

## When Arousal Influences Ad Evaluation and Valence Does Not (and Vice Versa)

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This research examines, across 2 studies, the interplay between the valence and arousal components of affective states and the affective tone of a target ad. In the first study, music was used to induce a pleasant or unpleasant mood, while controlling for arousal. Participants were subsequently exposed to an ad that either had a positive-affective tone or was ambiguous in its affective tone. As predicted, the valence of the affective state colored the evaluation of the ad in a mood-congruent direction, but this coloring effect occurred only when the ad had an ambiguous-affective tone. In the second study, the target ad had a clear positive or negative affective tone, and the valence and arousal dimensions of the mood state were manipulated independently. As predicted, the arousal dimension, but not the valence dimension, influenced ad evaluation. Ad evaluations were more polarized in the direction of the ad's affective tone under high arousal than under low arousal. This effect was more pronounced for self-referent evaluations (e.g., "I like the ad") than for object-referent evaluations (e.g., "The ad is good"), favoring an attributional explanation—the *excitation transfer* hypothesis—over an attention-narrowing explanation—the *dynamic complexity* hypothesis. Taken together, the results of the 2 studies stress the important contingency of the affective tone of the ad, when examining the effects of the valence and arousal dimensions of a person's affective state on ad evaluation. The results also provide additional insights into how and when affect serves as information in judgment processes.

The sources of affect can be diverse. In ad exposure settings, one source of affect is the consumer's preexisting mood state at the time of exposure. A second source lies in the affective tone of the ad itself (e.g., humorous or fear-inducing).<sup>1</sup> The interplay between the consumer's affective state and the affective content of the ad can have intricate effects on judgments. The purpose of this research is to document the nature

of this interplay, formalize its main contingencies, and explore underlying processes.

We suggest that to examine this interplay, it is useful to decompose consumers' affective states along their two primary dimensions (Havlena & Holbrook, 1986; Mehrabian & Russell, 1974): valence (pleasant or unpleasant) and arousal (high or low). We propose that each of these two components of consumers' affective states interacts differently with the affective tone of a target ad. Prior research has suggested that the valence component has the effect of "coloring" people's judgments in a mood-congruent direction (e.g., Forgas, 1995; Mayer, Gashke, Braverman, & Evans, 1992). *Ceteris paribus*, the target ad should be evaluated more favorably when the affective state is pleasant than when it is unpleasant (e.g.,

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<sup>1</sup>By *affective tone* (e.g., humorous), we mean that the ad has the potential to evoke specific feelings related to the tone (e.g., feelings of amusement = laughter).

Goldberg & Gorn, 1987). However, we argue that this coloring effect is more likely to occur when the ad is ambiguous in its affective tone than when the ad itself has a clearly positive or negative affective tone. When the ad does have a clear affective tone—and mood valence has less of an influence—it is the arousal component that has an effect on ad evaluation. This effect is to polarize judgments by accentuating the affective tone of the target ad. Ads that have a positive-affective tone are likely to be evaluated more favorably under high arousal than under low arousal, whereas ads that have a negative affective tone are likely to be evaluated less favorably under high arousal than under low arousal. In other words, depending on the affective tone of the ad, the valence of affective states has an effect when arousal does not, and vice versa. These predictions are tested in two studies: one focusing on coloring and the other focusing on polarization. The processes underlying coloring and polarization are discussed, with two different explanations of polarization examined in Study 2.

## VALENCE, AROUSAL, AND AD EVALUATION

### Valence and Coloring

A considerable amount of research has suggested that the valence of people's affective states influences their judgments in a mood-congruent direction (e.g., Clore, Schwarz, & Conway, 1994; Forgas, 1995; Goldberg & Gorn, 1987; Gorn, Goldberg, & Basu, 1993; Mayer et al., 1992). Two explanations have been offered for this coloring effect. One explanation is that mood states—pleasant or unpleasant—cue similarly valenced materials in memory, thereby biasing people's perceptions of the target at the time of evaluation (Isen et al., 1978). Another explanation, known as affect-as-information, is that people often inspect their feelings when making evaluative judgments (Schwarz & Clore, 1988; see also Pham, 1998). During this process, pleasant or unpleasant feelings emanating from the mood state at the time of judgment may be misattributed to the target (Schwarz & Clore, 1983). Forgas (1995) suggested that these two explanations are in fact complementary and apply to different processing strategies. When the person uses a systematic processing strategy, mood will primarily influence judgments through the cuing of mood-congruent thoughts. When the person uses a heuristic processing strategy, mood will influence judgments through affect-as-information mechanisms. Still, both explanations suggest that the valence of people's affective state at the time of exposure to an ad will color its evaluation.

Research has suggested that this coloring effect may be contingent on a number of factors (Clore et al., 1994; Martin, Abend, Sekides, & Green, 1997; Pham, 1998). Of particular interest is research showing that mood-congruent evaluations may be more pronounced when the targets are affectively am-

biguous. For instance, Isen and Shalcker (1982) observed that the effect of being in a pleasant mood when assessing the pleasantness of slides of local scenes was stronger when the slides were affectively neutral than when the slides were clearly pleasant or unpleasant. Similarly, Miniard, Bhatla, and Sirdeshmukh (1992) observed that the effect of being in a pleasant or unpleasant mood on participants' rating of the taste of a brand of peanut butter was stronger when the brand's actual taste was ambiguous than when it clearly tasted good or bad. Several mechanisms, which are not necessarily mutually exclusive, can explain why moods have less of an effect when the target is affectively unambiguous. First, the target's affective content may actually erase the preexisting mood state, precluding any mood influence on judgment (Miniard et al., 1992). Second, when the target is affectively unambiguous, the mood state will lose its heuristic (information) value in evaluative judgments (Clore et al., 1994). Third, judgments of affectively unambiguous targets are less likely to require a search for additional information. As a result, mood-congruent associations will have less of an influence on these judgments (Isen & Shalcker, 1982).

The role that affective ambiguity of the target plays in moderating the coloring effect of mood valence can also be interpreted in light of Forgas's (1995) Affect Infusion Model (AIM). According to this model, mood is most likely to "infuse" (i.e., color) judgments when people use a generative processing strategy—that is, a heuristic or systematic search for additional inputs—to construct their judgments. When the target is affectively unambiguous, a generative processing strategy—hence, infusion or coloring—is less likely because the target's affective tone provides potent cues for the judgments. Consistent with this reasoning, we hypothesize the following:

- H1: The coloring effect of the valence of people's affective state will be more pronounced for ads that have an ambiguous-affective tone than for ads that have a clear affective tone.

### Arousal and Polarization

A substantial amount of research (see Reisenzein, 1983) has suggested that arousal experienced at a given point in time may accentuate subsequent affective and evaluative responses. Consumers' responses to a given object—for instance, an ad—may be more extreme or polarized if the consumers have been recently aroused. Two explanations have been offered for this effect. One invokes attributional processes, and the other invokes processing interferences.

