

PART-LIST CUIING EFFECTS IN ADVERTISING: WHEN EXPOSURE TO  
SOME ADVERTISEMENTS IMPAIRS RECALL  
OF SAME-VALENCED ADS

by

HIEU PHUC NGUYEN

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Thu, and late Father, Hoai Phien, the best parents one can have. You believed in me and your sacrifice made my dreams possible. You were always there for me, no matter the physical distance between us. Mom and Dad, I am forever indebted to you.

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ABSTRACT

PART-LIST CUING EFFECTS IN ADVERTISING: WHEN EXPOSURE TO  
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Hieu Phuc Nguyen, PhD.

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Supervising Professor: James M. Munch

This study represents the first empirical examination of the inhibitory effect of part-list cuing in emotional print advertisements. It was hypothesized that exposure to a subset of print advertisements as cues impairs recall of the uncued ads. Additionally, exposure to positive cues would only inhibit memory for positive uncued ads, and exposure to negative ads as cues would only impair memory for negative uncued ads. Exposure to neutral ads was expected to inhibit memory for positive, negative, and neutral uncued ads. The effects of emotional versus neutral ads were also tested in both an uncued recall task and a cued recall task.

An experimental design involving two independent variables (affective valence of the advertisements, and type of cues) was used. These two independent variables were manipulated in a 3 (affective valence: positive, negative, neutral) x 4 (cue type: positive cues, negative cues, neutral cues, or no cues) mixed factorial design. The within-subject factor is affective valence, and the between-subject factor is cue type. Under these experimental conditions, subjects were exposed to a presentation of 26 print advertisements (eight advertisements per each affective valence plus two buffer ads) and were asked to recall the brands and executions of the advertisements they had seen.

The results of the study can be summarized as follows: 1) Exposure to a subset of print advertisements as cues impaired recall of the remaining uncued ads irrespective of affective valence types. 2) Positive ad cues only impaired subjects' memory for positive ads but not negative or neutral ads; negative ad cues only impaired subjects' memory for negative ads but not positive or neutral ads; and neutral ad cues inhibited subjects' memory for positive, negative, and neutral ads. 3) In an uncued recall task, negative ads were more memorable than neutral ads, but positive ads did not have an advantage over neutral ads. 4) In a cued recall task, cues impaired memory for ads sharing the same affective valence as the cues, but helped memory for ads using the other affective valence. In the neutral cue condition, neutral cues impaired memory for ads irrespective of their affective valence.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Statement of the Problem

Marketers often want to secure a position for their products and brands in the consumers' evoked set and to be the first brand to come to mind when a consumer thinks of a product category (i.e. top of mind awareness). Repeat advertising exposure has been used as one of the tools for strengthening this secure foothold. Friestad and Thorson (1993) suggest that advertisers must rely on their messages' ability to stay on the consumers' mind until they have the opportunity to act as consumers may access these memory traces when they make decisions about the products after having been exposed to the ads. This is true because there is often a time delay between exposure to an advertisement and subsequent brand choice (Stayman and Batra 1991).

The effects of repeated ad exposures (repetition effects) have been researched extensively in both the psychology and marketing literatures. Most research programs have investigated the effects of repetition on consumers' affective responses (e.g. attitude toward the ad, attitude toward the brand, etc.). However, findings have been inconclusive. As early as 1967, Light found that when slides of a magazine ad were repeated in a virtually uninterrupted sequence, subjects' liking of the ad slightly declined. However, when the exposures to the ad slides were separated by filler slides,

the effect was eliminated. Messmer (1979) found that consumers' liking of a TV ad increased significantly after one exposure and declined after additional exposures. Many researchers have looked at potential moderators of the repetition effects. Cox and Cox (1988) found that repetition had a strong positive impact on subjects' evaluation of complex ads but only a slight effect on their evaluations of ads that were simple. They also reported that brand liking is positively related to ad exposures but acknowledged that these effects needed to be tested over different levels of repetitions. However, repeated exposures do not always result in increased preference, as other researchers have reported the "wearout" effects of ad repetitions. Burke and Edell (1986) found a negative relationship between ad exposures and liking for the ads and the strength of this effect varied from ad to ad. In a review article examining 208 studies investigating the affect-exposure relationship, Bornstein (1989) found that 75 percent of the studies reported a positive relationship between exposure frequency and affect while 11 percent showed no significant relationship or an inverted U-shape relationship, and 14 percent showed a negative relationship between exposure and affect.

According to Campbell and Keller (2003), the best explanation of repetition effects is based on Berlyne's (1970) two-factor theory, which proposes a two-part process by which repetition influences message response. In the first phase ("wearin" – occurring during approximately the first three exposures), hostility or uncertainty about an unfamiliar message might exist, and initial levels of message repetition may increase positive habituation. This in turn reduces negative responses to the unfamiliar message and therefore the effectiveness of the message is increased at lower levels of repetition.

In the second phase (“wearout” – beginning with approximately the fourth exposure), continued repetitions result in boredom and the message’s effectiveness decreases.

Besides affective responses, the effects of repetition on post-exposure recall have also been well documented in the literature. Research (see Pechmann and Stewart 1988 for a detailed discussion) shows that wearin occurs immediately following exposure and recall increases linearly until the number of exposures to the messages reaches six and eventually recall levels off due to a ceiling effect. The difficulty of the recall tasks partly determines the point at which recall levels off.

In summary, the repetition research paradigm mainly investigates repetition effects on the target ad (the ad that is repeatedly shown). Repeated exposures to an ad strengthen the ad’s memory trace (representation) in consumers’ memory and under certain circumstances (for example, moderate repetition) this could lead to increased liking for the ad or the brand. However, little is known about the effect of repetition (in the form of re-exposure to the target ad) on memory for the other ads that were originally viewed together with the target ad.

Specifically, the current research attempts to address an important question that has been neglected by researchers in the field: would exposure to a subset of previously viewed print advertisements strengthen or inhibit recall of ads that share similar affective tones or evoke similar emotional responses? For example, while everyone is still talking about the funny commercials that aired during the Super Bowl game the previous night, the day after the game brand A shows its funny commercial again on major networks. Would rerunning this commercial facilitate or inhibit viewers’ recall of

the other commercials that were also humorous? In another example, imagine that one day last week you were reading a popular magazine and saw quite a few print advertisements for a variety of products and services (for example, the September 26<sup>th</sup> 2005 issue of *People* magazine has a total of 68 print ads representing a variety of products and services), the next day you were thumbing through another magazine and saw several of those print ads that you had seen earlier in the other magazine. Do these ads help you recall the other ads that are not currently viewed? Do they help you recall some but forget others? Alternatively, could advertisers inhibit consumers' recall of their competitors' brands by re-presenting their own ads? Or could advertisers enhance consumers' recall of their ads by placing "cues" in the decision environment as Keller (1987) suggests?

These questions are important and to provide an answer to the questions, the current study reports the results of the inhibitory effects of part-list cuing on list item recall (exposure to a subset of items from an original study list impairs recall of the remaining uncued items) in an advertising context. In a study of the effects of part-list cuing on product attribute recall, Alba and Chattopadhyay (1985b, p. 410) suggest that "part-list cuing works not by directly persuading the consumer to place higher weights on the attributes emphasized at the time of learning, but by actively inhibiting consideration of familiar attributes not cued at the time of recall." Stated differently, part-list cuing works not by strengthening the memory representations of cued materials but by impairing memory representations of uncued materials. Drawing from this argument, re-exposure to some ads (cuing) may in fact inhibit recall of ads that use the

same emotional appeals (uncued). Specifically, in this dissertation the following questions are addressed:

(a) Does providing subjects with a subset of previously viewed print ads as retrieval cues impair recall of the remaining ads that share the same valence (positive or negative)?

(b) Are emotional ads more memorable than neutral ads? Under what conditions (cue versus no cue)?

(c) Can neutral ads cause part-list inhibition?

## 1.2 An Overview of The Research

The problem statement as well as the purpose and objectives of the study comprise Chapter I. Chapter II provides a review of the literature on the effects of part-list cuing in social psychology and marketing and presents alternative explanations of the effects. In Chapter III, the specific research issues of interest are derived from these alternative positions and specific hypotheses to be tested are then delineated. Chapter IV discusses the methodology and research design essentials for the testing of these hypotheses. The experiment and hypothesis tests are covered in Chapter V. Discussion of the results comprises Chapter VI and limitations of the current study and future research implications are provided in Chapter VII.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Overview

This chapter contains a review of the relevant literature that serves as the theoretical underpinnings for the research hypotheses to be tested. First, the chapter discusses the effect of part-list cuing in both semantic and episodic memory with categorized as well as uncategorized lists. The discussion is then followed with a detailed examination of alternative accounts of the part-list cuing effect. Affective valence as an organizational factor for print advertisements is then discussed before the research hypotheses are proposed.

#### 2.2 Part-list Cuing in Memory Research

This research study investigates the effect of a phenomenon considered an “enigma” in memory research (Nickerson 1984) in a marketing context: the effect of part-list cuing on print advertisements that use emotional appeals. The following sections review the literature on part-list cuing effects with both noncategorized and categorized study lists.

What is part-list cuing? In a nutshell, when people are asked to recall words they have studied earlier from a list, those given a subset of these words as cues recall fewer words than people who do not receive any cues. Similarly, when asked to



generate a list of states in the United States, people who received a list of several states as retrieval cues recalled fewer states than those who did not receive any cues at all (Brown 1968). The effect of part-list cuing has been found to be very robust in both episodic (memory that stores information about a specific event experienced by a person) and semantic (memory that stores general knowledge about the world in a logical and categorized way [Tulving 1972]) memory, and it is present with both noncategorized and categorized lists.

### *2.2.1 Part-List Cuing Effects With Noncategorized Lists*

The first and seminal study of part-list cuing effect was conducted by Slamecka in 1968. In a series of six experiments, subjects listened to the reading of 30-item lists before they were asked to recall the items from the lists. In the experimental condition, subjects were provided with a written subset of the items as retrieval cues and then the experimenter asked them to recall the list items. Meanwhile, subjects in the control condition were asked to recall as many items as they could without the retrieval cues. In both conditions, the rarity of the words and the strength of the association between the words were varied. Subjects who received retrieval cues recalled a smaller proportion of the noncue words compared to subjects who were not provided with retrieval cues. List composition, between-word association strength, and number of cues provided did not have any significant effects (Slamecka 1968).

Following the work of Slamecka, psychologists Roediger, Stellan, and Tulving (1977) conducted an experiment in which subjects listened twice to a list of 48 semantically unrelated words. In the experimental condition, subjects received either 16

or 32 of the original items as cues and were asked to recall the remaining list items. They found that control subjects who did not receive the cues recalled more of the 16 items that were not on either cue lists than did the experimental subjects.

The inhibitory effect of part-list cuing was caused not only by items that are derived from the original list (inralist items) but also by items that do not appear on the original list (extralist items). In a second experiment, Roediger et al. (1977) cued some subjects with a subset of the list items, other subjects with extralist items, and others with a mix of both intralist and extralist items. The materials were 160 high-imagery, two-syllable nouns and were randomly placed into one of four sets. Half of the subjects who received the intralist items as cues had them available during recall. They were asked to recall only the noncue items from the original list. Remaining subjects were also provided with a subset of intralist items as cues prior to the recall task but these cues were not provided during recall. Subjects were asked to recall all of the items from the original list including those presented as cues. For the subjects who received the extralist items or a mix of intralist and extralist items as cues, the experimenters asked them to recall as many as possible the items from the original list. Results showed that both intralist and extralist cues impaired recall of the noncue items, with intralist cues producing a stronger inhibitory effect than extralist cues. Subjects who studied the cues and then attempted to recall *all* items from the original list were more likely to recall noncue items than those who studied the cues, had them available during recall, and then attempted to recall only noncue items.

### 2.2.1.1 Summary of Part-List Cuing Effects With Noncategorized Lists

In brief, research on the effects of part-list cuing with noncategorized lists could be subsumed as follows:

- Subjects who were given a subset of previously studied items as retrieval cues tend to recall fewer noncue items than uncued subjects.
- The inhibiting effect of part-list cuing is less robust when subjects have first studied the cues and then attempted to recall all items than when cues are provided during recall and subjects attempt to recall only noncue items.
- The inhibiting effect of part-list cuing is also present with extralist cues (items that do not appear on the original list), but the effect is not as robust as that caused by intralist cues.

### 2.2.2 *Part-List Cuing Effects With Categorized Lists*

The previous section discussed empirical findings in studies investigating the inhibitory effect of part-list cuing on noncategorized lists. In this section, the literature on the effect of cuing with category instances is reviewed.

#### 2.2.2.1 Cuing With Intralist Category Instances

Intralist cuing refers to cases where subjects are given a subset of items derived from the original list as retrieval cues to recall the entire list. Wood (1969) presented subjects with either three or five alternating study and recall trials with 54-item lists composed of 18 categories with three words from each category. Upon completion of the final recall trial, half of the subjects were given 18 cue words, one from each

category, and then were told to attempt to recall one more time as many of the list items as they could. The control group was also asked to recall the list items again but without the benefit of the cues. Wood found that subjects for whom the study lists had been blocked by category recalled more items than subjects for whom the study lists had been scrambled. Notable in this study is the fact that cues were given *after* subjects had attempted to recall the list items.

The facilitative effect of category instances was shown in a study by Hudson and Austin (1970) where subjects listened to 30-item lists composed of ten familiar categories with three words per category. They found that subjects who were given a category name or an instance from each category as cues recalled more words than subjects who were given no cues. However, cue type (category name or instance) did not have an effect on the number of words that were recalled from each category.

