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Data from two experiments suggest that the genders differ in how they make judgments. In comparison with men, women appeared to have a lower threshold for elaborating on message cues and thus made greater use of such cues in judging products. These differences were eliminated both when the message cues prompted so little attention that they were below men's and women's thresholds for message elaboration and when they prompted so much attention that both genders' thresholds were exceeded. The origins and implications of these differences are discussed.

# Gender Differences in the Use of Message Cues and Judgments

Gender commonly is used to segment the audience for persuasive appeals. This practice is consistent with the common observation that unique interests and knowledge associated with the genders' social roles guide males' and females' judgments. For example, it has been shown that the genders differ in the characteristics they consider important in evaluating products (Holbrook 1986; Painter and Granzin 1976) and that both genders are more easily persuaded when message content is relevant to the opposite gender's social role than to their own gender's role (Sistrunk and McDavid 1971).

Undoubtedly some of the gender effects reported in the literature reflect differences in males' and females' knowledge relevant to judgment. However, there is a growing recognition among gender researchers that some differences cannot be explained adequately in terms of unique knowledge but can be interpreted by hypothesizing that males and females differ in their information-processing strategies. For example, on the basis of their extensive review of the literature pertaining to the genders' responsiveness to various sensory modalities, McGuinness and Pribram (1979, p. 13) concluded that "females are more sensitive to all modalities at threshold, with the possible exception of smell." Moreover, McGuinness and Pribram suggested that these rather basic differences "may contribute to other more complex processes" (p. 5).

Several findings are consistent with this view. Wood (1966) and Nowaczyk (1982) observed that women responded to nonverbal stimuli by evoking more associative, imagery-laced interpretations and more elaborate descriptions than did their male counterparts. Krugman (1966) reported that women engaged in greater elaboration of ads than did men, regardless of whether the ads focused on content considered to be of more interest to men or to women. DePaulo and Rosenthal (1979) found greater stimulus elaboration among women than among men when subjects were given adequate time to process information. However, they also observed that this difference was eliminated when the time available for information processing was highly constrained.

The view emerging from such observations is that the genders differ in their thresholds for elaborative processing. In comparison with males, females seem to be more likely to elaborate on message cues that command a somewhat limited amount of attention. Hence, gender differences are expected to be manifested when message cues are sufficiently attention-getting that females' but not males' threshold for elaborative processing is exceeded. In contrast, no gender differences are anticipated when the message cues either command very little attention or processing is constrained by some other means so that attention to cues is below both genders' threshold for elaboration. Likewise, no differences are anticipated when the message cues are so extremely attention-getting or processing is otherwise so greatly enhanced that

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both genders' threshold for elaborative processing is exceeded.

Exploration of the idea that the genders differ in their elaboration thresholds is of interest to marketers for several reasons. Such investigation examines the proposition that gender segmentation may be useful even when males and females exhibit similar knowledge and interest in a message topic. If differences in the genders' thresholds are found, it would be informative to understand how various attention-getting properties of message content or structure can affect the genders' responses.

We investigate gender differences in elaboration thereshold in the context of product judgments. For this purpose, we exposed subjects to a message that they later were asked to recall and make judgments about. These two measures were selected because they are thought to be informative about different aspects of information processing. Recall is believed to prompt a detailed and thorough search of memory for a record of the message items that have been represented there (Mandler 1980; Seamon, Brody, and Kauff 1983). Hence, good recall of message cues would imply the representation or encoding of that information in memory.

Judgments are thought to involve a different process. Rather than stimulating a detailed search and consideration of specific message items represented in memory, judgments are believed often to be based on readily accessible information (Seamon, Brody, and Kauff 1983). The implications of message information drawn during comprehension generally are more accessible than the particular representations of individual message cues because such implications are the product of reflective and elaborative thought that occurs during comprehension (Carlston 1980; Ostrom et al. 1980). In turn, at judgment "the deeper processing associated with reflective thought might facilitate the retrieval of [these] prior inferences" (Carlston 1980, p. 99). This observation suggests that the implications of message cues will be highly accessible and used to make judgments only if the cues have been extensively elaborated upon; otherwise, more general impressions of the message information are likely to be used to render judgments (cf. Wright and Kriewall 1980).

The preceding analysis can be applied to explore the process that may underlie the anticipated gender differences in judgments. Suppose the genders have equivalent recall of message cues, but that in comparison with males, females are found to make greater use of those cues in rendering judgments. Such outcomes would suggest that both genders encode the message cues and are able to retrieve the cues when the demands of a recall task prompt a detailed memory search. However, when such demands are absent and instead a judgment is required, the genders' responses are likely to be based on those implications of the message information that are highly accessible in memory. If, in comparison with males, females elaborate more extensively on message cues as we hypothesize, it follows that the implications of those cues should be more accessible to females than they are to males and gender differences in judgments would be expected.

Two experiments were conducted to address these issues. Each study investigated how the attention level prompted by cues in a product description influenced males' and females' use of the cues at judgment and the genders' recall. In addition, both studies examined measures of product knowledge and interest to assess the role of those factors in accounting for the genders' responses. The second study extended the first by examining the generalizability of the effects in a different context and by including a cognitive response measure to assess further the genders' processing of message cues and judgments.

## *EXPERIMENT 1*

In this study we investigated the notion that the genders differ in the threshold at which they engage in elaborative processing of message information. Support for this idea would be found if (1) females exhibited greater elaborative processing when attention-getting properties of the message cues were sufficient to exceed only females' elaboration threshold and (2) there were no gender differences when the message cues prompted so little attention that they were below both males' and females' elaboration thresholds.

These predictions were tested in the context of a message that described a new television program. The program was identified as a new in-depth news show, and the description generally portrayed the program in a manner that rendered it highly congruent with current in-depth news shows. After exposure to the program description, subjects were asked to recall this information and to judge how similar the program was to two current shows.

