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The Role of Mood in Advertising Effectiveness

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This study demonstrates the facilitating effect of positive mood on brand attitudes for readers of print advertising and explores contingencies and cognitive processes underlying that effect. Mood appears to affect the amount of total cognitive elaboration, bias the evaluation of argument quality, and peripherally affect brand attitudes. An experiment using print ads reveals that positive moods create less elaboration, which results in more heuristic processing and reduces the extent to which message evaluation—itself favorably influenced by positive moods—mediates brand attitudes. The effect is greater when the reader has a low need for cognition and when the ad contains weak message arguments.

Recent persuasion research shows that positive moods evoked by ads facilitate brand-attitude change (e.g., Batra and Ray 1986; Edell and Burke 1987). However, such research has not investigated how moods affect cognitive processes underlying these attitudinal changes or explored contingencies that might moderate them. The importance of understanding such cognitive processes has been demonstrated in the persuasion literature (e.g., Petty and Cacioppo 1986), and it is well established that the attitudinal effects of key persuasion variables (e.g., argument quality [AQ] or source expertise) depend on the total amount of cognitive elaboration. Because research in social cognition has recently shown that positive moods affect motivation and ability for cognitive elaboration, persuasion researchers should now study how positive moods interact with other variables that affect, and have their attitudinal consequences affected by, such cognitive elaboration.

In the context of persuasive communications, this study examines how positive mood interacts with one variable that affects the total amount of cognitive elaboration and one that has its attitudinal consequences moderated by such elaboration. Previous persuasion research (e.g., Petty and Cacioppo 1986) has shown that the consumer's need for cognition (NFC) affects the amount of elaboration, which then moderates the attitudinal effects of message AQ. We

thus examine how mood interacts with NFC and AQ. Exploring these interactions, we seek to understand the cognitive processes through which moods affect brand attitudes.

CONSTRUCTS

The three constructs in this study are positive moods, message AQ, and the subject's NFC. In accordance with the literature (e.g., Isen 1984), moods are defined here as mild, pervasive, and generalized affective states, rather than intense emotions. Because the effects of negative moods are less predictable, depending more on context and on the nature of the specific negative mood created (Forgas and Bower 1987; Isen 1984), they are not examined in this study.

In keeping with past research on "central and peripheral routes to persuasion" (e.g., Petty and Cacioppo 1986, p. 31), we define message AQ by the nature of thoughts evoked by the argument: "strong" arguments evoke primarily favorable thoughts; "weak" arguments evoke primarily unfavorable thoughts. As Areni and Lutz (1987, p. 199) noted regarding other manipulations of AQ reported in the literature, ours was actually a manipulation of the audience's evaluation of the desirability of the consequence associated with the attribute (argument valence). It was not a manipulation of the logical strength of the supporting evidence presented, which would increase the audience's subjective probability that the attitude object is associated with that consequence, for arguments of constant valence.

Need for cognition is defined as "the statistical tendency of and intrinsic enjoyment individuals derive from engaging in effortful information processing" (Petty and Cacioppo 1986, p. 48). This individual

difference construct is typically scaled by a set of 18 items (Cacioppo, Petty, and Kao 1984) that pertain to one's reactions to demands for effortful thinking in a variety of situations (e.g., "I find satisfaction in deliberating hard and for long hours").

ATTITUDINAL EFFECTS OF MOOD

Subjects in positive moods have been shown to perceive and evaluate stimuli more favorably than in other moods (e.g., Isen and Simmonds 1978). Three processes have been suggested.

Peripheral Effects

Mood-based distortions in person and object perception have historically been interpreted in terms of peripheral or heuristic processes, such as classical conditioning and similar associative phenomena (Forgas and Bower 1987). Moods may work in peripheral ways because they are expected to be relatively effortless to evoke and to process (see Petty and Cacioppo 1986, p. 214).

In addition to such peripheral processes, however, recent research suggests that positive moods also influence message acceptance by shaping the number and pattern of message-oriented and issue-oriented cognitive responses, such as support arguments (SAs) and counterarguments (CAs; Mackie and Worth 1989; Worth and Mackie 1987). These effects on cognitive response are partly due to mood effects on the storage and retrieval of mood-congruent material in memory (see Isen [1984] for a review). The cognitive response processes studied here take two forms, which we call "(decreased) elaboration" and "(biased) evaluation." Because this cognitive perspective on mood effects is of interest to contemporary research (see Forgas and Bower 1987; Isen 1984), the advertising study described here was designed to permit these cognitive effects to occur. Consumers were shown an ad for which they had the motivation and ability to generate at least some SAs and CAs; further, they were asked to process the ad from a "brand evaluation" perspective, where effects on attitudes should occur primarily through SAs and CAs (Hastak and Olson 1989, p. 453).

Decreased Elaboration

Researchers in social cognition have advanced two reasons why people in positive moods process messages with less cognitive elaboration. First, they have suggested that people in positive moods are motivated to maintain that positive mood state. Because detailed cognitive processing requires effort, it disrupts positive moods; therefore, "mood-protection" tendencies should lead to reduced effort in the cognitive processing of ads (see Isen and Levin 1972). Second, researchers have suggested that positive moods

in subjects might activate more (usually positive) material from memory (Boucher and Osgood 1969; Isen 1984), thus filling up limited processing capacity and reducing cognitive ability to elaborately process message content. Mackie and Worth (1989) argued that this effect of mood is stronger than the motivational effect.

Empirically, decreased elaboration should be manifest in fewer SAs + CAs evoked by message arguments. Such a decrease in elaboration, caused by mood-induced reductions in either motivation or ability, should result in more heuristic than systematic processing (Worth and Mackie 1987). Because peripheral cues have a greater attitudinal impact under heuristic processing, and message content a greater impact under systematic processing (see Petty and Cacioppo 1986), positive moods can thus be said to moderate the attitudinal effect of these variables through their effect on the amount of cognitive elaboration.

Biased Evaluation

In addition to the moderating effect of reduced cognitive elaboration, the motivational positive-mood protection described previously could also lead to a differential avoidance of processing that results in negative thoughts (such as CAs), which would presumably reduce positive moods (see Isen and Simmonds 1978). To avoid mood-disrupting negative thoughts, positive-mood subjects might be motivated to process messages less elaborately and to assess weak messages more favorably (have fewer CAs) than would neutral-mood subjects. We call this second motivational effect "biased evaluation."

