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ABSTRACT

Based on the associational nature of memory, the distinction between episodic and semantic memory, and the notion of memory strength, a model was developed of the role of emotion in the memory of television commercials. The model generated the following hypotheses: (1) emotional commercials will more likely be recalled than nonemotional commercials; (2) the stronger the emotion experienced by the viewer, the more likely the recall; and (3) types of details remembered will differ for emotional and nonemotional commercials. To test these hypotheses, 20 commercials were categorized as depicting neutral, postive, negative, or poignant (positive and negative) emotions. Sixty-five college students viewed the comercials, and continually registered their feelings on a dial ranging from 100 (very positive) through 50 (neutral) to 0 (very negative). After viewing the 20 commercials, subjects were asked to write down as much as they could remember about each commercial. The results indicated that there are differances in the memory strength of episodic traces for emotional and nonemotional commercial messages and even differences reflecting the relative intensity of emotional response. In addition, some semantic processing (for example, judgment and evaluation) was shown to be affected by the emotionally enhanced episodic trace. (HTH)

The Effects of Emotion on Episodic Memory for TV Commercials

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Abstract

This paper presents a model of how emotion experienced by viewers during the watching of TV commercials affects memory. The model is based on three assumptions about the structure of memory: its associational nature, the distinction between episodic and semantic storage, and the concept of strength differences in memory traces. Predictions from the model include: (1) emotional commercials will be recalled with a higher probabilty than non-emotional; (2) the stronger the emotion experienced, the more likely the recall; and (3) types of details remembered will differ for emotional and nonemotional commercials. Results from an experimental test of the predictions are reported, and future research directions are suggested.

The Effects of Emotion on Episodic Memory for TV Commercials

In recent years, advertisers and practitioners alike have been involved in discussions of what consumer memory can tell us about the effectiveness of commercials. In many of these discussions, memory has been defined narrowly in terms of the delayed recall methods used by advertising research companies like Burke, ARS, and ARI. Although the present treatment encompasses these methods, it will go beyond them to develop a model of memory for commercials. In particular there will be concern with how memory measures are useful for evaluating the emotional commercial. The model and the data presented will contradict the position taken by practitioners (e.g., Zielske, 1982) that recall underestimates the strength of emotional commercials. Indeed, we think this position has resulted from the fact that in spite of its long history in advertising evaluation, research on memory for ads has been carried out in a theoretical vacuum. With the present model of memory it will be seen that questions about emotion's effects on memory for a commercial do not revolve only around the typical argument about "how much information" is contained in emotional commercials, but rather on how human memory stores, operates on, and retrieves information about emotional commercials and the products they promote.

The paper will first present a general discussion of memory. In this section we will discuss the associational nature of memory, the distinctions and relationships between episodic and semantic memory, and what we mean by the concept of "memory strength."

Secondly, we will present our model of ad memory. This model is fundamen-

tally concerned with understanding how emotion and emotional responses influence memory for commercials. Finally we will summarize the results of a study that tested some aspects of the model, and that generated a number of questions for further research.

The Associational Nature of Memory

Every conscious human experience leaves a memory trace consisting of elements representing a variety of aspects of the experience including external events such as what happened, who was there, where it was, and internal events such as emotions, thoughts, and bodily sensations occurring during the event. These elements, because of their contiguity in time and the way the human nervous system is built, become tied together or associated, in memory. As a result the subsequent presence of any one of the elements is likely to reinstate "memory" for the others. In fact, the "context" effect is such that reinstatement of elements that would appear to be irrelevant to certain memories prove to be closely tied to them. For example, the literature of state dependent memory shows that things learned under water are better recalled under water (Godden & Baddeley, 1975), things learned while happy are better recalled when happy (Bower & Cohen 1982), and things learned in one room are better recalled in that room (Smith, Glenberg, & Bjork, 1978).

