Absence Makes The Mind Grow Sharper: Element Omission and Product Recall

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ABSTRACT

Advertisers often deliberately leave out crucial elements from an ad. While prior research has explored various attitudinal consequences of such omission, our research investigates the memorial consequences of element omission. We focus specifically on the recall effects resulting from a previously unstudied form of element omission – leaving out an entire visual element from the ad. Research on self-generation as well as on message elaboration indicates that such element omission may actually lead to an improvement along specific dimensions such as category recall and brand recall. We find strong support for this perspective in a series of three experiments which explore the effects of feature omission both in the context of perception-based omission (wherein the omission is noticed purely on the basis of a perceptual process) and knowledge-based omission (wherein the omission is noticed due to prior expectations for that ad type). Our pattern of findings favor a self-generation process (vs. a process centered on overall ad elaboration) as being the likely driving mechanism for the recall advantages resulting from element omission.
Recent research on advertising effects has documented that the deliberate omission of ad elements can enhance the effectiveness of the ad. For instance, researchers have found that omitting explicit conclusions from an ad (e.g., open-ended advertising) can produce more positive as well as more accessible brand attitudes (Kardes 1988; Stayman and Kardes 1992; Sawyer and Howard 1991). Similarly, research on object-cropping has shown that cutting off a significant portion of a visual outline can lead to more positive brand attitudes (Peracchio and Meyers-Levy 1994). However, while investigations in this area have proven to be very informative regarding the persuasion-related outcomes arising from deliberate omission, the memorial consequences of element omission (e.g., product category recall, brand recall, etc.) have yet to be explored in the consumer literature.

One particularly interesting form of omission consists of entirely leaving out a key visual element from the ad. Advertisers may do this in two broadly disparate ways. In the first case, a perceptual technique can be used within the advertisement to highlight the omission – e.g., the missing element may be explicitly outlined in the ad. For instance, the central feature of a recent advertisement for Olympus cameras depicts the outline of a strap hanging around a man's neck, at the end of which is the outline of a camera on his chest. While most viewers would be likely to realize that the outline actually highlights a camera, this crucial product-relevant element was deliberately omitted by the advertiser. In this case, the realization that a visual piece is missing is based on a perceptual process – accordingly, we label this type of omission "perception-based omission."

In another type of visual element omission, the absence of the element may not be highlighted by the advertiser. However, prior expectations may lead viewers to perceive an omission. For highly advertised products, consumers often have a well-formed ad schema (Goodstein 1993; Goodstein, Moore, and Cours 1992), including a knowledge of the important ad elements that they typically expect to see in an ad campaign for a particular brand (e.g., consumers would usually expect to see a cowboy in an ad for Marlboro cigarettes). If one of these elements is left out, consumers are likely to notice such an omission. We label this type of omission "knowledge-based omission."

Although the two cases above differ in several respects, they share an important similarity – in both cases, the advertiser entirely omits an important element from the ad. Thus far, consumer researchers have not examined the effects of such element omission on later recall. Drawing on earlier
findings in consumer research and cognitive psychology, we suggest that the absence of a prominent product-relevant element can actually lead to increased recall. This proposition is tested first in the context of perception-based omission, and subsequently, for knowledge-based omission as well. Further, while the major goal of this paper is to delineate the recall-related consequences of element omission, we also seek to provide insights into the mechanism underlying our results.

THEORETICAL BACKGROUND

Why would advertisers deliberately omit a product element from their ads? From the point of view of increasing product recall, the presence of the product-relevant element (as compared to its absence) should increase the number of product related links resulting from ad processing. The greater the number of product-related links in the associative network of memory (Anderson 1990), the higher should be the probability of later product recall (Haugtvedt et al. 1994). Thus, omitting a product-relevant element would seem to be counterproductive in the sense of lowering product recall. However, two separate streams of research, reviewed below, suggest that the absence of a product-relevant ad element might actually serve to increase recall. The discussion that follows relates primarily to the case of perception-based omission. Later, we extend these arguments to knowledge-based omission as well.

Self-generation and Recall

Research on the self-generation effect in cognitive psychology provides the primary rationale for the prediction that enhanced recall might be produced by the omission of a product-relevant part of an ad. The self-generation effect suggests that items which are generated by participants themselves are retained better than items which are externally provided. This effect is posited to occur because the act of retrieving an item from semantic memory (as opposed to simply being exposed to the item) leads to greater activation of associated traces. In turn, this yields a greater number of retrieval routes for generated items, producing better retention. Abundant evidence has been obtained for the self-generation effect on several different memory tasks including cued recall, free recall and recognition (Gardiner 1988; Jacoby 1983; McElroy and Slamecka 1982; Payne, Neely, and Burns 1986; Slamecka and Graf 1978). The generation effect has been used to explain improved memory performance for
perceptually incomplete items (such as word fragments and picture fragments) as compared to perceptually complete items. For example, Gardiner (1988) asked participants to generate a target word based on the word fragment and a semantic clue to the meaning of the word (e.g., “ASSA---N; paired with “Political killer”). Participants in this “generate” condition performed better on a subsequent recognition test of target words than participants who were asked to read the complete version of the target word (along with the cue) at exposure. Similar effects have been found in the context of picture generation for participants asked to identify objects based on fragmented pictures rather than complete ones (Snodgrass and Kinjo 1998; Experiment 4).

The self-generation effect has straightforward implications for the memory consequences of perception-based omission. When the absence of a visual element is highlighted (e.g., by outlining the element), consumers may generate the element themselves, even without external prompting. Prior advertising research is supportive of the idea that viewers are capable of spontaneously generating missing ad elements. Research on open-ended advertising (in which an explicit ad conclusion is deliberately omitted; Stayman and Kardes 1992) and object-cropping (i.e., cutting off a significant portion of the outline of a visual element; Peracchio and Meyers-Levy 1994) both base their persuasion findings on the implicit assumption that consumers can spontaneously generate the missing element in the ad. Specifically, the attitude improvement for open-ended ads is assumed to be a function of the greater credibility of self-generated arguments (vs. externally provided ones); while in the case of object-cropping, the attitude advantage is held to be a result of the positive affect produced by a process of closure and ambiguity resolution.

Object cropping and conclusion omission both differ from the type of perception-based omission being considered here, in which the ad is actually complete except that the omission of an entire visual element is highlighted by providing the outline of the element. In object cropping, the outline itself is incomplete; whereas in conclusion omission, a text conclusion (rather than a visual element) is omitted. A more important difference is that research in these areas has focused on persuasion-related outcomes, rather than the memory outcomes that are central to our investigation. However, these research streams are particularly relevant to the current exploration in proposing the idea that omitting an ad element can lead to unprompted self-generation of that element.
In the current context, this argument suggests that highlighting the absence of an ad element (e.g., by outlining a visual element instead of actually presenting it) can cause viewers to think of it themselves. Such self-generation should result in greater activation of that element (e.g., the camera in the Olympus ad discussed in the introduction) than would have been obtained had the outline been filled in the first place, and the ad, therefore, been more perceptually complete. If, further, the missing element is conceptually associated with either the product category or a particular brand, category/brand recall should then be improved.

**Unexpectedness, Ad Elaboration and Recall**

The literature on self-generation is not the only one which suggests that enhanced recall might be produced by the omission of a crucial ad element. Another stream of research uses principles of effortful elaboration to provide a broad-based explanation for the improved recall that can be obtained by the various creative techniques that advertisers use in order to break through clutter. In print ads, these techniques often rely on presenting a novel or unexpected element in the pictorial component of the ad (as in our example of perception based omission). Research has shown that pictures that are in some way deviant from expectations can lead to improved ad recall. For instance, Heckler and Childers (1992) found that the presence of an unexpected pictorial element (e.g., an elephant sitting with its legs stretched out, in an airline ad emphasizing seating comfort) led to greater overall ad recall than an equivalent ad featuring an expected element (the same ad, with the elephant replaced by a person).