Embedded in the description were two features of the program that were of particular interest. Depending on the treatment to which subjects were randomly assigned, these cues were either relatively low, moderate, or high in incongruity in relation to the in-depth news show theme. The choice of this manipulation was based on Wright's (1979, p. 257) observation that "it is likely that people must be nudged" into engaging in elaborative processing, and on research suggesting that increasing levels of cue incongruity prompt greater attention and elaborative processing (Hastie 1980; Houston, Childers, and Heckler 1987; Srull 1981). Hence, we reasoned that when these cues were relatively low in incongruity, they would not prompt sufficient attention for either gender to engage in extensive message cue elaboration. As a result, we did not expect gender differences in the use of the cues at judgment. At higher levels of cue incongruity, however, the attention-getting properties of message cues were likely to be strong enough to induce females to engage in more extensive message elaboration. Thus, gen-

der differences in the elaboration and use of these cues were anticipated.

*Pretesting of Message Materials*

To develop the message materials, we constructed several pretests. All pretest subjects came from the same pool as was used in the main study.

In the first pretest, program topics were identified that were consistent with those featured on in-depth news shows. *Nightline* with Ted Koppel, a seemingly prototypical member of the in-depth news show category, was used as an exemplar in identifying such issues. Topics thought to be representative of those often presented on in-depth news shows were generated by noting issues actually presented on *Nightline*. Twenty-one subjects then rated the congruity of those issues with *Nightline* on 11-point scales anchored by "extremely consistent" (0) and "extremely inconsistent" (10). From this pretest, six issues that were viewed as relatively consistent (i.e., received ratings that ranged from .62 to 1.67) were selected and used in the program description. Gender differences were absent in the ratings of these items ($p > .35$). In order of their presentation in the description, these issues were medical malpractice, United States presence in El Salvador, America's problem of drug infiltration, drug abuse, combating terrorism, and worldwide hunger.

Next, a pretest was conducted to identify issues that were incongruent with content typically featured on in-depth news shows such as *Nightline*. Several potentially incongruent issues were generated by noting the topics featured on shows that are more entertainment-oriented than *Nightline* (e.g., *Good Morning America*). These items were rated by 14 subjects on the same 11-point scales that were used in pretesting the congruent items. On the basis of the survey results, three pairs of items were identified that varied in their incongruity with the in-depth news show exemplar. The low incongruity items were "national weather forecasts" and "movie reviews" ($\bar{X}$ = 4.61), the moderate incongruity items were "healthful nutrition" and "organizing family finances" ($\bar{X}$ = 6.22), and the high incongruity items were "magic performances" and "poetry readings" ($\bar{X}$ = 8.15). An ANOVA performed on these data indicated that the main effect of incongruity was significant ($F_{1,12} = 9.64$, $p < .01$) and that no gender differences were present in the ratings of any of these items ($F$'s $< 1$).

Though the genders did not differ in their perceptions of the incongruity of the preceding incongruity items, it was possible that males' and females' perceptions of those items differed on other dimensions that might influence their judgments. To examine this possibility, 53 subjects were asked to indicate their opinions about a new television program that would include the pairs of items identified as low, moderate, and high in incongruity. Each of these items was evaluated on four 7-point scales: not interesting/interesting, not familiar/familiar, dislike/like, and not at all important/important. Means and standard deviations on these low, moderate, and high incongruity items are reported in Table 1. No significant gender differences were found on any items ($p$'s $> .11$).

To assess the extent to which subjects' judgments reflected a consideration of the message cues, we planned to ask subjects in the main study to judge the similarity between the stimulus program and some referent programs with which they were familiar. Hence, in pretests we sought to identify referent programs that differed in their similarity to the program described in the message as a basis for testing the generality of our findings. Among the programs tested were *Chicago Tonight*, a weeknight show focusing on serious news issues of local concern and having the same basic characteristics as *Nightline*. Also examined was *Good Morning America*, a weekday morning network program featuring considerable human interest and eclectic story coverage. On 11-point scales with anchors of "extremely similar" (0) and "extremely dissimilar" (10), 10 pretest subjects indicated that *Chicago Tonight* was similar to *Nightline* ($\bar{X}$ = 2.50) whereas *Good Morning America* was relatively dissimilar ($\bar{X}$ = 6.90). This difference was significant ($t_9 = -5.88$, $p < .001$), though the genders' ratings of these shows were not ($F < 1$).

One other pretest was conducted. Its goal was to assess whether the message cues found to be incongruent with serious news shows such as *Nightline* were perceived to be relatively consistent with the type of content featured on *Good Morning America*, the show identified as dissimilar to such serious news-oriented shows. The congruity of the incongruent issues with *Good Morning America* was assessed by 29 subjects on the same 11-point scales as were used in previous pretests. The low, moderate, and high incongruity items were perceived as increasingly congruent with *Good Morning America* ($F_{1,27}$

**Table 1**
**PRETEST RESULTS FOR INTEREST, FAMILIARITY, LIKING, AND IMPORTANCE OF INCONGRUENT CUES**

| | *Cue incongruity*[a] | | |
|---|---|---|---|
| *Dependent measure* | *Low* | *Moderate* | *High* |
| *Interest* | | | |
| Males | 3.70 (1.34) | 3.67 (1.32) | 1.80 (.98) |
| Females | 3.92 (1.47) | 4.17 (1.35) | 1.81 (.88) |
| Significance | $p > .59$ | $p > .21$ | $p > .98$ |
| *Familiarity* | | | |
| Males | 5.41 (1.28) | 3.04 (1.41) | 1.67 (.90) |
| Females | 5.72 (.96) | 2.75 (1.13) | 1.31 (.69) |
| Significance | $p > .37$ | $p > .45$ | $p > .14$ |
| *Liking* | | | |
| Males | 4.20 (1.35) | 4.24 (1.08) | 2.13 (.96) |
| Females | 4.78 (.93) | 4.67 (1.06) | 2.53 (1.40) |
| Significance | $p > .11$ | $p > .18$ | $p > .23$ |
| *Importance* | | | |
| Males | 3.40 (1.29) | 3.64 (1.55) | 1.47 (.64) |
| Females | 3.44 (1.36) | 3.64 (1.49) | 1.47 (.87) |
| Significance | $p > .91$ | $p > .99$ | $p > .99$ |

[a]Standard deviations reported in parentheses.

= 43.58, $p < .001$; $\bar{X}$'s = 7.44, 2.38, and 1.41, respectively). No gender differences were observed in these ratings ($p > .25$).