Episodic and Semantic Memory

Endel Tulving (1972) first argued that there are differences between memory processes that store information about specific events or episodes experienced by a person, and memory that stores general semantic knowledge about the world. Episodic memory was defined as the mental storage of personal experiences and their spatial and temporal context. For example, when a person

watches a commercial, she is experiencing the visuals and the copy, along with the appearance of and occurrences in the viewing context, and events such as thoughts, feelings, and so on that are internal to her. Figure 1 shows a schematic of the resulting episodic trace.

Insert Figure 1 about here

Semantic memory is the mental storage of general knowledge. For example, when a person tells us that the major laundry detergents are Solo, Tide, and Cheer, these are items of knowledge rather than personal memories. The individual may, in fact, no longer know under what conditions or when this knowledge was acquired. Figure 2 shows a schematic of semantic knowledge of soap.

Insert Figure 2 about here

Some controversy has developed about whether episodic and semantic memory are actually separate (Atkinson, Herrmann, & Wescourt, 1974; Crowder, 1976; Herrmann & McLaughlin, 1973; Shoben, Wescourt, & Smith, 1978), or whether the distinction is really just a useful way to classify different kinds of knowledge (Anderson & Bower, 1973; McKoon & Ratcliff, 1979; McCloskey & Santee, 1981). Under either interpretation, however, the distinction has proved to be an important one to psychologists studying memory (Lachman, Lachman, & Butterfield, 1979; Kintsch, 1977; Klatzky, 1980; Seamon, 1980).

In the present paper we further explore the notion that the distinction is also important to considerations about how advertising works (Thorson, 1984). To clarify the application of the distinction, we look first at examples of episodic and semantic memory in some typical methods of evaluating advertising.

In a prototypic episodic task, a consumer is telephoned and asked if she watched a particular program on television the preceding evening. Upon answering in the affirmative, she is asked to list all the commercials she saw in the program and to talk about each one. Clearly this task is one for episodic memory. The viewer must think through what she was doing last evening, what shows she watched, and what commercials she saw. But there is a complication. If the viewer fails to recall the commercial of interest, she is then cued--and as soon as one attempts to jog memory with classificatory information (Did you see any cake mix commercials?; any commercials for Duncan Hines?), semantic memory may be initiated. Our viewer may access her storage of cake mix commercials—a semantic organization -- and index its contents. Or she may create a list of cake mix commercials--also a semantic memory activity. In spite of these complications, however, the initial memory for a commercial is episodic, and asking an individual to recall one seen last night is usually and primarily an episodic task.

In a prototypic semantic memory task a consumer watches some programming and commercials and then is asked to talk about how the values expressed in the ad are consistent or inconsistent with her own. Or she is asked how well she liked the way emotion was expressed in the ad, or whether she would be interested in trying the advertised product. Although there are some episodic memory requirements in these tasks, they mainly involve classification, com-

parison, judgment, and evaluation of memory material other than that contained in the episode. Here, primarily semantic memory is involved.

It is clear, then, that when a commercial is experienced, a set of associations are laid down. These aspects of the experience may involve product, brand name, product characteristics and execution, but will also include emotions, thoughts, and bodily sensations experienced during the viewing, the presence or absence of other people, and so on. All of these elements become part of the episodic trace.

Thus far we have treated the two memories as separate and non-communicating systems. Obviously, however, all information must be input as episodes. Mental operations on episodic information create semantic memory. These operations occur when episodes are acted upon in some way to classify, judge, or compare their contents. The operations need not occur immediately, but the episodic traces, of course, must be available when the operations occur. In the example above, if a viewer is asked which recent commercial for laundry detergent she finds most effective, the available episodes for each relevant commercial would be called up, compared, contrasted, and evaluated. Traces of these operations and their results would come into existence in semantic memory—although the episodic traces would probably remain, perhaps with minor modifications resulting from the processing that operated on them.

Memory Strength

It is at this point that the concept of memory strength becomes important. If it is the case that not every episode is immediately processed semantically, it becomes important to optimize the strength of the episodic trace so as to enhance the likelihood of its availability at a later time. In the present

approach, memory strength for a trace is operationally defined in terms of: 1) its likelihood of being recalled; 2) how early it is recalled as compared to other episodes; and 3) the number and type of elements recalled in the trace. If we think of a commercial as an episode, the question of obvious concern to practitioners is how to enhance its episodic trace strength.