Drawing on research in social cognition (Hastie 1980; Hastie and Kumar 1979; Srull 1981; Srull and Wyer 1989; Stangor and McMillan 1992), consumer researchers (e.g., Heckler and Childers 1992; Houston, Heckler and Childers 1987) have provided a rationale for the improved ad recall that is obtained because of unexpected/novel elements in an ad. This explanation is based on the proposition that unexpected information leads to greater overall processing of the ad, in an attempt to make sense of the entire set of information. In turn, such elaborative processing creates more links and strengthens existing links in the associative memory network, thus resulting in improved recall for the entire set of ad elements. For ease of exposition, this paper uses the phrase “ad elaboration” to refer to this general mechanism for the enhanced ad recall produced by an unexpected item in the ad.
Heckler and Childers (1992) drew on the above mechanism to explain the improvement in overall recall that was obtained when the ad featured an unexpected pictorial element (e.g., an elephant) rather than an expected pictorial element (a person). The former condition led to greater effortful elaboration, producing an improvement in overall ad recall. Similarly, for the case of perception-based omission discussed here, it might be expected that greater ad elaboration (and thus, improved overall recall) would be obtained for an ad in which a crucial element is merely outlined rather than being actually provided in toto.

Research relating to unexpectedness effects as well as self-generation effects both thus lead to the counterintuitive proposition that the noticeable absence of a product-relevant element can actually lead to better recall. While our major goal in this paper was to obtain evidence of such recall improvement, we also sought to explore which of these two mechanisms was more likely to be operative in the particular contexts under study. This exploration was based on the premise that these two mechanisms, although they both predict improved recall, also differ along some important dimensions. While self-generation is a relatively effortless process (Gardiner 1988; Nairne 1988) which primarily involves the processing of only the particular item/concept that is generated (Slamecka and Graf 1978), message elaboration involves an effortful processing of other elements as well, in an attempt to integrate the unexpected item with contextual elements (Hastie and Kumar 1979; Heckler and Childers 1992; Houston et al. 1987; Srull 1981). Accordingly, the latter process is more likely to be subject to resource constraints than the former. Relatedly, while self-generation typically results in very specific memory improvement for only the generated item (and not the surrounding context; Slamecka and Graf 1978), message elaboration has been found to produce improved memory for contextual features as well as the unexpected item itself (Heckler and Childers 1992; Houston et al. 1987).

These differences allow us to infer the underlying process from the particular pattern of recall outcomes obtained across experimental conditions. In the current research, such outcome-based evidence was preferred to direct process measures, primarily because of the difficulties surrounding the measurement of unprompted self-generation. In psychological research, to ensure that participants are in fact self-generating the correct response during the exposure phase, they are explicitly asked to
generate items in response to a cue (e.g., Jacoby 1983; McElroy and Slamecka 1982; Slamecka and Graf 1978; Snodgrass and Feenan 1990). However, in the advertising context of interest to us, we did not want to employ such an intrusive procedure because of its lack of ecological validity. We felt that any improved recall obtained by asking participants to explicitly engage in a generation task was unlikely to be representative of the results that would be obtained from exposure to the ad in a natural setting (see Kardes 1988 for a similar argument in the context of conclusion-omission). Hence, it was considered more appropriate to simply let participants view the ads and investigate whether the obtained pattern of recall outcomes was more reflective of self-generation or ad elaboration.

In Experiment 1, we first provide a simple outcome test of our basic proposition – namely, that feature omission can lead to better recall – in the context of perception-based omission. Experiment 2 then provides further insights into the process underlying this finding; while Experiment 3 extends our arguments to the case of knowledge-based omission.

EXPERIMENT 1

Overview

Experiment 1 tested the proposition that the perception-based omission of a product-related element would actually lead to improved ad recall as compared to a condition where the element was present in the ad. Seventy-five undergraduate participants at a major Hong Kong University participated in this experiment in return for a chance to take part in a cash lottery worth approximately 25 US dollars. Participants were exposed either to a “perceptually complete” (element-present) version of a test ad for Olympus cameras, or a “perceptually incomplete” (element-absent) version of this ad, in the context of several filler ads. Two days later, participants responded to a questionnaire booklet containing a set of dependent variables, including the critical recall measure. Delayed recall measures were used because the effectiveness of an advertisement is often best captured by its influence over time (Haugtvedt et al. 1994). However, as discussed later, the use of a delay also limited the extent to which our process measures reliably reflected the amount of ad elaboration at exposure.
Test Ad

An ad for Olympus cameras was used as the test ad. The ad featured a man’s bare-chested upper torso. In the incomplete version of the ad, the outline of a camera strap and camera was displayed on the man’s chest. The bottom portion of the ad contained the following items: a) a slogan “The official cameras of summer; b) pictures of four small cameras; c) general text relating to product attributes (e.g., “extremely easy to use”; etc.) and d) the brand name in bold white lettering.

To create the element-present (“complete”) version of the ad, the outline of the strap and the camera on the man’s chest was professionally filled in with one of the cameras featured in the lower portion of the ad using Photo Shop software. Thus, the incomplete version of the ad featured an overt omission of a product-relevant element (i.e., the camera on the man’s chest); whereas the complete version of the ad actually contained the camera.

A pretest was carried out to check that the outline of the camera in the foreground of the ad in the element-absent (incomplete) condition was prominent and therefore noticeable. Further, as described below, this pretest also sought to test that attention to this feature was not significantly greater than attention paid to the actual camera on the man’s chest in the element-present condition. If such an attention difference were detected, any advantages in recall (especially product category recall) for the incomplete condition might simply be attributed to the greater attention paid to the product-relevant element in this condition.

35 participants took part in a memory test featuring either the perceptually incomplete element-absent ad or the perceptually complete element-present ad. In each case, the ad was exposed on an overhead projector (OHP) very briefly (for a period of 4 seconds). Following ad exposure, participants first completed an open-ended recall task in which they were asked to list all the separate elements they recalled seeing in the ad. An independent assistant coded the responses to check for mentions of the camera outline (incomplete condition) or the camera on the man’s chest (complete condition). After the recall measure, pretest participants completed a recognition task in which they were given a list of 6 items, and asked to indicate (via True/False questions) whether each of these items had been present in the ad. Among the recognition items listed for the two conditions, of
particular interest to us was the second item, which read: “outline of camera on man’s chest” (incomplete condition), vs. “camera on man’s chest” (complete condition).

Analyses showed that attention to the camera outline was not significantly greater than attention to the actual camera in the complete condition – indeed, the pattern of recall (incomplete = 63.16%, complete = 81.25%; $X^2 (1) = 1.39, p > .23$) and recognition scores (incomplete = 73.68%, complete = 87.5%; $X^2 (1) = 1.03, p > .30$) suggested the reverse, though these differences were not significant. Thus, any advantages for product category recall that may be obtained for the element-absent ad in the main study are presumably not susceptible to a simple attention-based explanation.

Importantly, the pretest above also revealed that a large proportion of participants in the incomplete condition did successfully recall (63.16%) and recognize (73.68%) the camera outline, thus suggesting that this feature was quite prominent, as was desired. However, did attention to this outline also cause participants to think of a camera? Another pretest was carried out as a check for this generative process. Twenty-eight participants were shown the “incomplete” camera ad (depicting the outline) on an OHP. The experimenter (an assistant unconnected with the research) then pointed to the outline and asked “What is the first thing that comes to mind when you see this? Please write down your answer in the space provided.” Twenty-one participants (75%) wrote down “camera” as their first reaction, lending support to the idea that viewing the outline would indeed lead participants to think of the product category.

Main Study Procedure

The experiment was conducted in a classroom setting, towards the end of a lecture session. The two experimental conditions (“element-absent/incomplete” vs. “element-present/complete”) were run in separate sections of the same course, on the same day. In each case, the experimenter (who was blind to the experimental hypotheses) went into the classroom and asked for voluntary participation in a research experiment, in return for inclusion in a cash lottery.