Nickerson (1984) concluded that category instances are likely to increase the probability that items will be recalled from the cued category if the categorical structure of the lists is known to subjects or if the number of the categories is so high that subjects are unlikely to recall all of them should cues be absent. The strength of the association between a word and its category was also shown to increase the probability that more list items would be recalled as cued by that word (Hudson and Davis 1972; Nelson, McEnvoy, and Friedrich 1982).

However, it is important to note that in these studies, either all categories were cued by instances or none was, and the number of category instances that was used as cues was always one. Empirical findings from these studies suggest that category

instances made the category they represent more accessible and therefore recall is facilitated. However, if one instance is sufficient to facilitate access to the categories, a question that follows is whether several instances from the same category is more facilitative. Slamecka (1968, experiment 4) provided subjects with three categorized lists of 30 words each. Each list had six words belonging to each of five supraordinate categories. The words were fairly common and randomly ordered. Then he gave the experimental subjects either five, 15, or 25 of the words as cues while the control subjects were not given any cues. An equal number of cue words from each category was displayed, ranging from one per category at the five cue level to five per category at the 25 cue level. Results indicated that subjects who were given cues recalled a slightly smaller number of noncue words than subjects who were not.

In a study conducted in 1973, Rundus had subjects listen to randomly ordered lists of ten items from each of four categories. Afterwards subjects were given a subset of eight items derived from the study list to vary the number of times individual study list categories were represented in the set from zero to four. Rundus found that subjects recalled more noncue items when categories were represented in the cue set than when they were not represented. Also, within the categories from which at least one noncue item was recalled, the higher the number of items from any given categories included in the cue set, the lower the number of noncue items recalled.

Marsh, Dolan, Balota, and Roediger (2004) investigated the effects of part-list cuing in younger and older adults. Subjects listened to lists of category exemplars and later attempted to recall them. In experiment 1, subjects were cued with some of the

category names and they recalled fewer never-cued categories than subjects in the free-recall condition. In experiment 2, category exemplars were used as cues and a similar effect was observed. In addition, relative to younger adults, older adults' recall of never-cued items from categories with no exemplars was inhibited to a larger extent by a small number of cues.

From these findings, it can be concluded that a single category instance functions the same way a category name does in helping subjects retrieve noncue items from the study list. However, presenting multiple category instances as cues produces an inhibitory effect similar to that produced by part-list cuing with noncategorized lists. Specifically, cues facilitate recall when they provide access to more higher order units (categories) than would have been produced without them, and they inhibit recall when more information is provided than necessary to access these categories (Nickerson 1984).

#### 2.2.2.2 Extralist Category Instance Cuing

The possibility that cues not originally presented in the study list might have an inhibitory effect on recall of study list items has also been investigated by a large body of work in psychology. Hudson and Davis (1972) presented subjects with lists composed of four words each from ten different categories. For half of the subjects, the category instances (cues) were highly associated with their category names, for the other half they were not. Prior to recall, subjects were given eight study-test trials with the order of words presented scrambled at each trial. Upon recall, subjects were given the category name, one instance from each of the categories, an extralist instance from

each of the categories, or nothing. Hudson and Davis found that all the cues were facilitative for subjects whose lists were composed of words strongly associated with their categories, with no significant differences produced by extralist or intralist cues. For subjects whose lists were composed of words not strongly associated with their categories, only category names were facilitative as cues and neither intralist nor extralist cues facilitated recall.

In another study, Watkins (1975) presented subjects with lists composed of six words from each of six categories with four “buffer” words at each end to minimize primacy and recency effects. Unlike most studies of part-list cuing where the lists were read to subjects, each list was presented visually once, one item at a time, and the order was scrambled. Upon recall, subjects were given all category names, plus zero, two, or four category instances as retrieval cues, of which some were taken from the lists and some were not. Results indicated that the probability of recalling a noncue item from the study list *decreased* as the number of category instance cues *increased*. Extralist cues produced as much inhibitory effect as intralist cues. Explaining the inhibitory effect caused by extralist cues, Watkins argued that the presentation of a recall cue was equivalent to increasing the length of the list whether or not the cue was from the original list. As such, the presentation of a category instance increases the number of instances nested under that category, thereby decreasing the effectiveness of the category name as a facilitator of category access.

Along the same line of research, Mueller and Watkins (1977) showed that when words from a categorized study list were presented at recall along with a category

name, they inhibited recall of items from the category only if they were names of instances from that category (category-specific). The inhibitory effect was not found when the names were derived from categories not being tested.

More recently, Marsh, McDermott, and Roediger (2004) also found part-list cuing inhibition with extralist cues (Study 3). Lists of 15 words were subdivided into three subsets randomly assigned as intralist cues, extralist cues, and never cued items. Subjects studied the intralist cue and never cued items (10 words) and never studied the words which were later used as extralist cues. Findings indicated that subjects in the noncue condition recalled a greater proportion of studied items than subjects in both the extralist and intralist cue conditions.

#### 2.2.2.3 Summary of Findings With Categorized List Cues

In sum, researchers have found that:

- The presentation of a single category instance as recall cues from each of the categories has facilitated recall.
- Recall is better when subjects were given only category names as cues than when they were given category names plus instances from each category as cues.
- The facilitative effect of category instances as cues has been attributed to an increase in the number of categories recalled, not words recalled per each category.
- The more cues given from the same category, the lower the probability of recalling remaining items in that category.
- Extralist cues have produced similar effects as intralist cues.



- When words from a categorized list are presented as cues along with the name of a category at recall, they inhibited recall from the specified category if they were names of instances from that category.

### *2.2.3 Part-List Cuing Effect With Semantic Memory*

So far I have discussed findings of part-list cuing effects with episodic memory (e.g. recall of words from a list that was recently studied). However, part-list cuing effects have also been found in experimental tasks that require retrieval of words from relatively permanent memory (semantic memory). Tulving (1972) defined episodic memory as memory that stores information about a specific event experienced by a person while semantic memory is memory that stores general knowledge about the world in a logical and categorized way.

The first study dealing with part-list cuing inhibition in semantic memory was conducted by Brown (1968). In the first of a series of three experiments, he asked subjects (U.S. college students) to list as many names of U.S. states as they could within a specified time. However, before the task was performed, half of the subjects studied a list of 25 state names for five minutes. Brown found that these subjects listed fewer names of states that were not on the studied list than the control group who were not given the list to study. In the second experiment, the items were the 40 counties of England and the subjects were English school children. The same results were obtained. In the third experiment, subjects attempted to list as many counties as they could within six minutes, then half of the subjects were presented with a list of 20 counties to study while the other half drew pictures. After that, all subjects were asked to list as many

counties as they could within six minutes. Results showed that the experimental group produced 10% *fewer* of the names not on the study list than before, while controls produced 11% *more* of the names not on the original list. Brown proposed a hypothesis that strong associations block weak ones and the studying of items on the list or retrieving them from memory strengthens the associations. He also contended that memory retrieval is assumed to involve sampling with replacement and so items that have already been retrieved may inhibit the subsequent retrieval of other items.

Similar to Brown's (1968) study, Karchmer and Winograd (1971) also had students attempt to list the names of all 50 U.S. states after studying a 25-state list for five minutes. However, the popularity of the states was varied. For one experimental group, the cue list contained names of the 25 states that had been most frequently listed by other students in a previous study to establish state-retrieval norms. For the other group, the cue list contained names of the 25 states least frequently listed in the normative study. Controls read a story for five minutes. After that subjects were asked to list as many states as they could in any order. Results showed that control subjects listed more of the noncue states than did experimental subjects. Within the experimental subjects, those whose cue list was composed of the less accessible states performed significantly worse than controls while those subjects whose cue list was composed of the more accessible states did not differ significantly from the controls. In the second experiment which was similar in most respects to the first, the inhibitory effect was significant for both experimental groups. Karchmer and Winograd argued that memory traces or accessibility of one part of a larger set (the cue list of 25 states

versus the entire 50 U.S. states) may be weakened when the accessibility of the other part is strengthened by prior exposure.

#### 2.2.3.1 Summary of Part-list Cuing Effect With Semantic Memory

The inhibitory effect of part-list cuing has been found in experimental tasks which required recall of items from relatively permanent memory. Specifically:

- When subjects were asked to list as many items as possible from some well-known set of modest size, presentation of a subset of the items as cues did not facilitate recall of the noncue items from the set. In fact, recall of the noncue items was inhibited. The effect was found independently of a priori accessibility of the cue items.

- Strengthening the accessibility of the cue set, either by selection of items highly associated with the category name or by increased exposure to the items did not weaken subjects' ability to produce noncue items from the category.

- When the sizes of the target sets and the cue sets were varied independently, the size of the inhibitory effect tended to be larger when the ratio between the sizes of the cue set and the target set was relatively large.

### 2.3 Theoretical Accounts of Part-List Cuing Inhibition

Despite the robustness of the effect, a “one size fits all” theoretical account that can satisfactorily explain the part-list cuing effects across various contexts and tasks without making too many assumptions still remains nonexistent. Researchers have suggested different hypotheses to decode the part-list cuing effect but none of these

accounts is immune to criticism. In the following section, the most accepted theoretical frameworks that attempt to explain the inhibitory effect of part-list cuing are reviewed.

### *2.3.1 The Retrieval Competition Hypothesis*

One of the earliest researchers of the part-list cuing effect, Rundus (1973) proposed the retrieval competition hypothesis (also see Kimball and Bjork 2002). It suggests that exposure to cue words strengthen their memory traces compared to those of noncue words. In his experiment, subjects studied categorized word lists and then recalled items from each category with varying numbers of cue words. Rundus found that recall of the remaining noncue items decreased as the number of cue words increased from zero to four. Rundus's retrieval competition hypothesis rests on several assumptions. First of all, the framework assumes that items are organized hierarchically in memory and items that emanate from a common node in the hierarchy can be accessed via that node, and therefore the presentation of a category name can cue recall of items in that category. The association between items is vertical at different levels of the hierarchy (for example, in our research context, a series of happy ads can be subsumed under the "warmth ad" category). The "warmth ad" category can be viewed as a node that serves as a "control" element for subordinate nodes (happy ads) that emanate from it. Rundus argues that the strength of the link between a "control" element and a subordinate node determines whether a particular item will be recalled when its control element is accessed. The hypothesis also assumes that once found, an item remains available (not deleted) for subsequent recall attempts, even though such duplicates will be edited out and not expressed. The act of processing a cue item

strengthens the item and its relationship with its control element. When subjects attempt to recall noncue items at test, the higher retrievability (strengthening) of the cue items leads subjects to covertly retrieve cue items before noncue items, resulting in a retrieval competition bias. This bias favors covert retrieval of the cue items at the expense of the noncue items. The hypothesis also assumes that each retrieval of the cue items reflects a failure to retrieve the noncue items and that the retrieval process stops after a critical number of failures (cessation rule). According to this rule (Rundus 1973), the search for a target item at a given level is terminated after the process has reached a predetermined number of successive items that have already been recalled. The search process continues until a similar cessation criterion is reached at a higher level, at which point all search is terminated. Hence, the competition bias can lower the recall probability for noncue items, thereby causing the detrimental effect of part-list cuing. Stated briefly, increasing the probability of recalling a cue item necessarily decreases the probability of accessing any other item at the same level on a given trial (Nickerson 1984).

Other researchers have seen a fit between the retrieval competition hypothesis and findings from their studies. Roediger (1978) interpreted the results of his experiments with categorized lists to be consistent with Rundus's account, contending that the provision of a category name facilitated access to items within that category but impairs access to other category names. The strengthening of the vertical association between a category name and its recalled instances leads to the inhibition of recall of noncue items because the process underlying recall is assumed to involve sampling with replacement. Therefore the strengthening of a given association increases the

probability of recalling the same items which indirectly decreases the probability of recalling the other items. Sharing some assumptions with Rundus, Mueller and Watkins (1977) contend that additional memory traces of the cue words are formed via cuing, thereby overloading the retrieval cue and decreasing the retrievability of the less numerous noncue traces.

In spite of the initial approval, the retrieval competition hypothesis has also been questioned by a number of researchers. For example, Basden (1973) employed two lists of 30 words each in his experiment. Subjects engaged in free-recall trials of one list until they met a criterion of 21 of 30 correct responses. Immediately following the completion of this trial period, subjects were told that they would have to learn a second list and the first trial of this second list began. Subjects were trained for seven trials on this second list. Upon completion of this second list's trial period, subjects were given either a blank recall sheet or a recall sheet containing 10 words that they had recalled from the first trial session as cues. Subjects were then asked to recall as many words as they could remember from the first list. Basden found that cued subjects recalled significantly more critical items (remaining list items) than uncued subjects. Basden argued that despite the fact that the cue words were highly available in memory at the time of the second recall task, the cue words did not impair recall of the noncue items.

The ratio rule has been criticized as a major weakness of the retrieval competition hypothesis (Basden et al. 1977). This rule treats the retrieval probability of a noncue item strictly as a function of its strength (the strength of the association

between an item and its category) relative to the sum of the strengths of the other items in the category and independent of absolute strengths. Following this rule, the probability of recalling a weakly associated item among other equally weakly associated items should be equal to the probability of recalling a strongly associated item among other strongly associated items. Basden et al. (1977) designed an experiment with three lists: List 1 consisted of items that were strongly associated with their category labels; List 2 consisted of items that were weakly associated with their category labels; and List 3 consisted of two types of items: half of the items were strongly associated with the category labels and the other half were weak. Rundus's ratio rule would predict that the strongly associated items on List 3 would be recalled more effectively than the strongly associated items on List 1. By the same token, weakly associated items on List 2 should be recalled more effectively than weakly associated items on List 3. Results from the experiment did not support these predictions. Strongly associated items were not recalled better among weakly associated items than among strongly associated items. Weakly associated items were not recalled more poorly among strongly associated items than among weakly associated items.