Determinants of Memory Trace Strength

It is certainly true that a cogent message is easier to encode and later recall than a garbled & ambiguous message (Anderson, 1980). Research investigating the effects of linguistic structure of ads (Thorson & Snyder, 1984; Rossiter, 1981), as well as research dealing with the structural integration (Thorson & Friestad, 1983) of a message (e.g., the ad shows lots of lather while making a claim that the soap makes rich & thick suds) has shown that these message variables also affect memory strength. But the determinant of memory strength we wish to examine here is the presence of viewer emotion during the episode.

When a message elicits an emotional response in the viewer, information about the emotion is laid down in the episodic trace of the message. The presence of emotional elements in the trace is interpreted by the individual as a signal that the trace itself is important or significant. Indeed, the argument for this "signal of importance" effect has been made in evolutionary or adaptive terms (Plutchik, 1980) as well as from a developmental point of view (Leventhal, 1980).

In addition, the belief that the relationship between emotion and cognitive processes is an important arena of theoretical and empirical investigation is reflected in the relatively recent surge of interest in this topic (e.g., Dutta and Kanungo, 1975; Plutchik & Kellerman, 1980; Mitchell, 1981; Lynch & Srull,

1982; Clark & Fiske, 1982; Izard et al, 1983; Mandler, 1984). There is, therefore, ample support for the hypothesis that episodic traces laid down during the experience of emotion are enhanced in strength.

The Model

Based on the conceptions elaborated above -- the associational nature of memory, the distinction between episodic and semantic memory, and the notion of memory strength, we developed a model of the role of emotion in memory for commercials. The model is in a preliminary stage of development and does not take a position on many questions that have been asked about the general relations of memory and emotion. For example, it does not specify whether emotion and memory can operate independently (Zajonc, Pietromonaco & Bargh, 1982), whether emotion exists as a node in associative network structures (Bower & Cohen, 1982; Isen, Skalker, Clark & Karp, 1978); or even whether emotion is primarily a cognitive or a somatic process (Izard, 1982). Indeed, for present purposes, the model remains closely tied to empirical indices of its components.

As a further caveat, it is obviously the case that the existing cognitive structure of the viewer will exert considerable influence over all of the processes described in the model. Variables such as goal states, meaningfulness of message or product, and familiarity are but a few examples of intervening variables that can influence both processing and storage of incoming information from a commercial. Given these assumptions, however, it is hypothesized that if an individual experiences emotional response as a commercial trace is laid down, then the trace will differ in both content and intensity from a trace that is formed by a message that does not generate an emotional response. The presence of emotion will result in more episodic details being processed and

stored, and there will be particular enhancement of executional details -- wha happens in the commercial, and inferences -- an indication of increased involvement. Finally, at least within the limits of emotion created by 30 second commercials, the stronger the emotion experienced, the greater the strength of the traces in the episode. A schematic of the model is shown in Figure 3.

Insert Figure 3 about here

The model generates a number of specific hypotheses. First, emotional commercials will be more likely to be recalled than ones unaccompanied by emotion. Second, the stronger the emotion generated, the greater its memory effects. Third, strong emotional commercials will be more likely to be recalled before weaker emotional commercials or those failing to engender any emotional response. Fourth, descriptors, inferences and executional details will be more likely to be recalled from emotional commercials. Finally, the kind or strength of emotional response experienced during a commercial is likely to serve as an organizer of recall, particularly in the absence of other reasonable organizing principles (e.g., similarity of products or their attributes). We report next a test of these hypotheses.