To begin with, participants were asked to fill out a short filler questionnaire about the prices of various brands (no camera brands were included). This was used simply as a decoy to lessen the likelihood of ceiling effects on our key recall measure. Such effects might have resulted had participants focused all of their mental resources and energy on the exposure to the ads that followed.
After this initial questionnaire was completed and collected, each of seven print ads was then shown on an overhead projector (OHP) for 8 seconds. In each condition, the test ad was the second one to be shown. The other six ads, which acted as fillers and remained the same across conditions, were real print ads for brands such as Clorox detergent, Toyota cars, etc.

After exposure and before being dismissed, participants were asked to do another decoy task so that they would not question why the ads had been shown, and would also believe that the experiment had been concluded. They were told that the researchers were interested in the effects of exposure to different types of stimuli on subsequent tasks. Thus, while the current participants had been shown ads, other participants had been given some mathematical puzzles to work on (this, of course, was untrue). The researchers now wanted to see how exposure to these different stimuli would affect participants’ performance on a map task. Participants were given five minutes to draw a map of the world on a sheet of paper, and label as many countries as possible in their correct geographic locations. Upon completion of the task, the experimenter conducted the cash lottery. Finally, participants were thanked for their help and dismissed.

Two days later, the experimenter again went into each of the two class sessions to collect the delayed measures. In each session, he reminded participants that they had seen some ads two days earlier, and asked them to respond to a questionnaire booklet which contained some questions about the ads. Once again, a monetary incentive (in the form of a lottery) was used to enlist participants’ cooperation.

Participants filled out their name and student ID number on the first page of the questionnaire. Product category recall was then measured on the next page where participants listed all of the product categories for which they had been shown ads two days earlier. On the final page of the questionnaire, participants listed all the brands that they remembered from the ads shown earlier.

Upon completion and collection of this questionnaire, a second booklet of follow-up questions was administered. After again putting their name and ID number on the first page, participants were subsequently asked to write down everything that they could remember from the ad that had been shown for Olympus cameras. Following this open-ended recall measure, participants were asked to write down all the thoughts that they had had about the ad for Olympus cameras. It was made clear
that this question referred to thoughts about the ad, rather than ad recall. Participants were urged not to worry about spelling or grammar while filling out these open-ended protocols.

After completing the protocols, participants responded to a variety of demographic questions, including age and gender. These measures had no effect on our dependent variables and are not discussed further. Finally, participants were asked to write down what they thought the purpose of the experiment was. None of the responses suggested that participants had made a link between ad type (complete vs. incomplete) and subsequent recall.

Results

Recall. We had proposed that recall would be significantly better in the perceptually incomplete (element-absent) condition as compared to the perceptually complete (element-present) condition. This hypothesis was examined by analyzing recall on three separate indicators: a) product category recall; b) brand name recall; c) total number of distinct ad elements listed on an open-ended recall measure.

Product category recall was coded as ‘1’ if cameras was listed in response to the category recall question, and as ‘0’ otherwise. Similarly, brand recall was coded as ‘1’ if Olympus was listed in response to the brand recall question, and as ‘0’ otherwise. Spelling mistakes were treated fairly liberally – thus, "Olymps" was coded as a ‘1’ for brand recall.

Analysis of the product category recall measure showed a significant advantage for the element-absent condition (recall = 30.77%) over the element-present condition (recall = 8.33%; $X^2 (1) = 5.89, p < .05$). Brand recall, however, did not differ significantly between the element-absent (recall = 5.13%) and element-present (recall = 2.78%; $X^2 (1) < 1, ns$) conditions.

The open-ended recall protocols were coded by two independent coders for the total number of distinct items participants recalled from the ad (e.g., text items, specific pictorial elements, etc.). Coder agreement was 81%, and discrepancies were resolved by an author. No difference on this ad recall measure was obtained between the element-absent condition (recall = 1.00) and the element-present condition (recall = 1.32; $F (1,70) = 1.08, p > .30$).
In sum, the hypothesized prediction of improved recall for the perceptually incomplete element-absent ad was borne out for product category recall, but not for brand recall or overall ad recall.

**Ad Thoughts.** As a check on the amount of ad elaboration across conditions, we compared the total number of ad thoughts in the two conditions. The greater the elaboration, the greater should be the number of thoughts about the ad (cf. Goodstein 1993). Two independent assistants coded the total number of ad-relevant thoughts about the test ad. Coder agreement was 86%, and discrepancies were resolved by an author (for each of the three experiments reported here; the agreement level for coding open-ended thoughts and recall data exceeded 80%). Analyses on this index revealed no differences between the element-absent (mean = 0.73) vs. element-present (mean = 0.74, F < 1, ns) conditions. Along with the results on open-ended recall, this finding suggested a lack of difference in overall ad elaboration across the two conditions. However, as we discuss subsequently, the low absolute numbers for ad recall and ad thoughts across the two conditions may simply be due to a floor effect.

**Discussion**

The results from Experiment 1 provided support for our basic contention that the overt omission of a product-relevant element can lead to improved recall. Perception-based omission, caused by outlining the product (camera) as compared to actually presenting it, led to significantly higher category recall over a delay of two days. This finding, however, was limited to product category recall – the absence of the camera on the man’s chest did not translate to improved brand recall or total ad recall.

Interestingly, of the two processes that may have caused improved recall in the element-absent condition, *viz.*, self-generation and unexpectedness-induced ad elaboration, the obtained recall findings seem more consistent with the former perspective. Self-generation typically results in improved memory for only the activated element, not for the surrounding context, or even for the cues that induce the process of self-generation. For example, Slamecka and Graf (1978) found significantly improved memory performance for rhyming words that were self-generated in response to cue words (rather than being provided explicitly by the experimenter); however, this generation effect did not result in improved memory for the cue words themselves. In our study, the finding that improved
recall was obtained only for the product category is consistent with this mechanism. In particular, the omitted element (a camera) was related only to the product category, not to a specific brand. Activation of this element should then only improve recall for the product category, as was found to be the case. Thus, the very specific nature of the recall improvement that was obtained in this study is consistent with an underlying process of self-generation.\(^4\)

Conversely, the ad elaboration mechanism argues that the presence of an unexpected item typically induces greater effortful elaboration of the entire message (or ad), in a bid to integrate the unexpected item with other contextual items (Heckler and Childers 1992; Houston et al. 1987; see also Srull 1981). Such overall elaboration leads to an improvement in recall for not just the unexpected item, but also for the surrounding elements – thus producing better overall ad recall (Heckler and Childers 1992; Houston et al. 1987). For example, Heckler and Childers (1992) obtained greater recall for other elements in their ad picture apart from the unexpected item itself. Similarly, Houston et al. (1987) found that the deviation of ad copy from expectancies created by the ad picture led to an improvement in an index of overall recall (comprising brand recall, category recall and also copy recall). Thus, if ad elaboration were the driving mechanism responsible for the increased category recall in the element-absent condition of our study, we would have expected an improvement in brand recall and overall ad recall as well. This, however, was not found to be the case.

Finally, the total number of ad-related thoughts, which is an indicator of ad elaboration, also did not differ across conditions. It should be noted, however, that all these process checks were collected after a two-day delay. It is therefore possible that the lack of differences on our elaboration checks (such as total ad recall, and total ad thoughts) was simply due to a floor effect. In other words, even if the incomplete ad led to greater overall elaboration than the complete ad, the difference may not have been detectable after a delay. This limitation was addressed in our subsequent experiment, where immediate measures are used.