*Polarization as misattribution.* Building on Schachter and Singer's (1962) work, Zillmann (1971) offered the excitation transfer hypothesis. It is well established that arousal, as a generalized state of activation, tends to be nonspecific (e.g., Schachter & Singer, 1962). Moreover, arousal does not dissipate immediately after the removal of the arousing condition:

Arousal decays relatively slowly (e.g., Cantor, Zillmann, & Bryant, 1975). As a result, the residual arousal experienced following an event may polarize the response to a subsequent target by intensifying the affect elicited by this target. For instance, White, Fishbein, and Rutstein (1981) observed that arousal, induced through either physical exercise or emotional material, subsequently increased (decreased) male participants' liking of an attractive (unattractive) female target. Apparently, participants misattributed the residual arousal left by the prior event as part of their genuine affective response to the female target and therefore expressed more polarized judgments. This intensifying effect of residual arousal has been replicated in many studies (for a review, see Reisenzein, 1983).

*Polarization as reduced cognitive complexity.* The dynamic complexity hypothesis (Paulhus & Lim, 1994) states that arousal polarizes evaluative judgments by reducing the complexity of perceptions about a target. This hypothesis elaborates on the theory that because arousal reduces processing capacity, aroused individuals tend to selectively process important cues at the expense of less important ones (Easterbrook, 1959). Because the primary dimension of social perception is evaluative (Osgood, Suci, & Tannenbaum, 1957), selective processing focusing on this dimension at the expense of nonevaluative dimensions will polarize judgments (Paulhus & Lim, 1994). In a study of people's evaluation of famous figures and social acquaintances, Paulhus and Lim found that arousal did result in simpler perceptions and that these simpler perceptions seemed to lead to more polarized judgments. Consistent with this hypothesis, it was observed in an advertising context that arousal could polarize brand evaluation by increasing people's reliance on whichever cues—good or bad—were perceived to be more diagnostic (Pham, 1996).

Therefore, there is a strong theoretical reason to believe that the arousal component of consumers' affective states at the time of exposure to an advertisement should polarize its evaluation. This effect should depend on the ad's affective tone. If the ad's primary affective tone is positive, evaluations should be more favorable as arousal increases. If the ad's affective tone is negative, evaluations should be less favorable as arousal increases. In principle, this polarization effect of arousal should be independent of any coloring effect of the valence component of the affective state.

H2: When ads have a clearly positive or negative affective tone, high arousal will polarize ad evaluations in the direction of this tone.

In summary, the two main components of consumers' affective states at the time of exposure to an ad should have distinct effects on its evaluation. The valence component should color the evaluation of the ad in a mood-congruent direction, whereas the arousal component should polarize its evaluation in the direction of the ad's primary affective tone. Although

many ads have a positive affective tone (e.g., humorous, warm commercials), the positivity of this tone is likely to vary (e.g., some commercials are warmer than others). Study 1 tests the hypothesis that the coloring effect of valence will be more pronounced when the affective tone of the target ad is ambiguous than when it is clearly positive. The polarization effect should manifest itself in the reverse condition in which the affective tone of the target ad is unambiguous (as opposed to ambiguous). In Study 2, we test the hypothesis that arousal will have a polarization effect when the ad's affective tone is clearly positive or negative. Under such conditions, valence will have little influence.

## STUDY 1

The purpose of this study was to test the proposition that the coloring effect of consumers' mood states on their evaluations of advertisements would depend on the affective ambiguity of the ad. Because the experiment focused on the coloring effect of affect states, participants' mood was manipulated to be either pleasant or unpleasant, controlling for variation in arousal. Following the mood induction, participants were subsequently exposed to the target ad in a supposedly unrelated task. In one condition, the ad's affective tone was clearly positive. In the other condition, the ad's affect tone was more ambiguous. It was predicted that the valence of participants' mood would color their evaluation of the target ad in the ambiguous-ad condition but not in the clearly positive-ad condition.

### Method

*Participants and design.* Participants consisted of 80 business undergraduates who participated in the study to fulfill a course requirement. They were randomly assigned to one of four conditions in a  $2 \times 2$  between-subjects design. The first factor manipulated two levels of affective state: pleasant versus unpleasant. The second factor manipulated two levels of the affective tone of the ad: positive versus ambiguous.

*Procedure.* The experiment was introduced as two unrelated studies, conducted in two separate small rooms. The "first" study was purportedly about musical appreciation. To enhance experimental control, the study was conducted one participant at a time. Participants were seated in a comfortable chair while one of the two selected musical pieces (see Pretest 1 next) was played through a high-quality cassette recorder. Participants were instructed to listen carefully and form impressions of, and opinions about, the music. After listening to the music for 5 min, participants were asked to assess the music on a number of dimensions (e.g., fast-slow, quiet-loud, and interesting-uninteresting). Participants were then directed to the "second" study, which was purportedly a

pilot advertising test conducted by the marketing department for a private company. Participants were exposed to one of the two target ads (see Pretest 2 next) for 40 sec. They then evaluated the ad on four 7-point items: “I like (dislike) the ad,” “The ad is good (bad),” “The ad looks (does not) professionally made,” and “I feel positive (negative) towards the ad.” These items ( $\alpha = .84$ ) were averaged into a single measure of ad evaluation.

**Pretest 1: Music selection.** Because it is important to separate the valence and arousal dimensions of affective states, we investigated manipulations of valence that would control for the level of induced arousal. We elected to rely on music for several reasons. First, music has been repeatedly shown to be an effective manipulation of valence of affective states, both in marketing studies (e.g., Alpert & Alpert, 1990; Kellaris & Kent, 1993; Miniard et al., 1992) and in psychological studies (e.g., Eich & Metcalfe, 1989). Second, compared to most social manipulations of affective states—such as performance feedback, gift giving, and interaction with a confederate—music is relatively content free. Finally, there is an enormous variability of music available in the marketplace. This facilitated the search for pieces that would induce different levels of valence without inducing different levels of arousal.

Our goal in pretesting was to find 2 pieces of music that were equally arousing but one that was more pleasing than the other. In a preliminary pretest ( $n = 86$ ), 44 pieces of music were evaluated on pleasure and arousal. Participants were run in small groups of 4 to 6 people, with each group evaluating 6 pieces of music. Based on this preliminary pretest, 2 pieces of music were selected to be tested in a more formal pretest in which 23 participants were run individually and listened to only 1 piece of music. After listening to each piece for 5 min, participants rated how pleasing and arousing the music was on 7-point scales. As expected, the first piece (“Eine Kleine Nachtmusik: Allegro” by Mozart) was rated as pleasing ( $M = 5.70$ ) and high in arousal ( $M = 5.70$ ). The second piece (an Indian classical piece by Pandit Dhimsen Joshi) was rated as much less pleasing ( $M = 2.23$ ) but still high in arousal ( $M = 5.61$ ). It was confirmed by  $t$ -tests that the 2 pieces of music were different in how pleasing they were,  $t(21) = 11.71$ ,  $p < .001$ , but not in arousal,  $t(21) = .21$ ,  $p > .10$ .

**Pretest 2: Affective tone of the ad.** A second pretest was conducted to identify two advertisements in which the content would vary in terms of their affective tone. One ad should have a clear positive affective tone, whereas the other should have a more ambiguous affective tone. A wide range of ads were initially screened before settling on the following approach for the formal pretest. Ads for a fictitious insurance company were professionally produced. A central feature of the ad was a picture, which varied across conditions. In the positive-affective-tone condition, the picture depicted a happy family: a smiling father with a smiling mother and a

smiling child. In the ambiguous-affective-tone condition, the picture was a more distant shot of a man and woman taking a walk. Aside from the picture, the two ads were identical in every respect. Both versions of the ad had a headline reading “YOU CAN ENJOY MORE FROM LIFE!” and a short copy about the benefits of insurance with the company.