### *2.3.2 The Editing Task Hypothesis*

Roediger and Tulving (1974) suggested that cuing might force subjects to check each word that is recalled against the cues (or editing out the cues) and therefore slowed down the recall process. On a standard recall task with a given time limit, this delaying of recall would necessarily decrease the number of noncue items that could be recalled.

However, findings by Watkins (1975) and Roediger et al. (1977) that extralist cues can also inhibit recall of noncue items argue against this hypothesis. Because the extralist cues were not on the original study list, subjects would not have to check the items recalled against these cues before reporting them (in Roediger et al.'s second experiment, subjects were instructed as to the nature of the cues being intralist, extralist, or both). Also findings in studies involving semantic memory (such as those in which subjects were asked to produce as many U.S. states names or names of birds as they could) seem to be at odds with this hypothesis. When subjects were given ample time, the editing process might slow down the rate at which target items were generated, but it should not reduce the number of items that were produced eventually because these items were stored permanently in memory. The memory representations of these items should not be expected to fade just because their retrieval is somewhat delayed.

### *2.3.3 The Increased-List-Length Hypothesis*

Another hypothetical account of the part-list cuing effect suggests that the presentation of cues increases the length of the list that subjects have to remember and thereby decreasing the probability that any given item will be recalled (Watkins 1975). This hypothesis was proposed when Watkins observed from his experiment that extralist cues inhibited recall of noncue items on a categorized list by the same amount as intralist cues did. He concluded that the presentation of a list item as a retrieval cue is equivalent to presenting a new category instance.



However, this hypothesis does not seem to be able to account for findings in experiments involving retrieval of information from semantic memory rather than episodic memory. The contention that increasing list length would decrease the probability that any given item would be recalled presumably follows from the argument that in free-recall tasks, the longer the list of items to be studied, the lower the percentage of items to be recalled. However, in retrieval tasks involving semantic memory (for example, listing U.S. states), the items to be retrieved are stored permanently in memory and should not be affected by an inhibition to the episodic memory.

In a later experiment conducted in 1977, Mueller and Watkins found that cues that did not belong to the categories being tested did not inhibit recall, rendering the application of the increased-list-length hypothesis to this finding difficult.

#### *2.3.4 The Retrieval Inhibition Hypothesis*

A more recent account of part-list cuing is the retrieval inhibition theory (Anderson, Bjork, and Bjork 1994). By definition, retrieval inhibition refers to any potential theoretical mechanisms that underlie the impairment of retrieval access to information that remains available in memory (Kimball and Bjork 2002). Put in another way, retrieval inhibition has occurred when information has been stored but becomes inaccessible (Basden, Basden, and Wright 2003). Similar to the retrieval competition hypothesis, this account assumes that the presentation of cue items enhances these items' representations (strength) and this strengthening induces early covert retrieval of the cue items at test. However, this account differs from Rundus's (1973) hypothesis in

that it posits that the covert retrieval is assumed to cause forgetting of noncue items because of retrieval inhibition rather than biased retrieval competition.

### *2.3.5 The Interference-With-Maintenance Hypothesis*

The finding that recall performance for words from a given category falls off with the position of the category in a recall sequence gives rise to the speculation that attention paid to the cues weakens the memory representations of other items. Epstein (1970) asked subjects to remember two short lists composed of eight items each and then half of the subjects were told to recall one of the lists while the other half to recall both of them. Results showed that recall was better on a given list when subjects only had to recall that list than when it was the first of the two lists to be recalled. The inhibitory effect was even more robust when the first or only list to be recalled was the second of the two lists. Epstein contended that the need to maintain both lists in memory impairs recall. However, the interference-with-maintenance hypothesis had difficulty in explaining the inhibitory effect of part-list cuing in recall tasks involving semantic memory (retrieval of items from long-term, relatively permanent memory such as Brown's [1968] experiment in which subjects were asked to reproduce the names of U.S. states).

### *2.3.6 The Associative Sampling Bias Hypothesis*

Raaijmakers and Shiffrin (1981) proposed the associative sampling bias hypothesis which assumes that the memory search for list items is based on cues regardless of the fact that the cue was provided by the experimenter or internally generated by the subjects themselves. The hypothesis postulates that based on a

particular cue, subjects search their memory until a new item is found or a cessation criterion is reached, at which point the cue is discarded, the subjects pick a new cue and reset their cessation criterion index to zero. In this model, the cues presumably help subjects access other items from the appropriate associative clusters (of related words). The model assumes further that experimenter-provided cues prevent the subjects from sampling noncue clusters that, on average, include more target items hence none of these items have been discarded as cues. Therefore, the probability of recalling target items is necessarily lowered.

Despite the fact that this model can predict many of the results that have been reported in earlier studies, many researchers have questioned the assumption that the cued subjects search their memory on all of the cue words before moving on to the recalled words (Nickerson 1984). A second assumption that was found inexplicable is that both the experimental and the control subjects sample the same number of clusters. The unanswered question regarding this assumption is “Why should we not expect them [experimental subjects] to sample all those they would have sampled had they not been given cues, plus all the cued clusters not included in their uncued sample?” (Nickerson 1984, p. 549).

### *2.3.7 The Strategy Disruption Hypothesis*

Another major account of part-list cuing is the strategy disruption hypothesis (Basden and Basden 1995; Basden, Basden, and Galloway 1977; Reysen and Nairne 2002). This hypothesis suggests that the optimal retrieval strategy during free recall is to use the strategy that was employed to encode the materials to be remembered.

Hence, recall would be maximized when the retrieval cues are compatible with the list as organized during encoding. In the absence of experimenter-given cues, subjects must generate their own cues and recall performance depends on memory for their encoding strategies. In the presence of part-list cues provided by the experimenter, item recall will be guided by their associations with these cues and subjects will access target items by chance associations between cues and targets rather than by more principled strategies that are more similar to those they had used during encoding (in the part-list cuing paradigm, cues are usually chosen on a random basis). The strategy disruption hypothesis posits that when subjects are given cue words which are part of a previously studied list, they are “cued” to recall only part of the list and the organization that they have formed in order to retrieve the whole list may be irrelevant for retrieval of the part list.

Researchers have argued that people tend to use seriation strategies in recall, meaning they often attempt to recall items in the order in which they have been presented (Nairne, Riegler, and Serra 1991; Reysen and Nairne 2002). In a series of five experiments, Basden and Basden (1995) showed that inhibition is diminished when the organization of cues was consistent with the order in which the items were studied. In experiment 1, subjects studied a categorized list with instances from each category displayed in two randomly comprised columns. Half of the subjects were asked to think of the two columns as separate parts of the category while the other half did not receive the instruction. For half of the subjects the words were presented individually while the other half saw an entire column at a time. After two study-test trials, half of the subjects

in each group were cued with an entire word column (a subcategory) while the rest of the subjects were not cued. Results showed that the uncued group recalled more words than the cued group (main effect) and subjects receiving the subcategorization instructions recalled more words than those who did not receive any instructions (interaction effect). Apparently, instructing subjects to think of two arbitrary columns of words as separate parts of the category increased the probability of recalling members of the same column together. Experiment 2 replicated the results found in Experiment 1 and more importantly, when subjects were told to expect part-list cuing, inhibition still occurred, meaning the inhibitory effect was not due to a “surprise” factor introduced by the presentation of cues. Study 3 showed that subcategorization instructions eliminated part-list inhibition only when the cues were consistent with subjects’ presumed retrieval strategy (the cues made up an entire subcategory). In experiment 4, subjects failed to adapt to part-list cuing even though it was present on several study-test trials. Results from Study 5 showed that part-list cuing inhibition was eliminated by using subcategory names to suggest subcategorical organization whether that strategy was suggested at study or at test.

Brown and Hall (1979) interpreted their results to be consistent with the strategy disruption hypothesis and inconsistent with other theoretical accounts. In their experiment, subjects free-associated four responses to each of 20 stimulus words. After a two-day delay, the same subjects were asked to regenerate the same responses. For all subjects, some of the sets were cued with previous responses while others were not. A third of the subjects received a single-response cue on the cued sets, a third received

double-response cues, and a third received triple-response cues. Also, within each group, the cues were picked from different positions in the output sequence. Results from the study did not support the other hypothetical accounts of the part-list cuing effect in that the inhibitory effect was invariant across cue-number groups whereas all of those positions would demand that there be an increase in inhibition as the number of cues increases.

Reysen and Nairne (2002) also report findings that show consistent cues reduced the inhibitory effects of part-list cuing (Study 2). Subjects studied eighteen 12-item word lists in which the items were presented visually in descending order of associative strength. Subjects completed a simple distractor task before completing recall tasks. Subjects in the random cued recall task were exposed to six of the list items which had been selected randomly from the original 12-item list and were displayed in a random order. Subjects in the consistent cue condition were exposed to six even numbered list items as cues. Subjects in the free recall condition did not receive any cues. The subjects completed six free recall tests, six cued recall tests with random cues, and six cued recall tests with the even numbered items as cues. Results showed the typical part-list inhibition effects where subjects recalled a significantly greater proportion of studied words in the free recall condition than in either the consistent cue condition or the random cue condition. More importantly, the consistency of retrieval cues had a significant effect on recall. Subjects in the consistent cue condition recalled a significantly greater proportion of studied words than subjects in the random cue condition, lending support for the strategy disruption hypothesis.

Another study conducted by Bauml, Kissler, and Rak (2002) also shows evidence for the strategy disruption hypothesis. Subjects studied two types of categorized lists: lists in which each category consisted of strong and moderate items and lists in which each category consisted of weak and moderate items. Subjects were asked to recall the category's strong or weak items in either the presence or absence of moderate items serving as cues. Results indicate that part-list inhibition was a function of the item's associate strength to the category cue, specifically, larger inhibition occurred in the case of strong associations to the category cues and smaller, if any, impairment in the case of weak associations to the category cues. Bauml et al. interpreted the fact that part-list cuing impaired recall of strong items but not weak ones as evidence against the strength-dependent competition hypothesis (Rundus 1973). This hypothesis would predict inhibition for both strong and weak items with proportionally larger amount of inhibition for the weak items than the strong ones. Bauml et al. see the results as consistent with a strategy disruption hypothesis: the retrieval of studied material depends on people using the same or a similar organizational framework during retrieval as they used for encoding. Exposure to the part-list cues causes a sufficiently large incongruity between the retrieval and encoding frameworks which results in retrieval failure.

The strategy disruption hypothesis shares similar suggestions with Sloman, Bower, and Rohrer's (1991) incongruity principle and Raaijmakers and Shiffrin's (1981) search-of-associative-memory (SAM) model. Sloman, Bower, and Rohrer conducted a series of experiments in which they showed that part-list cuing inhibition is

caused by an incongruency between encoding and retrieval frameworks. Their contention was that “memory retrieval depends upon people using the same or similar organizational framework during retrieval as they had used for learning the items originally. This principle predicts part-list inhibition to the extent that part-list cues capture attention and induce people to adopt a different framework during retrieval than they had developed during learning” (p. 974). In the first study, subjects studied word lists and then were asked to recall the items either without cues or with cues serially organized to be either congruent or incongruent with the order in which the items were studied. In experiments 2, 3, and 4, cues consisted of every second study item in the order it was originally presented (congruent) or reordered to form famous names or familiar idioms which had been concealed in the study list (incongruent). Results showed that incongruent cues caused more inhibition than congruent cues in all four experiments.

The strategy disruption hypothesis is also consistent with the encoding specificity principle (Tulving and Thomson 1973) which posits that recall of an event is enhanced if conditions at encoding match the conditions at retrieval or if the properties of the memory representations of an event are sufficiently similar to the properties of the retrieval information. Friestad and Thorson (1993) argue that how well the retrieval cues perform in helping people retrieve previously learned information depends on the match between the content and structure of the information in the retrieval cues and the content and structure of the memory trace. This argument was in line with findings in a study by Conway and Bekerian (1987) that when subjects were given semantic



category cues (e.g. sports) instead of episodic category cues (e.g. personal history), their recollections of personal life experiences (episodic memory) took significantly longer.

In short, these accounts suggest a change in the retrieval process from a more effective strategy in the absence of cues to a less effective one when they are present. Forgetting will arise whenever subjects are forced to use a recall order that is incompatible with their own strategies. Other researchers (see Lynch and Srull 1982) have also suggested that item organization is extremely important for recall because it is important to have some organization scheme available for retrieval of various items. Several researchers have found that the size of the recall impairment decreases when the presentation of cue items was consistent with subjects' preferred recall strategy (Basden and Basden 1995; Sloman, Bower, and Rohrer 1991).

## CHAPTER 3

### HYPOTHESIS DEVELOPMENT

#### 3.1 Subheading Sample Title

This chapter develops the hypotheses to be tested in the current research. First the chapter provides a recap of the contexts in which part-list cuing effects have been investigated in the marketing literature. Next the chapter discusses findings of empirical studies focusing on the use of affective valence as an organizing factor in memory. The discussion on the structural organization of emotions in memory is followed by development of the hypotheses.