**EXPERIMENT 2**

Apart from seeking to replicate the findings of Experiment 1, the major goal of Experiment 2 was to further clarify the mechanism underlying these findings. This was done in several ways. First,
the limitation pointed out above was addressed by taking dependent measures soon after ad exposure. Under those circumstances, any differences in overall ad elaboration across conditions should be more easily detected by measures such as the total number of thoughts; total ad recall, etc. More importantly, Experiment 2 also sought to distinguish between the two competing mechanisms (ad elaboration vs. self-generation) by manipulating ad processing time. Because the effortful elaboration that is required for the integration of unexpected information demands significant cognitive resources, the impact of unexpectedness on memory should diminish as the opportunity to process (e.g., encoding time) is decreased (Houston et al. 1987; Srull and Wyer 1989; Stangor and McMillan 1992). For example, Houston et al. (1987) found that the improvement in ad recall that was produced when ad copy deviated from picture-created expectations disappeared when ad exposure time was reduced from 15 seconds to 10 seconds.

In this connection, note that the 8 seconds exposure time used in the current Experiment 1 is already lower than the lower limit used by Houston et al (1987), suggesting that the recall differences in our study did not arise from differences in overall ad elaboration. It could plausibly be argued, however, that given the relatively sparse nature of the ad we used (specially compared to the one used by Houston et al.), 8 seconds was a sufficiently long time to allow for elaboration of the ad content. An elaboration-based explanation cannot, therefore, be entirely ruled out for the recall results obtained in Experiment 1. To provide a stronger test, Experiment 2 studied recall differences between the element-absent and element-present conditions when the ads were exposed for only 4 seconds (in addition to the 8 seconds conditions studied in Experiment 1). If elaboration differences underlie the obtained differences in product category recall, we would expect these recall differences to be diminished, if not entirely eliminated, when the opportunity to process is lowered from 8 seconds to 4 seconds. On the other hand, if the relatively effortless process of self-generation accounts for the improved category recall findings in the incomplete condition, lowering the opportunity to process should not affect the recall differences obtained in Experiment 1. Indeed, several experiments in the self-generation literature have obtained the usual pattern of recall results with very brief exposure times, such as 4 seconds (word-fragment completion; Gardiner 1988), 2 seconds (picture fragment
identification; Snodgrass and Kinjo 1998) and even less than 1 second (word identification; Nairne 1988).

In light of the support (albeit limited) offered in Experiment 1 for the self-generation process, as compared to the more effortful process of ad elaboration, our a priori prediction consists of a main effect of ad type, with improved category recall expected for the perceptually incomplete element-absent vs. the perceptually complete element-present ad, irrespective of exposure time.

Finally, Experiment 2 also sought to clarify the underlying mechanism by testing a boundary condition for the product category recall findings obtained in Experiment 1. Specifically, our reasoning demands that, for the element-absent condition to result in better category recall, the omitted element should be related to the product. Only then should self-generation of the omitted element lead to a corresponding increase in product category recall. This reasoning suggests a boundary condition for Experiment 1 findings: if the omitted element is not related to the product, it should not lead to improved category recall. Indeed, in comparison to the element-present condition (which actually features a camera on the man’s chest), a control group which features a product-unrelated outline instead should actually produce lower product category recall, because of the likelihood of fewer product-relevant associations in this condition.

On the other hand, the improved recall obtained in the element-absent condition of Experiment 1 may not be due to self-generation. Rather, this result may simply be attributable to the “outlining” technique per se – for reasons such as the greater ad elaboration produced by this relatively novel technique, or because the outlining technique simply makes the test ad distinctive (and therefore more memorable) compared to the filler ads. Such a rationale would argue that a control ad which features the outline of a visual element (instead of featuring the element itself) should also lead to improved category recall, even if the element outlined is not product-relevant.

Experiment 2 provides a test of these conflicting predictions by including a control group in which the omitted element is not related to the product category.
METHOD

Overview

Experiment 2 followed a 2 (Ad type: element-absent/element-present)× 2 (Exposure time: 4s/8s) between-subjects design. The element-absent and element-present ads used in this experiment were the same as those used in Experiment 1. In addition to this basic design, a control condition with a different type of perceptually incomplete ad was also tested in Experiment 2. In this condition, we again sought to create a prominent and noticeable omission in the Olympus ad by means of presenting an outline on the man’s chest. However, instead of an outline in a rectangular camera shape, the outline in the control condition was of a circular form, of about the same area as the rectangular outline. As explained earlier, this control ad was included to test the idea that merely outlining a form (and thus creating the perception of an omission) would not increase product category recall if the element perceived to be omitted is not related to the advertised product.

Pretesting was conducted to confirm that the circular outline did not lead to product-related inferences. Thirty nine participants from our participant pool were shown the control ad on an OHP. After putting the ad on the OHP, the experimenter pointed to the circular outline and asked “What is the first thing that comes to mind when you see this? Please write down your answer in the space provided.” The modal answer was “medal”; this response was listed by only 8 participants (20.5%). None of the participants responded with “camera”. Thus, as intended, element omission in the control ad did not appear to induce inferences related to the product category.

Procedure

Experiment 2 followed a very similar procedure to that used in Experiment 1. However, in order to prevent a confound between the experimental condition and the classroom, Experiment 2 was not run in a class session. Instead, participants were signed up through an undergraduate participant pool and were given research credit for their participation. All experimental sessions were thus run in the same room (although each condition was run at a separate time) by an experimenter blind to the hypotheses. A total of 118 business undergraduate students participated in the experiment; cell sizes in the five conditions ranged from 20 to 27.
All participants were shown seven ads on the OHP, with the test ad for Olympus being the second ad shown. Each ad was shown for either 8 seconds or 4 seconds at a time, depending on the experimental condition. Participants in the control condition (product unrelated element-absent) were shown the ads for 8 seconds.

Subsequently, the experimenter used the same cover story employed earlier to explain why the ads had been shown, and gave participants five minutes to complete the map task which had also been used in Experiment 1. The major departure from the earlier procedure occurred at this point. Instead of ending the experimental session, the experimenter now announced that he would like to collect some responses about the ads that had just been shown. The same dependent variables that were collected in Experiment 1 were now measured. First, participants responded to a questionnaire containing just the product category recall and brand recall measures. Upon completion, they filled out a follow-up questionnaire which contained the following measures: a) open-ended recall protocols; b) open-ended thought protocols; c) demographic measures; d) question regarding experiment purpose. The two questionnaires were matched through student ID numbers, which were collected in each questionnaire.

None of the demographic variables (age, gender, etc.) had any impact on our results and are not discussed further. No participant guessed the experimental hypothesis.

Results

The 2 (element-present/element-absent) × 2 (8s/4s) design was analyzed using the SAS procedure CATMOD for categorical variables (such as product category recall and brand recall) and ANOVA for continuous variables such as total ad recall, number of thoughts, etc. Comparisons with the control condition (product-unrelated element-absent ad) are reported later.

Our prediction was that product category recall (coded as a 1/0 variable) would be greater for the element-absent ad than the element-present ad; and that this effect would not vary across time of exposure. In support of this prediction, analyses revealed only a main effect of ad type (element-absent recall proportion = 86.2%; element-present recall proportion = 61.9%, $X^2 = 6.74$, p < .01). Importantly, the interaction of ad type with exposure time was not significant ($X^2 < 1$, ns). The pattern
of recall proportions (see Table 1) confirmed that product category recall was higher for the element-absent ad, in the 4s-exposure condition as well as the 8s-exposure condition.

Since the omitted element (a camera) in the perceptually incomplete ad related only to the product category (not the specific brand), we did not expect any differences in brand recall across conditions. Analyses supported this prediction, with neither the main effect of ad type (element-absent ad = 20.0%, element-present ad = 28.21%, $X^2 = 1.05, p > .30$) nor the interaction of ad type and exposure time ($X^2 < 1$) proving to be significant. Similarly, no differences were predicted in the total number of distinct ad items recalled, as listed in the open-ended ad recall measure. This prediction was also supported, in that an equivalent number of items was recalled for the element-absent ad (mean = 3.25) versus the element-present ad (mean = 2.95, $F(1,88) < 1, ns$). The other effects from the $2 \times 2$ ANOVA were also not significant.