It could be argued that people in positive moods would avoid negative information (by producing fewer CAs) and would also seek additional positive information (by producing more SAs). However, we think that it is more important, and thus more motivating, for people in positive moods to avoid disrupting those good moods (by avoiding negative thoughts) than it is for them to seek enhancement of those positive moods (by seeking additional positive thoughts). This is consistent with results such as those of Isen, Nygren, and Ashby (1988), who found that positive-mood subjects showed a more negative subjective utility for losses than did controls but did not show a symmetric positive increase in utility for gains. (It should be noted that further research on this result is required, since other research, reviewed in Isen [1984], suggests a more symmetric seeking of positive information as well.) Based on the Isen, Nygren, and Ashby result, we expect positive moods to bias evaluations more by reducing CAs than by increasing SAs.

Empirically, such biased evaluation during positive moods should result in a smaller ratio of CAs to the total number of CAs + SAs than would occur during

TABLE 1

SUMMARY OF HYPOTHESES

Effect	Elaboration–cognitive response sum	Evaluation–CA ratio	Brand attitudes
		Measured variable	
Mood	Lower under positive mood (Hypothesis 1a)	Lower under positive mood (Hypothesis 1b)	Higher under positive mood (replication)
NFC	Higher for high NFC (Hypothesis 2)	No main effect	No main effect
AQ	No main effect	Higher for weak arguments (Hypothesis 3)	Higher for strong arguments (replication)
NFC by mood	No interaction effect: positive mood reduces sum for both high, low NFC	Greater reduction by positive mood for low NFC (Hypothesis 4a)	Greater effect of CA ratio on A_b under high NFC (Hypothesis 4b); greater attitude increase by positive mood for low NFC (Hypothesis 4c)
AQ by mood	No interaction effect: positive moods reduce sum for both strong, weak arguments	(Weak minus strong argument) difference greater under neutral moods (Hypothesis 5a)	Greater effect of CA ratio on A_b under neutral mood (Hypothesis 5b); attitude gain of strong over weak arguments reduced under positive mood (Hypothesis 5c)
NFC by AQ	No interaction effect: high NFC increases sum for both strong, weak arguments	Difference in CA ratio for weak arguments over strong lower for low NFC (Hypothesis 6a)	Greater effect of CA ratio on A_b under high NFC (Hypothesis 6b); attitude improvement of strong over weak arguments greater for high NFC (replication)

NOTE.—The peripheral effects of mood are not listed here since they are not directly measured in this study. AQ = argument quality; CA = counterargument; NFC = need for cognition; A_b = brand attitudes.

neutral moods.[1] This mood-induced change in the CA ratio should then lead to changes in consumers' brand attitudes in situations inducing systematic processing, which occurs only when the amount of cognitive elaboration is high. Since the amount of elaboration should vary with the consumer's mood, moods should lead to changes in the evaluation CA ratio and should also (through their effects on elaboration) moderate the extent to which such changes mediate attitudinal effects. That is, the attitudinal effect of mood should be mediated by its effect on the CA ratio only when attitudes are formed systematically, which occurs only when elaboration is high. Since mood should affect the amount of such elaboration, it serves to moderate the mediating effect of the CA ratio. The CA-ratio measure of biased evaluation should thus be a "moderated mediator," not simply a mediator, of the attitudinal effects of positive moods (see Baron and Kenny 1986).

We will report tests of moderation and mediation that are more complete than others have reported (e.g., Mackie and Worth 1989, pp. 31 and 36). However, we will begin with a presentation of our hypotheses regarding the effects of our variables on elaboration, evaluation, and attitudes. (All hypotheses are listed in Table 1.)

MAIN EFFECTS

Mood

As mentioned, previous research has already shown that subjects processing an ad in a positive, instead of a neutral, mood will have higher brand attitudes. We will attempt to replicate that attitudinal main effect for mood in this study.

In terms of underlying processes, we expect that positive mood should affect attitude peripherally, and this effect should be especially powerful in decreased elaboration conditions. Such a reduction in elaboration is the first cognitive consequence we expect: positive mood should lead to decreased elaboration. Finally, to the extent that message processing continues to be systematic under positive mood, this mood should also have an attitudinal impact through a positive biasing of message evaluation: a positive mood should reduce the CA ratio, with fewer CAs produced because of the motivation to protect the positive-mood state. Thus, in terms of the two cognitive processes just described, we expect that:

H1a: The total amount of cognitive elaboration (the number of SAs + CAs) is lower under positive mood than under neutral mood.

H1b: Message arguments are evaluated more favorably (the ratio of CAs to total SAs + CAs is lower) under positive mood than under neutral mood.

[1] Petty and Cacioppo used the ratio of CAs to SAs to reflect the total amount of central processing, instead of evaluative bias (1986, p. 39). However, they also used it to measure the favorability of message evaluation (e.g., p. 43 and p. 135; p. 54, n.4.).

Need for Cognition

Compared with low-NFC subjects, those with high NFC are expected to increase their total amount of message elaboration (see Petty and Cacioppo 1986, p. 101).

> **H2:** Total cognitive elaboration is higher for high-NFC consumers than for low-NFC consumers (i.e., more SAs + CAs are produced by high-NFC consumers).

However, we see no reason to expect a main effect of NFC on either the evaluation CA ratio or attitudes: higher NFC should not by itself affect the valence of cognitive processing (for messages with the same AQ). Although the amount of processing should change, unless this change itself leads to an attitudinal effect (through amplifying or attenuating the effects of message arguments or peripheral cues), we do not expect a main effect of NFC on evaluation or on attitudes.

Argument Quality

We see no reason to expect any main effect of AQ on the elaboration sum. Although weak arguments should evoke relatively more CAs and strong arguments more SAs, the total number of cognitive responses evoked should not differ. However, we do expect a main effect on the evaluation ratio; by definition, weak arguments should evoke a higher CA ratio than do strong arguments, resulting in less favorable attitudes (Petty and Cacioppo 1986).