Research Findings

Before summarizing the study, two points of methodological clarification should be made. First, it is important to make the distinction between mood and emotional response at the time of viewing. The effects of the less intense, more enduring mood variable have been investigated in a variety of contexts

(e.g. Isen et al, 1982). Our study, however, dealt with the more short-term emotional response experienced while viewing the commercial. To handle possible confoundings with mood, two considerations were of primary importance: first, to control for the subjects' mood prior to any exposure; and second, to discover if there was any change in mood state after viewing all of the commercials. Pre-and post-measures, of mood state (Nowliss, 1965) revealed no differences in subjects' moods due to exposure. Further, correlations of pre-viewing mood scores with overall recall revealed that the subject's mood does not have a strong relationship with the likelihood of recalling the commercials.

A second distinction to be made is that we were not measuring attitude toward the ad (Lutz, MacKenzie, & Belch, 1983; Mitchell & Olson, 1981, Moore & Hutchinson, 1983). As developed in the literature, att_{ad} measures are highly cognitive in nature (e.g., post-viewing evaluations of liking for the ad), and they clearly require the operation of semantic memory. We were not interested in overall judgments or evaluations of the commercials. We wanted instead to index the strength and direction of emotion as it was experienced during the commercials.

With these points of clarification made, the study can now be summarized. Discrimination of emotional and nonemotional commercials was based on the following criteria: 1) portrayal of scenes, events or situations which are traditionally associated with strong emotions, (holidays, family reunions, birth or death); 2) an emphasis on displays of emotion by the characters in the ad; 3) use of production techniques such as soft focus and slow motion; and 4) the use of language that is intense or vivid; or that refers directly to emotions or physical sensations.

The types of emotion that we wished to examine reflected differences in both valence and intensity. Neutral commercials were straight-forward presentations with an emphasis on factual information; positive commercials were those capable of eliciting feelings of happiness or contentment; negative commercials included fear messages or portrayal of anger or disgust; and finally, poignant commercials were ones that elicited both positive and negative feelings at the same time or in rapid succession. An example of a poignant ad would be an old man watching alone out his window, then suddenly having his grandchildren and children drive up to the house and begin to shout "happy birthday."

Using this categorization, we selected 20 commercials, five of each type, none of which had been shown in the testing area. These commercials were shown in randomized order to 65 college students who had been told they were to evaluate the emotional characteristics of a set of commercials. The students were asked to continually turn a dial that would register their feelings each half-second on a scale from 100 (very positive) through 50 (neutral) to 0 (very negative). The dials were reset to 50 at the beginning of each commercial.

After viewing the 20 commercials, subjects were given an unexpected free recall test in which they were asked to write down as much as they could about each commercial. They then filled out an adjective checklist and rated their att_{ad} for each commercial.

Analyses. Data from the dials indicated significantly more intensity of emotion during viewing of the negative and poignant commercials. These two categories were most often recalled and were recalled first (see Figures 4 and 5). The positive commercials were next most often recalled, and the neutral commercials were most weakly recalled, and recalled last. Therefore, the first two criteria of memory strength, probability of successful retrieval and primacy

Insert Figures 4 and 5 about here

of recall were significantly associated with commercials that had generated the strongest emotional responses.

The free recall protocols of the subjects were coded for seven different classes of information. Table 1 presents a description of each of these variables and their rates of occurrence across subjects. As can be seen in the table, when the intensity of the emotional response increased, the number and type of elements in the recall protocols was affected. More specifically, the number of executional elements, descriptors, and inferences were higher for the more emotional messages.

Insert Table 1 about here

There was also evidence that the emotional component of the messages could be used as a cue for accessing memory traces. When analyzing the sequence in which the commercials were recalled, we found a strong clustering of negative and poignant messages. When subjects accessed either a negative or poignant ad, they were much more likely to next recall another ad of the same emotional intensity. This phenomenon occurred even though the products within emotional categories were as diverse as house paint, a self-defense device, a soft drink, and a public service announcement about drunk driving.

There was also evidence for an influence of emotion on semantic processes. The most intense emotional messages (i.e., the poignant ones) were liked best, followed by positive, negative, and neutral ones. In addition, when making judgments about how effective, important, or interesting each commercial was, subjects tended to make more extreme judgments about the more emotional commercials (the poignants and negatives). These findings lend support to the hypothesized operation of the model.