In light of research documenting that greater message elaboration leads to improved message recall, particularly when recall is measured soon after message exposure (Chaiken, 1980; Cacioppo, Petty, & Morris, 1983; Haugtvedt & Petty, 1992), our overall open-ended recall findings suggest that ad elaboration did not differ across ad type. Further, an analysis of ad-related thoughts was conducted to provide a direct check of ad elaboration. A $2 \times 2$ ANOVA on this measure indicated an equivalent number of thoughts for the element-absent (mean = 2.10) versus element-present ad (mean = 1.85, $F(1,88) = 1.26, p > .26$), again supporting the idea that overall ad elaboration did not differ across conditions. Other effects on the total number of ad thoughts across the four experimental conditions were also insignificant.

**Control Ad Results.** Recall results for the control (product-unrelated element-absent) ad were compared with the recall obtained for the element-present ad. If the improved category recall obtained in the product-related element-absent condition were due simply to processes resulting from the outlining technique itself (such as elaboration or greater distinctiveness), we would expect a similar recall improvement for the control ad as well. Conversely, if an improvement in category recall is obtained only when the outline leads to self-activation of a product-related node, we would not expect such a result when the outline was unrelated to the product. Results supported the latter prediction. Only 36% of participants exposed to the control ad were able to correctly recall the product category.
(cameras). Not only did this figure not represent an improvement in recall over the element-present ad condition, a follow-up contrast (in which data was pooled for the 4s and 8s conditions for the element-present ad) revealed that the control ad led to significantly poorer recall ($X^2 = 4.21, p < .05$) than the element-present complete ad (recall = 61.9%). As we suggested earlier, this pattern of results can plausibly be explained on the grounds that the control ad (which featured a product-unrelated visual outline) induced fewer product-related associations than the element-present ad (which featured a camera on the man’s chest).

Interestingly, this recall advantage for the element- present ad as compared to the control ad was also manifested in brand recall (complete = 28.21%, control = 4%, $X^2 = 5.86, p < .05$), as well as in the total number of distinct items recalled from the ad (complete = 2.95, control = 1.72, $F(1,64) = 8.15, p < .01$). Further, the number of thoughts reported in the control condition was found to be significantly lower (mean = 1.24) than in the perceptually complete element-present condition (mean = 1.85; $F(1,64) = 6.49, p < .05$). The thoughts data provides another explanation for the lower recall obtained along all dimensions for the control ad vs. the element-present ad. Specifically, the visual outline in the control condition was irrelevant to the product category. Trying to understand why such an irrelevant feature had been placed in the ad could well have detracted from the attention paid to other ad elements, leading to reduced overall ad elaboration (as manifested in lower thoughts), and consequently, lower overall recall of ad elements (cf. Heckler and Childers 1992).

Thus, consistent with research documenting the correspondence between message elaboration and message recall, the lowered recall for the control ad might be a result of lower ad elaboration in this condition. However, while the elaboration mechanism provides another valid explanation for the recall pattern in the control condition, the major point of Experiment 2 is that an increase in overall ad elaboration may not always be necessary to increase recall along certain specific dimensions (e.g., category recall). As noted earlier, the main comparison between the product-related element-absent ad and the element-present ad revealed better product category recall for the former, without any differences in ad elaboration.
Discussion

Experiment 2 both replicated and extended our earlier findings. An ad which omitted a product-related element, as highlighted by the perception-based technique of outlining the feature, was found to lead to improved product category recall as compared to an equivalent ad which actually contained that element. Together, Experiments 1 and 2 demonstrated this recall advantage for this perceptually incomplete ad, both immediately after ad exposure and also after a substantial delay.

The specific outcomes obtained in Experiment 2 are more supportive of a process of self-generation of the specific element missing from the ad, rather than a process of effortful elaboration of the ad overall. With the former process, there is reason to expect improved recall only along dimensions related to the specific element omitted. In this case, since the omitted element (a camera) was related only to the product category, the self-generation effect would predict an improvement only in category recall, as was found to be the case. If the ad elaboration process had been at work, we would have expected the advantage for the incomplete ad to be manifested not just on product category recall, but also on other measures such as brand recall, overall ad recall and ad-related thoughts. This turned out not to be the case. While Experiment 1 had also obtained a similar pattern of results, the usefulness of that evidence was limited by the fact that these measures had been taken only after a delay of two days. Thus, it could simply have been the case that even though differences in ad elaboration did exist, they were masked by the time delay. By obtaining these measures immediately after ad exposure, Experiment 2 provided stronger evidence against the ad elaboration explanation.

Even stronger evidence was provided by manipulating exposure time. If ad elaboration differences were driving the differences in category recall, these differences should be diminished when opportunity to process is lowered significantly, such as was done in this experiment in the 4s exposure condition. However, our findings revealed that recall differences were not influenced by the time of exposure, arguing against the ad elaboration explanation (cf. Houston et al. 1987). Rather, the fact that the recall differences were obtained with such a brief exposure is once again consistent with a relatively effortless self-generation process (Gardiner 1988; Nairne 1988; Snodgrass and Kinjo 1998).

Finally, Experiment 2 provided further insights into the mechanism underlying our findings by ruling out the possibility that the improved recall obtained in the element-absent condition is
attributable simply to the relatively novel technique of providing only the outline of an element, instead of the element itself. The results obtained in the control condition argue, in line with our favored mechanism of self-generation, that an improvement in recall will be obtained only when the omitted element is related to the product. Indeed, highlighting the outline of a product-unrelated element not only did not lead to a recall improvement; it actually produced lower category recall when compared to the element-present ad.

Experiments 1 and 2 thus provide good support for the recall advantage resulting from the overt omission of a product-related visual element from an ad, when such an omission is highlighted using a purely perceptual technique (such as providing the element outline). Experiment 3 seeks to extend our findings in two major ways. First, we try and examine whether the recall results obtained thus far extend to other types of element omission as well. As discussed in the introduction, instead of using simple perceptual techniques to create an omission, advertisers may sometimes use a strategy of knowledge-based omission. That is, instead of explicitly highlighting the omission within the ad, advertisers may rely on existing ad schemas (Goodstein 1993; Goodstein et al. 1992) in order to create an omission.

Consider a hypothetical case: advertisements for Marlboro cigarettes have traditionally featured the Marlboro cowboy – and consumers have come to expect this element in Marlboro ads. However, legislation in the EEC bars the use of actual characters (e.g., the Marlboro Man, Joe Camel) in cigarette commercials; and similar legislation has been contemplated in the United States. If an ad for Marlboro were to have some of the other usual elements consistent with American west theme of a Marlboro ad (e.g. horses), but left out the cowboy, this would constitute a missing or absent element. In this case, the viewer/consumer would realize that a particular element is absent, because of prior knowledge of Marlboro’s advertising.

Experiment 3 focuses on the effects of such knowledge-based omission, extending our theorizing and findings from Experiments 1 and 2. Further, Experiment 3 also seeks to document that the recall advantages resulting from element omission may sometimes extend to brand recall as well as category recall. According to the self-generation perspective that has served as our primary theoretical foundation, element omission should improve recall along all dimensions that are conceptually related
to the omitted element. Thus, if the omitted feature is related to only the product category, but not the brand name (as was the case in our earlier experiments), an improvement should be manifested for only category recall. However, if the omitted element were to be directly related to the brand name as well, an improvement should also be obtained for brand recall. Experiment 3 tests this prediction by studying the effects of knowledge-based omission of a feature which is related to the brand name.