The two versions of the ad were shown to separate groups of participants ( $N = 71$ ). These participants were asked to examine the ad and assess how it made them feel. The affective tone of the ad was assessed by four 7-point semantic differential items ( $\alpha = .92$ ) anchored at “happy–sad,” “pleased–displeased,” “delighted–distressed,” and “joyful–depressed.” The arousal content of the ad was assessed by three 7-point semantic differential items anchored at “stimulated–relaxed,” “excited–calm,” and “aroused–unaroused.” As intended, the ad with the happy family was judged to be more positive in tone and elicited more positive feelings ( $M = 5.09$ ) than did the ad with the couple walking ( $M = 4.40$ ),  $t(69) = 3.65$ ,  $p < .01$ . The two ads were not different in the feelings of arousal they elicited (positive tone ad:  $M = 3.45$  and ambiguous tone ad:  $M = 3.26$ ),  $t < 1$ .

## Results

**Manipulation checks.** To check the perceived affective tone of the ad in the main experiment, participants’ ratings of the pleasantness of the ad (as they again looked at it) were submitted to a 2 (ad tone)  $\times$  2 (valence) analysis of variance (ANOVA). As expected, the ANOVA revealed only a main effect of ad tone,  $F(1, 79) = 9.23$ ,  $p < .01$ , showing that the perceived pleasantness of the ad was significantly higher in the positive-ad condition ( $M = 4.88$ ) than in the ambiguous-ad condition ( $M = 4.30$ ). Although the positive ad’s pleasantness was clearly above the midpoint of the scale,  $t(39) = 8.54$ ,  $p < .001$ , the ambiguous ad’s pleasantness was only marginally above the midpoint of the scale,  $t(39) = 1.91$ ,  $p = .06$ . The main effect of valence and the Ad Tone  $\times$  Valence interaction did not approach significance,  $F$ ’s  $< 1$ .

The affective-state manipulation was checked with an independent sample of participants ( $N = 20$ ) who were run individually. Each participant listened for 5 min (the same amount of time as in the main experiment) to one of the two pieces of music used in the main experiment. After listening to the piece, participants were asked to report on their affective state using the Affect Grid (Russell, Weiss, & Mendelsohn, 1989), which is a graphical scale that assesses both feelings of pleasure and arousal on a 9-point scale ranging from 1 (*low*) to 9 (*high*). As expected, the pleasant music induced higher pleasure ( $M = 7.10$ ) than did the unpleasant music ( $M = 3.0$ ),  $t(18) = 10.83$ ,  $p < .001$ . However, the two pieces induced similar levels of arousal ( $M_{\text{pleasant}} = 7.60$  and  $M_{\text{unpleasant}} = 7.10$ ),  $t(18) = 1.41$ ,  $p > .10$ . Therefore, the two pieces induced different feelings of pleasantness but not different levels of arousal.



*Ad evaluation.* Ad evaluations across conditions were analyzed in a series of planned contrasts (Rosenthal & Rosnow, 1985). A first contrast showed that in the ambiguous-ad condition, participants in a pleasant affective state indeed reported more favorable evaluations ( $M = 3.66$ ) than did participants in an unpleasant affective state ( $M = 3.16$ ),  $t(76) = 1.65$ ,  $p = .05$ , one tailed ( $\omega^2 = .02$ ). This effect replicates the standard mood-congruency effect. In contrast, in the positive-ad condition, the valence of participants' affective states had no effects on ad evaluations,  $t < 1$ . Participants in this condition reported comparable evaluations regardless of whether they were in a pleasant ( $M = 3.64$ ) or unpleasant ( $M = 3.84$ ) affective state. Consistent with the planned contrasts, which were the focus of the analyses, a 2 (valence)  $\times$  2 (ad tone) ANOVA revealed a marginally significant Ad Tone  $\times$  Valence interaction,  $F(1, 76) = 2.66$ ,  $p = .10$  ( $\omega^2 = .02$ ). Moreover, as expected, both the main effect of valence and the main effect of ad tone were not significant,  $F < 1$  and  $F(1, 76) = 2.29$ ,  $p > .13$ , respectively, suggesting that valence did not color ad evaluations independently of the ad's affective tone. Overall, the results are consistent with our hypothesis (H1) that the coloring effect of valence depends on whether the target ad has a clear affective tone.<sup>2</sup>

## Discussion

The results are consistent with H1 and with the general notion that ad evaluations may be influenced by an interplay between the ad's affective tone and consumers' affective states. When the target ad's affective tone was ambiguous, ad evaluation was more favorable among participants in a pleasant affective state than among participants in an unpleasant affective state. This coloring effect of valence on ad evaluation replicates the well-established mood congruency effect. This coloring effect did not occur, however, when the ad's affective tone was clearly positive. Although mood-congruency effects on evaluation have been considered to be pervasive and robust (e.g., Mayer et al., 1992; Schwarz, 1990), they appear to be sensitive to the affective ambiguity of the target (e.g., Isen & Shalke, 1982; Miniard et al., 1992). This contingency is noteworthy given that many advertisements are not affectively ambiguous. In this study, affective ambiguity—and thereby the coloring effect of valence—was reduced by the mere modification of an execution cue.

<sup>2</sup>Alternatively, one could interpret the data as showing that the affective tone of the ad had a stronger effect on ad evaluations among participants in an unpleasant mood than among participants in a pleasant mood. This interpretation would be consistent with previous arguments that negative mood increases analytical processing and message scrutiny, whereas positive mood decreases it (e.g., Schwarz, Bless, & Bohner, 1991). This interpretation does not seem to be applicable to this study. The ads differed only on a single execution characteristic that was simple to process. Therefore, depth of message scrutiny should have made little difference.

It is possible that mood-congruency effects would have been observed in the unambiguous-ad condition had we used a stronger mood manipulation. However, our manipulation (a 4.1 difference on a 7-point scale;  $\omega^2 = .85$ ) was quite strong compared to the mood manipulations used in other studies where mood congruency was indeed observed (e.g., Gorn et al., 1993; Schwarz & Clore, 1983).<sup>3</sup> This suggests that, in real consumer settings, mood-congruency effects on ad evaluations may be less pervasive and pronounced than implied by previous research (e.g., Goldberg & Gorn, 1987).

Given that valence appears to color ad evaluation only when the ad is affectively ambiguous, the question arises whether consumers' affective states have any influence at all on ad evaluations when the ad is *not* affectively ambiguous (i.e., clearly positive or clearly negative). This issue is examined in Study 2.

## STUDY 2

The main objective of this study was to test the proposition that when ad targets have a clear affective tone, it is the arousal component of consumers' affective states, and not the valence component, that will affect how the ad will be evaluated. Participants whose affective state was manipulated in terms of both valence and arousal were subsequently exposed to a target ad that was either clearly positive in its affective tone or clearly negative. It was predicted that high arousal would polarize ad evaluations in the direction of the ad's affective tone. In contrast, as suggested by the results of Study 1, valence would have little influence on how the unambiguously positive or negative ad would be evaluated.