> **H3:** The evaluation CA ratio is more unfavorable for weak messages than for strong messages.

INTERACTION EFFECTS: NFC BY MOOD

Interaction Effects on Elaboration and Evaluation

As stated in Hypothesis 2, we expect greater elaboration from high- than low-NFC consumers, before accounting for the mood effects. When we look at these mood effects, we might first expect that the mood-induced motivational reduction in total elaboration (to avoid aversive cognitive effort) should occur more strongly for low-NFC consumers than for high because high-NFC consumers are by definition more likely to enjoy cognitive effort and not consider it something to be avoided. However, the mood-induced reduction in ability to elaborate, created by reduced cognitive processing capacity, should reduce cognitive elaboration for high-NFC consumers as well. As pointed out by Petty and Cacioppo (1986), both higher motivation and higher ability are neces-

sary for greater cognitive elaboration; high-NFC consumers have higher motivation to process than do low-NFC consumers, but they are not intrinsically more intelligent. Thus, positive moods should reduce elaboration for both high- and low-NFC consumers (i.e., no significant interaction is expected). Because it seems reasonable to assume a higher elaboration starting point for high-NFC consumers (Hypothesis 2), they should continue to have greater cognitive elaboration than do low-NFC consumers under both neutral and positive-mood conditions. (If low-NFC consumers initially have no SA + CA production during neutral moods, a greater decrease in elaboration might be observed for high-NFC consumers. However, in the brand-evaluation context studied here, some elaboration in neutral moods is expected even for low-NFC consumers. Therefore, such a "floor effect" is not anticipated.)

We expect the favorable bias created by a mood-induced aversion to negative thoughts to occur more strongly for low-NFC consumers. Because high-NFC consumers should be more motivated to process information objectively and veridically, they should be less susceptible to this mood-induced aversion. (An exception would be a consumer seeking to defend a particular attitude schema; see Petty and Cacioppo [1986, p. 19].) Therefore,

> **H4a:** The increase in the favorability of message evaluation by positive moods is greater for low- than for high-NFC consumers (i.e., NFC moderates the effect of mood on the CA ratio).

Interaction Effect on Brand Attitudes

As discussed, high-NFC consumers are expected to have higher levels of cognitive elaboration than low-NFC consumers, even after mood-induced reductions in such elaboration. Thus, even in positive moods, high-NFC consumers would be expected to base their attitudes relatively more on message evaluation. In contrast, low-NFC consumers would be relatively more heuristic, relying on peripheral cues. Consequently,

> **H4b:** The attitudinal effect of cognitive message evaluation (the CA ratio) is greater for high- than for low-NFC consumers (i.e., NFC moderates the attitudinal effects of the CA ratio).

Positive moods are thus unlikely to have strong effects on attitudes for high-NFC consumers. Such consumers are expected to base their attitudes largely on message evaluation (Hypothesis 4b), and positive moods are expected to have a relatively weak influence on such evaluation (Hypothesis 4a). Low-NFC consumers should also have only a small effect of mood on attitudes through message evaluations. For

them, moods should have a strong effect on evaluations (Hypothesis 4a), but evaluations should have a relatively weak effect on attitudes (Hypothesis 4b). The attitudes of low-NFC subjects should, however, be relatively more influenced by the positive peripheral effects of mood. When this peripheral effect of mood is added to any (relatively weak) positive attitudinal effect of message evaluation, the outcome should be a greater attitudinal impact of positive mood on low- than on high-NFC consumers.

Supporting this expectation, Srull (1983) found an analogous result: moods have greater attitudinal effects on low-ability (than on high-ability) subjects. (The result is analogous because the processing effects of ability, motivation, and NFC have been found to be similar; see Petty and Cacioppo 1986.) Srull (1983, p. 575) concluded that low-ability consumers are "more malleable and therefore more likely to be affected by irrelevant influences such as one's own subjective mood state." This conclusion parallels our expectation for low-NFC consumers. Thus,

H4c: The positive effect of mood on brand attitude is greater for low-NFC consumers than for high-NFC consumers.

INTERACTION EFFECTS: AQ BY MOOD

Interaction Effects on Elaboration and Evaluation

We approach this interaction from the perspective of positive mood's moderating the effect of AQ.[2] As stated in Hypothesis 1a, the motivation and ability effects of such moods should generally lead to decreased cognitive elaboration. There seems to be no theoretical or empirical reason to believe that SAs (evoked by strong arguments) and CAs (evoked by weak arguments) differ in the amount of motivational effort, or cognitive capacity, they require; this argues against expecting any AQ-by-mood interaction on the elaboration sum. (However, to the extent that weak arguments are perceived by positive-mood subjects as being more aversive—because their negative nature disrupts positive moods—the reduction in elaboration might be slightly greater for weak arguments than for strong.)

Given this reduction in cognitive elaboration, subjects in positive moods would be expected to process messages more heuristically than would consumers in neutral moods. The difference in evaluation of strong versus weak arguments expected in neutral moods should therefore be less apparent in positive moods (Mackie and Worth 1989; Worth and Mackie 1987).

H5a: The difference in the evaluation favorability of strong over weak argument messages is greater under neutral moods than under positive moods (i.e., mood moderates the effect of AQ on the CA ratio).

Interaction Effect on Brand Attitudes

Positive moods are expected to reduce both the difference in evaluation of strong over weak argument messages (Hypothesis 5a) and the effect of that evaluation CA ratio on brand attitudes, since processing in positive moods is expected to be relatively more heuristic (Hypothesis 1a). Thus,

H5b: The effect of the evaluation CA ratio on brand attitudes is stronger under neutral moods than under positive moods (i.e., mood moderates the attitudinal effect of the CA ratio).

In addition, the decreased elaboration associated with positive moods should lead to increased heuristic processing, which allows positive moods to have a peripheral effect on attitudes for both strong and weak arguments. Although weak argument messages should benefit from both the more favorable cognitive evaluation and this positive peripheral mood effect, strong argument messages should benefit from this positive peripheral effect but should be hurt by a less favorable cognitive evaluation (compared to neutral moods). Combined, these two effects of positive moods should lead to (1) a narrowing of attitudinal ratings for strong and weak argument messages and (2) a relatively larger positive impact of positive moods on weak argument messages than on strong. Thus,

H5c: The attitudinal superiority of strong arguments over weak ones in neutral mood is reduced in positive-mood conditions; further, brand attitudes are relatively unchanged across mood conditions for strong arguments but are higher under positive moods for weak arguments.