EXPERIMENT 3

While knowledge-based omission clearly differs in some general respects from the perception-based omission studied earlier, we suggest that a recall advantage should be obtained for this type of omission as well. Once again, both the ad elaboration and self-generation literatures support such a thesis. Thus, in the Marlboro example cited above, as long as consumers have a well-defined expectation of seeing the cowboy in a Marlboro ad, omitting the cowboy will violate consumer expectations. Such a deviation from the specific ad schema should lead to increased ad elaboration (Goodstein 1993; Houston et al. 1987; Meyers-Levy and Tybout 1989; Sujan 1985), which in turn should increase overall recall for ad. This effect should be manifested along different dimensions, such as category recall, brand name recall, and also the total number of ad elements recalled.

The self-generation literature also presents a rationale for the improved recall that may be obtained by omitting the cowboy from a Marlboro ad. Specifically, not only does research in this area document the effects of perception-based self-generation for items that are presented as perceptually incomplete (e.g., word or picture fragments; Gardiner 1988; Snodgrass and Kinjo 1998), it also documents improved recall for items that are generated on the basis of existing associative links in memory. For instance, target words (e.g., "cold") that have memory-based associations with cue words (e.g., "hot") have been found to better recalled when self-generated by participants in response to the cue words, rather than when explicitly provided by the experimenter (Jacoby 1983; Slamecka and Graf 1978). Correspondingly, with the Marlboro example, even if the cowboy is omitted, being exposed to other typical features of a Marlboro ad (a horse; the brand name; a pack of cigarettes, etc.) can lead consumers to think of the cowboy on their own volition. According to the self-generation literature, such voluntary retrieval (as compared to external presentation of the item) should lead to greater
activation of the item in semantic memory. Consequently, recall for concepts which are related to the concept "cowboy" should also be higher in the former condition. In the current example, since the cowboy concept is well associated with the brand name "Marlboro" and also the product category "cigarettes", we would accordingly expect both improved brand recall and better category recall for an ad which omitted the cowboy.

**Overview**

Experiment 3 manipulated the same two experimental factors as Experiment 2, namely ad type (element-absent/incomplete vs. element-present/complete) and exposure level (4 vs 8 seconds) in a between-subjects design. An ad for Marlboro cigarettes was used as the test ad. Pilot testing with 8s exposure revealed that, when recall measures were taken immediately after ad exposure, both category recall and brand recall were very high for the complete ad (recall proportions: 82.86%, 85.71%) and the incomplete ad (recall proportions: 95%, 90%), presumably because Marlboro cigarettes and Marlboro advertising are both very well-known to our target student population in Hong Kong. Accordingly, in order to avoid ceiling effects, it was felt desirable to take the recall measures after a two-day delay. As discussed later, however, the above pilot test, in which dependent variables were measured immediately after ad exposure, was used to provide a check for overall ad elaboration of the element-present vs. element-absent ads.

**Test Ad and Pretests**

The foreground of the element-present test ad featured a cowboy sitting on a horse, holding the reins. In addition, the ad consisted of the following major elements: a) A bright orange sky; b) In the distance, a paddock with an indistinct cluster of horses; c) An ad slogan in big white lettering "Come to Marlboro County" in the top portion of the ad; and d) a small pack of Marlboro cigarettes under the slogan. To create the element-absent version of this ad, Photo Shop software was used to delete the cowboy, so that the horse was featured on its own in the foreground. All other aspects of the ad remained the same across conditions. The self-generation perspective suggests that the presence of cues such as the brand name, the pack of cigarettes, and in particular, the riderless horse in the element-absent ad can lead participants to voluntarily think of the cowboy when exposed to the ad, thus increasing recall for cowboy-associated elements such as the product category and brand.
Two sets of pretests were carried out to check whether the Marlboro man was an important part of participants' schema for Marlboro ads, and also, whether participants were likely to think of a cowboy when exposed to the element-absent (incomplete) ad. First, 17 participants were asked to list all of the elements they would normally expect to see in a Marlboro ad. All 17 participants listed a "cowboy" (or equivalents like "Marlboro man") in their responses. This group was then asked to write down what else they would expect to see if they saw a horse in a Marlboro ad (to write down the first thing that came to their minds.) Again, a majority of participants (n = 14, 82.8%) responded with "cowboy."

In a second pretest, 45 participants were shown the incomplete Marlboro ad on an OHP. They were asked whether anything was missing from the ad, and if yes, to write down the missing feature. Participants were encouraged to not think for too long over their responses, and were asked to simply write down the first thing that came to mind. A significant proportion (n = 37; 80.4%) listed the Marlboro man/cowboy as their answer.

Together, these pretests suggest that a cowboy is indeed an integral part of our participants' Marlboro ad schema, and also indicate that participants exposed to the incomplete version of the Marlboro ad (featuring a riderless horse) are likely to think of the cowboy on their own.

Procedure

Experiment 3 followed a procedure very similar to that used in the earlier experiments. Participants first completed an irrelevant questionnaire relating to brand image, and then viewed the test ad (element-present or element-absent) in the context of six other filler ads. Depending upon the exposure time condition, each ad was exposed for either 8 seconds or 4 seconds on an OHP. As in Experiment 2, participants then completed the map task, and were informed that the research study was concluded. Two days later, however, they were asked to complete a questionnaire booklet containing the dependent variables.

Results

As before, the 2 (Ad type: element-absent/element-present) × 2 (Exposure level: 4 vs. 8 seconds) design was analyzed using the logistic procedure CATMOD for categorical variables (such as
product category and brand recall) and ANOVA for continuous variables such as total ad recall, number of thoughts, etc.

As in Experiments 1 and 2, we predicted that recall would be better for the element-absent (incomplete) than the element-present (complete) ad. The analysis for product category recall (coded as a 1/0 variable) yielded supportive results. Ad type exerted a significant effect ($X^2 (1) = 5.41, p < .05$), with a higher proportion of participants in the element-absent condition (68.35%) more likely to recall that they had been exposed to an ad for cigarettes than participants in the element-present condition (50.00%). Importantly, ad type did not interact with exposure level ($X^2 < 1$, ns), thus showing that the recall advantage for the element-absent (vs. element-present) ad persisted irrespective of whether participants were exposed to the test ad for 8 seconds or 4 seconds (see Table 2 for cell proportions). As before, this pattern of results argues in favor of the self-generation mechanism rather than the ad elaboration mechanism--a significant interaction effect would be expected with the latter. Finally, the main effect for exposure time also did not attain significance ($X^2 < 1$, ns).

A very similar pattern of results was obtained for brand recall. The only significant effect was for ad type ($X^2 (1) = 7.46, p < .01$), with participants in the element-absent condition (67.08%) better able to recall that the ad was for Marlboro cigarettes than participants in the element-present condition (45.70%). Thus, as expected, given the relatedness of the missing element (cowboy) to both product category and brand name, the recall advantage for the element-absent ad prevailed along both dimensions, in contrast to our previous studies where such an advantage was only obtained for product category recall.

Analyses were also conducted on the total number of items recalled from the ad, and the total number of ad-relevant thoughts. No significant results were obtained on either of these measures. In particular, the element-absent ad did not lead to greater total recall ($M = 2.67$) or greater total thoughts ($M = 1.85$) as compared to the element-present ad ($M_+'s: 2.97, 1.92, F_+'s < 1$). Again, these findings argue against the idea that the element-absent ad led to greater overall elaboration of the ad.

However, since total recall and thoughts were both measured after a two-day delay, it is possible that these checks do not reflect the actual ad elaboration that took place at the time of exposure. Therefore, we also examined the effects of ad type on these two outcomes from a pilot study.
that we had conducted earlier, in which ad recall and ad thoughts were measured immediately after exposure. A marginally significant effect of ad type was actually obtained for total ad recall (F(1,73) = 3.35, p < .10); however, the cell means revealed greater recall for the element-present condition (M = 3.49) versus the element-absent condition (M = 2.95). This finding may simply have been due to the fact that the element-present ad had an additional feature (the cowboy) than the element-absent ad; in any event, it did not provide any indication that the element-absent ad led to greater overall elaboration. The pattern of total ad thoughts also did not support such a conclusion, with the element-absent ad not leading to a greater number of thoughts (M = 1.87) than the element-present ad (M = 2.14, F(1,73) = 1.08, p > .3).