Thus, the pretests were useful in three ways. First, they provided an empirical basis for selecting the six issues that would prompt subjects to view the program as being generally consistent with *Nightline* but inconsistent with the three pairs of items that manipulated cue incongruity. The pretests also allowed selection of two referent programs, *Chicago Tonight* and *Good Morning America*, which were used to make similarity judgments. Finally, the pretests were useful in planning the data analysis. They showed that when examined in relation to both *Nightline* ($t_{13} = -4.14$, $p < .001$) and *Good Morning America* ($t_{28} = -6.38$, $p < .001$), the ratings for low incongruity items were significantly different from the combined average ratings for moderate and high incongruity items. This finding suggested that in analyzing the data, comparison of the low versus combined moderate and high cue incongruity conditions would be one meaningful contrast. To assess whether the latter two conditions were more or less equivalent, a second planned contrast would compare the moderate and high cue incongruity conditions.

### *Method*

*Subjects*. Sixty-one men and 60 women were recruited by a research firm to participate in a product evaluation study. Participants were screened to ensure that they watched 15 or more hours of television each week. Subjects participated in groups of five to 11 and received $5.00 as compensation.

*Stimulus and procedure*. Subjects were informed that the purpose of the study was to examine consumers' reactions to a pilot television program. They then read a message describing a proposed new half-hour in-depth news program to be aired after the evening news. The description of this program closely resembled in structure *Nightline* with Ted Koppel, a well-known exemplar of the in-depth news show category. Subjects learned that the half-hour in-depth news program would be aired in the evening, that it would be hosted by a well-known broadcaster and journalist who would moderate the discussion of various newsworthy topics, and that the program would present experts on featured issues.

Also included in the program description were eight topics or issues that were said to be scheduled for discussion on the show. Six were common to all descriptions and were the issues found in pretests to be congruent with the serious news issues often featured on in-depth news shows like *Nightline*. The remaining two issues were the ones that in pretests were found to be of either low, moderate, or high incongruity with such in-depth news shows. These issues were placed about midway in the list of congruent issues.

*Dependent measures*. After reading the program description, subjects answered a series of questions about their general television viewing habits, such as the number of hours they watched television during various dayparts, whether they owned a videocassette recorder, and whether they subscribed to pay or cable TV. These questions were included to limit short-term memory effects. Next, subjects were asked to recall as accurately and completely as possible all statements presented in the message. No time limit was imposed on subjects as they performed this recall task.

Subjects also were administered two critical judgment measures, which entailed assessing how similar the stimulus program was to two current shows. One similarity judgment measure requested a comparison of the program with *Chicago Tonight*, the show that generally features serious news story coverage such as that discussed on *Nightline*. To provide an internal conceptual replication, subjects also rendered similarity judgments for *Good Morning America*, which is much more entertainment oriented than *Nightline*.

All similarity judgments were assessed on 7-point scales with anchors of 1 as "very similar" and 7 as "not at all similar." To avoid confounding program similarity assessments with program familiarity, subjects who were unfamiliar with either of the referent shows were instructed to circle an 8 on the scales and were excluded from the analysis. Finally, subjects' familiarity with in-depth news shows such as the stimulus program was assessed by asking them how frequently they watched *Nightline*, the in-depth news show upon which the stimulus description was based.

### *Results*

*Confounding check*. If present, gender differences in familiarity with in-depth news shows of the sort portrayed by the program description (i.e., *Nightline*), rather than the processing of message cues, might account for differences in males' and females' judgments of the stimulus program. To assess this possibility, we examined the frequency with which subjects watched *Nightline*, the in-depth news program most like the stimulus program. Subjects watched the program frequently ($\bar{X}$ = 2.04 times per week, S.D. = 1.79) and both genders watched the program equally often ($p > .95$). Hence, gender differences in familiarity with in-depth news shows is not a likely explanation for treatment effects on the other dependent measures.

*Similarity judgments and recall*. First, similarity judgments for each of the two referent programs were analyzed for the full 2 (gender) by 3 (cue incongruity: low, moderate, and high) factorial design. These analyses revealed a significant interaction of gender and cue incongruity for *Chicago Tonight* ($F_{1,55} = 3.18$, $p < .05$) and for *Good Morning America* ($F_{1,101} = 3.99$, $p < .02$)[1]

[1]Because *Chicago Tonight* is a local program that airs on a non-network station, several subjects were unfamiliar with it and therefore did not make similarity judgments. This fact accounts for the difference in degrees of freedom between this analysis and the one for *Good Morning America*.

Further analysis explored the interaction for judgments of how similar the stimulus program was to the relatively serious referent news program, *Chicago Tonight*. As noted before, this analysis involved examining the contrast between the low incongruity condition and the average of the combined moderate and high incongruity conditions. It revealed a significant interaction of gender by low versus moderate/high cue incongruity contrast ($F_{1,55} = 4.78$, $p < .03$). No other effects were significant ($p$'s $> .15$), including those for the moderate versus high cue incongruity contrast.

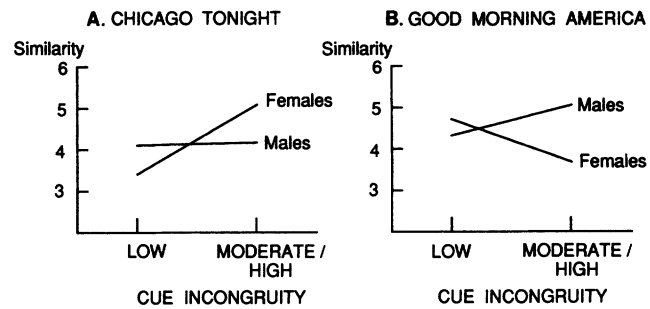
The data plotted in Figure 1A suggest that when the program description contained cues that were relatively high in incongruity with the *Nightline* prototype, the cues apparently attracted greater attention among women than men. As a result, women made greater use of the incongruent cues than did men and judged the stimulus program to be less similar to *Chicago Tonight* than did men ($F_{1,53} = 4.65$, $p < .04$). By contrast, when the cues were low in incongruity with the *Nightline* prototype, they apparently prompted little attention by either gender and thus the genders' judgments did not differ in the incongruity conditions ($p > .30$). In addition, women judged the stimulus program to be less similar to *Chicago Tonight* when the cues were moderate/high than when they were low in incongruity ($F_{1,53} = 6.86$, $p < .01$), but men's judgments were not affected by the level of cue incongruity ($F < 1$).