INTERACTION EFFECTS: NFC BY AQ

In addition to the interactions of NFC by mood and mood by AQ, we will attempt to replicate the result that high-NFC subjects base their attitudes more on AQ than do low-NFC subjects (Petty and Cacioppo 1986, p. 103). Because some studies have failed to replicate this effect (e.g., Axsom, Yates, and Chaiken 1987, p. 35), such a replication is not entirely redundant. We would expect, following Petty and Cacioppo, that the increase in brand attitudes for strong AQ over weak should occur only for high-NFC subjects. Such a replication would establish that our use

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[2]A discussion of the second perspective (AQ's moderating mood effects) can be obtained from the authors.

of the NFC and AQ constructs is consistent with past research.

We will also test an underlying process hypothesis. Low-NFC consumers should elaborate less than high-NFC consumers (Hypothesis 2), and this decrease should occur for both strong and weak argument messages; thus, no interaction is expected on elaboration. However, just as the reduced elaboration due to positive moods is expected to bring the evaluation CA ratios closer for weak and strong argument messages (Hypothesis 5a), the reduced elaboration for low- versus high-NFC consumers should also lead to a corresponding narrowing in the difference in the CA ratio for weak versus strong messages. Further, we expect that the attitudinal effect of the evaluation ratio will be stronger for high-NFC consumers than for low. Thus, in addition to replicating the attitudinal interaction shown by Petty and Cacioppo (which indicated a greater difference in attitudes between weak and strong messages for high- than low-NFC subjects), we expect that

H6a: The difference in the evaluation CA ratio for weak versus strong argument messages is smaller for low-NFC than for high-NFC consumers (i.e., the effect of AQ on evaluation is moderated by NFC).

H6b: The attitudinal effect of the evaluation CA ratio is stronger for high-NFC consumers than for low (i.e., this attitudinal effect is moderated by NFC).

METHOD

Design and Procedure

Subjects were 251 undergraduate business students recruited from organizations at a large southwestern university. Both the students and their organizations received $3 each for participation.

The experiment followed a two (initial mood: positive or neutral) by two (AQ: weak or strong) factorial design, with the subject's NFC used as a measured independent variable through a median split (as done in prior research by R. E. Petty, J. T. Cacioppo, and colleagues).

The experiment involved two phases, which were presented to subjects as two different studies; we used different experimental assistants to mask the connection between the phases. This is similar to the method used by Forgas and Bower (1987) and Gardner (1986) and appears to have been accepted without suspicion by our subject. (In informal debriefing, no one indicated noticing a connection between the phases.) Although the possibility of demand effects cannot be eliminated entirely, note that in this between-subjects design our interaction hypotheses should not have been apparent to our subjects. Subjects were run in

groups of approximately 30 per experimental group, and all conditions were run in each session.

The first phase was a mood manipulation (two levels: positive and neutral) and was presented to subjects as an independent study on empathy. Subjects first completed a number of scales in a booklet (including the NFC items) to lend credibility to the cover story. Subjects in the positive-mood condition then read a "happy and warm" story about the achievements of an explorer (adapted, with permission, from Gardner [1986]), whereas subjects in the neutral-mood condition did not read a story. Reading the story took about a minute, and the "empathy" study took about 15 minutes. All subjects then completed a booklet containing a number of mood scales (to be described subsequently), which served as the manipulation check.

The second phase, ostensibly unrelated, was described as a financial services study funded in part by a bank that might enter the local market. Subjects were asked to examine a print ad and to evaluate the bank and its marketing efforts, which should have led subjects to view the ad in a brand-evaluation mode (see Hastak and Olson 1989). Inside a booklet was a magazine ad for a real (but not local) bank, stating that a branch was about to open in the subjects' geographical area. The booklets contained either three strong arguments or three weak arguments for the bank. Selected after pretests among similar students, the strong arguments offered free checking, immediate credit for bank deposits, and a half-percent higher interest rate on deposits; the weak arguments offered free coffee in the lobby, backing by one of the oldest banking institutions in the state, and the availability of mutual funds.

After seeing the ad, subjects listed their thoughts in a verbal protocol and answered brand-attitude questions. They then provided information about their use of, and attitudes toward, financial services in general. These cover-story measures served as manipulation checks on argument strength and covariate measures on category involvement.

Measures

Mood. Feelings were measured through a reduced-item version of the Nowlis (1965) Mood Adjective Check List with four-point items. This method was used instead of unidimensional alternatives because some research (e.g., Polivy 1981) suggests that laboratory mood inductions are often not unidimensional and that the induction of different moods in different situations can affect judgment tasks differently (see, e.g., Hill and Ward 1989). Following recent research on moods and emotions in consumer behavior (e.g., Edell and Burke 1987), our items and analysis examined three dimensions labeled "positive: happy," "positive: warm," and "negative."

Our "happy" scale contained three items (happy, elated, pleased; alpha .73), our "warm" scale con-

tained four (warmhearted, caring, affectionate, loving; alpha .83), and our "negative" scale contained four items (sad, sorry, regretful, angry; alpha .85). Data from the three sets of mood scales were analyzed through confirmatory factor analysis for convergent and discriminant validity, as measured through the tests suggested by Fornell and Larker (1981) and others. This analysis showed that the scales had adequate convergent validity and reliability: the statistics for average variance extracted ranged from .55 to .61, and the statistics for composite construct reliability from .72 to .86. Supporting discriminant validity, the 95 percent confidence interval for every pairwise phi coefficient did not include unity, and the squared phi coefficient was, in all cases, below the average variance extracted of the constructs forming that pair. Our analysis of moods thus uses these separate scales (averages of the relevant items).