#### 3.2 Part-List Cuing Effects in The Marketing Literature

Marketing researchers have studied the effects of part-list cuing in limited contexts. Alba and Chattopadhyay (1985a) found that using a subset of brands as cues may either enhance or inhibit recall of remaining brands depending on the knowledge level of consumers. In study one, subjects were asked to recall as many brands of shampoo as they could remember (a semantic memory paradigm since the subjects had to search their general knowledge of different brands of shampoo). Subjects in the cue condition were also given zero, five or 15 brand names as cues prior to the recall task while control subjects were not. The cues were brands with moderate market share while the top nine leading brands appeared in the target set to be recalled. Cues were

presented on computer screens and subjects were tested on an individual basis. After exposure, subjects listed as many brands they could recall in five minutes. The authors found that as the number of retrieval cues increased, the number of leading brands recalled decreased and also women outperformed men, presumably for two possible reasons: (1) women are more familiar with the product category, and (2) women may have a more differentiated knowledge of shampoos and therefore may perceive subcategories within the larger subcategory of beauty shampoos (the target set). This subcategory perception could facilitate access to the beauty shampoo category. Study two examined the effects of consumer knowledge and market structure on part-category cuing effects using an episodic memory paradigm with the inclusion of lesser known brands of shampoo. Subjects were shown 25 brands of shampoo and then were given subsets of zero, five, or 15 brands as cues and were asked to recall the remainder. If women truly have a more highly differentiated knowledge of shampoos, the inhibition by part-list cuing may be offset by inter-category cuing that might be present when the cue and target items belong to a more homogeneous set that is composed of both less known and well known shampoos. Results indicated that women showed virtually no effects of part-category cuing, presumably because of higher familiarity with and more sophisticated knowledge of shampoos than men, whose recall was significantly impaired by the cue set. The authors also conducted a third study in which they found that the presentation of two brands can inhibit recall of entire categories of competing brands.

In another study, Alba and Chattopadhyay (1986) found in a series of five experiments involving different product categories that increasing the salience of a single brand can significantly inhibit recall of competing brands. In these experiments, “salience” was defined as “the prominence or ‘level of activation’ of a brand in memory” (p. 363). Subjects were given one familiar brand of shampoo as cue and were then told to recall all other brands in that category. The salience of the brand was operationalized by the amount of time subjects were exposed to and thought about the brand. In the high salience group, subjects spent a minute thinking about the brand prior to recall whereas subjects in the low salience group began recall immediately after the presentation of the cue brand. Subjects were given four minutes to list all the brands they could remember. Results indicate that subjects who thought about the cue brand for one minute (i.e. the high salience group) recalled significantly fewer additional brands than the controls. The same pattern of results was obtained in the remaining four experiments involving different product categories.

### 3.3 Affective Valence as an Organizing Factor

This current research extends beyond the contexts that have been investigated in part-list cuing research (word lists, chess piece placement, brand attribute information, etc.) into a domain that, to my knowledge, has not been examined: emotional appeals in print ads as categorical information for memory organization. Thus, it investigates the effects of part-list cuing on recall of *feeling* ads and not *thinking* ads. Bagozzi, Gopinath, and Nyer (1999) contend that thinking ads focus on either factual information such as product attributes and features or utilitarian consequences of

consuming the product or service while feeling ads concentrate on the emotions one experiences through the usage or ownership of a product. In accordance with this conceptualization, print ads that use emotional appeals could be categorized as feeling ads.

Advertisers have long adopted emotional appeals in advertisements (print ads, TV commercials, radio commercials, etc.) because of the positive effects they have on consumers' attitude toward the ads, the products, and the brands (Burke and Edell 1989; Holbrook 1986; Shimp 1981). The wide usage of emotions in the practice of marketing to trigger buying responses (Gardner 1985) can also be seen in other domains such as retail store environment cues, background music, brand names, packaging, and celebrity endorsement (Bagozzi, Gopinath, and Nyer 1999). This view is consistent with findings in psychology that even relatively mild affective states can have a substantial influence on cognitive processing and social behavior (Johnson and Tversky 1983).

By definition, emotional appeals represent "the extent to which advertising tries to build affective or 'subjective impressions of intangible aspects of a product'" (Biswas, Olsen, and Carlet 1992). Advertisers want the emotional appeals of the advertisements to invoke emotional responses on the part of the viewers that would stimulate a behavioral response in favor of the products or brands advertised. Stout and Leckenby (1986) defined emotional response as "a response to some psychologically important event, real or imagined, past or anticipated" (p. 36). Not everyone exposed to the same stimulus will show emotional responses as it depends on the individual's

ability to make progressively self-relevant connections to the stimulus event, person, or situation (Stout and Leckenby 1986). In this research, it should be noted that not all subjects will necessarily feel the emotional experience intended by the advertisers. Subjects' responses to the ads might typically range from no emotions at all to feeling the same emotions as evoked by the ads due to self-relevance. Stout and Leckenby (1986) proposed a framework consisted of three levels of intensity of emotional response to advertising. The first level is labeled "descriptive" emotional response where the feelings of the characters in the ads are transmitted to the individual as viewer and the viewer recognizes the emotion but does not necessarily experience it herself. The second level of emotional response is termed "empathy" where the viewer feels the same emotions as the character in the ad does. Stout and Leckenby defined it as when the viewer responds to the commercial or scenes from the commercial from her own independent affective standpoint. "The individual can empathize or feel with the character, but the experience generated is dependent upon the stimulus" (p. 36). Highest on the hierarchy of emotional response is the "experiential" level defined as "a true 'emotional response' exhibiting valenced feelings occurring as reactions to self-relevant events" (p. 36). To distinguish this level with "empathy" emotional response, the "experiential" emotional response is embraced by the viewer as self-relevant and not identified with any specific character, scene, or action in the ad.

It is predicted in this research that emotion-laden print advertisements can evoke a range of emotions as described by Stout and Leckenby (1986). It is therefore critical

that the stimuli used in the experiment evoke the distinct emotions as intended. This issue will be discussed further in the method section.

Investigating the organization of memory traces of print advertisements by the emotional appeals apparent in the ads is important because this organizational structure may help consumers access their memory representations of ads more rapidly and demonstrates that emotions elicited by advertisements can be effectively employed as organizing factors in consumers' memory. Barsalou (1983) contends that the organization of information to be remembered is central to recall performance. Isen (1984, 1987) suggested that positive affect reorganizes material in memory as it brings to mind positive information and because this positive material is very extensive, positive affect also induces more integrative ways of thinking about and grouping together information. In support of this view, Isen and colleagues have showed that individuals expand the boundaries of both positive and neutral categories when they are in a positive mood. Other researchers have proposed that both positive and negative information organizes materials in memory. Support for this view comes from findings in research concerning mood congruent learning and the retrieval of mood congruent information from long term memory for both positive and negative affective states (see Blaney 1986; Singer and Salovey 1988, for reviews). Niedenthal, Halberstadt, and Innes-Ker (1999) show that induced emotions affect the organization of information by causing subjects to be more likely to form conceptual groupings by emotional response categories. They asked subjects to sort triads of concepts that had both emotional and non-emotional relations and found that compared to control subjects (who were in a

neutral emotional state), subjects in the positive and negative emotional states were more likely to perform the sorting along emotional lines. In the same vein, Keller (1991) argues that consumers may have strong memory associations with respect to an advertised brand's overall valence derived from the ad's execution appeal or the persuasiveness of its claims. He quoted Isen (1989, p. 9) as suggesting that "not only do people remember how things made them feel, but ... they often organize cognitive material in terms of how it made them feel." Other researchers (Conway and Bekerian 1987; Shaver, Schwartz, Kirson, and O'Connor 1987) also contend that emotions are represented in memory as a type of categorical knowledge.

The above arguments suggest that consumers may organize memory traces of advertised brands in terms of the affective valence or tones derived from or used in the ads (the funny ads, the sad ads, the scary ads, etc.). This is consistent with findings in the literature that brand names and feelings toward ads can become linked in memory (Bagozi, Gopinath, and Nyer 1999). If this is the case, integrating this finding with research on part-list cuing suggests that cuing subjects with print ads that use a specific emotional appeal should impair recall of the remaining ads that use the same appeal.

In an experiment investigating the effect of encoding strategies, retrieval cues, and emotional response on ad recall, Friestad and Thorson (1993) reported that when subjects watched emotional TV ads casually (what they termed "experiential" processing), using product category as a retrieval cue resulted in longer ad-memory response time. They theorized that memory traces of emotional ads formed under casual viewing conditions are not organized in terms of product categories. In this



research, I propose that under casual viewing conditions, consumers may organize their memory traces of print ads by the emotional appeals of the ads if the emotions are sufficiently salient.

### 3.4 Structural Organization of Emotions in Memory

An important question is how might emotions or the emotional appeals of stimuli be organized in memory? In other words, are affective valence types (positive and negative) necessarily linked together? Bower's (1981) seminal associative network model of emotion provides some insights. According to this model, individual emotions are represented as "nodes" (units of information) that are linked by semantic pointers to other units that represent casually related stimuli. These stimuli could be past events that elicit the emotion, a verbal label for the emotion, a description of the emotion, as well as behaviors and physiological events that constitute the emotion. Niedenthal, Halberstadt, and Setterlund (1997) reported evidence for an organization of material according to specific emotions. In three experiments employing lexical decision and word naming methodologies, subjects were induced to feel happy, sad, or neutral and were then exposed to a series of word and pronounceable nonword letter strings. The critical stimuli included words related to happiness, sadness, anger, and love while control words matched each emotion word on frequency and length. The subjects' task was to make word/nonword identifications of these letter strings. Findings indicated that happy condition subjects' identifications of happy words showed greater facilitation than did those of sad condition subjects and vice versa. However, patterns of facilitation for anger and love words did not vary by subjects' emotional states. The

authors also found emotion-congruent word naming, giving stronger support to the associative network model of emotion.

In the current study, the effects of part-list cuing on the two basic forms of emotions (positive and negative valence) are examined. Shaver, Schwartz, Kirson, and O'Connor (1987) suggest that individuals' knowledge of emotions is structured hierarchically with two superordinate categories: positive and negative emotions. Based on propositions from Bower's (1981) associative network model of emotion, if memories are linked with one another via emotion-based associations, prompting retrieval of print ads that use a specific affective valence (positive or negative) should inhibit recall of the remaining noncue print ads that have the same valence. Sison and Mather (2004) showed subjects 60 pictures of negative (20) and positive (20) valence together with neutral (20) pictures. These pictures were chosen from the International Affective Picture System (Lang, Bradley, and Cuthbert 1999). Subjects in the valence-cue condition were cued to retrieve ten pictures of one valence type while control subjects did a series of ten word completion tasks. They found that (1) neutral pictures were less likely to be recalled than positive or negative pictures; (2) control subjects showed superior recall compared to cued subjects in both valence cue conditions; and (3) the recall impairment in the cue conditions was valence specific: when cued with pictures of a certain valence type, recall of noncue pictures of the same valence type was impaired compared to the control condition. Additional analysis was conducted on pictures with people only (to assess the possibility that the superior recall performance

was due in part to the presence of people in some pictures) and yet the same pattern of result was found.

#### *3.4.1 Research Hypotheses – Cue versus No Cue Comparisons*

Findings reviewed in the previous sections reported that exposure to part of an original item list as cues inhibits recall of the remaining items on the list compared to a noncue condition. Consequently, when exposed to part of an original list of print advertisements as cues, it is expected that subjects would also recall fewer of the remaining ads than uncued participants. This main effect of part-list cuing is expected regardless of the valence of the print ads (positive or negative). Hypothesis 1 predicts that:

H1: Exposure to ad cues will inhibit overall recall of ads by cued subjects compared to uncued subjects.

Findings in the psychology literature (e.g. Marsh et al. 2004; Rundus 1973; Slamecka 1968) suggest that not only does exposure to part of an item list as cues inhibit recall of the remaining uncued items, this effect is also categorical. Mueller and Watkins (1977) showed that when words from a categorized study list were presented at recall along with a category name, they inhibited recall of items from the category only if they were names of instances from that category (category-specific). The inhibitory effect was not found when the names were derived from categories not being tested.

Reviewing studies investigating part-list cuing effects with categorical lists, Nickerson (1984) concluded that a single category instance functions the same way a

category name does in helping subjects retrieve noncue items from the study list by providing access to the category (that otherwise would not have been remembered). However, presenting multiple category instances as cues produces an *inhibitory* effect similar to that produced by part-list cuing with noncategorized lists. Specifically, cues facilitate recall when they provide access to more higher order units (categories) than would have been produced without them, and they *inhibit* recall when more information is provided than necessary to access these categories (multiple cues rather than one). It is therefore predicted in the current research that cuing subjects with positively-valenced ads might hinder their recall of noncue positively-valenced ads but not ads with negative valence or are neutral. It is hypothesized that:

H2: When exposed to positively valenced advertisements, subjects in the positive cue condition will recall fewer positively valenced advertisements than subjects in the no cue condition. Recall of negative and neutral advertisements will not differ among positively cued and uncued subjects.

A similar inhibitory effect is also predicted for subjects in the negative cue condition, specifically:

H3: When exposed to negatively valenced advertisements, subjects in the negative cue condition will recall fewer negatively valenced advertisements than subjects in the no cue condition. Recall of positive and neutral advertisements will not differ among negatively cued and uncued subjects.

With regard to subjects exposed to neutral advertisements (ads that do not evoke strong positive or negative emotions) as cues, it is predicted that neutral cues will inhibit recall of neutral ads (main effect) and but have no impact on the retrieval of

positive and negative ads (because the salient property of those neutral ads do not match with the salient properties of the positive/negative affective ads). Therefore it is hypothesized that:

H4: Compared to subjects in the control condition, subjects in the neutral cue condition will recall fewer positive, negative, and neutral ads.