Should a polarization effect of arousal be uncovered, a second objective of this study was to explore alternative explanations of this effect. According to the excitation transfer hypothesis (e.g., Cantor et al., 1975; Zillmann, 1971), high arousal should polarize subsequent ad evaluations if consumers believe that the context-induced arousal reflects their genuine affective reactions to the ad itself. Consumers inspecting "how they feel" about an ad (e.g., Pham, 1998; Schwarz & Clore, 1988) may infer from their arousal that they "feel strongly" about the ad and hence evaluate it more extremely. We examined this explanation by comparing responses to ad-evaluation items phrased in self-referential manner (e.g., "I like the ad" and "I react favorably to the ad") to responses to items phrased in object-referent manner (e.g., "The ad is good" and "The ad is enjoyable"). It was reasoned that self-referential items should be particularly sensitive to a transfer of excitation because these items emphasize partici-

<sup>3</sup>In Gorn, Goldberg, and Basu (1993), the mood manipulation induced differences of 2.38 ( $\omega^2 = .29$ ) and 3.16 ( $\omega^2 = .22$ ) on the 10-point scales that were used to assess mood. In Schwarz and Clore (1983; Study 1), the mood manipulation induced a difference of 1.8 on a 7-point scale ( $\omega^2 = .22$ ) and a difference of 2.6 on an 11-point scale ( $\omega^2 = .25$ ).

pants' reactions to the ad. In contrast, object-referent items should be less sensitive to a transfer of excitation because they emphasize the ad itself (for a related discussion, see Wyer, Clore, & Isbell, 1999). In other words, if the polarization effect of arousal is indeed mediated by a transfer of excitation, this effect should be more pronounced on self-referent items (e.g., "I like-dislike the ad") than on object-referent items (e.g., "The ad is good-bad"). The dynamic complexity hypothesis would not predict that polarization would depend on the phrasing of the items.

According to the dynamic complexity hypothesis (Paulhus & Lim, 1994), high arousal may polarize subsequent ad evaluations if consumers process a simpler representation of the ad and if the primary component of the simplified representation is evaluative. Participants' representations of the target ad were assessed through cognitive responses. The dynamic complexity hypothesis would predict that aroused consumers should report (a) fewer thoughts in response to the ad and (b) a higher proportion of evaluative to nonevaluative thoughts. The excitation transfer explanation does not hypothesize any specific change in cognitive responding under high arousal.

## Method

**Participants and design.** Participants in this study consisted of 128 business undergraduates who participated to earn course credit. They were randomly assigned to one of eight conditions of a 2 (arousal)  $\times$  2 (valence)  $\times$  2 (ad affective tone) between-subjects design. Unlike in Study 1, the affective tone of the ad was either clearly positive or clearly negative. Furthermore, valence of affective state (pleasant vs. unpleasant) was crossed with two levels of arousal (high vs. low). Crossing these two factors presents three advantages. First, it reduces the likelihood that either manipulation is confounded with the other. One could argue, for instance, that states of high arousal are less pleasant than states of lower arousal. Second, it allows us to test the null prediction that valence of the affective state will not have an effect when the affective tone of the ad is unambiguously positive or negative, and to test it across both higher and lower levels of arousal. Third, previous research on arousal effects on persuasion has ignored potential interactions between arousal and valence (Pham, 1996; Sanbonmatsu & Kardes, 1988). Crossing the two factors allows us to examine such interactions. In addition to these between-subjects factors, a within-subjects factor was formed by the inclusion of two types of ad-evaluation items (self-referential vs. object referential).

**Procedure.** The procedure closely followed that used in Study 1. The sessions were again run one participant at a time. The study was introduced as two unrelated studies, conducted in different rooms. The "first" study was purportedly about musical appreciation. Participants were seated in a comfortable lounge chair while one of four selected musical

pieces was played (see Pretest 3 next). Participants were instructed to listen carefully and form impressions of the music. As in Study 1, 5 min following the music onset, participants completed a questionnaire. The questionnaire included (a) a 22-item scale assessing perceptions of the music (e.g., fast-slow, quiet-loud, and simple-complex); (b) a 3-item scale measuring evaluations of the music (e.g., like-dislike); and (c) the Affect Grid, which served as a manipulation check of participant's states of pleasure and arousal. Participants were then directed to the "second" study.

The "second" study was again introduced as a pilot advertising test conducted by the marketing department for a private company. Each participant was exposed for 40 sec to one of two ads. One ad had a clear positive affective tone and the other had a clear negative affective tone (see Pretest 4 next). Participants then completed a questionnaire, which assessed their evaluations of the ad and their cognitive responses while reading the ad. At the end of the session, participants were orally asked what the purpose of the study was and to write down their answers on a separate sheet of paper. They were then debriefed.

**Measures.** The main dependent measure, ad evaluation, was assessed on seven 7-point semantically differential items ( $\alpha = .88$ ): "The ad is pleasant-unpleasant," "The ad is good-bad," "The ad is enjoyable," "I like-dislike the ad," "I react favorably-unfavorably to the ad," "I feel negative-positive toward the ad," "The ad is fun-not fun to read." Participants were also asked to list all the thoughts and feelings that came to mind while reading the ad. Two judges, working independently, classified each thought or feeling as either positive, negative, or neutral (agreement = 95%). Disagreements were resolved by a third judge.

**Pretests 1 and 2: Valence and arousal of affective states.** We again used music to manipulate both valence and arousal of affective states. Although music has often been used to manipulate affect valence, the use of music to manipulate arousal orthogonally to valence is a unique feature of this study.

In a first, within-subject pretest, 22 participants, in groups of 4 to 6, were asked to listen to 16 pieces of music (a subset of the 48 pieces pretested in Study 1), one piece at a time for 2 min. After listening to each piece, participants reported their mood states using the Affect Grid. Based on this pretest, 4 musical pieces were selected. They were: (a) "Eine Kleine Nachtmusik: Allegro" by Mozart, which induced high pleasure ( $M = 7.23$ ) and high arousal ( $M = 7.36$ ); (b) "Saraseeruhana" by Naada Loludai, which induced low pleasure ( $M = 3.14$ ) and high arousal ( $M = 6.73$ ); (c) "Whatever We Image" by David Foster, which induced high pleasure ( $M = 6.91$ ) and low arousal ( $M = 4.14$ ); and (d) "Raga Bhopali" by Mohanam, which induced low pleasure ( $M = 3.73$ ) and low arousal ( $M = 3.50$ ).

In a second, between-subjects pretest ( $N = 31$ ), each of the four selected pieces was played to a separate group of partici-

pants in a soundproof room. After listening to the piece for 5 min, participants reported their moods using the Affect Grid. These self-reports of pleasure and arousal were submitted to  $2 \times 2$  ANOVAs in which the two factors were the level of arousal (high or low) and valence (pleasant or unpleasant) expected to be induced by each piece. As expected, both factors had strong main effects on the corresponding self-reports. Self-reports of pleasure were greater when the musical pieces were pleasant ( $M = 6.43$ ) than when they were unpleasant ( $M = 3.60$ ),  $F(1, 27) = 28.83$ ,  $p < .0001$  ( $\omega^2 = .44$ ). Similarly, self-reports of arousal were greater when the musical pieces were highly arousing ( $M = 6.70$ ) than when they were less arousing ( $M = 4.39$ ),  $F(1, 27) = 6.92$ ,  $p < .02$  ( $\omega^2 = .16$ ). Self-reports of pleasure also exhibited a small but significant Arousal  $\times$  Valence interaction,  $F(1, 27) = 7.33$ ,  $p < .02$  ( $\omega^2 = .06$ ), showing that the valence manipulation was slightly stronger for the more arousing pieces. No other effects were significant, all  $ps > .20$ , suggesting that the four pieces manipulated pleasure and arousal largely independently. This manipulation was further assessed in the main experiment.