Thought Listings. We collected thought listings immediately after subjects' exposure to the ad by asking them to write, on a blank page, any thoughts and feelings they had while reading the ad. These listings were then coded by two judges, who were blind to the hypotheses and the subjects' cell, using the coding scheme reported by Batra and Ray (1986), which includes the CA and SA responses of interest. The two judges agreed on 79 percent of the classifications; disagreements were resolved by a third judge.

Brand Attitudes. Brand attitudes (A_b) were measured through 10 seven-point semantic differential items: pleasant/unpleasant, good/bad, positive/negative, favorable/unfavorable, like/dislike, useful/useless, high quality/low quality, beneficial/not beneficial, valuable/worthless, and agreeable/disagreeable. These were then averaged (alpha = .94).[3]

Need for Cognition. Need for cognition was measured through the 18-item scale developed by Cacioppo, Petty, and Kao (1984), with the items averaged for analysis (alpha = .88).

Manipulation Checks and Covariates. Besides the manipulation check of mood in phase one, other manipulation checks and covariates were used. To measure product-class involvement, a three-item scale on enduring involvement in banking—the importance of the bank decision, amount of thought required, and riskiness of a bad choice—was administered and averaged for analysis. As part of the filler task, seven-point rating scales of the importance of a variety of attributes of banks were included as a check on the AQ manipulation.

[3]Confirmatory factor analysis through LISREL showed that these 10 items could also be analyzed as two separate factors, one more hedonic (positive, pleasant) and the other more utilitarian (useful, valuable). Results using these two scales separately were not significantly different from those reported here for the overall scale and are omitted.

TABLE 2

MEANS: MAIN EFFECTS AND TWO-WAY INTERACTIONS

Effect	CA + SA sum[a]	CA ratio[b]	Total CAs[a]	Brand attitudes
Mood:				
Neutral	.74 (.86)	.54 (.34)	.47 (.70)	4.68 (1.14)
Positive	.52 (.82)	.45 (.26)	.20 (.45)	5.03 (.78)
NFC:				
High	.77 (.95)	.49 (.30)	.43 (.68)	4.91 (1.10)
Low	.50 (.72)	.50 (.31)	.25 (.52)	4.79 (.88)
AQ:				
Weak	.69 (.88)	.57 (.32)	.45 (.71)	4.63 (.99)
Strong	.59 (.84)	.41 (.29)	.23 (.47)	5.07 (.95)
Low NFC:				
Neutral mood	.60 (.81)	.57 (.30)	.37 (.62)	4.45 (.91)
Positive mood	.39 (.60)	.42 (.27)	.13 (.34)	5.13 (.70)
High NFC:				
Neutral mood	.90 (.89)	.51 (.38)	.59 (.78)	4.92 (.84)
Positive mood	.61 (.96)	.49 (.25)	.26 (.52)	4.90 (1.29)
Positive mood:				
Strong arguments	.55 (.96)	.42 (.24)	.18 (.44)	5.09 (.77)
Weak arguments	.51 (.77)	.47 (.31)	.24 (.51)	4.97 (.79)
Neutral mood:				
Strong arguments	.61 (.73)	.41 (.33)	.27 (.49)	5.05 (1.09)
Weak arguments	.89 (.97)	.70 (.29)	.70 (.83)	4.27 (1.05)
High NFC:				
Weak arguments	.87 (.99)	.61 (.31)	.58 (.79)	4.57 (1.07)
Strong arguments	.71 (.97)	.37 (.33)	.30 (.58)	5.24 (1.04)
Low NFC:				
Weak arguments	.55 (.75)	.54 (.33)	.34 (.61)	4.68 (.92)
Strong arguments	.47 (.69)	.44 (.25)	.17 (.38)	4.90 (.83)

NOTE.—Standard deviations are in parentheses. AQ = argument quality; CA = counterargument; NFC = need for cognition; SA = support argument.
[a] Mean number.
[b] Ratio of CA/(CA + SA).

RESULTS

The success of the mood manipulation in phase one was assessed through the scales for feelings described earlier. Analyses by t-tests showed that the positive-mood subjects rated themselves as feeling more warm than those in the neutral-mood condition (3.04 vs. 2.60, $p < .001$), more happy (3.07 vs. 2.69, $p < .001$), and less sad and angry (1.41 vs. 1.64, $p < .02$). In addition, an ANOVA showed that the mood manipulation was effective on both high- and low-NFC subjects: there was neither a significant main effect of NFC nor a significant NFC-by-mood interaction on any of the mood manipulation checks ($p > .20$).

Supporting the AQ manipulation, the three strong bank attributes were rated 5.4, 5.7, and 6.6, whereas the three weak arguments were rated 3.8, 3.3, and 1.4. Paired comparison t-tests showed that each of the strong arguments was significantly higher than any of the weak arguments (at $p < .001$). Moreover, strong arguments led to fewer CAs and higher brand attitudes than did weak arguments (see Table 2), indicating that subjects were processing the ad information systematically rather than heuristically and that the experimental objective of setting a brand evaluation

TABLE 3

ANOVA RESULTS

Source of variation	df	CA + SA sum		CA ratio[a]		Total CAs		Brand attitude	
		Sum of squares	F	Sum of squares	F	Sum of squares	F	Sum of squares	F
Mood	1	1.47	2.64	.60	8.76**	3.78	14.77**	8.29	10.14**
Need for cognition (NFC)	1	6.90	12.37**	.00	<1	2.17	8.29**	.53	<1
Argument quality (AQ)	1	.51	<1	1.42	20.88**	2.59	9.89**	11.75	14.37**
NFC by mood	1	.13	<1	.20	2.94+	.31	<1	4.80	5.87*
AQ by mood	1	.98	1.76	.67	9.82**	1.68	6.41*	6.66	8.15**
NFC by AQ	1	.21	<1	.21	3.11+	.13	<1	3.46	4.23*
Mood by AQ by NFC	1	.12	<1	.05	<1	.0	<1	.27	<1
Residual	244	135.89		16.60		63.90		199.45	

NOTE.—AQ = argument quality; CA = counterargument; NFC = need for cognition; SA = support argument.

[a] CA ratio = CA/(CA + SA).

+ $p < .10$.

* $p < .05$

** $p < .01$.

goal appears to have been met (Hastak and Olson 1989).