Discussion

In summary, there are differences in the memory strength of episodic traces for emotional and non-emotional messages, and even differences reflecting the relative intensity of emotional response. In addition, some semantic processing (e.g., judgment, evaluation) can be shown to be affected by the emotionally enhanced episodic trace.

There has been some research that contends that day-after recall penalizes feeling ads and favors rational ads (Zielske, 1983; Berger, 1981). If this were correct, it would be in direct contradiction to the present approach, which suggests the presence of emotion strengthens rather then weakens memory. In close examination of Zielske's study, however, it is not clear that the three tested ads in each category would have been categorized in the same way under our methodology. As conceptualized in our research, emotional and rational are not opposites. Emotional refers to the responses elicited during viewing. Rational is applied to the type of claim being made; and certainly rational claims may be carried out within an execution that produces emotion or one that does not. Zielske's conclusions were based on day-after recall scores in which one rational ad scored very high, one feeling ad scored very low, and there were

no differences between the remaining four ads. Before this result can be seen as a contradiction to the present results, therefore, the problems of sample size and definition of emotion would need attention.

Our primary goal is to understand how emotional responses experienced while viewing a commercial influences the memory for that commercial. Traditional measures of advertising effectiveness have been less than satisfactory when applied to emotional messages. We feel that a model of how emotion affects the memory process, as well as empirical indices of emotions experienced during commercials and more complex measurement of recall will enable the researcher and practitioner alike to assess more adequately the effects of the emotional message. There are, of course, a number of questions that need to be addressed. Two of these are located in the ad itself. First, how much of the variance in memory can be accounted for by the linguistic structure of the ad? And second, what are the differences in effects when the emotion-eliciting charcteristics of an ad reside in the claims about the product rather than the execution surrounding the product?

In terms of the emotional response of the viewer, we need to determine more precisely the relationships between different levels of recall and the valance (positive, negative) as opposed to intensity of the emotions experienced. Although our research points toward intensity as being the more important variable in predicting episodic memory strength, the issue warrants further investigation.

Finally, as stated above, a richer conception of memory is needed. Some advertising effectiveness research would count the following responses as equal:

Trash bags. Three ordinary bags can fit into two [Brand name] bags. (from a Neutral ad)

[Brand name]: This was my favorite commercial. The father coming to America on the boat. The reunion with his son. Seeing the son mouth the word "PAPA." The commercial gave me a tingling sensation, my eyes watered. Then I found myself smiling at the end." (from a Poignant ad)

It is our contention that a more complex memory will yield a better picture of what people remember about a particular ad. With better understanding of how the memory process is affected by emotion, and of the differences in memory trace structure and content, advertisers will be able to design a message best suited to meet their specific goal (e.g., brand awareness as opposed to image creation). Further, the advertiser can use measurement strategies tailored to the specific memory traces of interest.