#### *3.4.2 Research Hypotheses – Emotional versus Neutral Ad Comparisons*

Previous research has reported that events or information that elicit emotional responses are more memorable than neutral events or information (Bolles 1988; Brewer 1988; Nilsson 1984) unless the emotional response is so extreme as to evoke a repression response (Loftus and Burns 1982). However, findings in advertising research have been inconclusive as to the effects of advertising emotional appeals on memory. In support of the impact of emotional stimuli, and to reconcile different findings, Friestad and Thorson (1993) argue that encoding conditions and retrieval cues affect memories for emotionally evocative ads differently from memories for neutral ads. The general consensus among researchers is that ad-evoked emotional response enhances memory for ads in uncued, free-recall tasks (Stout and Leckenby 1986; Thorson and Friestad 1989). However, emotional ads had no significant effects in comparison to neutral ads in tasks where brand or product category names were used as cues (Aaker, Stayman, and Hagerty 1986). Friestad and Thorson (1993) suggest that the differences in the structure and content of memory traces may help explain why different types of cues vary in their effectiveness in retrieving memory traces of emotional and neutral

ads. They argue that “ad-evoked emotional responses tend to be strongly associated with episodic encoding processes (Tulving 1983) and, in the absence of any specific encoding tasks, may strengthen viewers’ ‘experiential’ encoding tendency” (p. 5). “Experiential” encoding was conceptualized as casual viewing of an ad (“watch the tape as if you had turned on the TV just to ‘relax for a few minutes’ or to ‘pass a little time’ while waiting for a friend” [p. 8]). Meanwhile, evaluative encoding was conceptualized as to “form an opinion about the products in the commercials, the issues addressed by the public service announcements, and the topics of the program segments” (p. 8). In the absence of any specific encoding tasks, the salience of the emotional appeals of the ads may strengthen viewers’ experiential encoding tendency by focusing their processing resources on the emotion-evoking elements in the ads.

In line with this argument, it is predicted that in a free recall task without any cues and specific encoding instructions, control subjects should recall more emotional ads of both valence types than neutral ads because neutral ads are much weaker in terms of the salience of the emotions evoked in the ads (if at all). Therefore, hypothesis 5 predicts that:

H5: When cues are not presented in a free recall condition, subjects will recall more emotional ads of both valence types (positive and negative) than neutral ads.

However, in the cued conditions, the property of the cue ads is compatible with the properties of the materials to be retrieved (ads with emotional appeals) and may therefore facilitate retrieval of those ads. The encoding specificity principle (Tulving

and Thomson 1973) contends that if the properties of the memory trace of an event are sufficiently similar to the properties of the retrieval information (Hintzman 1986; Raaijmakers and Shrifin 1981; Tulving 1983), recollection of an event is enhanced. This contention is in line with findings that cues can in fact facilitate recall *until the number of cues becomes more than necessary to recall learned materials*, at which point inhibition occurs. Following the encoding specificity principle, it is predicted that in the positive cue condition, recall of negatively-valenced ads should be enhanced compared to recall of neutral ads because the emotional property of the cues is compatible with that of the ads to be retrieved (emotions). However, part-list cuing inhibition should impair recall of positively-valenced ads but not of neutral ads because neutral ads do not have the same affective property as positive ads. Therefore, it is predicted that in the positive cue condition, recall of positive ads will not be significantly higher recall of neutral ads. In short, it is expected that:

- H6a: In the positive cue condition, recall of positively-valenced ads and neutral ads will not differ.
- H6b: In the positive cue condition, subjects will recall more negatively-valenced ads than neutral ads.

Following the same logics, in the negative cue condition, exposure to negative ads as cues should impair subjects' recall of negative ads but not of neutral ads. Thus subjects should not recall more negative ads than neutral ads. However, recall of positively-valenced ads should be enhanced compared to recall of neutral ads because the property of the cues (emotions) is compatible (not identical) with that of the ads to be retrieved. It is therefore hypothesized:

H7a: In the negative cue condition, recall of negatively-valenced ads and neutral ads will not differ.

H7b: In the negative cue condition, subjects will recall more positively-valenced ads than neutral ads.

In the neutral cue condition, it is expected that neutral ad cues will inhibit recall of neutral ads (part-list cuing main effect) and also subjects will have better recall of both types of affective ads than neutral ads, consistent with findings in the literature that ad-evoked emotional response enhances memory for ads (Stout and Leckenby 1986; Thorson and Friestad 1989). It is hypothesized that:

H8: In the neutral cue condition, subjects will recall fewer neutral ads than negative and positive ads.



## CHAPTER 4

### METHODOLOGY

#### 4.1 Overview

This chapter details the methodology used to test the hypotheses discussed in chapter 3. The topics will be discussed in the following orders: participants and design, materials, procedures, and dependent variables.

#### 4.2 Participants and Design

One hundred forty seven undergraduate students from a large Southwest university participated in the experiment for partial course credit. Subjects were randomly assigned to a 3 (ad valence: positive, negative, neutral) x 4 (cue type: no cue, positive cue, negative cue, neutral cue) mixed factorial design. The within-subject factor is ad valence as each subject viewed all 26 ads (eight per affective valence type plus two buffer ads), and the between-subject factor is cue type (each subject received only one type of cue, either no cues, positive cues, negative cues, or neutral cues). Table 4.1 describes the design in the study.

Table 4.1 Experimental Design

<b>Cue Type</b>			
<i>No Cue</i>	<i>Positive Cue</i>	<i>Negative Cue</i>	<i>Neutral Cue</i>
1 Buffer ad	1 Buffer ad	1 Buffer ad	1 Buffer ad
8 Positive ads	8 Positive ads	8 Positive ads	8 Positive ads
8 Negative ads	8 Negative ads	8 Negative ads	8 Negative ads
8 Neutral ads	8 Neutral ads	8 Neutral ads	8 Neutral ads
1 buffer ad	1 buffer ad	1 buffer ad	1 buffer ad
	4 Positive ad cues	4 Negative ad cues	4 Neutral ad cues

### 4.3 Materials

120 print ads representing three valence types (40 positive, 40 negative, 40 neutral) were selected from a pool of 250 print ads taken from popular American magazines. Only full-page or larger advertisements were used in this study because of their prevalent use in magazines and also to control for advertisement size (Harmon, Razzouk and Stern 1983). For positive valence, ads that used either a happy, upbeat, or humorous appeal were selected. For negative valence, ads with either an anxious, disgusted, or sad appeal were selected. Ads that did not use emotions as the main appeal were chosen to represent the neutral ads. Because emotional appeals are prone to possible misinterpretation by the target audience (the emotional appeal the advertiser believes the ad conveys might not be the same appeal the consumer feels about the ad), it was necessary that the ads be rated by a random sample of the target audience to ascertain that the final set of ads evoke the emotional responses intended. As such, the pool of 250 ads was subject to rating by a panel of 10 undergraduate students whose demographics are similar to experiment subjects'. The students were briefed on the use

of emotional appeals in print advertisements and then were instructed to rate the ads in terms of how the ads made them feel (both positive and negative). Each ad was shown on a large drop-down screen in a classroom setting for 10 seconds and the students rated the ad by six items (*happy, upbeat, humorous* and *anxious, disgusted, sad*) on a seven-point Likert scale (1 = Not at all; 7 = Very much so). For each of the positive ads, the highest of the scores on three positive dimensions (*happy, upbeat, humorous*) was selected as its positive score and the highest score of its negative dimensions (*anxious, disgusted, sad*) was selected as its negative score. The same procedure was applied to negative and neutral ads. Among the positive ads, the top 40 ads with the highest positive scores were selected. Similarly, 40 ads with the highest negative scores were picked to represent negative ads. For neutral ads, the 40 ads with the lowest scores on both positive and negative dimensions were chosen.

The mean scores of the selected positive ads ranged from 7.0 (highest) to 4.8 (lowest) on the positive dimension. None of these positive ads scored higher than 2.5 on the negative dimension, indicating that the ads evoked only the intended positive valence. The mean scores of the selected negative ads ranged from 6.4 (highest) to 4.4 (lowest) on the negative dimension. None of these negative ads had a score higher than 2.4 on the positive dimension, indicating that the ads only evoked the intended negative valence. Regarding the selected neutral ads, none of them scored above 3.8 on the positive dimension and 2.1 on the negative dimension, indicating that they did not evoke any specific valence (positive or negative). All ads were screened so that no brand or organizations' name was featured in more than one ad across all valence types.

The final set of ads (stimuli) comprised of different product categories and service types including automobile, food, drink, clothing, office products, pharmaceutical, accommodation, telecommunications, financial services, insurance, public health, etc. While positive and neutral ads featured a wide variety of products and services, most negative ads expectedly featured pharmaceutical products, insurance policies, and public health issues. All ads featured at least a human or humanized character with headlines and ad copies. The brand name or organization's name in each ad was always identified and visible.

#### 4.4 Procedure

It has been long established that mood states can influence recall of stimulus materials. Broadly speaking, mood effects could be classified into three categories: retrieval effects, encoding effects, and state-dependent effects (Bagozzi, Gopinath, and Nyer 1999). Researchers (e.g. Isen, Shalke, Clark, and Karp 1978; Laird, Wagener, Halal, and Szegda 1982) have found that people in a positive mood state at retrieval show superior recall performance for positive materials learned during encoding compared to neutral or negative materials. Mood states at encoding have also been found to affect recall performance whereby the affective state at encoding is associated with superior recall of similarly valenced materials (Bower and Cohen 1982; Forgas and Bower 1987). Finally, mood states also have shown state-independent effects where any material learned under a particular mood state regardless of its affective valence will be recalled better when the subject is in that affective state (Bower, Monteiro, and Gilligan 1978; Bower, Gilligan, and Monteiro 1981). In this study, in

order to control for the potential confounding effects of mood states at encoding and retrieval, subjects read a short article on frivolous gas saving tips. After subjects finished reading the article, they were asked to fill out a mood scale to measure their mood state.

In order to minimize any confounding effects caused by differences among the ads, ads were presented in a randomized order. The size of the final ad pool was not sufficient to allow for total randomization (meaning each subject sees a completely different set of ads) and therefore partial randomization was the choice. This means that there was a certain degree of overlapping (approximately 15%) in terms of ads across subjects. The order in which the ads appeared on subjects' computer screens was also randomized, as was the order of ad cues.

Within each valence type, the ads were numbered from 1 to 40. The Excel command "RANDBETWEEN(1,40)" was used to generate a string of eight random numbers between 1 and 40 (representing the ads) of each valence type for each subject, resulting in 24 ads per subject. These 24 randomly assigned ads plus two "buffer" ads (one presented at the beginning and one at the end of the slideshow to minimize primacy and recency effects) were then burned onto a CD-Rom as a PowerPoint presentation and loaded onto each computer in the lab.

Subjects arrived at the lab in groups of no more than ten per session and were seated at individual computers. Subjects were randomly assigned to either a control (no cue) condition or to one of the three experimental cue conditions (positive, negative, or neutral cue). Each subject received a packet containing the experimental material and a

pen. Subjects were given brief instructions on the experimental procedures before starting the session. At the instruction of the researcher, subjects started reading the article and followed written instructions in the packet from that point on. After completion of the article, subjects filled out the mood scale and viewed their individual set of ads on the computer screen. The slideshow was programmed so that slides were automatically transitioned after 15 seconds. A pretest with six undergraduate students showed that 15 seconds was sufficient for an individual to view the ad image together with its elements such as brand name and some claims. After subjects have seen all of the 24 ads (plus two buffer ads), those in the experimental conditions were shown four ads from the slideshow they had just seen. These four cue ads have the same valence type as the condition the subjects were assigned to (neutral, positive, *or* negative cues). For example, subjects in the negative cue condition saw four negative ads as cues, subjects in the neutral cue condition saw four neutral ads as cues. Subjects in the control (no cue) condition solved some reasoning tasks. After the presentation of the ads and cues, all subjects did a problem-solving task for 12 minutes to minimize the chance that some of the ads might enter short-term memory. After the completion of this task, subjects were given a written free-recall test where they were asked to list the brand names and the execution of the ads (brief description of the ads) they could remember from the slide show. These measures were part of a recall protocol used by Friestad and Thorson (1986). At the end of the session, each subject's recall sheet was put in an envelope with their CD-Rom. Subjects were debriefed on the purpose of the

experiment and asked not to disclose the content of the experiment to their friends. A total of 18 experimental sessions were conducted over a period of four weeks.

#### 4.5 Dependent Variables

The dependent variables in the study are the percentage of brand names and ad executions correctly recalled as a portion of the total number of ads. Subjects were instructed to write down any brand names they could recall from the slide show. For ad execution, subjects were asked to briefly describe the images used in any ads that they could remember (for example, “little girl eating chicken nuggets”). Specific instructions on how to perform this task was given in the booklet. The total number of brand names and ad executions correctly recalled were divided by the number of ads available for recall. For example, for the measure of “total recall”, the number of brand names or ad executions recalled was divided by 24 in the (no cue) control condition, and by 20 in the experimental conditions. Meanwhile, for the measure of “positive ad recall”, the total number of positive brand names or ad executions correctly recalled was divided by eight in the control condition, and four in the experimental condition (because four of the original eight positive ads were used as cues). The two “buffer” ads and the ad cues that were recalled by subjects were not included in the computation of recall measures.

## CHAPTER 5

### RESULTS AND ANALYSIS

#### 5.1 Overview

This chapter reports the results and analyses for the hypotheses presented in Chapter 3. The hypotheses are reported according to the dependent variables studied: recall of ad brands and recall of ad executions. The hypotheses are reported in the same order as presented in Chapter 3.

#### 5.2 Demographic Variables

Participants' average age is 25.8, 43% are males and 57% are females. Eighty six percent of participants have some college education and 14% have completed their first degree. In terms of ethnicity, 54% of participants are Caucasian, 11% African American, 11% Asian American, 16% Hispanic, and 8% other. Results show that gender does not have any significant effects on recall of ads and therefore it was dropped from further analysis.