*Pretests 3 and 4: Affective tone.* The purpose of these pretests was to identify two advertisements with a clearly positive or negative affective tone. In Pretest 3, 64 participants were shown one of eight print advertisements. As in Study 1, the ads were for a fictitious insurance company and were professionally produced to induce different levels of affective tone. The positive-affective tone ad was the same as the one used in Study 1. It featured the picture of a happy family, the copy stressed the benefits of the insurance company, and the headline read "YOU CAN ENJOY MORE FROM LIFE!" The goal in constructing a negative ad was to differentiate its affective tone as much as possible from that of the positive ad. The negative affective tone ad featured the picture of a distressed-looking girl described as a 5-year-old orphan whose parent had died in a car accident. The headline of the ad read "SHE COULD HAVE LIVED BETTER! PROTECT YOUR CHILDREN AND THEIR FUTURE." The affective tone of the ads was assessed by four 7-point semantic differential items ( $\alpha = .95$ ): "This ad made me feel happy-unhappy," "This ad made me feel pleased-displeased," "This ad made me feel delighted-distressed," "This ad made me feel joyful-depressed." As desired, the two ads differed in affective tone ( $M = 2.69$  vs.  $M = 5.27$ ),  $t(16) = 5.58$ ,  $p < .01$ . To ensure that the two ads were equal in terms of overall quality, 20 participants (Pretest 4) evaluated the ads after listening for 5 min to a piece of music (selected on the basis of the preliminary pretest reported in Experiment 1) designed to induce a neutral mood. As expected, the two versions of the ad were evaluated similarly ( $M_{\text{positive}} = 5.02$  and  $M_{\text{negative}} = 4.88$ ),  $t < 1$ .

## Results

*Demand and manipulation checks.* Three participants expressed at least some understanding of the study's

general purpose. Their data were discarded from the analysis, performed on 125 observations. To assess the manipulations of affective states, participants' self-ratings of arousal and pleasure after listening to the piece of music were each submitted to a 2 (affect dimension)  $\times$  2 (valence manipulation)  $\times$  2 (arousal manipulation) mixed ANOVA. As expected, the analysis uncovered a strong Affect Dimension  $\times$  Arousal Manipulation interaction,  $F(1, 119) = 153.07$ ,  $p < .0001$  ( $\omega^2 = .55$ ), as well as a strong Affect Dimension  $\times$  Valence Manipulation interaction,  $F(119) = 99.37$ ,  $p < .0001$  ( $\omega^2 = .44$ ). Follow-up analyses show that the arousal ratings were strongly influenced by the arousal manipulation ( $M = 3.76$  vs.  $6.97$ ),  $F(1, 119) = 182.06$ ,  $p < .0001$  ( $\omega^2 = .58$ ), and they were much less influenced, although significantly so, by the valence manipulation,  $F(1, 119) = 5.51$ ,  $p < .03$  ( $\omega^2 = .01$ ). Similarly, the pleasure ratings were mostly affected by the valence manipulation ( $M = 3.61$  vs.  $7.01$ ),  $F(1, 119) = 358.65$ ,  $p < .0001$ , ( $\omega^2 = .67$ ). They were also affected by a small Valence  $\times$  Arousal State Manipulation interaction,  $F(1, 119) = 5.31$ ,  $p < .05$  ( $\omega^2 = .01$ ). In summary, the four musical pieces succeeded in manipulating pleasure and arousal states largely independently, although not perfectly orthogonally.

*Effects on ad evaluation.* Ad evaluations were submitted to a 2 (arousal)  $\times$  2 (pleasure-valence)  $\times$  2 (affective tone) between-subjects ANOVA. The means across conditions are reported in Table 1. The analysis revealed a main effect of affective tone,  $F(1, 117) = 79.90$ ,  $p < .0001$  ( $\omega^2 = .39$ ). Evaluations were more favorable for the positive-affective tone version of the ad ( $M = 4.17$ ) than for the negative affective tone version ( $M = 2.89$ ). As expected, given the affective unambiguity of the ads, the valence of participants' affective states did not have any main or interaction effect on their ad evaluations,  $F < 1$ . Participants who were in a pleasant affective state were not more favorable in their ad evaluations ( $M = 3.49$ ) than were participants who were in an unpleasant affective state ( $M = 3.58$ ). This result is consistent with the results of Study 1.

More important, there was a significant Arousal  $\times$  Affective Tone interaction,  $F(1, 117) = 4.22$ ,  $p < .05$  ( $\omega^2 = .03$ ). As predicted, the simple effect of the ad's affective tone was greater under high arousal ( $M_{\text{positive}} = 4.41$  vs.  $M_{\text{negative}} = 2.85$ ),  $F(1, 117) = 58.63$ ,  $p < .0001$  ( $\omega^2 = .32$ ) than under low arousal ( $M_{\text{positive}} = 3.94$  vs.  $M_{\text{negative}} = 3.02$ ),  $F(1, 117) = 24.29$ ,  $p < .0001$  ( $\omega^2 = .16$ ). This pattern of results indicates that high arousal polarized ad evaluations in the direction of the ad's affective tone, which supports H2.<sup>4</sup> No other effects

<sup>4</sup>We also tested the simple effects of arousal within each level of affective tone of the ad. Consistent with the polarization hypothesis, in the positive-affective tone condition, ad evaluations were significantly more favorable under high arousal than low arousal,  $F(1, 117) = 5.24$ ,  $p < .05$ . In the negative ad tone condition, ad evaluations were somewhat less favorable under high arousal than under low arousal. However, the difference was not significant,  $F < 1$ .



TABLE 1  
Ad Evaluation as a Function of Valence, Arousal,  
and Affective Tone

	Positive Affective Tone		Negative Affective Tone	
	Pleasant Affective State	Unpleasant Affective State	Pleasant Affective State	Unpleasant Affective State
Low	3.89 <sup>a</sup>	4.02 <sup>a</sup>	2.95 <sup>a</sup>	2.98 <sup>a</sup>
High	4.23 <sup>a</sup>	4.56 <sup>b</sup>	2.85 <sup>b</sup>	2.78 <sup>b</sup>

<sup>a</sup> $n = 16$ . <sup>b</sup> $n = 15$ .

were significant. The two different explanations of this polarization effect are examined next.

Recall that, according to the excitation transfer explanation, preexisting arousal polarizes evaluations because this arousal is misattributed as being part of a genuine affective response to the target. Should this explanation be correct, the polarization effect of arousal should be more pronounced on items stressing the participants' reactions to the ad (e.g., "I like-dislike the ad") than on items stressing the ad itself (e.g., "The ad is enjoyable-not enjoyable"). We tested this reasoning by examining the Arousal  $\times$  Tone interaction for each evaluation item, separately. As can be seen in Table 2, the polarization effect appeared to be consistently more pronounced for the items phrased in a self-referential format than for the items phrased in an object-referent manner. A post hoc contrast of the pooled self-referential items and the pooled object-referent items shows that the simple two-way interaction between Arousal  $\times$  Tone was significantly greater for the self-referential items,  $F(1, 117) = 5.71, p < .02$  ( $\omega^2 = .04$ ) than for the object-referent items,  $F(1, 117) = 1.90, p = .17$  ( $\omega^2 = .01$ ). This contrast was reflected in a significant three-way Arousal  $\times$  Affective Tone  $\times$  Type of Reference interaction,  $F(1, 117) = 4.47, p < .04$  ( $\omega^2 = .03$ ), which is depicted in Figure 1. This pattern of findings is consistent with an excitation transfer explanation. To test the other process explanation, we also examined participants' cognitive responses.