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Table 1

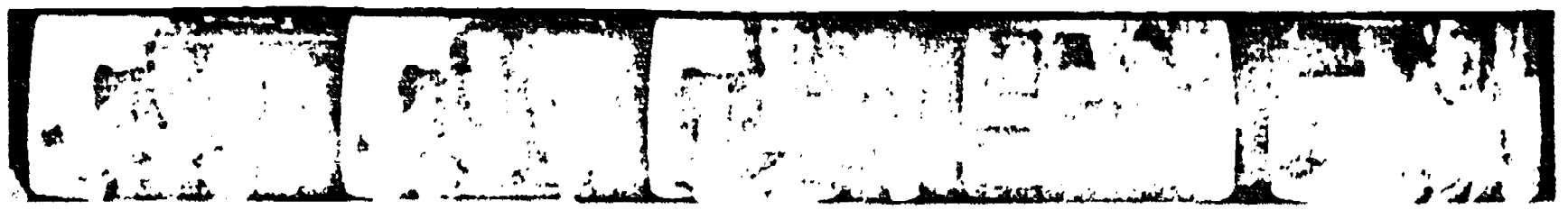
MEAN OCCURRENCE OF
MEMORY TRACE ELEMENTS
IN
FREE RECALL PROTOCOLS

Element	Commercial Type			
	Neutral	Positive	Negative	Poignant
BRAND The number of times the brand name occured.	.67[b]	.34[b]	.23[b]	.69[b]
PRODUCT CATEGORY The number of times the product category (e.g. car) was mentioned	2.15[c]	1.76[c]	1.08[b]	1.01[b]
PRODUCT CLAIMS The number of different characteristics mentioned about the product, which had appeared in the commercial.	.98[c]	.32[a]	.40[a]	.31[a]
QUOTES The number of verbatim quotations from the commercial.	.09[a]	.10[a]	.02[a]	.20[c]
EXECUTION The number of events, characters and/or settings recalled from the commercial.	3.32[c]	4.28[c]	4.81[b]	5.01[b]
DESCRIPTORS The number of vivid or superlative terms used to describe the commercial. [Words of phrases occuring in the script were not coded]	.10[c]	.37[b]	1.20[c]	.49[b]
INFERENCES Information added by the viewer which was not explicitly portrayed in the commercial. (e.g. "He was his only son") Judgments made about the internal state of the characters (e.g. "The little girl felt scared.")	.34[a]	.23[a]	.45[a]	1.20[c]

n=56; $p \leq .05$; [a] significantly different from one other group; [b] significantly different from two other groups; [c] significantly different from three other groups.