#### 5.3 Manipulation Check

A one-way ANOVA comparing the mean positive ratings of the three groups of ads (positive, negative, neutral) indicates that there is a significant difference among the groups ( $F(2,122) = 546.63, p < .001$ ) in terms of the emotion the ads elicit. The mean positive rating of positive ads ( $M_{\text{positive}} = 5.26; SD = 0.34$ ) is significantly higher than



that of negative ads ( $M_{\text{negative}} = 1.31$ ;  $SD = 0.39$ ) and neutral ads ( $M_{\text{neutral}} = 2.90$ ;  $SD = 0.76$ ) at the  $\alpha = .001$  level. Similarly, result from a one-way ANOVA comparing the mean negative ratings of the three groups of ads shows that there is a significant difference among the groups in terms of negative ratings ( $F(2,122) = 848.76$ ,  $p < .001$ ). The mean negative rating of negative ads ( $M_{\text{negative}} = 5.10$ ;  $SD = 0.61$ ) is significantly higher than that of positive ads ( $M_{\text{positive}} = 1.57$ ;  $SD = 0.47$ ) and neutral ads ( $M_{\text{neutral}} = 1.25$ ;  $SD = 0.28$ ) at the  $\alpha = .001$  level. For neutral ads, the low mean positive rating ( $M_{\text{neutral}} = 2.90$ ) and mean negative rating ( $M_{\text{neutral}} = 1.25$ ) indicate that these ads have neither positive nor negative emotional appeals.

These results indicate that the manipulation of ad valence was successful. Subjects rated positive ads as evoking highly positive emotions and negative ads eliciting highly negative emotions. Meanwhile, they rated neutral ads lower than a neutral point (3.5) on both dimensions.

#### 5.4 Assumption Check

Data screening procedures identified a total of 25 responses as influential outliers whose  $z$ -score's absolute value was greater than 1.96 (Field 2006). These responses were therefore removed from the dataset, resulting in a total of 122 usable responses.

Kolmogorov-Smirnov (K-S) test was conducted in SPSS to check whether recall of brand names and ad executions were normally distributed. Results show that recall measures of positive, negative, and neutral ads are not normally distributed, warranting a correctional measure. Logarithm transformation was conducted as researchers (e.g.

Field 2005) have suggested such measure is relevant for positive skewness as in this case. Since there are several recall measures of zero (subjects' recall of brand names was nil after removal of brand cues), a constant of 1 was added to all responses since log transformation cannot work with zero values (Field 2005). Results indicate that recall measures are still non-normally distributed even after log transformation. Thus, nonparametric tests were adopted for data analysis because they make fewer assumptions about the type of data on which they can be used (Field 2005). Research has indicated that in general, nonparametric tests are preferable under violation of the normality assumption because they can show greater power than parametric procedures (Nanna and Sawilowsky 1998, Rasmussen et al. 1989). Serlin and Harwell (2004) conducted a Monte Carlo study of test predictor subsets in multiple regression analysis and found that various nonparametric tests show greater power than the *F* test for skewed and heavy-tailed data.

### 5.5 Mood Check

Subjects' mood state was measured by four bipolar items on a 7-point scale. Results in table 5.1 indicate that there were no significant differences among the conditions (positive cue, negative cue, neutral cue, and no cue) on the four measures of mood. The mean scores of each item also indicate that subjects were not in a particularly positive or negative mood state at the time of the experiment. This is evidence that the short article that was intended to neutralize subjects' mood state prior to the experiment was in fact effective.

Table 5.1 Mood Check

<i>Item</i>	<i>Condition</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Sig.</i>
Sad/Happy	Positive cue	4.37	0.71	0.36	0.78
	Negative cue	4.29	0.67		
	Neutral cue	4.24	0.90		
	No cue	4.43	0.78		
Bad mood/Good mood	Positive cue	4.78	0.91	0.34	0.79
	Negative cue	4.55	0.93		
	Neutral cue	4.54	1.06		
	No cue	4.63	1.24		
Irritable/Pleased	Positive cue	4.37	1.15	0.29	0.83
	Negative cue	4.29	1.20		
	Neutral cue	4.24	1.17		
	No cue	4.10	1.21		
Depressed/Cheerful	Positive cue	4.75	1.13	1.28	0.28
	Negative cue	4.18	1.11		
	Neutral cue	4.27	1.23		
	No cue	4.30	1.46		

*Note: N = 122; M = Mean; SD = Standard deviation;*

### 5.6 Brand and Execution Recall – Cue versus No Cue Comparisons

Besides recall of the advertised brands, the effects of ad cues on subjects' recall of ad executions were also examined because sometimes people can recall the image from a print advertisement but cannot remember the brand advertised. If the use of emotional appeal is effective as intended, people should remember the imagery content of the ads that evoked certain emotions in them. This was measured by asking subjects to describe the ads that they could remember in simple terms. Two judges who were not aware of the purpose of the research decided whether the description of an ad matched with the actual ad (a "hit"). The judges agreed on 94% of the cases, and when there were differences, they were resolved through discussion. Results indicate that the two dependent measures (brand name and ad execution recalls) were significantly correlated

as expected. Correlations were 0.65 for positive brand recall and positive ad execution recall, 0.64 for negative brand recall and negative ad execution recall, and 0.82 for neutral brand recall and neutral ad execution recall. Overall, the correlation between total brand recall and total ad execution recall was 0.71. All correlations were significant at the  $\alpha = .01$  level.

### *5.6.1 Total Ad Recall*

Hypothesis 1 states that exposure to ad cues will inhibit overall recall of ads by cued subjects compared to uncued subjects. This hypothesis was tested using non-parametric tests due to violations of the normality assumption. The proportions of ads recalled (positive, negative, and neutral) were summed up to generate a total ad recall index. Kruskal-Wallis test (Kruskal and Wallis 1952) showed a significant difference in terms of total ad brands recalled among the conditions (positive cue, negative cue, neutral cue, and no cue) ( $H(3) = 19.24, p < .001$ ). Consistent with Hypothesis 1, exposure to ad cues (regardless of valence) significantly lowered total recall of ad brands. Mann-Whitney (Mann and Whitney 1947) tests were used to follow up this finding. Because there was also interest in the effects of ad cues on subjects' recall of brands, three Mann-Whitney tests were run to compare the no cue (control) condition to each of the experimental conditions. Therefore, instead of using .05 as the critical level of significance, I used  $.05/3 = .0167$ . This procedure was recommended by Field (2005). A Bonferroni correction was applied and all effects are reported at a .0167 level of significance. Because the direction of comparisons was specified *a priori*, all test significance (*p*-value) was reported at the one-tailed level.

Mann-Whitney test indicates that compared to control subjects, positive cue subjects recalled significantly fewer ad brands ( $U = 221.00, r = -.39, p < .001$ ). The same effects were found for negative cue subjects ( $U = 244.00, r = -.41, p < .001$ ) and neutral cue subjects ( $U = 169.50, r = -.54, p < .001$ ). These findings illustrated the inhibitory effects of part-list cuing in an advertising context in which ad-evoked emotion was used as the appeal.

Table 5.2 Total Brand Recall

Condition	<i>N</i>	Mean rank	<i>Z</i>	Sig. (2-tailed)
No cue	28	35.61	-2.97	.003
Positive cue	29	22.62		
No cue	28	38.79	-3.18	.001
Negative cue	33	24.39		
No cue	28	40.45	-4.15	.000
Neutral cue	32	21.80		

The main effects of cuing on recall of ad execution were examined in the same fashion. Kruskal-Wallis test shows a significant difference in terms of correctly recalled ad execution among the groups ( $H(3) = 19.99, p < .001$ ). As predicted, Mann-Whitney tests show that compared to control subjects, a significantly lower identification rate was found for positive cue subjects ( $U = 263.50, r = -.30, p = .011$ ), negative cue subjects ( $U = 148.00, r = -.58, p < .001$ ), and neutral cue subjects ( $U = 231.50, r = -.42, p < .001$ ). Therefore, Hypothesis 1 was supported. Showing subjects with ad cues appeared to reduce their recall of ad execution, regardless of valence.

Table 5.3 Total Execution Recall

Condition	<i>N</i>	Mean rank	<i>Z</i>	Sig. (2-tailed)
No cue	28	34.09	-2.29	.022
Positive cue	29	24.09		
No cue	28	42.21	-4.57	.000
Negative cue	33	21.48		
No cue	28	38.23	-3.22	.001
Neutral cue	32	23.73		

### 5.6.2 Positive Ad Recall

Hypothesis 2 states that when exposed to positively valenced advertisements, subjects in the positive cue condition will recall fewer positively valenced advertisements than subjects in the no cue condition. However, recall of negative and neutral advertisements will not differ among positively cued and uncued subjects. Consistent with this hypothesis, Mann-Whitney tests reveal that subjects in the positive cue condition recalled significantly fewer positive ad brands than subjects in the no cue condition ( $U = 277.00$ ,  $r = -.29$ ,  $p = .014$ ). However, their recall of negative ad brands was not affected ( $U = 317.50$ ,  $r = -.19$ , NS). This finding is consistent with Hypothesis 2. Exposure to positive ad cues did not lower subjects' recall of negative ad brands. However, Mann-Whitney tests also indicate that subjects in the positive cue condition recalled significantly fewer neutral ad brands than (no cue) control subjects ( $U = 273.50$ ,  $r = -.29$ ,  $p = .013$ ). This finding is not consistent with Hypothesis 2. Exposure to positive ad cues did seem to inhibit recall of these neutral ads.

Mann-Whitney tests reveal no significant effects of positive ad cues on recall of positive ad execution between the (no cue) control condition and the positive cue condition ( $U = 333.50$ ,  $r = -.16$ , NS). This finding is inconsistent with Hypothesis 2.

Results also show that as predicted, there is no significant difference in terms of negative ad execution recall between subjects in the positive cue condition and those in the control condition ( $U = 315.50$ ,  $r = -.19$ , NS). The positive ad cues did not hinder subjects' correct recall of negative ad execution. Consistent with Hypothesis 2, Mann-Whitney test indicates a nonsignificant difference in terms of neutral ad execution recall between the positive cue condition and the control condition ( $U = 303.50$ ,  $r = -.22$ , NS). Therefore, H2 was partially supported.

Table 5.4 Positive Ad Recall

	Condition	<i>N</i>	Mean rank	<i>U</i>	<i>Z</i>	Sig. (2-tailed)
Positive Ad	No cue	28	33.61	277.00	-2.20	.028
	Positive cue	29	24.55			
Negative Ad	No cue	28	32.16	317.50	-1.45	.147
	Positive cue	29	25.95			
Neutral Ad	No cue	28	33.73	273.50	-2.21	.027
	Positive cue	29	24.43			
Positive Exec.	No cue	28	31.59	333.50	-1.21	.228
	Positive cue	29	26.50			
Negative Exec.	No cue	28	32.23	315.50	-1.49	.135
	Positive cue	29	25.88			
Neutral Exec.	No cue	28	32.66	303.50	-1.70	.089
	Positive cue	29	25.47			

### 5.6.3 Negative Ad Recall

Hypothesis 3 states that when exposed to negatively valenced advertisements, subjects in the negative cue condition will recall fewer negatively valenced advertisements than subjects in the no cue condition. However, recall of positive and neutral advertisements will not differ among negatively cued and uncued subjects. Mann-Whitney test results indicate that subjects in the negative cue condition recalled significantly fewer negative ad brands than subjects in the control condition ( $U =$

308.50,  $r = -.30$ ,  $p = .001$ ). This finding is consistent with Hypothesis 3 and showed that the use of negative ads as cues did not help but hurt subjects' recall of negative ad brands. Results also indicated that as predicted, there was no significant difference in terms of positive ad brand recall ( $U = 417.00$ ,  $r = -.08$ , NS). However, negative cue subjects recalled significantly fewer neutral brands than (no cue) control subjects ( $U = 337.50$ ,  $r = -.24$ ,  $p < .05$ ).

A similar procedure was conducted on ad execution recall. Mann-Whitney tests showed that consistent with Hypothesis 3, negative cue subjects did have a significantly lower negative ad execution recall than control subjects ( $U = 308.00$ ,  $r = -.29$ ,  $p = .01$ ). Also as predicted, exposure to negative ad cues did not seem to affect subjects' recall of positive ad execution ( $U = 400.00$ ,  $r = -.12$ , NS). However, neutral ad execution recall by negative cue subjects was significantly lower than that by control subjects ( $U = 317.00$ ,  $r = -.28$ ,  $p = .014$ ). The inhibitory effect of ad cues seemed to be categorical, as recall of negative ad execution was reduced by exposure to negative ads while recall of positive ad executions was not affected. Surprisingly, exposure to negative ad cues did seem to impair recall of neutral ad execution. H3 is therefore partially supported.



Table 5.5 Negative Ad Recall

	Condition	<i>N</i>	Mean rank	<i>U</i>	<i>Z</i>	Sig. (2-tailed)
Positive Ad	No cue	28	32.61	417.00	-.68	.496
	Negative cue	33	29.64			
Negative Ad	No cue	28	36.48	308.50	-2.33	.020
	Negative cue	33	26.35			
Neutral Ad	No cue	28	35.45	337.50	-1.88	.060
	Negative cue	33	27.23			
Positive Exec.	No cue	28	33.21	400.00	-.93	.350
	Negative cue	33	29.12			
Negative Exec.	No cue	28	36.50	308.00	-2.30	.021
	Negative cue	33	26.33			
Neutral Exec.	No cue	28	36.18	317.00	-2.19	.028
	Negative cue	33	26.61			

#### 5.6.4 Neutral Ad Recall

Hypothesis 4 predicts that compared to (no cue) control subjects, neutral cue subjects will recall fewer positive, negative, and neutral ads. Mann-Whitney test shows that consistent with Hypothesis 4, exposure to neutral ads as cues inhibits subjects' recall of neutral ads ( $U = 202.50$ ,  $r = -.51$ ,  $p < .001$ ). Exposure to neutral ads also impairs recall of positive ads ( $U = 282.00$ ,  $r = -.34$ ,  $p < .01$ ) and negative ads ( $U = 273.50$ ,  $r = -.34$ ,  $p < .01$ ).