**Effects on cognitive responses.** Table 3 summarizes the effects of arousal and affective tone on participants' cognitive responses. The means are collapsed across the valence factor, which did not have any significant influence on these responses. As discussed earlier, the dynamic complexity hypothesis postulates that high arousal narrows perceptions to a primary dimension that is evaluative. A simplification would imply fewer ad-related thoughts, whereas narrowing to an evaluative dimension would imply a greater proportion of valenced to nonvalenced thoughts. These correlated predictions were tested as follows. Participants' total number of thoughts were submitted to a 2 (arousal)  $\times$  (valence)  $\times$  2 (ad tone) ANOVA. The analysis did not reveal any significant effect of these factors on the total number of cognitive responses (smallest  $p = .19$ ). In particular, participants in the high- and low-arousal conditions reported an almost

identical total number of thoughts ( $M_{\text{high arousal}} = 3.21$  vs.  $M_{\text{low arousal}} = 3.16$ ),  $F < 1$ . A similar analysis was then done on the proportion of valenced thoughts (i.e., [positive + negative] / total). It revealed a main effect of affective tone,  $F(1, 115) = 13.39, p < .001$  ( $\omega^2 = .09$ ). The negatively toned version of the ad polarized participants' thoughts more strongly ( $M = 86\%$ ) than did the positively toned version ( $M = 66\%$ ). This was mostly by increasing the number of negative thoughts,  $F(1, 115) = 5.76, p < .02$  ( $\omega^2 = .04$ ), and decreasing the number of neutral thoughts,  $F(1, 115) = 17.70, p < .001$  ( $\omega^2 = .12$ ). Arousal itself did not increase the proportion of valenced thoughts as would be predicted by the dynamic complexity hypothesis,  $F < 1$ .

Further analysis showed that arousal did influence participants' cognitive responses—albeit not in the manner predicted by the dynamic complexity hypothesis. We computed the net valence of participants' thoughts by subtracting the number of negative thoughts from the number of positive thoughts. A three-way ANOVA on this net valence index revealed a main effect of the affective tone of the ad,  $F(1, 117) = 4.97, p < .03$  ( $\omega^2 = .03$ ). Expectedly, the net valence of participants' thoughts was more negative in the negative-ad condition ( $M = -1.45$ ) than in the positive-ad condition ( $M = -.70$ ). More important, there was a significant Arousal  $\times$  Affective Tone interaction,  $F(1, 117) = 4.58; p < .04$  ( $\omega^2 = .03$ ). Although, under low arousal, the affective tone of the ad had no influence on the net valence of participants' thoughts ( $M_{\text{positive}} = -1.31$  vs.  $M_{\text{negative}} = -1.34$ ),  $F < 1$ , under high arousal, the net valence of the thoughts was significantly more negative among participants exposed to the negative tone ad ( $M = -1.57$ ) than among participants exposed to the positive tone ad ( $M = -.06$ ),  $F(1, 117) = 9.32, p < .01$  ( $\omega^2 = .06$ ). Therefore, the influence of arousal on the net valence of participants' thoughts largely paralleled its effect on ad evaluation.<sup>5</sup>

## Discussion

The results of this study clearly support the hypothesis (H2) that when an ad has an unambiguous affective tone, the arousal component of consumers' affective states may polarize ad evaluations in the direction of the ad's affective tone. It was found that participants evaluated the ad more favorably when it had a positive-affective tone than when it had a negative-affective tone. However, this tendency was significantly stronger in the high-arousal condition than in the low-arousal condition.

Although exploratory, the results also shed some light on the process underlying this polarization effect. There seemed to be little evidence that this effect was caused by the type of evaluative attention narrowing postulated by the dynamic complexity hypothesis. Although null effects should, of

<sup>5</sup>A mediation analysis confirmed that the valence of participants' thoughts mediated the polarization effect of arousal on ad evaluation.



TABLE 2  
Arousal × Ad Tone Interaction on Each Ad Evaluation Item

Items (In the Order They Were Assessed)	F Value	p Value
The ad is pleasant–unpleasant <sup>a</sup>	0.21	.65
The ad is bad–good <sup>a</sup>	2.78	.10
I like–dislike the ad <sup>b</sup>	3.80	.05
The ad is enjoyable–not enjoyable <sup>a</sup>	0.79	.38
I react favorably–unfavorably to the ad <sup>b</sup>	4.97	.03
I feel negative–positive <sup>b</sup>	4.45	.04
The ad is fun–not fun to read <sup>a</sup>	0.29	.59

<sup>a</sup>Object-referential items (beginning with “The ad ...”). <sup>b</sup>Self-referential items (beginning with “I ...”).

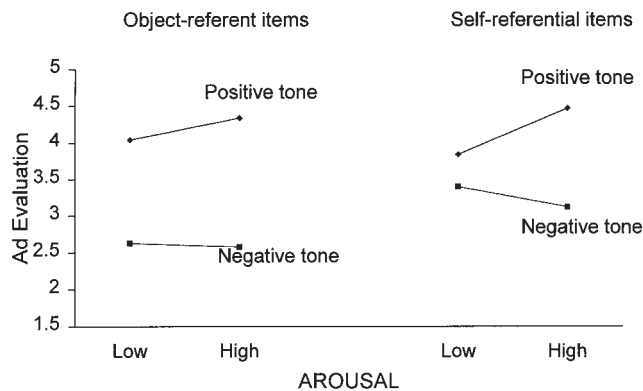


FIGURE 1 Study 2: Arousal × Tone × Reference interaction.

TABLE 3  
Cognitive Responses as a Function of Arousal and Affective Tone

	Positive Affective Tone		Negative Affective Tone	
	Low Arousal	High Arousal	Low Arousal	High Arousal
Positive thoughts	0.44	1.10	0.53	0.63
Negative thoughts	1.75	1.16	1.88	2.20
Neutral thoughts	1.25	1.00	0.47	0.33
Total	3.44	3.26	2.88	3.17
Polarized thoughts (%) <sup>a</sup>	.63	.68	.85	.87
Net valence <sup>b</sup>	-1.31	-0.06	-1.34	-1.57

<sup>a</sup>(positive + negative)/total. <sup>b</sup>(positive – negative).

course, be interpreted with caution, high arousal did not appear to reduce the number of thoughts participants had in response to the ad, and it did not increase the proportion of these thoughts that were valenced. Along with the finding that high arousal increased (rather than decreased) the effects of the target ad's tone, the absence of a main effect of arousal on the number of ad-related thoughts rules out the argument that highly aroused participants were more distracted during ad evaluation than less aroused participants were.