Figure 1

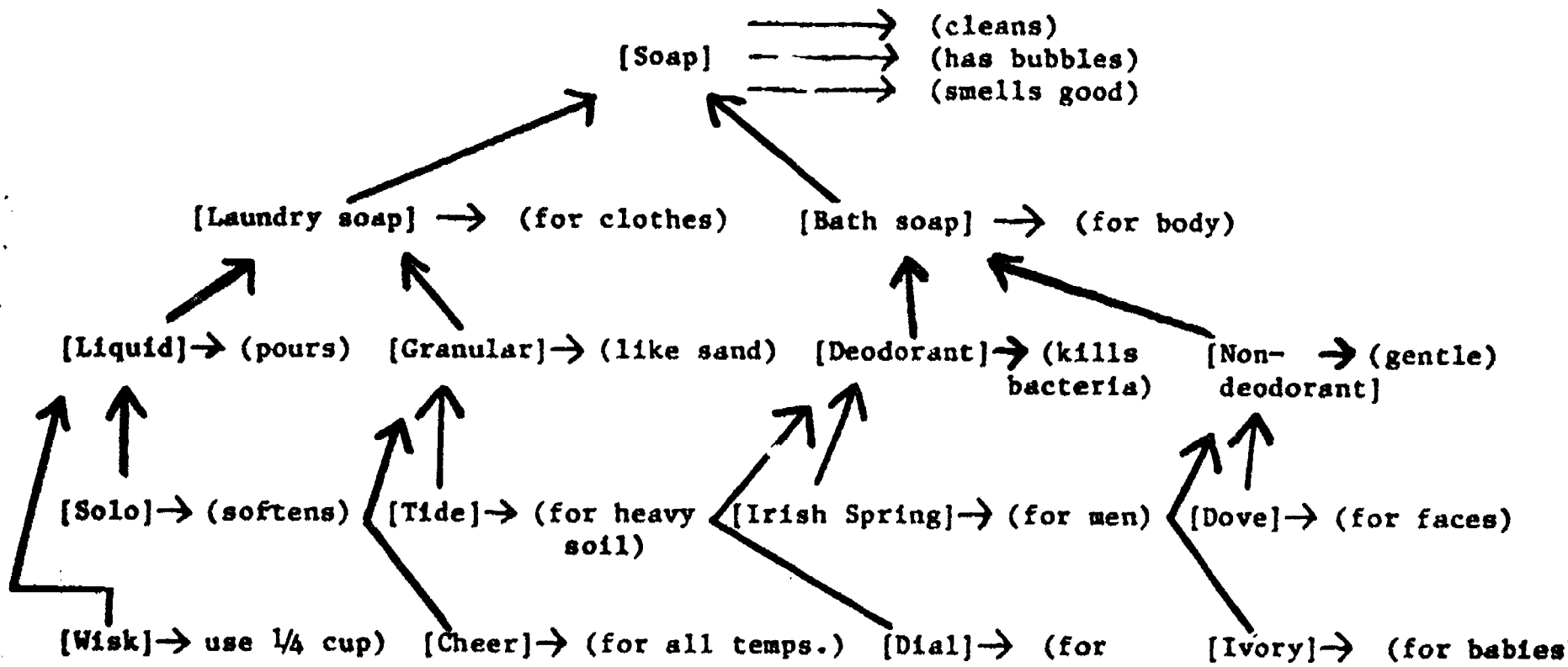
Episodic Memory for A Puffs Commercial



Commercial copy	1. 1ST WOMAN: When I have a cold, ...	2. my soup doesn't have to be chicken, ...	3. but I won't have a cold without Puffs.	4. (Sound Effects) MAN: I'll do without my quilt, ...	5. but I won't have a cold without Puffs.
Contextual events and spaces	TV in rec room		Son enters room		Oven timer buzzes
Internal events	Mild boredom		Mild liking		Mild liking

