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**Product knowledge and pictorial information effects on  
automatic processing**

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**The University of Arizona, 1992**

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PRODUCT KNOWLEDGE AND PICTORIAL INFORMATION EFFECTS ON  
AUTOMATIC PROCESSING

by  
Tara Sallie Wernsing

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A Thesis Submitted to the Faculty of the  
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In Partial Fulfillment of the Requirements  
For the Degree of  
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1992

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July 14, 1992  
Date

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## ABSTRACT

This paper expands the study of automatic processing in the marketing literature. An empirical study was designed to test for automatic inference making due to pictorial or verbal advertisements and prior product knowledge. The theory developed in this thesis suggests that certain factors, high product knowledge and pictorial processing, will result in the accumulation of information in memory. This, in turn, yields easier processing of new information, which signifies a reduction in the attention and effort needed for processing the new information. Finally, the reduction of effort reflects a decrease in the amount of time needed for processing. Therefore, response latencies served as a direct measure of automatic processing in this thesis.

Findings indicated that pictures in ads are likely to result in more automatic inference making than verbal information alone. Therefore, automaticity has the potential to explain some of the information processing that occurs in advertising and marketing.

## INTRODUCTION

Consumers are exposed to a great deal of product information every day. From advertisements to actual usage experience, people are bombarded with information concerning products they may or may not use. Under certain conditions, such as high involvement, consumers will take the time to process the incoming information effortfully (Petty and Cacioppo 1986; Batra and Ray 1986). Kahneman (1973) equates effort with attention. Such processing may involve trying to remember specific characteristics about the product or evaluating the product. However, consumers aren't always motivated to process information in this way.

Since consumers can't effortfully process all incoming information due to time and mental capacity constraints, other theories evolved to explain consumer information processing. Nonconscious processing suggests information processing can occur at a less than conscious level and thus decrease the limitations on processing (Lewicki 1986). For example, Janiszewski (1988) found that consumers can be influenced by information they do not even remember being exposed to. Thus attention may not be a necessary antecedent to information processing.

Nonconscious processing is a more prevalent phenomenon than most marketing theorists believe as evidenced by the growing body of literature in the behavioral sciences and the limited research on the topic in marketing. Mandler (1975) goes so far as to say that a conscious thought is the result of many nonconscious processes. Additionally, Kihlstrom (1990) asserts that the initial stage of information processing is outside of conscious awareness.

Thus, an adequate amount of research is lacking in an area that is posited to account for a substantial amount of information processing.

Nonconscious processing is a broad concept that applies to several more specific domains of study, including preconscious and automatic processing. Preconscious processing focuses on feature detection and pattern recognition that occur prior to the formation of a mental representation in memory (Kihlstrom 1990). Automaticity, on the other hand, reflects skills that become routinized through experience, as opposed to processes that are inherently unavailable to our conscious awareness (Kihlstrom 1990).

Automaticity is described as the reduction of effort and attention (Kahneman 1973) that results from the accumulation of experiences in memory (Logan 1988b). The more knowledge one has about a concept, the easier it is to process new information. The easier it is to process information, the less effort needed.

Additionally, the imaginal processing literature suggests that pictures allow for easier processing than their verbal counterparts. The accumulation of knowledge and pictorial processing both produce additional information stored in memory. This abundance of information for any one concept, such as a consumer product, allows for easier processing of new related information. This means that less effort must be expended which, in turn, increases the resultant automatic processing.

Automaticity has the potential to explain a great deal of consumer information processing. Much of the information to which consumers are exposed is repetitive, such as advertising or product packaging. As a result, the

repetitive nature of consumer information processing suggests that automaticity may often develop in consumer information processing contexts.

The purpose of this thesis is (1) to expand the treatment of automatic processing in the marketing literature, and (2) to explore the conditions under which automaticity results. In particular, this thesis proposes that certain factors, high product knowledge and pictorial information format, enhance the conditions necessary for automatic processing.

This thesis is organized as follows: Information processing, including automatic processing and pictorial processing, is discussed. Then, a review of the relevant literature on memory, cognitive structure, and prior knowledge follows. An inference making context is presented which allows for the measurement of automatic processing and the testing of several hypotheses. Finally, the results and implications of an empirical study are presented.