The evidence was more congenial with the excitation transfer hypothesis. It was found that the polarization effect of arousal was stronger when the ad evaluation items emphasized participants' reactions to the ad (“I \_\_\_ the ad”) than when the items focused on the ad itself (“The ad is \_\_\_”). This pattern of results is consistent with the misattribution mechanism postulated by excitation transfer. Consumers whose state of arousal has been heightened by a contextual cause (e.g., the programming context) and who are then exposed to an affectively valenced ad may experience intensified affective responses to the ad. They may infer from these intensified affective responses that they “feel strongly” about the ad (either positively or negatively) and therefore evaluate it more extremely. The differential influence of arousal and ad tone on self-referential versus object-referent items rules out the possibility that highly aroused participants were simply more alert during ad evaluation. It was also found that aroused participants had polarized thoughts and feelings in response to the ad and that these thoughts and feelings mediated the extremity of their evaluations. This finding suggests that the polarization effect of arousal was not a mere response scaling effect, but a genuine change in participants' subjective responding to the ad.

Although the results appear to favor excitation transfer over dynamic complexity, it is nevertheless possible that our analyses may not have been equally sensitive to the two types of processes. For instance, the evidence for excitation transfer comes primarily from ad-evaluation scale responses. In contrast, the evidence (or lack of it) for dynamic complexity comes from open-ended thought listings, which are likely to be less sensitive than close-ended ratings. It therefore remains possible that the polarization effect of arousal was caused by both misattribution and attention-narrowing processes (e.g., Easterbrook, 1959) of the type postulated by the dynamic complexity hypothesis. As elaborate in the General Discussion section, it is also possible that the two explanations apply to different ranges of the arousal continuum.

Finally, the results converged with those of Study 1 in suggesting that when the target ad has a clear affective tone, the coloring effect of valence is less likely to be observed. This lack of a valence effect cannot be attributed to a weak manipulation. The manipulation check indicates that, as in Study 1, the manipulation of valence was strong—a 3.4 difference on a 9-point scale ( $\omega^2 = .67$ ). Its strength was, in fact, comparable to that of the arousal manipulation ( $\omega^2 = .58$ ).

## GENERAL DISCUSSION

### Summary

Ad exposures do not occur in a vacuum. For a variety of reasons, consumers exposed to advertisements may be in various affective states (e.g., they have been relaxing on the beach vs. riding a crowded subway after a busy day of work). It is therefore important to understand how these affective states may

influence advertising responses, including ad evaluations. Of course, this issue is not new. Several studies have, for instance, examined how high arousal may influence persuasion (e.g., Pham, 1996; Sanbonmatsu & Kardes, 1988). An even greater number of studies have examined how the valence of affective states (i.e., good vs. bad moods) influence advertising responses (e.g., Batra & Stayman, 1990; Gardner & Wilhelm, 1987; Goldberg & Gorn, 1987; Schwarz, Bless, & Bohner, 1991; Yi, 1990). Yet compared to previous studies, this research is unique in two important respects.

First, by manipulating arousal and valence independently, Study 2 offers the distinct advantage of separating the effects of these two dimensions of affective states. Previous studies have generally focused on one dimension and ignored the other. It is therefore possible that part of the results attributed to valence may reflect arousal, and vice versa.<sup>6</sup>

The second distinguishing feature of this research lies in its investigation of an important contingency of the effects of affective states on ad evaluations. The results indicate that, whereas valence of affective states may color ad evaluations in a mood-congruent direction when the ad is ambiguous (Study 1), this coloring effect is less likely when the ad has a clearer affective tone (Studies 1 and 2). Our findings echo the results of research in other settings in which mood congruency effects on evaluation are mitigated whenever the target has a clear intrinsic valence (Isen & Shalker, 1982; Miniard et al., 1992). They suggest that mood congruency effects may not be as pervasive and robust as previously thought (Mayer et al., 1992).

Interestingly, it is precisely when the coloring effect of valence is less likely that the polarization effect of arousal becomes more likely. It was found in Study 2 that, when the ad's affective tone was clearly positive or negative, high arousal polarized ad evaluations in the direction of the ad's affective tone. This suggests that preexisting arousal states while exposed to an ad may interact with the affective tone of the ad itself. Although both dynamic complexity and excitation transfer mechanisms could have been at work, our results appear to support the latter explanation. Consumers may misattribute their preexisting arousal as being part of their affective response to the ad itself. Aroused consumers may report more extreme evaluations because they "feel strongly" about the ad.

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<sup>6</sup>A potential limitation of our studies is that we used different types of music (Indian vs. Western) to manipulate mood valence. One could argue that the two types of music primed different types of associations, which then tainted subsequent ad evaluations. This explanation would not account for our results. First, our cognitive responses in Study 2 gave no indication of any imagery that could be traced back to the music that participants heard in the previous task. Second, a difference between Western and Indian music could at best explain main effects and not interactions. Finally, the main result of Study 2 pertains the Arousal  $\times$  Ad Tone interaction. Both Indian and Western music were used for each level of arousal. We acknowledge, however, that keeping the type of music constant across conditions would be desirable design property. An interesting possibility would be to manipulate mood valence and arousal by varying the tonality and tempo of a single piece of music that remains constant in all other respects (Kellaris & Kent, 1993).

It is noteworthy that the arousal manipulation used in Study 2 (a 5-min exposure to a music piece) was relatively innocuous—significantly milder than those used in earlier research on arousal effects. That such a mild manipulation of arousal had a significant influence on advertising responses suggests that such effects may be pervasive in real world settings. The mildness of our arousal manipulation has theoretical significance as well. In retrospect, it may be precisely because this manipulation was relatively mild that we found greater support for the excitation transfer hypothesis than for the dynamic complexity hypothesis. Our manipulation may have been too mild to induce the kind of processing interference posited by the dynamic complexity hypothesis. In comparison, studies that have shown such interferences have used stronger manipulations, such as caffeine (e.g., Humphreys & Revelle, 1984), physical exercise (e.g., Pham, 1996; Sanbonmatsu & Kardes, 1988), and loud white noise (e.g., Paulhus & Kim, 1994).

Whereas dynamic complexity may require fairly high arousal, interestingly, excitation transfer may be more likely under more moderate arousal. This is because when arousal is very intense (e.g., immediately after a dramatic emotional event), its actual source is likely to be very salient. As a result, intense arousal is less likely to be misattributed to a subsequent target (e.g., Cantor et al., 1975). Therefore, it is possible that both moderate and very high levels of arousal produce polarization—the former via excitation transfer mechanisms, and the latter via dynamic complexity mechanisms. This issue is worthy of further investigation, using a broader range of arousal levels.

#### Assimilation–Contrast, Elaboration Likelihood, or Affect Infusion?

It is instructive to relate our findings to other potential explanations of affective influences on evaluation. The coloring effect of valence can be related to several theoretical frameworks. Within an assimilation–contrast framework, one would posit that, during ad exposure, the valence of the preexisting mood, along with mood-congruent cognition, becomes integrated with the consumer's representation of the target ad—thereby resulting in the evaluation of the ad being assimilated toward the valence of the preexisting mood (e.g., Schwarz & Bless, 1992; Strack, Schwarz, & Gschneidinger, 1985). Within the Elaboration Likelihood Model (ELM) framework (Petty & Cacioppo, 1986), one would posit that the valence of the preexisting mood serves as a peripheral cue in evaluating the ad (e.g., Batra & Stayman, 1990; Petty, Schumann, Richman, & Strathman, 1993). Within the AIM (Forgas, 1995), one would posit that the valence of the preexisting mood and mood-congruent cognitions that it primes are used as additional inputs in constructive processes of ad evaluation.