A similar Mann-Whitney test for ad execution indicates the same pattern of effects as in recall of neutral brand names. Subjects in the neutral cue condition had a significantly lower ad execution recall rate than subjects in the control condition ( $U = 258.00$ ,  $r = -.39$ ,  $p < .01$ ). Exposure to neutral cues also inhibits recall of positive ad executions ( $U = 287.50$ ,  $r = -.32$ ,  $p < .01$ ) and recall of negative ad executions ( $U = 285.00$ ,  $r = -.32$ ,  $p < .01$ ). Hypothesis 4 was therefore supported.

Table 5.6 Neutral Ad Recall

	Condition	<i>N</i>	Mean rank	<i>U</i>	<i>Z</i>	Sig. (2-tailed)
Positive Ad	No cue	28	36.43	282.00	-2.61	.009
	Neutral cue	32	25.31			
Negative Ad	No cue	28	36.73	273.50	-2.66	.008
	Neutral cue	32	25.05			
Neutral Ad	No cue	28	39.27	202.50	-3.94	.000
	Neutral cue	32	22.83			
Positive Exec.	No cue	28	36.23	287.50	-2.48	.013
	Neutral cue	32	25.48			
Negative Exec.	No cue	28	36.32	285.00	-2.46	.014
	Neutral cue	32	25.41			
Neutral Exec.	No cue	28	37.29	258.00	-3.01	.003
	Neutral cue	32	24.56			

### 5.7 Brand and Execution Recall – Emotional vs. Neutral Ad Comparisons

Since the data are non-normally distributed, Friedman's ANOVA (1937) was used to compare subjects' recall of ads per valence type within each condition.

#### *5.7.1 (No Cue) Control Condition*

Hypothesis 5 predicted that when cues are not presented in a free recall condition, subjects will recall more emotional ads of both valence types (positive and negative) than neutral ads. Results indicate that ad brand recall did seem to vary among the groups ( $\chi^2(2) = 5.36, p < .10$ ). Wilcoxon tests were used to follow up this finding. A Bonferroni correction was applied so all effects are reported at a .025 level of significance (because there are two tests: comparing recall of positive ad brands vs. neutral ad brands and recall of negative ad brands vs. neutral ad brands). Recall of positive ad brands did not differ significantly from recall of neutral ad brands ( $T = 156,$

$r = -.03$ , NS). However, subjects recalled significantly more negative brand names than neutral brand names ( $T = 47.50$ ,  $r = -.46$ ,  $p < .01$ ).

A similar test was run with ad execution recall as the dependent variable. Results indicate that ad brand recall did seem to vary among the groups ( $\chi^2(2) = 13.19$ ,  $p = .001$ ). Wilcoxon tests were used to follow up this finding. Results showed that recall of positive ad execution did not differ significantly from recall of neutral ad execution ( $T = 162.50$ ,  $r = -.06$ , NS). However, subjects recalled significantly more negative ad execution than neutral ad execution ( $T = 8.00$ ,  $r = -.67$ ,  $p < .001$ ). Hypothesis 5 was therefore partially supported.

Table 5.7 Brand Recall – Control Condition

		<i>N</i>	Mean rank	Sum of ranks	<i>Z</i>	Sig. (2-tailed)
Neutral Ad - Positive Ad	Negative ranks	11	14.18	156.00	-.18	.857
	Positive ranks	14	12.07	169.00		
	Ties	3				
	Total	28				
Neutral Ad - Negative Ad	Negative ranks	15	12.23	183.50	-2.42	.015
	Positive ranks	6	7.92	47.50		
	Ties	7				
	Total	28				
Neutral Execution - Positive Execution	Negative ranks	12	15.71	188.50	-.34	.736
	Positive ranks	14	11.61	162.50		
	Ties	2				
	Total	28				
Neutral Execution - Negative Execution	Negative ranks	17	10.71	182.00	-3.53	.000
	Positive ranks	2	4.00	8.00		
	Ties	9				
	Total	28				

### 5.7.2 Positive Cue Condition

Regarding the positive cue condition, Hypothesis 6a predicts that recall of positive ad brands and neutral ad brands will not differ while Hypothesis 6b predicts that subjects will recall more negative ad brands than neutral ad brands. Friedman's ANOVA results indicate that there is a significant difference in terms of ad brands recalled among the types of ads ( $\chi^2(2) = 10.93, p < .05$ ). Wilcoxon tests found that as expected, the difference between recall of positive ad brands and neutral ad brands was insignificant ( $T = 99.00, r = -.04, NS$ ). Subjects recalled significantly more negative ad brands than neutral ad brands ( $T = 45.50, r = -.46, p < .01$ ).

With regard to ad execution recall, results show similar effects. Friedman's ANOVA results indicate that there is a significant difference in terms of ad execution recall among the group ( $\chi^2(2) = 16.47, p < .001$ ). Wilcoxon tests found that subjects recalled significantly more negative ad executions than neutral ad executions ( $T = 4.50, r = -.71, p < .001$ ). Meanwhile, the difference between recall of positive ad executions and neutral ad execution was insignificant ( $T = 107.00, r = -.18, NS$ ). Both hypotheses 6a and 6b were therefore supported.

Table 5.8 Ad Recall – Positive Cue Condition

		N	Mean rank	Sum of ranks	Z	Sig. (2-tailed)
Neutral Ad – Positive Ad	Negative ranks	7	14.14	99.00	-.23	.818
	Positive ranks	13	8.54	111.00		
	Ties	9				
	Total	29				
Neutral Ad – Negative Ad	Negative ranks	16	11.59	185.50	-2.48	.013
	Positive ranks	5	9.10	45.50		
	Ties	8				
	Total	29				
Neutral Execution – Positive Execution	Negative ranks	12	14.08	169.00	-.96	.335
	Positive ranks	11	9.73	107.00		
	Ties	6				
	Total	29				
Neutral Execution – Negative Execution	Negative ranks	19	10.82	205.50	-3.81	.000
	Positive ranks	1	4.50	4.50		
	Ties	9				
	Total	29				

### 5.7.3 Negative Cue Condition

Similar analyses were conducted to test the effects of cues in the negative cue condition. Hypothesis 7a predicted that recall of negative ad brands and neutral ad brands will not differ while Hypothesis 7b predicted that subjects will recall more positive ad brands than neutral ad brands. There appeared to be no significant difference in terms of negative ad brands recalled among the types of ads ( $\chi^2(2) = 1.16$ , NS). In terms of ad execution recall, in the negative cue condition, recall did not significantly

differ among conditions ( $\chi^2(2) = 3.84$ , NS). Hypothesis 7a was therefore partially supported while Hypothesis 7b was not supported.

#### *5.7.4 Neutral Cue Condition*

Hypothesis 8 predicts that within the neutral cue condition, subjects will recall more positive and negative ads than neutral ads. Friedman's ANOVA results indicate that there is a significant difference in terms of ad brands recalled among the types of ads ( $\chi^2(2) = 12.07$ ,  $p < .05$ ). Wilcoxon tests found that subjects recalled significantly more negative ad brands than neutral ad brands ( $T = 36.50$ ,  $r = -.53$ ,  $p < .01$ ). Meanwhile, the difference between positive ad brands and neutral ad brands recalled was insignificant ( $T = 80.50$ ,  $r = -.11$ , NS).

A similar test was conducted with ad execution as the dependent variable. Friedman's ANOVA results indicate a significant difference in terms of ad executions recalled among the types of ads ( $\chi^2(2) = 12.20$ ,  $p < .05$ ). Wilcoxon test results indicated that subjects recalled significantly more negative ad executions than neutral ad executions ( $T = 58.00$ ,  $r = -.47$ ,  $p < .01$ ). Meanwhile, the difference between positive ad executions and neutral ad executions recalled was insignificant ( $T = 80.50$ ,  $r = -.11$ , NS). Hypothesis 8 was therefore partially supported.

Table 5.9 Ad Recall – Neutral Cue Condition

		<i>N</i>	Mean rank	Sum of ranks	<i>Z</i>	Sig. (2-tailed)
Neutral Ad – Positive Ad	Negative ranks	13	8.42	109.50	-.60	.548
	Positive ranks	6	13.42	80.50		
	Ties	13				
	Total	32				
Neutral Ad – Negative Ad	Negative ranks	18	12.03	216.50	-3.00	.003
	Positive ranks	4	9.13	36.50		
	Ties	10				
	Total	32				
Neutral Execution – Positive Execution	Negative ranks	13	8.42	109.50	-.60	.548
	Positive ranks	6	13.42	80.50		
	Ties	13				
	Total	32				
Neutral Execution – Negative Execution	Negative ranks	18	13.44	242.00	-2.65	.008
	Positive ranks	6	9.67	58.00		
	Ties	8				
	Total	32				

### 5.8 Summary of Hypothesis Tests

Table 5.10 Summary of Hypothesis Tests

<b>Hypothesis</b>	<b>Results</b>
H1 Exposure to ad cues will inhibit overall recall of ads by cued subjects compared to uncued subjects.	<i>Supported</i>
H2 When exposed to positively valenced advertisements, subjects in the positive cue condition will recall fewer positively valenced advertisements than subjects in the no cue condition. Recall of negative and neutral advertisements will not differ among positively cued and uncued subjects.	<i>Partially supported</i>

Table 5.10 - continued

H3	When exposed to negatively valenced advertisements, subjects in the negative cue condition will recall fewer negatively valenced advertisements than subjects in the no cue condition. Recall of positive and neutral advertisements will not differ among negatively cued and uncued subjects.	<i>Partially supported</i>
H4	Compared to subjects in the control condition, subjects in the neutral cue condition will recall fewer positive, negative, and neutral ads.	<i>Supported</i>
H5	When cues are not presented in a free recall condition, subjects will recall more emotional ads of both valence types (positive and negative) than neutral ads.	<i>Partially supported</i>
H6a	In the positive cue condition, recall of positively-valenced ads and neutral ads will not differ.	<i>Supported</i>
H6b	In the positive cue condition, subjects will recall more negatively-valenced ads than neutral ads.	<i>Supported</i>
H7a	In the negative cue condition, recall of negatively-valenced ads and neutral ads will not differ.	<i>Partially supported</i>
H7b	In the negative cue condition, subjects will recall more positively-valenced ads than neutral ads.	<i>Not supported</i>
H8	In the neutral cue condition, subjects will recall fewer neutral ads than negative and positive ads.	<i>Partially supported</i>



## CHAPTER 6

### GENERAL DISCUSSIONS

The purpose of this research is to investigate the inhibitory effects of part-list cuing, a phenomenon coined “the enigma of memory research” (Nickerson 1984), in a marketing context, specifically in print advertisements with emotional appeals. A large body of research in psychology has explored the inhibitory effects of part-list cuing in various domains, but to date little is known about its effects on categorized images that elicit emotional responses.

In the psychology domain, researchers have found that events or information that elicit emotional responses are more memorable than neutral events or information (Bolles 1988; Brewer 1988; Nilsson 1984) unless the emotional response is so extreme as to evoke a repression response (Loftus and Burns 1982). Capitalizing on these findings, advertisers have widely used emotional advertising (advertisements that evoke emotional responses), hoping that their advertisement messages will be more memorable in consumers’ minds, leading to top-of-mind awareness and higher probabilities that their products will be purchased. However, findings in the advertising domain have been inconclusive as to the effect of emotional advertising on memory. The general consensus is that emotional response evoked by advertisements enhances memory for ads in uncued, free-recall tasks (Stout and Leckenby 1986; Thorson and

Friestad 1989) while emotional ads had no significant effects over neutral ads in tasks where brand or product category names were used as cues (Aaker, Stayman, and Hagerty 1986).

Motivated by the above findings in both the psychology and advertising domains, this research aims to explore (1) the possibility that the inhibitory effects of part-list cuing are also present in print advertisements that use emotions as the main appeals; and (2) whether emotional advertisements are more memorable than neutral advertisements when the cues are ads of the same emotional categories rather than brand or product category names.

Results from the current study suggest that simply exposing to part of an original list of print ads impairs recall of the remaining uncued ads (Hypothesis 1). This finding provides evidence for the robustness of the inhibitory effects of part-list cuing: it is present in print advertisements that elicit emotional responses. More importantly, there is initial evidence for the notion that people might organize memory representations of advertisements by the emotions that they evoke. Results in the current study show that when cued with positive ads, subjects' recall of positive ads suffered, but their memory for negative and neutral ads was not affected. Similarly, when cued with negative ads, subjects' memory for negative ads was impaired while recall of positive and neutral ads remained unharmed. This effect is in line with findings in the psychology literature on the inhibitory effects of part-list cuing in categorized word lists in which items (words) on the list are broken down into categories. Nickerson (1984) suggests that category instances are likely to increase the

probability that items will be recalled from the cued category if the categorical structure of the lists is known to subjects or if the number of the categories is so high that subjects are unlikely to recall all of them should cues be absent. In the current study, subjects were not informed of the structure of the ad list and presenting them with ads of a particular valence impairs their memory for the remaining ads of that particular valence but not the other.

The current research also gives evidence for the effects of emotional advertising in uncued and cued recall tasks. Results indicate that in the control (uncued) condition, subjects recalled more negative ads than neutral ads. This effect is found with both brand names and ad executions and it is consistent with Friestad and Thorson's (1993) suggestion that "ad-evoked emotional responses tend to be strongly associated with episodic encoding processes (Tulving 1983) and, in the absence of any specific encoding tasks, may strengthen viewers' 'experiential' encoding tendency" (p. 5). However, results also indicate that in the absence of cues, positive ads did not have a significant advantage over neutral ads on subjects' memory. This finding provides a finer distinction on the effects of emotional ads on consumers' memory than what is suggested by the extant literature.