Finally, there did not appear to be any significant differences across the four conditions in the covariate measure of the degree of enduring involvement in banking and choosing a bank. The three-item scale used for this purpose (Cronbach alpha = .74) had means between 5.4 and 5.2 in all conditions. AN-COVA using this scale left results unchanged.

Analysis first attempted a replication of Petty and Cacioppo's result (1986, p. 103) that differences in message AQ influence attitudes more for high-NFC subjects than low. An ANOVA showed that the increase in brand attitudes when the messages had strong instead of weak arguments was significantly more ($p < .05$) for high-NFC subjects (from 4.57 to 5.24) than for low-NFC subjects (4.68 to 4.90), as shown in Tables 2 and 3. This suggests that the result reported by Cacioppo et al. is robust, despite the failure of Axsom et al. (1987) to replicate it, and establishes that our NFC and AQ constructs and manipulations were working as intended.

Previous research also suggests that when subjects process an ad in a positive instead of a neutral mood, they have higher brand attitudes. As can be seen from Tables 2 and 3, such effect was replicated ($p < .01$), though it must be qualified by the interaction effects to be discussed subsequently. In addition, brand attitudes were higher for strong argument messages ($p < .01$), as expected, and there was no main effect of NFC on brand attitudes ($F < 1$).

Tests of Hypotheses

Elaboration. According to Hypothesis 1a, positive moods should reduce the amount of cognitive elaboration (total SA + CA production) compared with neutral moods. The actual drop was from .74 to .52 (*F*-test for main effect, $p < .10$, but one-tailed *t*-test for planned comparison significant at $p < .05$; unless specified otherwise, the significance levels reported will apply both to overall *F*-tests and to the relevant one-tailed planned comparisons). Hypothesis 2 predicted more elaboration with high NFC than with low, and this was supported (high = .77, low = .50, $p < .01$). As expected, the main effect for AQ was not significant, nor were any interactions.

Evaluation. Supporting Hypothesis 1b, the evaluation CA ratio was lower in positive moods than in neutral moods (.45 vs. .54, $p < .01$). As expected, there was no main effect of NFC on the CA ratio ($F < 1$). As predicted by Hypothesis 3, weak arguments evoked a significantly higher CA ratio than did strong arguments (.57 vs. .41, $p < .01$).[4]

As expected from Hypothesis 4a, the mood-induced reduction in the CA ratio was greater for low-NFC subjects than for high ($p < .10$ for interaction *F*-test). For low-NFC subjects, it fell from .57 in neutral mood to .42 in positive ($p < .05$); for high-NFC subjects, from .51 to .49 (not significant). In support of Hypothesis 5a (at $p < .01$), the difference in the CA

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[4] In calculating this ratio, an adjustment was made for subjects who had zero SAs and zero CAs. Otherwise, the computation would have involved a problematic division by zero. The ratio of CAs for such subjects was set to .5, since SAs equaled CAs. Such a ratio, however, has an undesirable property even without adjustment because it becomes zero whenever the numerator (the number of CAs) is zero, no matter how many SAs are evoked. Fortunately, this effect should be minor, since 85 percent of the cases with zero CAs had only one SA. Nevertheless, alternative ratios were computed that added an arbitrary constant to the number of CAs to make the numerator (and the ratio) always nonzero. Two constants were tried: 1 and the mean number of CAs. Both results followed the same pattern as those for the original (adjusted) variable, adding confidence to our results. While admittedly imperfect, the adjustments seem reasonable.

ratio for weak versus strong arguments was greater under neutral moods (weak, .70; strong, .41; $p < .01$) than under positive moods (weak, .47; strong, .42; not significant). Hypothesis 6 was also supported ($p < .10$): the difference in the CA ratio between weak and strong messages was smaller for low-NFC subjects (weak, .54; strong, .44; $p < .05$) than for high-NFC subjects (weak, .37; strong, .61; $p < .01$, one-tailed).

Brand Attitudes. The first hypothesized interaction—that the attitudinal effect of mood should be greater for low-NFC subjects than high-NFC subjects (Hypothesis 4b)—was supported by an ANOVA ($p < .05$). Although there was no change in A_b for high-NFC subjects in the positive over the neutral-mood condition (4.92 vs. 4.90, respectively; not significant), there was a significant improvement for the low-NFC subjects (from 4.45 to 5.13; $p < .01$). Additional analysis showed that the correlation between NFC and A_b was 0.24 ($p < .05$) in the positive-mood condition, supporting this negative relationship between NFC and positive mood (neutral-mood correlation, .10, not significant).[5]

Hypothesis 5c—that the attitudinal gain of strong (over weak) argument messages would be reduced when the message was processed in positive instead of neutral moods—was supported. The difference in attitudes for strong over weak arguments was .78 (5.05 vs. 4.27) in the neutral mood but only .12 (5.09 vs. 4.97) in the positive mood (interaction significant at $p < .01$). Additionally, whereas attitudes for weak arguments increased significantly in positive over neutral moods (from 4.27 to 4.97, $p < .01$), those for strong arguments remained unchanged (from 5.05 to 5.09, not significant).

It should be noted that no three-way interaction emerged in these data (see Table 3).

Analyses of Moderation and Mediation

Both mood and NFC were expected to moderate the attitudinal effects of AQ by influencing total elaboration (Hypotheses 1a and 2). Further, both mood and AQ were expected to influence the systematic evaluation CA ratio (Hypotheses 1b and 3). However, the cognitive (nonperipheral) effects of mood and AQ on attitudes were expected to be mediated by their effects on the CA ratio only in conditions when processing was systematic (namely, when elaboration was high; Hypotheses 4b, 5b, and 6b). The attitudinal consequence of the evaluation effect of these variables was thus hypothesized to be moderated by the

effects of these variables on elaboration. The following sections describe tests used to analyze this hypothesized pattern of moderated mediation and give the results for each of the two-way interactions.

