exactly how these processes influence attitude change. For example, under low involvement, is attitude change influenced primarily by source cognitions or simple exposure to source cues? Under high involvement, are message content cognitions driving centrally-induced attitude change as predicted by the ELM?

To answer these questions, regression analyses were run for two competing conditions: high-involvement/strong arguments (positive central route conditions) and low-involvement/favorable source (positive peripheral route conditions). Attitude change served as the dependent variable for the analyses while two net indices of cognitive response activity served as independent variables. A procedure suggested by Calder, Insko, and Yandell (1974) was used to combine cognitive response categories by subtracting the total number of negative statements related to the message content from the corresponding total number of positive message content statements. The same procedure was applied to statements about the source. Therefore, each index represented a net valence of cognitive responses about the advertisement.

The results for the positive central route conditions indicated that attitude change was significantly influenced by net message-oriented thoughts (beta = .414, one-tailed $t = 2.09$, $p = .024$) and not by net source-oriented thoughts (beta = -.002, two-tailed $t = -.01$, $p = .992$), as expected. A similar pattern of results emerged for the positive peripheral route conditions in that attitude change was influenced by net message-oriented thoughts (beta = .394, two-tailed $t = 2.75$, $p = .01$) and not by net source-oriented thoughts (beta = -.049, one-tailed $t = -.34$, $p = .367$), contrary to expectations. However, the source manipulation check (i.e., the degree to which the source was perceived as being attractive, credible, etc.) indicated that simple perceptions of the source (as evidenced by the source manipulation check) did have a significant impact on peripherally-induced attitude change (beta = .393, one-tailed $t = 2.73$, $p = .005$).
DISCUSSION

The ELM represents a major contribution to the advancement of persuasive communications knowledge in that it has intelligently combined a multitude of persuasion processes under a single, unified framework. Research in consumer behavior explicitly examining both central and peripheral processing effects of the ELM, however, has been quite limited (cf., Petty & Cacioppo, 1981b; Petty, Cacioppo, & Schumann, 1983). The present study contributes in this regard by building upon previous ELM research in consumer behavior in the examination of the direction and valence of cognitive response activity, and the assessment of attitude change versus formation (Carnegie Mellon University Marketing Seminar, 1978).

Summary and Interpretation of Major Findings

Cognitive Response Activity

The experiment provides general support for ELM predictions concerning cognitive response activity. For central route subjects, total cognitive responses, total message-oriented thoughts, favorable message-oriented thoughts, and unfavorable message-oriented thoughts all operated as hypothesized—indicating that centrally-induced subjects diligently thought about the message arguments. Also, peripheral route subjects focused, as they should have, proportionately more of their cognitive effort on source than message information. Predictions concerning peripheral route subjects' unfavorable source cognitions were also supported. However, central route (i.e., high-involvement) subjects generated significantly greater favorable source-oriented thoughts when exposed to favorable (versus unfavorable) source characteristics. This contrary finding has been suggested as still being consistent with the ELM since under high involvement source information can be considered with all available information in evaluating the true merits of an issue or product (Petty & Cacioppo, 1986). Further, it is quite likely this finding resulted from the increased overall cognitive activity generated by high-involvement subjects.

Attitude Change

Central and peripheral attitude change operated as predicted by the ELM in H4 and H5, respectively. In support of H4, significantly greater attitude change was found for high-involvement subjects exposed to strong (versus weak) message arguments. Additionally, low-involvement subjects exhibited significantly greater attitude change when exposed to favorable (versus unfavorable) sources, providing evidence for H5. However, while not hypothesized, the low-involvement subjects also displayed significantly
greater attitude change under strong (versus) weak message arguments. This latter finding can be attributed, in part, to the fact that "low"-involvement subjects processed the message arguments to some extent in addition to their use of the peripheral source information. Due to necessity to limit the study to only regular or occasional beer drinkers, it is quite possible that most subjects possessed some degree of natural or enduring involvement in the general product category of beer (cf., Houston & Rothschild, 1978).

Determinants of Attitude Change

Although formal hypotheses were not developed, regression analyses were conducted in order to determine those factors significantly influencing central and peripheral attitude change. Under the central route, net message-oriented thoughts significantly influenced attitude change, as expected. While peripheral route subjects also used their message-oriented thoughts to influence attitude change, simple perceptions of the source (as measured by the source manipulation check) were found to have a significantly greater impact on attitude change than source-oriented cognitions.

In sum, the overall pattern of cognitive response and attitude change results is more consistent with that of the ELM than with other competing theories, such as social judgment theory (Sherif, Sherif, & Nebergall, 1965). Social judgment theory predicts that the more involved a person is in an issue, the less susceptible he will be to short term attempts to change his attitude. However, the present study findings indicate that increasing one's involvement in a message can lead to significantly more favorable message-oriented thoughts and attitudes when exposed to strong (versus weak) message arguments.

Implications for Advertising Practice

The practical implications of the present study may be limited given the laboratory (versus real-world) setting found in the experiment. However, two recent advertising campaigns can be used to illustrate the practical application of advertising stimuli in central and peripheral processing.

For example, Chrysler Motors has recently launched its "Car Buyer's Bill of Rights" campaign, placed predominantly in print media. The campaign is attempting to build credibility and sales among those motivated and able consumers presently in the market for a new car (i.e., central route consumers). This is accomplished by presenting six persuasive and detailed arguments of the "Car Buyer's Bill of Rights" in the ads: the right to quality, the right to long-term protection, the right to honest service, the right to safety, the right to address grievances, and the right to satisfaction. It is hoped that the elaboration of these cogent copy points will
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lead to favorable thoughts and attitudes toward Chrysler and their products.

Alternatively, Miller Brewing's Miller Lite campaign has successfully paired well-known sports celebrities and humor with their light beer product since 1973. The objective of this peripheral processing strategy is not to induce effortful thinking on the part of highly motivated and able consumers. Rather, it is hoped that favorable attitudes toward Miller Lite are developed through the frequent pairing of the peripheral cues (i.e., sports celebrities and humorous situations) with the brand.

While the present study examined experimentally induced involvement in print advertising, future research should also explore other moderating conditions (e.g., "real-world" involvement, trial experience, distraction, clutter, media type) that may serve to influence the selection of central or peripheral routes in the processing of advertising information.

REFERENCES


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