Figure 2

Semantic Network Model



[ ] = concept unit

( ) = property

— = associative relations

Figure 3

EPISODIC AND SEMANTIC MEMORY
PROCESSING OF TELEVISION
COMMERCIALS

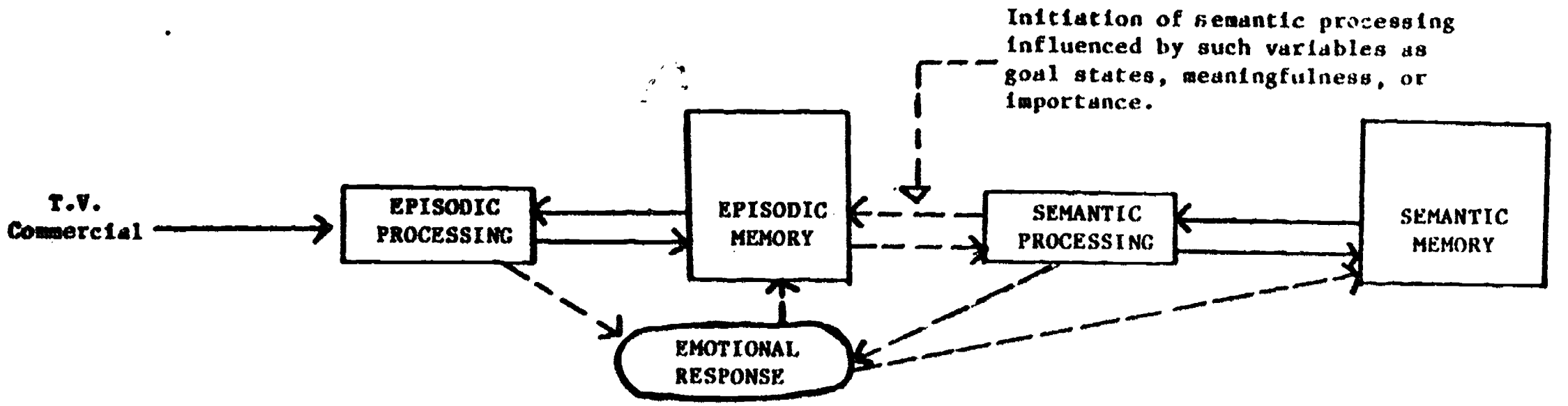


Figure 4

MEAN RECALL BY
EMOTIONAL CATEGORY OF COMMERCIALS

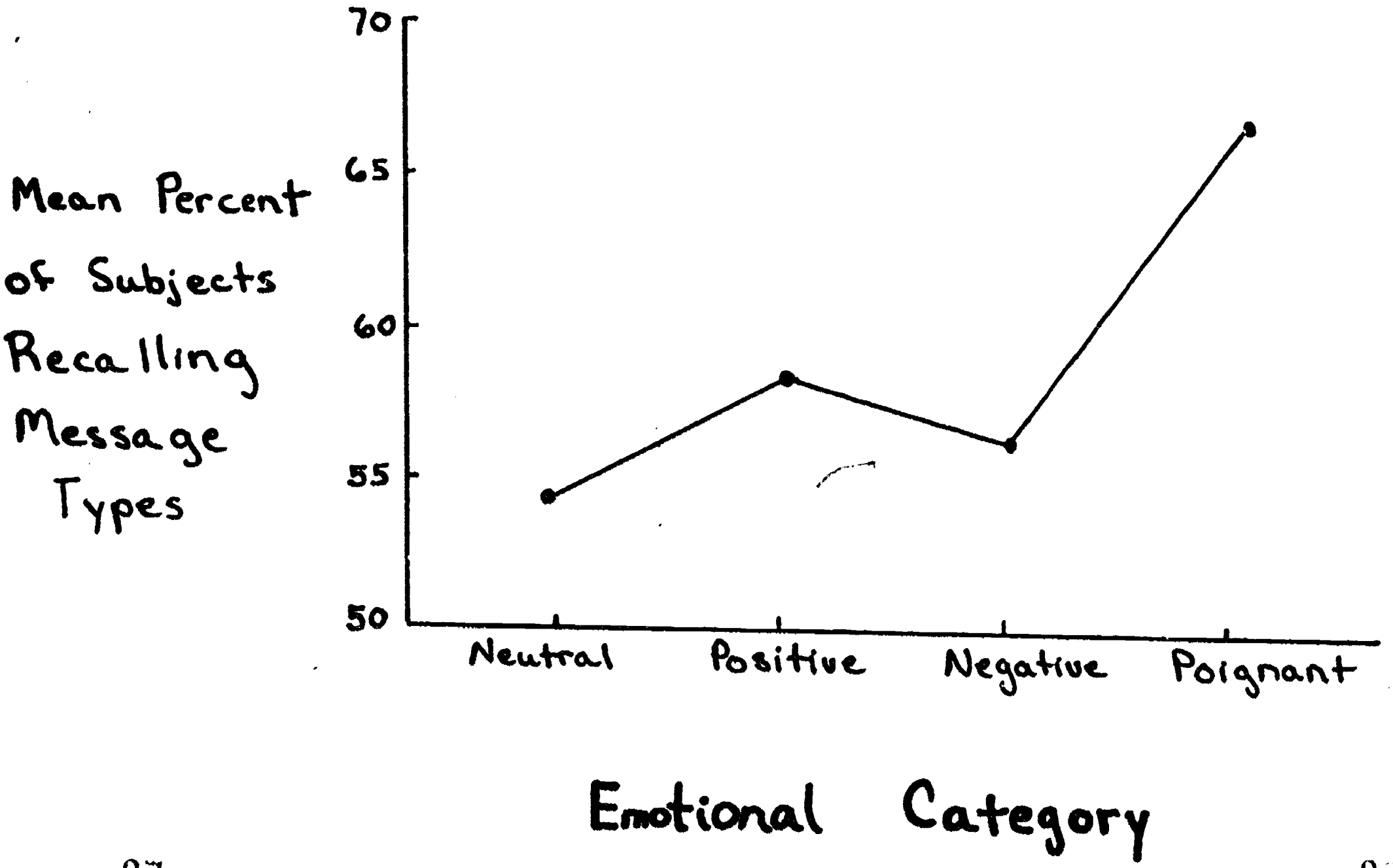


Figure 5

MEAN POSITION OF RECALL

BY EMOTIONAL CATEGORY OF COMMERCIALS