According to the method of Baron and Kenny (1986), a set of three regression estimates can be used to assess the role of the evaluation CA ratio in mediating the attitudinal effect of AQ and mood. These equations include terms representing three effects: the mediator (evaluation), the independent variable (here, either AQ or mood, depending on the equation), and the dependent variable (brand attitudes). According to the equations, (1) when the mediator is regressed on the independent variable, its effect should be significant because a mediator should be directly related to the variable it is mediating; (2) when the dependent variable is regressed on the independent variable, the effect should again be significant because otherwise there will be no meaningful effect to be tested for mediation; (3) when the dependent variable is regressed on the independent variable and the mediator, the mediator's effect should be significant because it should be directly related to the dependent variable, while the effect of the independent variable should ideally drop to nonsignificance because it should be related to the dependent variable only through the mediator.

To test the mediating role of the CA ratio, one set of equations included (1) mood predicting the CA ratio, (2) the CA ratio predicting brand attitudes, and (3) mood and the CA ratio jointly predicting attitudes. Another set of equations used AQ instead of mood as the independent variable.

To assess the differential degree of attitudinal mediation by the CA ratio across levels of the hypothesized moderator variables, these sets of regression equations were estimated separately for both levels of each moderator. (The two moderators are NFC and mood, as each affect elaboration according to Hypotheses 1a and 2; AQ has no moderating effect through elaboration.) For example, the CA ratio should be a stronger mediator for high-NFC consumers. In comparing the two levels of each moderator, use was made of the omega-squared statistic; Hastak and Olson (1989, p. 451) discuss how the percentage change in ω^2 measures the magnitude of mediation by the covariate of the effect of the independent variable. (The other ANOVA effects were included as control variables in these equations, to partial out their effects, but the pattern of results did not change if these variables were excluded.) With mood and AQ as independent variables, the equations were estimated separately for low and high NFC; when AQ was used as the independent variable, the equations were estimated for positive and neutral mood.

Interaction terms were then used to test statistically for the difference in effects across the two levels of each moderator variable. The interaction terms tested (along with appropriate main-effect terms)

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[5]Although low-NFC subjects had lower initial attitudes (neutral mood) than high-NFC subjects ($p < .05$), their final attitudes (positive mood) increased beyond the final attitudes of high-NFC subjects ($p < .10$). This crossover interaction argues against the results being artifactual (e.g., ceiling effects), but future research should attempt to better equate initial attitudes.

were those between (1) the moderator (NFC or mood) and each independent variable (AQ or mood) in predicting the mediator (evaluation CA ratio) or (2) the moderator and the mediator, in predicting the dependent variable (attitudes; cf. James and Brett 1984). For example, equations were estimated in which (1) NFC, mood, and NFC by mood predicted the CA ratio and (2) NFC, the CA ratio, and NFC by CA ratio predicted brand attitudes.

NFC by Mood. For low-NFC subjects, mood was significantly related to both the CA ratio ($p < .01$) and brand attitude ($p < .01$). It remained a significant predictor of A_b when the CA ratio was added as the covariate ($p < .01$). In addition, the ω^2 of mood decreased by only 5 percent (from .134 to .128) from the second to the third equation. Therefore, it would appear that for low-NFC subjects, who are expected to form attitudes heuristically, moods do affect the systematic evaluation CA ratio, but that ratio does not mediate mood effects on attitude (which thus presumably change by peripheral processes).

For high-NFC subjects, mood was not a significant predictor of the CA ratio ($p > .20$). However, this ratio significantly predicted A_b ($p < .01$). Thus, for high-NFC subjects, who are processing systematically, cognitive message evaluation does appear to predict attitudes—but mood effects on that evaluation ratio are themselves very weak.

The tests of moderation using interaction terms showed that the NFC-by-mood variable was marginally significant in predicting the CA ratio ($p < .10$), indicating that the effect of mood on this ratio was different in the two NFC conditions and supporting Hypothesis 4a. However, the tests also showed that the interaction term of the NFC-by-CA ratio was not significant in predicting A_b, indicating that the relationship between the CA ratio and A_b was equally strong for high- and low-NFC subjects. Thus, Hypothesis 4b was not supported. We believe this may be a spurious result, for reasons to be discussed.

Mood by AQ. Argument quality was a significant predictor ($p < .01$) of both the CA ratio and A_b for neutral moods, dropping in significance to $p < .05$ when the CA ratio was added as an A_b predictor. The drop in ω^2 was 80 percent (from .115 to .023). For positive moods, AQ was not a significant predictor of the CA ratio or of A_b; there was thus no effect of AQ for the CA ratio to mediate. In the statistical test for moderation, the interaction term of mood by AQ in predicting the CA ratio was significant ($p < .01$), indicating that the effect of AQ on the CA ratio was moderated by mood and supporting Hypothesis 5a. Further, the interaction term of mood-by-CA ratio in predicting A_b was also significant ($p < .05$), indicating that the effect of the CA ratio on A_b was also moderated by mood and supporting Hypothesis 5b. These results support the expectation that the attitudinal effect of AQ is mediated more strongly by evaluation

during neutral mood, when high elaboration is expected, than during positive mood.

NFC by AQ. Argument quality was a significant predictor of the CA ratio for high-NFC subjects ($p < .001$) and of A_b ($p < .001$), but it dropped to marginal significance in predicting A_b ($p < .10$) when the CA ratio was added. The change in ω^2 in predicting A_b was considerable (64 percent, from .070 to .025). For low-NFC subjects, however, AQ was only marginally significant in predicting the CA ratio ($p < .10$) and A_b ($p > .20$); there was thus no attitudinal effect for evaluation to mediate. In the moderation test, the interaction term of NFC by AQ in predicting the CA ratio was marginally significant ($p < .10$), indicating that the effect of AQ on evaluation was at least partly moderated by NFC (Hypothesis 6a). The interaction term of the NFC-by-CA ratio was again not significant.