Note that these three explanation are not mutually exclusive. They do differ, however, in their ability to handle the finding that the coloring effect of valence—whether called

assimilation, peripheral evaluation, or infusion—is more likely when the ad’s affective tone is ambiguous than when it is clearly positive or negative. This finding is most difficult to explain within an assimilation–contrast framework and easiest to explain within the AIM; the consistency with the ELM is somewhere in between. According to assimilation–contrast principles (e.g., Herr, 1986; Martin, Seta, & Crelia, 1990), one would expect assimilation when the affective tone of the target ad is similar to the valence of the preexisting mood and expect contrast when the affective tone of the ad is incongruent with the valence of the mood. If affective tone and valence are manipulated orthogonally, as was the case in Study 2, one would expect an interaction between these two factors on ad evaluation.<sup>7</sup> No such pattern was uncovered in Study 2. The finding that coloring occurs when the target has an ambiguous-affective tone, but not when it has a clear affective tone, is more congenial with the ELM. One could argue that the clarity or ambiguity of the affective tone of the ad somehow shapes whether ad evaluations are formed through issue-relevant elaboration or through peripheral processes. However, the contingent coloring effects of valence appear most consistent with the AIM.

According to the AIM model, the main determinant of whether valence will infuse on judgment is the processing strategy used to make the judgment. Generative strategies—that is, strategies that involve a constructive search for additional inputs—are more likely to result in affect infusion than nongenerative strategies (Forgas, 1995). According to the AIM, a major type of nongenerative strategy is direct access to a prior evaluation of the target stored in memory. Direct retrieval of a prior evaluation, also known as “affect referral” (Wright, 1975), reduces the likelihood of infusion (coloring). Our research extends the AIM by suggesting that even when the target has not been previously evaluated, a similar mechanism can take place. Coloring or infusion may decrease not only when people have access to prior internal evaluations (Forgas, 1995), but also when they have access to affective cues provided by the external target (in our studies, the affective tone of the ad).

Assimilation–contrast and the AIM do not speak to the polarization effect of arousal. Within the ELM framework, one could argue that because arousal interfered with their processing capacity, highly aroused participants engaged in peripheral processing of the ad and relied more heavily on the affective tone of the ad (cf. Sanbonmatsu & Kardes, 1988). Unlike in the ELM explanation of the valence effect, the peripheral cue would thus be the affective tone of the ad and not the valence of the affective state. Three arguments challenge

this interpretation. First, as discussed previously, the premise that high arousal interfered with participants’ processing capacity was apparently not supported in Study 2. Second, recent research (Pham, 1996) showed that even when arousal does interfere with their processing capacity, consumers do not process information more peripherally. Instead, they process the most diagnostic pieces of information in the message. Finally, an ELM explanation of the polarization effect would not explain why the effects of arousal were more pronounced on self-referential items than on object-referent items. Therefore, the polarization effects of arousal are probably best explained in terms of the excitation transfer and dynamic complexity mechanisms discussed previously.

### Another Look at the Affect-as-Information Hypothesis

Readers will recognize that our results are generally consistent with the affect-as-information hypothesis (Schwarz, 1990; Schwarz & Clore, 1983). The finding in Experiment 1, that the valence of participants’ mood colored their ad evaluations when the ad had an ambiguous-affective tone, is consistent with the “how-do-I-feel-about-it?” (HDIF) heuristic (Pham, 1998; Schwarz & Clore 1988)—that is, consistent with the idea that participants inspected their momentary feelings to make these evaluations and failed to realize that these feelings were also influenced by the musical mood induction. That valence did not have a similar effect when the ad had a clear affective tone highlights an important contingency of the HDIF heuristic. This heuristic is more likely to be relied on when the target is affectively ambiguous (e.g., Clore et al., 1994). Wyer et al. (1999) recently proposed a “race” model of judgment that is consistent with this contingency. In this model, multiple judgment procedures (e.g., bottom-up information integration, retrieval of a prior attitude, and HDIF heuristic) are invoked simultaneously. Whichever procedure produces a satisfactory output fastest, or more easily, “wins the race.” It is therefore possible that when the target contains clear affective cues, judgments can be reached faster and more easily based on these cues than based on a reflective inspection of one’s momentary feelings. As a result, contextual influences on these momentary feelings would have little influence on the judgments.

The findings in Experiment 2, that arousal polarized evaluations when the ad was affectively unambiguous, is also consistent with an affect-as-information process. To evaluate the ad, participants again may have inspected how they felt toward it. When the contextually induced arousal intensified their feelings, they concluded that they “felt strongly” about the ad and reported more extreme evaluations. Affect may therefore provide information not just in terms of the *direction* of preferences (liking vs. disliking), but also in terms of the *intensity* of these preferences. This proposition echoes research showing that affect conveys information beyond valence. For instance, affective states of

<sup>7</sup>Negative tone ads should be evaluated more favorably under a positive mood (contrast) than under a negative mood (assimilation). On the other hand, positive tone ads need not be evaluated more favorably under a positive mood (assimilation) than under a negative mood (contrast). If the contrast effect is strong compared to the assimilation effect, positive tone ads may be evaluated less favorably under a positive mood than under a negative mood.

the same valence (e.g., anxiety, anger, and sadness) may have distinct implications for judgment (e.g., Gallagher & Clore, 1985; Keltner, Ellsworth, & Edwards, 1993) and decision making (Lerner & Keltner, 2000; Raghunathan & Pham, 1999).

It is also instructive, from an affect-as-information perspective, that the polarization effect of arousal was significantly more pronounced for self-referential evaluations than for object-referent evaluations. This result substantiates the argument that certain types of evaluative judgments involve greater reliance on affective responses than other types of judgments (e.g., Schwarz, 1990; Wyer et al., 1999; Zanna & Rempel, 1988). Specifically, evaluations that implicate the self are more likely to involve the inspection of one's affective responses than evaluations that do not implicate the self (Wyer et al., 1999; for related findings, see Raghunathan & Pham, 1999). The result also supports the argument that people are very flexible in choosing to use or not use feelings depending on the relevance of these feelings to the judgment or decision to be made (Pham, 1998).

### Where Do We Go From Here?

Our approach for testing the excitation transfer hypothesis capitalized on the contrast between self-referential items and object-referent items. The former may facilitate misattribution by directing attention to internal feelings, whereas the latter may attenuate misattribution by directing attention to the target itself and away from one's feelings. This contrast may have broad applicability in misattribution research. In the classic misattribution paradigm (e.g., Manucia, Baumann, & Cialdini, 1984; Schachter & Singer, 1962; Zanna & Cooper, 1974), the effects are tested through the (often clever) manipulation of independent variables. Our strategy offers a possible twist: Rather than capitalizing on costly manipulations of independent variables, one could also infer misattribution through a careful selection of the dependent measures.

As mentioned previously, we suspect that the principles of contingent coloring and polarization effects of valence and arousal transcend advertising settings. There is no reason to believe that they would not apply to a broader range of targets. After all, mood states are pervasive, and many targets provide affective cues (e.g., an attractive person or a moving piece of art). At the very least, we hope that, within the advertising domain, our research will prompt a greater interest in the arousal component of mood effects. How arousal influences ad evaluation is not a trivial issue. Ads with humor, happy people, pleasant scenes of nature, and the like can all be seen, in the words of this study, as ads having a positive affective tone. They characterize much of the advertising we see, and it is this advertising that we believe is affected by people's feelings of arousal at the time of exposure.

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