These findings suggest that in the moderate/high cue incongruity condition, women's judgments differed from those of men and from all judgments rendered in the other conditions because (1) the considerable incongruity between the critical moderate/high incongruity message cues and serious in-depth news shows such as the prototype *Nightline* prompted women to engage in heightened elaboration of the message cues (presumably because of women's lower elaboration threshold) and (2) these message cues led to women's perception that the stimulus program was very different from the serious news show *Chicago Tonight*. But what if subjects were asked to judge the similarity between the stimulus program and a show that, unlike *Chicago Tonight*, was *consistent* with these critical message cues? The process described previously suggests that in this case women in the moderate/high cue incongruity condition should judge the stimulus program as *more similar* to such a show than should subjects in all other conditions.

We tested this prediction by asking subjects to judge how similar the stimulus program was to *Good Morning America*. That program was chosen because as the critical message cues became increasingly incongruent with the *Nightline* prototype, they also became increasingly congruent with the entertainment-oriented *Good Morning America* show. Judgments of the similarity between the stimulus program and *Good Morning America* revealed a main effect of gender ($F_{1,101} = 5.29$, $p < .02$) that was qualified by a significant interaction of gender with low versus moderate/high cue incongruity contrast ($F_{1,101} = 7.18$, $p < .009$). No other effects were significant, including those involving the contrast between the moderate and high cue incongruity conditions ($p$'s $> .37$).

**Figure 1**

**PLOT OF THE INTERACTION OF GENDER AND CUE INCONGRUITY ON SIMILARITY JUDGMENTS**




The data, plotted in Figure 1B, indicate that women judged the stimulus program to be more similar to *Good Morning America* than did men when the cues were moderate/high in incongruity with the *Nightline* prototype ($F_{1,99} = 10.89$, $p < .001$), but the genders' similarity judgments were equivalent when the cues were low in incongruity ($F < 1$). In addition, women judged the stimulus program to be more similar to *Good Morning America* when the cues were moderate/high than when they were low in incongruity ($F_{1,99} = 4.39$, $p < .04$), but men's judgments were not influenced by the level of the incongruity of the cues ($p > .12$).

Finally, we examined overall recall of the stimulus message as well as recall of the two incongruent cues. Means and standard deviations for both recall measures categorized by the treatments are reported in Table 2. An ANOVA on the overall number of statements recalled revealed no significant treatment effects ($F$'s $< 1$). Similarly, treatment effects were absent on recall of the incongruent cues ($p$'s $> .16$). Thus subjects in all treatments had equivalent recall of the incongruent cues.[2]

### *Discussion*

The findings of experiment 1 appear to be consistent with the notion that the genders differ in their thresholds for elaborating on message cues. Viewed from this per-

[2]Our finding of no treatment effects on recall differs from a previous finding of gender differences in recall under low incongruity (Meyers-Levy 1988a). However, the latter finding occurred only under a condition that was not examined in the current research.

**Table 2**
**EXPERIMENT 1: MEANS AND STANDARD DEVIATIONS FOR OVERALL RECALL AND RECALL OF THE INCONGRUENT CUES CATEGORIZED BY TREATMENTS**

| | *Cue incongruity*[a] | | |
|---|---|---|---|
| | *Low* | *Moderate* | *High* |
| *Overall number of statements recalled* | | | |
| Men | 6.62 (2.29) | 6.81 (2.35) | 6.42 (2.49) |
| Women | 6.74 (2.16) | 6.05 (2.50) | 6.65 (2.48) |
| *Recall of the incongruent cues* | | | |
| Men | .52 (.60) | .29 (.46) | .31 (.50) |
| Women | .42 (.51) | .60 (.82) | .50 (.76) |

[a]Standard deviations reported in parentheses.

spective, the cues did not attract much attention from either gender when cue incongruity was low, and thus there was little elaboration of them or use of their implications in rendering similarity judgments. However, when cue incongruity was relatively high, these cues attracted the attention of women more than that of men. Apparently women elaborated more on the incongruent cues, which in turn rendered the cues' implications more accessible to women such that they were more likely to use them in making similarity judgments. Yet the observation that the two genders were equivalent in retrieving the cues when directly requested to do so by a recall task suggests that differences in whether cue encoding took place are not likely to be responsible for the observed effects.

This explanation for the gender effects observed in experiment 1 follows from the notion that elaboration enhances the accessiblity of concepts used in making judgments (cf. Petty and Cacioppo 1981) and provides a plausible account of the data. However, as one reviewer suggested, the data also can be interpreted in terms of Tversky's (1977) model of feature matching. According to that view, men and women may not differ in their thresholds for cue elaboration but instead may employ different aggregation rules in incorporating message information into judgments. For example, when aggregating the message information in experiment 1, women might have placed more weight on the more distinctive incongruent information than did men, and thus made greater use of the moderate/high incongruent cues.

This possibility was addressed in experiment 2. The likelihood of elaborating on particular message cues was varied as in the previous study, but without varying the content of message information subjects received in the treatments. Thus, even if men and women differed in how they aggregated the information used to make a judgment, both genders' judgments should be constant across treatments because in each treatment the same message information was presented. By contrast, if men and women differed in their elaboration thresholds, the difference should be manifested in their judgments.

To provide a detailed test of the latter view, two other procedural changes were made in experiment 2. First, because elaboration and accessiblity are central to our explanation, the dependent measures were expanded to include additional indicators of those constructs. Second, to assess the generality of the effects, a different subject pool was recruited and a persuasive message context was employed in which subjects rendered evaluative product judgments.

## *EXPERIMENT 2*

In experiment 2, we sought a way of presenting message cues that would manipulate cue elaboration without requiring variation in message content. The social cognition literature was helpful in that effort. Analyses conducted by Petty and Cacioppo (1981, p. 265) imply that attention to an argument is a prerequisite for elaboration, and research reported by Fiske and Taylor (1984, p. 186) suggests that attention can be varied to the extent that an argument stands out from its background.