A post-hoc analysis of the specific content of participants’ open-ended recall data in the main experiment offered an interesting, albeit non-conclusive perspective on the likelihood of self-generation as the underlying mechanism for our findings. Specifically, the recall data was coded to see if participants remembered seeing a “cowboy” (or equivalents like “man”; “man on horse”, etc.) in the ad. As would be expected, a high proportion of participants (51 out of 69; 73.91%) exposed to the element-present ad recalled seeing the cowboy. More interestingly, of the participants exposed to the element-absent ad, which had not featured a cowboy, a substantial proportion (38 out of 79; 48.10%) still wrote that the ad had contained a cowboy. This pattern is consistent with a self-generation and source forgetting perspective, wherein participants exposed to the incomplete ad generated a cowboy, and then misattributed their recalling the cowboy to actually having seen it in the ad. However, while this encoding-based argument is a plausible one, the data is also consistent with a purely retrieval-based explanation. That is, it is possible that participants did not generate the cowboy on exposure to the ad. Rather, at delay, when filling out the recall protocols for “Marlboro Cigarette Ad”, the brand name cue may have led them to wrongly infer the presence of a cowboy in the ad they had seen two days earlier. Thus, recall of the cowboy in the protocols for the element-absent ad may be attributable simply to a retrieval process. However, our key finding, viz., the improved recall of the brand name and product category in the element-absent ad vs. the element-present ad, does not appear susceptible to a simple retrieval-based explanation.
Discussion

As with perception-based element omission, knowledge-based element omission was found to lead to improved recall. Further, unlike in the previous two experiments, in which this improvement was only manifested for category recall, Experiment 3 also documented an advantage in brand recall. This finding is of interest to marketers, since merely improving category recall may not always be desirable (indeed, this can be counterproductive, especially for new brands). By showing that the omission of a brand-related feature can lead to an improvement in brand recall, our findings offer suggestions for more specific omission strategies that may be employed by advertisers and marketers.

From a public policy perspective, these results suggest that one needs to be careful to avoid simplistic/legalistic efforts to ban the use of well-known advertising characters (such as the Marlboro Man). This approach may not work, at least in the short run, as long as the target audience maintains the initial schema that includes the banned feature. Indeed, if the original schema is maintained, there is the potential for forced element omission to result in a more rather than a less effective ad campaign.

From a theoretical viewpoint, Experiment 3 results provide further support for the rationale that element omission should improve recall along dimensions related to the omitted element. The omitted element (the cowboy) in the element-absent ad was related to both the brand name and the product category. Accordingly, activation of the “cowboy” concept should result in improved recall of not just the product category, but the brand as well. This prediction was supported.

The overall pattern of results in this experiment suggests that, at least to some extent, common processes may account for the effects on recall of both perception-based omission and knowledge-based omission. As discussed earlier, the ad elaboration mechanism and the self-generation mechanism are both consistent with the improved brand and category recall in Experiment 3. However, other findings argue for the latter rather than the former process. For instance, the lack of a difference in total ad recall fits with the specific pattern of recall improvement that is posited by the self-generation mechanism, but runs contrary to the ad elaboration perspective. More importantly, as in Experiment 2, a reduction in the opportunity to process (from 8s to 4s) was found to not detract from the recall advantages in the element-absent condition – again, this finding is more consistent with the relatively effortless self-generation mechanism rather than an effortful process of ad elaboration.
We recognize that despite our results, a more detailed discussion of the similarities between knowledge-based omission and perception-based omission awaits further research. Clearly, these two types of omission differ in certain respects. An ad such as the element-absent Olympus ad (Experiments 1 and 2) that clearly highlights the absence of a pictorial element through the outlining technique may actually be regarded as “incomplete.” However, in the case of the element-absent ad in Experiment 3 (where the cowboy is not included in the Marlboro ad), the ad would probably still be considered pictorially “complete”. Nevertheless, we suggest that the two types of ads may be processed similarly and result in similar outcomes, since both may be viewed as “missing” something. Indeed, it could perhaps be argued that the difference is a quantitative rather than a qualitative one: if placed along a complete vs. incomplete continuum, a perceptually incomplete ad would be placed more towards the incomplete end of that continuum than a knowledge based incomplete ad. Even so, both these types of ads will probably be regarded as being more incomplete than the “complete” end of the continuum, thus explaining the similarity in recall outcomes produced by these ads. However, this suggestion is a clearly a speculative one. More work is needed that will shed light on the similarities and differences between the effects of perception-based and knowledge-based omissions.

GENERAL DISCUSSION

The major goal of the current research was to investigate the memory consequences of feature omission in advertising. Our findings indicate quite strongly that significant recall advantages can accrue from strategic feature omission. These results carry straightforward practical implications for advertisers and marketers – not only do we show that the omission of an element can increase recall, we also document differences in category and brand recall. Thus, omitting an element that is related only to the product category (but not to a specific brand; Experiments 1 and 2) only results in improved category recall; this may sometimes be detrimental to the advertising brand (e.g., if the brand has low market share). However, if the omitted element is related to the brand as well, a brand recall advantage can also be obtained (Experiment 3).

Our research adds on to prior work on the effects of element omission in advertising. While prior research has shown that deliberate omissions can enhance an ad’s effectiveness by producing
more extreme and more accessible product evaluations (Kardes 1988; Peracchio and Meyers-Levy 1994; Sawyer and Howard 1991; Stayman and Kardes 1992), we show that these advantages can extend to the realm of product category and brand recall. However, in spite of this important difference in terms of the outcome variable under study, the current research does have an important commonality with prior research on the effects of element omission. As described earlier, the attitudinal effects obtained in that area have been posited to be due to self-generation of the omitted element (e.g., the ad conclusion). The current recall results are also consistent with the self-generation perspective.

As with prior consumer research on the effects of feature omission, our work provides outcome-based evidence for the proposed mechanism, rather than by a direct manipulation and measurement of self-generation. Thus, just as work on the effects of conclusion omission and object cropping finds support for the underlying process via the persuasion outcomes obtained, the particular pattern of recall results obtained in the current research is supportive of the self-generation process. For example, the finding that superior recall, in all our studies, was obtained only along dimensions related to the omitted feature and not along other dimensions, fits with the self-generation mechanism. Apart from obtaining such outcome-based support for self-generation, findings from our three studies also provide fairly strong evidence against the primary competing explanation: viz., unexpectedness-induced ad elaboration. However, while the current set of findings is consistent with self-generation, future research should strive to provide more direct evidence for this effect.

It should also be noted that the current findings do not in any way negate earlier research documenting the positive effects of ad elaboration on recall (e.g., Heckler and Childers 1992; Houston et al. 1987). We acknowledge that an improvement in brand and product category recall for the element-absent ad should also be produced if greater overall ad elaboration were obtained in this condition as compared to the element-present condition. However, the present research simply tries to show that element omission can lead to improved recall along specific dimensions related to that element (e.g., category recall/brand recall), even without increasing overall ad elaboration.

While the current research provides good support for the memory advantages accruing from element omission, future research should strive to uncover moderators for this effect. One such
moderator is consumers' level of prior knowledge (e.g., Kardes, Kim and Lim 1994; Sanbonmatsu, Kardes, and Herr 1992; Sujan 1985). Thus, for example, if consumers are not very knowledgeable about Marlboro advertising and do not possess a detailed ad schema for this brand, they are unlikely to generate an omitted feature (e.g., the cowboy) on exposure to the element-absent ad. Consequently, the memory advantages depicted in Experiment 3 should be obtained only for consumers who are highly knowledgeable about the different elements of the ad schema. Apart from knowledge, another factor that may moderate the current results is consumers' propensity to visualize and use imagery. Individuals differ in their tendency to process information visually versus verbally (Childers, Houston and Heckler 1985), and evidence has been obtained for the processing differences that are tied to this individual difference variable (Pham 1998). In the current context, it seems logical to suggest that the recall advantages accruing due to visual element omission are more likely to be obtained for high visualizers rather than low visualizers. The exploration of such moderating factors represents a promising avenue for further work in this area.