In the cue conditions, results show that cuing subjects with ads of a particular valence did not enhance subjects' memory for uncued ads of the *same* valence, but cuing helps memory for ads of the *other* valence. This finding is interesting. On the one hand, it is consistent with findings in the advertising literature (Aaker, Stayman, and Hagerty 1986) that emotional ads had no advantage over neutral ads when brand or

product category names were used as cues (in this current study, the cue was ad valence). On the other hand, valence cue did seem to facilitate recall of ads of a valence other than the cued one. It is suggested here that cuing subjects with ads of a particular valence might impair their memory for the remaining ads of the same valence (part-list cuing effect) but on the other hand facilitates retrieval of ads of a different valence (the encoding specificity principle). This finding provides an alternative explanation to the inconclusive findings in the extant literature on the effects of emotional advertisements on memory.

Results from the study also show that exposure to cues (regardless of valence) impairs recall of neutral ads and that exposure to neutral ads as cues did impair recall of the remaining ads regardless of valence. Since neutral ads do not evoke emotional responses, neutral cues did not facilitate access to positive or negative ads. Exposure to neutral ads as cues may have strengthened the memory traces of cued neutral ads and inhibited retrieval of the uncued neutral ads.

In summary, the study reported here makes several important contributions to both the psychology and marketing literatures. This study confirms the effects of part-list cuing inhibition in a domain hitherto untapped: emotional advertising. Not only is people's memory for the imagery components of the ads impaired by part-list cuing, but also their memory for the advertised brand names is inhibited. Results from this research also show that people may organize memory representations of emotional stimuli (images) by the emotions that they (the stimuli) evoke. Cuing people with advertisements of one specific valence type only inhibits their recall for ads sharing the

same valence but not others. Another important finding from this research is that in an uncued, free recall task, negative advertisements are better remembered than neutral advertisements, but that is not the case for positive advertisements. Even though advertisements that evoke positive affect might be preferred to neutral ads, they are not necessarily more durable in people's memory. This finding goes beyond current knowledge in the advertising literature that emotional advertising are more memorable than neutral advertising in a free recall task by showing that this effect is only true to negative ads but not positive ads.

The current research also provides important implications to advertisers. By cuing consumers with print advertisements for their own products, advertisers can strengthen consumers' memories for their own brands and at the same time impair their recall of the competition's brands. Advertisers can place posters in retail stores featuring the same ads they run in newspapers or magazines as cues. These cues may inhibit competing brands from entering consumers' evoked set and increase the possibility that the advertiser's brand will be chosen.

## CHAPTER 7

### LIMITATIONS AND FUTURE RESEARCH IMPLICATIONS

As with any lab experiments, there are limitations to the generalizability of this research. Even though randomization was attempted to minimize the effects of confounding variables, it is possible that the nature of the product categories might have had some effects on recall. For example, brands that use positive ad appeals tend to be fast-moving consumer goods while brands that use negative ad appeals tend to be in the pharmaceutical and security industries, plus public awareness campaigns. The time interval between exposure to the stimuli (ads) and recall task was approximately 20-25 minutes while in reality, it might be days or weeks between the time a consumer is exposed to a print advertisement and when he or she is making a purchase decision for a product in the same category as the one featured in the ad. Because of the nature of the ads (real ads instead of made-up ads with the help of computer software), some variables were impossible to control for, including the font size and length of the ad copy. However, randomization of the ad lists, the order of ad presentation, and order of cues, should minimize these confounding effects.

Despite its limitations, this research makes important contributions to the extant literature on the inhibitory effects of part-list cuing. It shows that the effect is robust

with images that evoke emotional responses (print advertisements), and more importantly, that people may use valence or emotion as an organizing factor for their memory of images or pictures and advertisements. The research also provides evidence for the effect of emotional ads versus neutral ads in free recall as well as cued recall tasks.

This research opens up opportunities for future research on the inhibitory effects of part-list cuing in the advertising domain. The effect of category names (rather than valence) as cues should be investigated in future research, as is the number of cues (for example, low, medium, high). Research in psychology has found that as the number of cues increases, fewer items from the original study list are recalled. This effect should be examined in an advertising context.

In this research, recall of an ad execution was recorded as either one or zero (hit or miss). Future research should look into the details of the descriptive recall of ad executions and record recall on a continuous scale based on the number of execution components recalled correctly. Such measure will provide more insights into the magnitude of the inhibition effects.

Another potential direction for future research is to investigate the connection between recall and liking. The research reported here did not attempt to explore such connection, but it should not be neglected in future research. One potential way to explore this relationship is to measure liking for the ads prior to and following the recall task. Findings from the current research show that when subjects were exposed to a

subset of print ads that they had already seen previously, their memory for the remaining uncued ads was inhibited. An interesting question that calls for future research is: of the brands that were recalled, would subjects be more likely to prefer them to other competing brands?

Also, the initial findings reported here should be investigated in a related context: TV and radio ads. Research of part-list cuing effects in those areas should give researchers and advertisers a more holistic picture of the effects of part-list cuing and provide valuable insights for marketers in their advertising strategies.

Moving beyond the advertising context, part-list cuing inhibition should also be explored in other research arenas, including healthcare and brand portfolio management. For example, is it better to remind senior citizens of some of their prescriptions or not to remind them at all? Can reminding them to take some of the many prescription drugs they need to take on a daily basis make them forget to take the other prescriptions that are not reminded? For companies with large brand portfolios such as P&G or Unilever, is it better to focus on advertising several of the flagship brands or to allocate their advertising budget evenly across all brands? Will companies do a disservice to their own brands by bombarding consumers with advertising messages for some flagship brands while neglecting other brands? Can repeated exposures to several brands impair customers' memory of the rest of the brands in the company's brand portfolio? These questions are worthy of future research.



APPENDIX A

GAS SAVING TIPS

Stunned by the high price of gasoline, many Texas motorists are working every angle to cope with the extra expense. Some penny-pinching tactics are undeniably helpful – accelerating gently, keeping tires properly inflated, and not buying gas at stations close to freeways. But other notions are bogus and might even increase motorists’ costs. Beware of the following money-saving myths currently making the rounds:

1. *Gas stations raise prices on weekends, so save money by filling up during the week.* Station owners raise prices when the oil companies raise prices. That can happen any day of the week – sometimes several times in one day.

2. *Higher-octane gasoline produces an increase in miles per gallon.* Not unless a car’s engine was built to burn midgrade or premium gasoline.

3. *A coordinated boycott of one gasoline brand, or boycotting all stations for a day, brings prices down.* A one-brand boycott shifts demand to other brands; a brief “gas-out” simply delays demand to another day. Only a sustained overall reduction in demand puts downward pressure on prices.

4. *Using a car’s air conditioner burns extra gasoline.* Rolling down the windows while driving at highway speeds creates extra aerodynamic drag and is even less fuel-efficient than keeping the windows up and the air conditioner on.

5. *Aftermarket devices boost cars’ fuel economy.* Various independent organizations, including the EPA, have tested many devices over the years, including magnets, intake-air agitators, fuel energizers, fuel additives, and lubricant additives. Their conclusion? Such products provide no significant gas-saving benefits.

6. *Hybrid vehicles are by far the most fuel-efficient cars.* Hybrids are fuel-efficient, but they typically achieve fuel-economy numbers much lower than their EPA estimates, just like most gasoline-powered cars. Some conventional cars get high gas mileage too – for example, certain models of the Honda Civic, Mini Cooper, Scion xA, and Toyota Corolla.

7. *Switching off and then restarting an engine burns less gas than letting the car idle.* Only if the wait is going to last more than a couple of minutes – say, while waiting at a railroad crossing for a long train to pass. In that case, it’s smart to switch off the engine.

8. *Station pumps deliver more gas for the buck at night, when temperatures are cooler.* It’s true that gasoline molecules are packed more densely at lower temperatures, but station storage tanks are located underground, where temperatures tend to be consistently cool day and night.

9. *It’s always best to buy gas at a station with the cheapest prices.* Not if it means using significantly more fuel to get to that cheaper station.

10. *Tailgating a big rig raises a car’s fuel-economy because it cuts wind resistance.* Okay, this is true: race-car drivers frequently “draft” their competitors. But tailgating is illegal, and it’s certainly unsafe. After all, who’s going to get the worst of it if the truck driver makes a sudden stop – the semi or the car that’s drafting?

APPENDIX B

FORM 1 – MOOD SCALE

**FORM 1:**

Please circle a number that best describes how you are feeling at the moment. For example, if you are feeling very sad, circle “1”. If you are feeling very happy, circle “7”. If you are neither very sad nor very happy, circle “4”.

Sad            1        2        3        4        5        6        7        Happy

Bad mood    1        2        3        4        5        6        7        Good mood

Irritable    1        2        3        4        5        6        7        Pleased

Depressed   1        2        3        4        5        6        7        Cheerful

**INSTRUCTIONS:**

- When you have finished answering the above items, please follow the instructions below
- You will see in a Power Point slideshow (located on your desktop) 26 magazine advertisements for various products, services, and causes. Each ad will be shown for 10 seconds. View the ads as you would in a magazine (what product/service, brands, companies, organizations, etc.).
- The slideshow lasts approximately 7 minutes. At the end of the slideshow, you should move on to the next page and follow the instructions on that page. Once you have finished the task on each page, *DO NOT GO BACK!*
- Please double click the Power Point icon and then hit (Shift+F5). The slideshow will start automatically in approximately 10 seconds.

APPENDIX C

DISTRACTOR TASK – (NO CUE) CONTROL CONDITION

**FORM 2:**

*Please answer the following questions to the best of your knowledge. You have approximately 2 minutes to complete the task.*

1. Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear demonstrations. Please check off the most likely alternative:
  - Lind is a bank teller
  - Linda is a bank teller and is active in the feminist movement
  
2. If you were faced with the following choice, which alternative would you choose:
  - A 100% chance of losing \$50
  - A 25% chance of losing \$200, and a 75% chance of losing nothing
  
3. John is envious, stubborn, critical, impulsive, industrious, and intelligent. In general, how emotional do you think John is? (*Circle one number*)  
  
Not emotional at all      1   2   3   4   5   6   7   8   9      Extremely emotional
  
4. Jim is intelligent, skillful, industrious, warm, determined, practical, and cautious. Please circle the other traits you think Jim is most likely to have. *Circle one trait in each pair:*
  - Generous ----- Ungenerous
  - Unhappy ----- Good-natured
  - Humorous ----- Humorless

*When you have completed, please move on to the next page*

APPENDIX D

DISTRACTOR TASK – ALL CONDITIONS

**FORM 3:**

*Please solve the following problems. You have 10 minutes to complete this task.*

1. Put these statements in order:
- The ship stopped to anchor in Commander Bay.
  - A boy awoke and saw a sea lion.
  - A boy went ashore and napped in a meadow.
  - A boy did not tell what he had seen.
  - A boy got a job on a ship.

*Your answer:* \_\_\_\_\_

2. You are competing in a race and overtake the last runner. In which position are you now (*circle a letter*)?

- Last.
- Second to last.
- Third to last.
- Cannot be determined unless the number of runner is known.
- Cannot be determined because this is an ambiguous question.

3. Which is a more likely cause of death in the United States – being killed by falling airplane parts or by a shark attack?

- Falling airplane parts
- Shark attack

4. In 20 seconds or less, determine which is greater:

- $410/963 - 208/962$ .
- $202/962$ .

5. Which of the following five is least like the other four:

- Celery
- Lettuce
- Onion
- Grape
- Asparagus

6. Emily is four years old. Her big sister Amy is three times as old as Emily. How old will Amy be when she is twice as old as Emily?

- 14
- 16
- 18
- 20
- 22



7. WOLF is to FLOW as 8526 is to:

- a. 2856
- b. 6258
- c. 5862
- d. 5682
- e. 6852

8. Let's say that the following arguments are true:

- a. Some gatekeepers are warriors
- b. Some warriors are coward

Therefore, we can conclude that some gatekeepers must be coward.

Is this conclusion true or false?

9. What would be the next number in this series:

15 ... 12 ... 13 .... 10 ... 11 ... 8 ...

- a. 5
- b. 6
- c. 7
- d. 8
- e. 9

10. Gina is faster than Jan, and Nora is slower than Gina.

Which of the following statements would be most accurate?

- a. Nora is faster than Jan
- b. Nora is slower than Jan
- c. Nora is as fast as Jan
- d. It is impossible to tell whether Jan or Nora is faster

11. If you rearrange the letters NLIRBE, you would have the name of a:

- a. River
- b. Country
- c. City
- d. Animal
- e. Plant

12. Hanger is to Closet as Tree is to:

- a. Branch
- b. Bushes
- c. Forest
- d. Ground
- e. Nest

*When you have completed, please move on to the next page*

APPENDIX E

RECALL PROTOCOL

**FORM 4:**

In the table below, please **TRY YOUR BEST** to recall and describe the ads you viewed by the following factors:

- *Brand name*: write the name of the advertised brand or organization (e.g.: “Lexus”, “United Way”).
- *Description*: briefly describe the ad as you remember (e.g.: “black car on the road”, “smiling child”)

<b>Ad</b>	<b>Brand name</b>	<b>Ad description</b>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		

APPENDIX F

DEMOGRAPHICS



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## BIOGRAPHICAL INFORMATION

Hieu P. Nguyen earned his Ph.D. in marketing from the University of Texas at Arlington. His research interests include part-list cuing effect, interpersonal attachment style, memory, judgment and decision making, and scale development. Hieu has published his research in the Journal of Marketing Theory and Practice and presented his work at various conferences. He earned an MBA in marketing from Texas Christian University and a BA in English from the Hanoi Foreign Studies University. Prior to his academic career, Hieu worked in sales, public relation, and marketing communications for various companies in Vietnam and the United States.