These notions were applied in our study context. Subjects were exposed to a product description that contained a large number of product characteristics. Among the characteristics were two cues relevant to the product's taste that were relatively unfavorable. Though the message always contained the two taste cues, the cues were either presented contiguously or separated by other product characteristics. This manipulation of the positioning of the taste cues was intended to vary the amount of attention the cues were likely to attract and thereby the likelihood that the cues would be above individuals' thresholds for elaboration. Our reasoning was that the contiguous presentation of the taste cues would enhance the extent to which the cues stood out, attracted attention, and were elaborated.[3]

To explore the effect of this independent variable, a pretest was conducted. Twenty subjects were exposed to a version of the product message in which the taste cues were presented contiguously or separately and then the subjects recorded their thoughts about the message. The findings indicated that subjects generated a greater number of thoughts pertinent to the two taste cues when the cues were contiguous ($\bar{X} = 1.50$) than when they were separated ($\bar{X} = .60$) in the message ($F_{1,16} = 9.09$, $p < .01$). Moreover, this difference was significant for women ($F_{1,16} = 4.55$, $p < .05$) but not for men ($p > .11$), de-

[3]The expectation that the cues would induce greater elaboration in the contiguous condition was based on the fact that the cues pertained to a single attribute, taste. As a reviewer pointed out and as Meyers-Levy (1988a) observed, separation of cues can enhance their elaboration when the cues pertain to different attributes.

spite the absence of an overall interaction between gender and taste cue positioning ($F < 1$).

These findings were encouraging as they afforded empirical support for the view that presenting the two taste cues contiguously in the message would render those cues above only women's elaboration threshold. If this effect occurred in the contiguous condition, the implications of the taste cues might be relatively accessible for women's but not men's use at judgment. By contrast, separating the taste cues was likely to limit the attention that all subjects devoted to the cues, render the cues below both genders' thresholds for elaboration, and inhibit the accessibility of cue implications at judgment.

Three dependent measures assessed the effects of gender and cue positioning. First, subjects were asked to judge the taste of the product described in the message. Because the taste cues were relatively unfavorable, their use in making judgments would be manifested by relatively negative responses. Subjects also recorded their thoughts about the product. The number of taste-related thoughts generated by subjects was viewed as an indicator of the extent to which the taste cues had been elaborated (Greenwald 1968). In addition, to provide an indicator of the accessibility of the taste information, the serial position in which subjects generated their first taste-related thoughts was examined (cf. Srull 1981). Finally, subjects recalled the message. As in experiment 1, recall of the taste cues was interpreted as an indicator that those cues had been represented or encoded in memory.[4]

On the basis of the threshold hypothesis, several outcomes can be anticipated. When the taste cues are positioned at separate points in the message, they should attract minimal attention and hence may be below either gender's elaboration threshold. Gender differences therefore should be absent in subjects' taste judgments, the number of taste thoughts generated, and the serial position of taste-related inferences generated in thoughts.

A different outcome is anticipated when the taste cues are positioned contiguously in the message. Such positioning makes it more likely that the cues will be above women's but below men's elaboration threshold. In this case, women should evaluate the product's taste more unfavorably than do men, elaborate more extensively on the negative implications of the cues as indicated by the generation of a greater number of taste thoughts, and have more ready access to taste inferences as indicated by an earlier mention of taste-related thoughts.

Thus, the prediction is that gender differences in the elaboration, accessibility, and use of the taste cues should emerge when the cues are presented contiguously but not when they are presented separately. To the extent that these outcomes are attributable to variation in the genders' elaboration rather than their encoding of the taste cues, no gender differences in recall of the cues should be observed.

*Method*

Twenty-five male and 28 female students were recruited to participate in a product evaluation. Upon arrival, subjects were told that a manufacturer of health and beauty aids was considering the introduction of a new toothpaste and was interested in their opinion about it. Booklets containing a product description and opinion measures were distributed.

The selection of toothpaste as the focal product was based on the results of a pretest in which 52 students were asked to list all the characteristics they would consider in evaluating a toothpaste. Men and women generated about the same number of characteristics (4.19 and 4.48 attributes, respectively; $F < 1$), suggesting the absence of gender differences in knowledge about the product category. In addition, the genders expressed similar interest in the product when interest was assessed on a 7-point scale (men's $\bar{X} = 5.42$; women's $\bar{X} = 4.96$; $p > .29$).

The attributes generated in the pretest also were used to design the message, which presented the various features of the new toothpaste. To enable us to detect the cues subjects used in evaluating the product, we varied the favorableness of the product features. The toothpaste purportedly had some relatively positive product characteristics such as its bacteria-killing property and value in the prevention of gum disease, more neutral features such as its size and purchase location, and relatively negative characteristics such as leaving a film on the user's teeth and the color of the product. The favorableness of these features in relation to a toothpaste was determined empirically by means of an independent survey conducted among 37 students. No gender differences were observed in the survey findings ($F < 1$).

Among the product attributes were two critical negative cues pertaining to the product's taste. The product was described as having a caustic taste and a pungent aftertaste. The two negative taste cues were either positioned contiguously or separated by other product characteristics. In both cue positions the taste cues were preceded and followed by other product information. This positioning was intended to impede subjects from elaborating on the taste cues because of their primacy or recency in the message.

Several pretests were conducted to assess the meaning of the two critical taste cues to men and women. As part of the pretest discussed before, 52 subjects were asked to define the terms "caustic" and "pungent" (where incorrect responses were scored 1 and correct responses were scored 2). Subjects also indicated the importance of taste in their toothpaste preferences on a 7-point scale bounded by "extremely unimportant" (1) and "extremely important" (7). No gender differences were found on the definitional question (men's and women's mean

[4]The serial position analysis also was conducted for the recall measure and revealed no significant treatment effects ($F$'s $< 1.30$). Inspection of the recall data suggested that the reason may be that recall followed the order of stimulus information presentation.

responses for "caustic" were 1.86 and 1.78 and for "pungent" they were 1.87 and 1.85; $p$'s > .75). Gender differences also were absent for the importance question (men's $\bar{X}$ = 5.50; women's $\bar{X}$ = 5.85; $F < 1$).