As mentioned, we believe the failure of the NFC-by-CA ratio interaction to achieve significance in predicting A_b is at least partly spurious. A high correlation between the CA ratio and A_b is theoretically reasonable for high-NFC subjects, who should be processing systematically. It is not theoretically reasonable for low-NFC subjects, who should be processing primarily in a heuristic manner (unless our brand processing led them to process systematically as well). For the latter, it is likely that since mood (1) peripherally affects A_b and (2) leads to a more favorable CA ratio (Hypothesis 1b), it led to a strong observed relationship between the CA ratio and A_b. In our data, the partial correlation between the CA ratio and A_b, when mood is controlled, dropped from .41 to .35 for low-NFC subjects and from .47 to .46 for high-NFC subjects. This difference in partial correlations across NFC levels was not statistically significant, but it does appear, at least directionally, that evaluation mediates the attitudinal effect of AQ more for high elaboration, high-NFC subjects than for low-NFC subjects. We note here the possibility that this interaction may have failed to reach significance (and some of our results involving the CA ratio may have been only marginally significant) at least partly because of measurement error in our CA ratio (see n. 4). As pointed out by Baron and Kenny (1986, p. 1177), measurement error in the mediator can lead to underestimation of its effect.

DISCUSSION

This study examined three processes through which positive moods affect the attitudinal outcome of advertising messages. The first, a direct increase in attitudes through associative mechanisms, is the peripheral effect. In addition, positive moods indirectly affect attitudes through two cognitive processes: (1) a bias against the generation of negative thoughts (such as those evoked by weak arguments), leading to a

more favorable evaluation of message arguments, and (2) a reduction in total cognitive elaboration, making processing more heuristic than systematic. This reduction in elaboration was expected to increase the attitudinal impact of the mood-induced peripheral effect and decrease the impact of the evaluation effect. In combination, these three processes were hypothesized to lead to increased attitudinal effects of mood for consumers with low, rather than high, NFC and for messages with weak, rather than strong, arguments. These attitudinal outcomes, along with the suggested process mechanisms, were largely supported by the data.

The greater attitudinal effect of mood for low-NFC consumers reported in this study might have been predicted on the basis of a peripheral effect alone. (Because high-NFC consumers process systematically, they should be relatively immune to such effects.) However, such a result is not yet demonstrated in the literature and would not account for the significant but equal reduction in total cognitive elaboration for both high- and low-NFC consumers or the stronger evaluation effect for low-NFC consumers. Our suggested mechanisms not only account for the eventual attitudinal outcome but also explain the steps in the process more completely. However, the failure of our test of the moderating effect of NFC on the attitudinal effect of the CA ratio, although possibly spurious, suggests that more work is necessary to understand these processes.

In the mood-by-AQ interaction, we found no mood-induced change in attitudes for strong arguments but did find a significant increase for weak arguments. This pattern of results is not explained by a peripheral effect alone, which should increase attitudes equally for both kinds of arguments. Nor is this pattern explained only by an elaboration effect, which would have predicted an equivalent movement in the CA ratio for both argument types (a drop for strong arguments, an increase for weak), a result reported by Worth and Mackie (1987), who found that positive-mood subjects rated strong argument messages less favorably than did neutral-mood subjects. Our explanation for the absence of a drop for strong argument messages in this study is that positive moods indeed reduce the favorability of evaluation for strong arguments, but strong arguments also gain from an offsetting upward peripheral "lift." It is possible that this last peripheral effect appeared more strongly in our advertising context than in the Worth and Mackie study, which used a highly charged political issue (acid rain). This explanation, however, requires further research, since our study did not explicitly measure such peripheral effects.

It might be argued that our strong argument message failed to show a mood-induced attitudinal gain because of ceiling effects, even though the percentage of subjects checking the highest scale point stayed small and unchanged. However, positive-mood subjects could well have rated the strong argument message lower than the weak argument, but did not. This result argues against the premature acceptance of the Worth and Mackie result and suggests that the interplay among the peripheral effects and cognitive effects needs to be considered in predicting the attitudinal effects of mood. Future studies should explicitly assess the magnitude of these peripheral effects.

Further, our mood-by-AQ results supported the notion that the evaluation effect of mood serves as a moderated mediator of its attitudinal consequences (Baron and Kenny 1986). Specifically, the results suggest that the decreased elaboration consequence of positive moods serves to reduce the effect of AQ on the CA ratio and the attitudinal effect of these changes in the CA ratio. In accordance with this explanation, Mackie and Worth (1989) showed that the correlation between cognitive responses and brand attitude changed across mood conditions. However, the present study used more appropriate regression techniques to explicitly support this pattern of moderated mediation (see Baron and Kenny 1986, p. 1175).

This investigation has various limitations. First, we studied the effects of mood by manipulating mood externally, instead of through the advertising message, thus possibly missing some attentional effects. Second, we investigated only the effect of positive versus neutral moods, excluding negative moods because of their demonstrated multidimensionality and contextual dependence (Forgas and Bower 1987; Isen 1984). Third, we used new brands to maximize control over extraneous effects. When existing brands are involved, more complex processes may be invoked (e.g., the retrieval of previously learned material about the existing brand may itself be subject to mood-induced biases; see Srull 1983). Finally, methodological questions might be raised that cloud our process interpretation: ceiling effects in the strong argument condition might have limited the effect of positive mood in that condition, and the mood manipulation is perfectly confounded with the additional task of reading a story, since neutral-mood subjects did not read any neutral material. The reading required only about a minute, but it could be argued that this additional task might have caused the positive-mood subjects to spend less effort than neutral-mood subjects in evaluating the quality of the arguments. Our use of a thought protocol before the measurement of attitudes, as well as the nature of our argument-strength manipulation (see Areni and Lutz 1987), might also have affected our process measurements, though both follow convention (Petty and Cacioppo 1986).

The key implication of these results is that, unlike what is implicitly assumed in most current consumer research on mood effects, moods appear to not only have peripheral effects on attitudes, but also to have significant effects on and through the cognitive processing of message content. Although this study ex-

amined only the AQ aspect of messages and only evaluation and elaboration cognitive processes, mood might affect other message variables and other cognitive processes and outcomes. Thus, future research might examine the effects of mood on other message variables that are likely to be affected (e.g., the use of pictures vs. words, in exploring how positive moods may influence the amount of imagery evoked by pictures and the subject's relative motivation to process words vs. pictures). Further, other processes that mood is likely to affect ought to be studied, such as the extent and nature of categorization (see Isen 1984) and the use of ad-based information in evaluation and choice processes (see Isen, Nygren, and Ashby 1988; Srull 1983). Additional contingency and process research is clearly required to increase our understanding of the effects of moods on advertising effectiveness.

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