A discussion of moderating factors also serves to highlight an interesting discrepancy between findings in the current research and those obtained in earlier work on the effects of feature omission. In particular, research in the area of both conclusion-omission and object cropping (Johar 1995; Kardes 1988; Peracchio and Meyers-Levy 1994; Sawyer and Howard 1991) has found support for the generation effect (via persuasion outcomes) only under conditions of high processing motivation, not under low motivation. In explanation, researchers have suggested that the act of completing the "incompleteness" – be it generating an ad conclusion, or completing a severely cropped visual – takes up cognitive resources, and will only be attempted if participants are sufficiently motivated to process the ad. In contrast, while the current studies did not explicitly manipulate processing motivation, the particular procedure employed (filler ads were used; participants were not asked to view ads carefully) was unlikely to have produced high levels of motivation. Even more importantly, the reduction in exposure time from 8 seconds to 4 seconds did not change the pattern of recall results, arguing against the premise that the act of generating the missing element required a significant amount of cognitive resources. Speculatively, we suggest that the reason why such effortless self-generation may have occurred in our experiments is that it was very easy to generate the omitted feature in each case. For
the Olympus ad, a very clear camera outline was provided, presumably leading to an easy generation of the product. Similarly, given the strong schema for Marlboro ads (especially among our experimental population of Hong Kong students), viewing a Marlboro ad – and in particular, elements which are strongly connected to the cowboy (e.g., the horse) – may naturally lead people to think of the Marlboro cowboy. Thus, the issue may be one of calibration – for more ambiguous patterns of feature omission than those studied here, effortless self-generation may be less likely to occur; in such cases, recall improvement may be obtained only with explicit instructions to generate, or under conditions of high motivation. Future research could adopt a resource matching perspective (Anand and Sternthal 1989; Peracchio and Meyers-Levy 1997) to explore conditions under which processing motivation may or may not exert a moderating effect on recall and persuasion findings resulting from element omission.

Finally, future investigations could apply our findings to other types of omissions as well. Thus, while the current research has investigated the effects of omitting a pictorial element, similar results should also be obtained for the case of textual omission. Further, advertisers might sometimes use strategies which combine the effects of perception and prior knowledge to create a sense of omission. As long as these omission strategies lead to the generation of an element which is related to the brand name or product category, recall along these dimensions should be improved. For example, a clever ad for J&B scotch whisky uses Christmas colors and features the tagline “...ingle ells, ... ingle ells... The holidays aren’t the same without J&B.” In this case, the advertiser is using a perceptual technique (providing a word fragment) to highlight the omitted letters in the opening words of the tagline. Further, they expect that consumers should be able to use their knowledge of the popular Christmas song (Jingle Bells, Jingle Bells...) to self-generate the missing letters. Our research would predict that such self-generation would then lead to improved recall of the letters (J, B), and thereby, the brand name (J&B), as compared to an ad in which the complete words are provided in the tagline. Research testing such applications would serve to further validate the ideas presented here.
REFERENCES


ENDNOTES

1 For both open-ended advertising and object cropping, such self-generation (and thus, the improvement in attitudes) is held to be more likely under conditions of high motivation. As we discuss later, this may be a calibration issue — high motivation may not always be necessary for self-generation to occur. If it is quite obvious to viewers what is omitted (as in the camera example discussed here), self-generation may occur even at lower levels of motivation.

2 Anderson (1990) provides two mechanisms by which the detailed memory structure created by elaboration can result in improved recall. One is a direct method, in which the elaborated structure improves recall by providing multiple alternative retrieval routes to directly access the target material. Another mechanism is termed inferential reconstruction, in which the activation of any part of the elaborated structure helps the subject to infer the original material (instead of directly accessing it). For the purposes of this research, we do not seek to distinguish between these two mechanisms, since our primary focus is simply on the improved recall consequences of greater elaboration, rather than on the antecedents of this effect. However, we alert the reader to findings by Walker (1986), who, while acknowledging the likelihood that both of the above mechanisms can contribute to improved recall, finds good support for the primacy of the inferential reconstruction explanation.

3 While the main study (Experiment 1) used an 8-seconds exposure, we also had a 4-seconds exposure condition in Experiment 2. Thus, our pretesting sought to check whether the camera outline was noticeable even with an exposure time of just 4 seconds.

4 Note that the self-generation logic does not necessitate that consumers filled in the outline on the man’s chest with a camera. Rather, it is only necessary that the camera outline led participants to think of the semantic concept “camera” — the self-generation literature indicates that the mere act of retrieving the concept oneself (as opposed to being externally provided with it) will lead to greater activation of associated memory traces.

5 Note, however that the generation-based explanation for the improved product and brand recall in the element-absent (vs. element-present) condition does not require that consumers should actually (incorrectly) remember having seen the cowboy in the element-absent condition. Rather, the self-generation hypothesis suggests simply that the “cowboy” concept remains more accessible in memory by virtue of having been generated; and thus recall for items linked to the cowboy (e.g., “cigarettes”; “Marlboro”) is likely to be higher.
<table>
<thead>
<tr>
<th></th>
<th>Exposure Time: 8s</th>
<th>Exposure Time: 4s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Complete Ad</td>
<td>Incomplete Ad</td>
</tr>
<tr>
<td><strong>PRODUCT RECALL</strong></td>
<td>0.59 (0.50)</td>
<td>0.89 (0.32)</td>
</tr>
<tr>
<td><strong>BRAND RECALL</strong></td>
<td>0.23 (0.43)</td>
<td>0.26 (0.45)</td>
</tr>
<tr>
<td><strong>TOTAL AD RECALL</strong></td>
<td>2.86 (1.68)</td>
<td>3.07 (1.41)</td>
</tr>
<tr>
<td><strong>TOTAL AD THOUGHTS</strong></td>
<td>1.86 (0.91)</td>
<td>2.07 (1.03)</td>
</tr>
</tbody>
</table>

Note 1: Standard deviations in parentheses.

Note 2: For Product Recall and Brand Recall, the cell means represent the proportion of participants correctly recalling the product/brand. Thus, the first number indicates that 59% of participants in the complete ad/8 seconds exposure condition correctly recalled having seen an ad for cameras.
### TABLE 2

**OUTCOME MEANS: EXPERIMENT 3 (MARLBORO CIGARETTES)**

<table>
<thead>
<tr>
<th></th>
<th>Exposure Time: 8s</th>
<th>Exposure Time: 4s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Complete Ad</td>
<td>Incomplete Ad</td>
</tr>
<tr>
<td><strong>PRODUCT RECALL</strong></td>
<td>0.49 (0.51)</td>
<td>0.71 (0.46)</td>
</tr>
<tr>
<td><strong>BRAND RECALL</strong></td>
<td>0.49 (0.51)</td>
<td>0.74 (0.45)</td>
</tr>
<tr>
<td><strong>TOTAL AD RECALL</strong></td>
<td>3.15 (1.86)</td>
<td>2.54 (1.07)</td>
</tr>
<tr>
<td><strong>TOTAL AD THOUGHTS</strong></td>
<td>1.82 (0.95)</td>
<td>1.70 (1.13)</td>
</tr>
</tbody>
</table>

Note 1: Standard deviations in parentheses.

Note 2: For Product Recall and Brand Recall, the cell means represent the proportion of participants correctly recalling the product/brand. Thus, the first number indicates that 49% of participants in the complete ad/8seconds exposure condition correctly recalled having seen an ad for cigarettes.
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