A second pretest was conducted to assess the implications of a caustic and pungent taste for the genders. On 7-point scales, 53 subjects were asked to assess their liking, interest, likelihood of buying, and degree of negativity for a toothpaste that was caustic and pungent. No gender differences were found on any of these measures (liking: men's $\bar{X}$ = 1.70, women's $\bar{X}$ = 1.33; interest: men's $\bar{X}$ = 1.57, women's $\bar{X}$ = 1.36; intention to buy: men's $\bar{X}$ = 1.39, women's $\bar{X}$ = 1.33; negativity: men's $\bar{X}$ = 1.70, women's $\bar{X}$ = 1.67; $p$'s > .29).

In the main experiment, subjects' processing and use of this taste information was assessed by administering three measures. Subjects rendered a critical judgment about the product's taste on a 7-point bipolar-adjective scale. Then a cognitive response task was administered, which encouraged complete reporting of thoughts pertaining to the product. Focusing subjects on product-related thoughts rather than on a more general thought listing reduced the chance that subjects' thoughts about taste, which were of focal concern, would be swamped by thoughts that were not of theoretical interest. Finally, subjects were asked to record as much of the information presented in the message as they could recall.

### *Results*

*Judgments*. First, taste evaluations were subjected to a log transformation to adjust for a violation of the homogeneity of variance assumption. An ANOVA then was performed to assess the effects of the experimental treatments on taste judgments. This analysis revealed an effect of taste cue positioning ($F_{1,48}$ = 4.79, $p$ < .03) that was qualified by a significant gender by taste cue positioning interaction ($F_{1,48}$ = 8.41, $p$ < .006). As the treatment means in Table 3 suggest, women judged the product's taste less favorably than did men when the taste cues were presented contiguously ($F_{1,48}$ = 6.93, $p$ < .01), but the genders' judgments did not differ when the taste cues were separated ($F$ = 1.86). Further, women's judgments were less favorable when the taste cues were presented contiguously rather than separately ($F_{1,48}$ = 14.49, $p$ < .001), whereas men's judgments were unaffected by variation in taste cue positioning ($F < 1$).

*Thoughts and recall*. The total number of thoughts generated by subjects was classified into categories by two independent judges who were blind to treatments. The few discrepancies were resolved in a meeting between the judges. The category of primary interest was the total number of taste thoughts generated, which ranged in number from zero to four (e.g., "pungent aftertaste is not pleasurable"). Other categories of thoughts examined were the total number of thoughts of any type generated, thoughts about hygienic attributes (e.g., "good for preventing gum disease and bacteria"), and thoughts about the brand's cosmetic properties (e.g., "may do a good job in preventing staining of the teeth").

An ANOVA was performed on the number of thoughts pertaining to taste cues that were elicited during the cognitive response task. This analysis revealed a significant main effect due to gender ($F_{1,48}$ = 15.14, $p$ < .001)—women were more likely than men to elaborate on the

**Table 3**

**EXPERIMENT 2: JUDGMENTS, VARIANCE IN JUDGMENTS, THOUGHTS, AND RECALL MEASURES CATEGORIZED BY TREATMENT**

| | *Males* | | *Females* | |
|---|---|---|---|---|
| | *Contiguous cue presentation* | *Separate cue presentation* | *Contiguous cue presentation* | *Separate cue presentation* |
| *Judgment*[a] | .32[b] | .21 | .06 | .26 |
| *Variance in judgments* | .27 | .53 | .10 | .41 |
| *Thoughts* | | | | |
| Total | 5.27 (1.44)[c] | 5.56 (1.81) | 5.26 (1.66) | 4.50 (1.85) |
| Taste | .56 (.63) | .77 (.67) | 1.63 (.69) | .63 (.74) |
| Hygienic attributes | .89 (.96) | .78 (.97) | 1.05 (.89) | .13 (.35) |
| Cosmetic attributes | .25 (.45) | .00 (.00) | .26 (.44) | .38 (.52) |
| Serial position of first taste thought | 3.75 (2.17) | 3.11 (1.36) | 2.60 (1.54) | 4.00 (2.00) |
| *Recall* | | | | |
| Total | 6.75 (1.18) | 6.89 (1.69) | 6.20 (1.64) | 6.25 (1.39) |
| Taste | 1.50 (.52) | 1.44 (.73) | 1.50 (.69) | 1.38 (.74) |
| Hygienic attributes | 1.63 (.72) | 1.44 (.73) | 1.55 (.60) | 1.88 (.64) |
| Cosmetic attributes | .31 (.48) | .67 (.50) | .37 (.49) | .25 (.46) |

[a]Treatment means for judgments are reported on the transformed data.
[b]Lower numbers indicate less favorable evaluations.
[c]Standard deviations are in parentheses.

taste cues. The effect of taste cue positioning was also significant ($F_{1,48} = 4.17, p < .05$). This outcome serves as a manipulation check, confirming that in comparison with the separate cue positioning condition, contiguous cue positioning enhanced elaboration of the taste cues. More important, however, both main effects were qualified by a significant gender by cue positioning interaction ($F_{1,48} = 10.31, p < .002$). Treatment means are reported in Table 3.

Followup tests on this interaction indicated that women produced more thoughts that pertained to taste than did men when the taste cues were presented contiguously ($F_{1,48} = 24.08, p < .001$), but the genders elicited equal numbers of such thoughts when the cues were presented separately ($F < 1$). Further, women produced more thoughts pertaining to taste when the taste cues were contiguous than when they were separate ($F_{1,48} = 13.84$, $p < .001$), but the number of men's thoughts pertaining to the taste cues was constant, regardless of the positioning of these cues ($F < 1$).

Treatment effects on the other categories of thoughts also were assessed by using ANOVA. Treatment means are reported in Table 3. Analyses of the overall number of thoughts and thoughts about the hygienic and the cosmetic characteristics of the prodouct revealed no significant effects ($p$'s $> .12$).

Next, subjects' access to taste inferences was investigated by examining the serial position in which subjects generated their first taste thought. We reasoned that the greater subjects' accessibility to taste information, the earlier taste thoughts would be represented in their list of thoughts.[5] An ANOVA on this measure indicated the presence of a gender by cue positioning interaction ($F_{1,48} = 3.68, p < .06$). No other effects approached significance. Treatment means are provided in Table 3.

Examination of this interaction revealed that women made their initial mention of the product's taste earlier in their thoughts than did men when the taste cues were presented contiguously in the message ($F_{1,48} = 3.81, p < .05$), but the serial positions in which men and women listed their first taste thought were similar when the taste cues were presented separately in the message ($F < 1$). In addition, women's first mention of a taste thought occurred earlier in their thought-listings when the taste cues were presented contiguously rather than separately ($F_{1,48} = 4.38, p < .04$), whereas for men the serial position at which the first taste thought occurred was not affected by the taste cue positioning ($F = 1.10$).

Finally, subjects' recall of the product message was analyzed by using the same categories as were employed for thoughts. An ANOVA indicated that the treatments did not have a significant effect on the recall of the two taste characteristics ($F$'s $< 1$). As Table 3 shows, both men and women had good recall of the taste attributes presented in the message. Total recall of message material as well as recall of hygienic and cosmetic characteristics also was unaffected by the treatments ($p$'s $> .11$).

### *Discussion*

The findings of this study seem to cast doubt on the plausibility of several explanations for gender differences in processing and judgments. The treatment effects on judgments of the product's taste appear unlikely to be attributable to differences in the genders' knowledge of, preferences for, or interest in the message information or product. The feasibility of such differences accounting for the findings is discredited because the same message information was presented in all treatments.

This equivalence of message information across treatments also suggests that differences in the genders' aggregation or weighting of the manipulated cues do not explain the observed gender differences. Thus, though Tversky's (1977) model of feature matching can account for many phenomena, it does not offer a plausible explanation for the gender differences reported here.

It also seems unlikely that differences in the genders' encoding of the message cues account for the findings, as no differences are found in recall of taste-relevant or any other message cues. Though the absence of such gender differences could be due to range restrictions, the observation that gender differences in judgments occurred regardless of whether recall was relatively poor (experiment 1) or relatively good (experiment 2) seems to testify to the robustness of the threshold hypothesis.[6]

Another issue that can be raised about our findings is whether the sequence in which judgments, cognitive responses, and recall measures were administered in the study produced reactivity among measures that in turn explain the data. This possibility seems to conflict with the observation of a null effect on recall whether recall was the last measure administered (experiment 2) or the first (experiment 1). This convergence in outcomes re-

[5]For subjects who failed to list any taste thoughts, this serial position variable was coded as one unit greater than the total number of thoughts those subjects generated. We thus avoided having to exclude these subjects from the analysis. Note that the effect of this coding scheme should be to make the test of treatment differences in access to taste information more stringent, as it credits even subjects who failed to mention taste-related thoughts with some access to the taste information.

[6]Mandler's theory (1982; examined recently by Meyers-Levy and Tybout 1989) about the relationship between a product's incongruity and affect is not testable in experiments 1 and 2. The theory suggests that, other things being equal, stimuli having moderate levels of incongruity should be preferred over ones that represent congruity or extreme incongruity. Because the similarity measures in experiment 1 do not assess preferences or affective responses, we do not know whether Mandler's predictions are supported. Experiment 2 also does not allow a reasonable application of the theory, even though the taste cues might be regarded as incongruent. The reason is that, as Mandler cautions, the extreme negative affect associated with those cues would be expected to overwhelm the subtle effects Mandler outlines.

gardless of the ordering in which measures were presented implies that reactivity among measures is unlikely to be an explanation for the findings. Further, because in experiment 2 the critical judgment measure was administered first, reactivity caused by other dependent measures could not explain the treatment effects observed on judgments.

A more plausible account for the findings of experiment 2 is offered by postulating that cue positioning and gender affected the extent to which taste information was elaborated in memory and thus implications of the information were accessible for judgments. When the taste cues were positioned separately in the message, they did not appear to prompt enough attention to be above the elaboration threshold of either gender. As a result, both genders generated relatively few thoughts related to the negative taste of the product and both genders judged the product relatively favorably. By contrast, the contiguous cue positioning apparently was sufficiently attention-getting to render the cues above women's but not men's threshold of elaboration. Women elaborated on the taste cues more than did men, and accordingly taste inferences were more readily accessible to women. Thus, women judged the product's taste more unfavorably than did men.

Though the data are consistent with this threshold hypothesis, an important deduction from the hypothesis has not been tested. This deduction holds that when both genders attend to and elaborate on message information, it should have a similar impact on men's and women's judgments. This issue was examined in a followup to experiment 2.

Twenty men and women received the same message as the one employed in experiment 2. However, the two taste cues were presented contiguously at the beginning of the message (in statements 2 and 3 as opposed to later in the message). This procedure was motivated by the finding that information presented early in a message often stimulates greater processing and tends to have greater impact on peoples' evaluative judgments than information presented later (Lichtenstein and Srull 1987). Hence, we anticipated that the contiguous presentation of the taste cues early in the message would render those cues above both genders' threshold for message elaboration. As a result, men and women would make equal use of the taste cues in rendering judgments. Consistent with this expectation, men ($\bar{X} = 1.71$) and women ($\bar{X} = 2.33$) judged the taste of the toothpaste very negatively and we found no gender differences in judgments ($p > .20$).

These findings extend those observed in experiments 1 and 2. Specifically, they provide additional evidence for the view that gender differences in the use of message cues are likely to occur only when the attention level they prompt is above women's but below men's elaboration threshold. Moreover, the observation that under certain conditions men make the same use of message cues as do women suggests that the genders are likely to have equal ability to engage in cue elaboration.

## *GENERAL DISCUSSION*

Our findings suggest that in comparison with men, women often have a lower threshold for elaborating on message cues, and hence at times may have greater access to the implications of those cues at judgment. Support for this view is suggested by our observation that when manipulations enhanced the likelihood of the cues being elaborated upon, women's judgments reflected greater consideration of the message cues than did those of men. Moreover, under these same conditions women evoked a greater number of thoughts about the judgment-relevant cues and more readily accessed such thoughts than did men (experiment 2), suggesting that these cues were above women's but not men's threshold of elaboration. However, when manipulations prompted attention to the message cues that was either above or below both genders' threshold for elaboration, no differences in judgments were found.

The findings also suggest that two factors or types of task demands influence whether gender differences will be manifested in the consideration or use of particular message cues. Message characteristics (e.g., cue incongruity) that can vary the degree of attention they prompt for message cue elaboration during comprehension represent one type of task demand. Depending on the degree of elaboration message characteristics provoke, message cues may be more or less accessible when one responds to a query. In addition, the particular response requested of an individual (e.g., recall, similarity judgments, recognition) is a second type of task demand that in part determines whether gender differences will emerge. Different response queries can influence the degree to which a person is prompted or effectively required to access specific message cues.

Anticipating when gender differences in the use of message cues will occur requires consideration of the task demands imposed both at comprehension and at response. In general, gender differences seem most likely to emerge when the average of the task demands is moderate. For example, consider experiment 1, in which gender differences in similarity judgments were observed in the moderate/high cue incongruity condition but not the low cue incongruity condition. Presumably this difference occurred because determining similarity judgments imposes low task demands on subjects, providing little impetus to access specific message information from memory (i.e., similarity judgments can be determined much more simply by making holistic assessments of comparability). Hence, only when cue incongruity was moderate/high and thus the accessibility of the message information was relatively high (high task demands) were gender differences observed because on average, the relevant task demands were moderate (low plus high task demands yield a moderate average).

We suspect that had a different response task been requested, one that imposed somewhat greater impetus to access specific message information, gender differences

might have emerged alternatively in the low incongruity cue condition. For example, a request to perform a recognition task might produce this outcome. The reason is that unlike a similarity judgment task, a recognition task gives subjects recognition probes, which are likely to enhance subjects' motivation to access specific message information represented in memory and match it with the probes. Hence, recognition appears to impose task demands that are somewhat greater than moderate. Therefore when cue incongruity is low such that the accessibility of message information is limited, gender differences in recognition performance are likely to emerge because the average of the relevant task demands should be moderate (above moderate plus low task demands yield a moderate average).

The notion that women, in comparison with men, have a lower threshold for elaborating on message cues and using those cues in judgments raises the question of the origin of the difference. Our research does not resolve this issue, but we can speculate about the ontogeny of such gender differences by drawing upon investigations reported in literature.

A view advanced in a variety of literatures is that males and females differ in their psychological orientation along the dimensions of agency and communion (Bakan 1966; Meyers-Levy 1988b). Agency is thought to be the orientation assumed by males. It denotes a rather single, self-focused perspective that is marked by self-assertive and achievement-oriented concerns. Communion, which characterizes females' orientation, is denoted by a concern with a broader array of phenomena that pertain both to self and to others. Hence, communion tends to be marked by an emphasis on affiliation with disparate parties and attachment of self and other. These distinctions in gender social roles are supported by an impressive array of investigations that examine children's behavior (e.g., Frankel and Rollins 1983) and adults' styles of interaction (e.g., Gleason and Greif 1983), written expression (e.g., Smith 1980), and use of linguistic forms (e.g., Bolinger and Sears 1981).

If we assume that the genders have these distinct psychological orientations, the question is how these differences are related to the threshold differences we have observed. Theorizing by Hall (1984) offers some insight into this question. She suggests that females' adherence to a communal role emphasizing a concern with self and other may develop because females traditionally have assumed a submissive and subordinate role in our culture in relation to the more dominant agentic role assumed by males. Further, Hall asserts that it is because females occupy this relatively submissive role that they have "heightened needs and therefore motives to understand subtle interpersonal cues" (p. 14). Females have reason to be attentive to any number of factors that might affect themselves directly or indirectly via their dependence on others around them. Thus, the assumption of a submissive role that prompts females' communion may also underlie their lower threshold for elaborating on a variety of often subtle cues in the environment.

The view that the genders differ in elaboration threshold is congenial with the findings of several investigations. Specifically, females have been found to show greater sensitivity to a variety of situation-specific cues in determining their self-evaluations (Lenney, Gold, and Browning 1983), use more elaborate descriptive terms (Nowaczyk 1982), and produce more associative, imagery-laced interpretations than do males (Wood 1966).

Perhaps the most provocative evidence documenting gender differences in thresholds is offered by Biggs (as reported by McGuinness and Pribram 1979). Males and females were exposed to words at a rate too fast to allow conscious word identification and then were asked to render judgments about the words (e.g., the words' meaning, number of syllables, evaluative connotation, etc.). Females were found to be more accurate than males in making these judgments, even though the rate at which words were presented (to make word identification impossible) did not differ for males and females.

The implication of this analysis is that gender differences in processing and judgments reflect unique motivations that evolve during socialization. Females' lower threshold for elaboration that is observed in our research may be but another manifestation of females' general manner of processing information, which evolved as a result of their assignment to a relatively subordinate societal role and their corresponding adoption of a communal orientation. Likewise, males' general manner of processing, which involves limited elaboration of relatively understated cues, may stem from the dominant role males tend to occupy and the more self-focused agentic orientation they have come to adopt because of their dominance.

Our research and discussion of the origins of gender differences suggest avenues of future research. It would be useful to explore implications that follow from the suggested origins of gender differences in thresholds for elaboration. For example, if these gender differences are tied to males' dominant and females' subordinate societal roles, one implication is that females' lower threshold for elaboration may be confined to patriarchal societies.

Research also might focus attention on the origins issue more directly. An important question along these lines is whether gender differences in processing and judgments are learned as a function of one's sex role and role within society (cf. Hall 1984) or whether more fundamental factors account for these differences as work related to males' and females' sensory responding seems to suggest (cf. McGuinness and Pribram 1979). Investigating whether young children produce responses similar to those of their adult counterparts would be informative in addressing this question.

Whether future research explores the origins of gender differences or the implications of those origins, several procedures warrant particular examination. Following

Wright's (1981, p. 279) observation that "most media ads do little more than cite the attributes of the touted product," we have assumed that detailed descriptions of offerings represent persuasive messages. Nonetheless, it would be useful to examine messages in which a strong advocacy is presented. Also of value would be assessments of the current account of gender differences in which variables such as the time available for stimulus processing, as well as subjects' reaction times in generating judgments, are examined. Finally, it would be instructive to assess the moderating role of individual differences such as need for cognition on the judgments rendered by the genders.

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