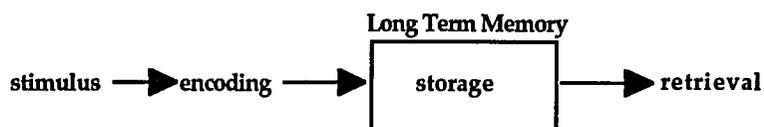
## THEORY DEVELOPMENT

### Information Processing

The traditional information processing view of memory involves several stages (see Figure One).

#### FIGURE ONE

#### Information Processing Model



Encoding determines which and how stimuli are stored in long term memory. Much work has been done on determining what information gets stored in memory. Biehal and Chakravarti (1983) found evidence that the processing goal is one determinant of what information is attended to and encoded into memory. Based on consumers' processing goals, they may make an evaluation at the time of exposure or may just encode the information as given. In the first case, only the evaluation is available for subsequent recall; whereas the second case allows for the original information to be retrieved and then evaluated at a later time. The former process refers to on-line processing, while the latter represents computational processing (cf. Hastie and Park 1986; Lichtenstein and Srull 1985).

The distinction between these two types of processing has implications for processing time and memory. On-line processing implies the original information is not available for retrieval. If a consumer forms an evaluation of a product at the time of exposure to information concerning the product, then it is likely that some information will not be remembered at a later time, but that an evaluation may be retrieved very quickly (Hastie and Park 1986). Conversely, computational processing allows for recall of specific information at a later time but is likely to require more time to evaluate the product.

The encoding and retrieval of information is important for understanding consumer information processing. Any information processing is subject to influence by the information that already exists in memory and by information that can be recalled and used in subsequent processing (Alba 1984).

### Types of Processing

In the mid-1970's, the distinction between automatic and controlled processes became well-known. Schneider and Shiffrin (1977) and Shiffrin and Schneider (1977) were among the first to clearly delineate the two types of processing into "qualitatively different mechanisms" (p. 3). Automatic processes are defined as those processes capable of occurring without conscious awareness of the initiation or the operation of the process, and which do not consume a substantial amount of the available cognitive processing capacity (see Kahneman 1973). Basically, automatic processes are "unintentional, involuntary, effortless, autonomous, and occurring outside awareness" (Bargh 1989, p. 3; see also Hasher and Zacks 1979; Logan 1988b). On the other hand, controlled, or effortful, processes are voluntary, require cognitive capacity and thus interfere with the ability to engage in other controlled processes (Hasher and Zacks 1979).

One example of automatic processing is impression formation. People tend to form initial impressions about other people or products without intending to do so (Higgins and Bargh 1987). They often do not know, or cannot verbalize, what factors determined their impressions, nor are they aware of the impressions' influence on subsequent judgments (Lewicki 1986).

On the other hand, effortful processes may include, for example, decision making strategies involved in buying a car. Various decision heuristics may be used to determine which criteria are most important and to provide a rating for each criterion.

The distinction between automatic and controlled processes is not often this clear. Recently, Bargh (1989) proposed that automaticity is not a single

category but rather a set of conditional groups. If a process requires any conscious intent, then it is not automatic (Bargh 1984). Some of the defining characteristics of automaticity may exist independently of the other characteristics. For example, driving a car can resemble an automatic process. The incoming information, such as stop lights and turns, does not register on the driver's conscious awareness. However, the driver intends to get where he/she is going. Although driving meets many of the defining characteristics of automaticity, intention is a characteristic of controlled, not automatic processes. Therefore, a simple dichotomy between automatic and controlled processing is not adequate to capture the nature of these phenomena (Chaiken et al. 1989). Even the appropriate term to use in opposition to automatic processing, such as controlled, effortful, or conscious, is debatable (see Kihlstrom 1990).

The process by which automaticity develops is also controversial. One well documented theory is based on the single capacity model of attention (Broadbent 1958; Kahneman 1973). The first premise is that a limited amount of cognitive capacity, or attention, is available for performing a task (Kahneman 1973). Due to this limited capacity, the human mind is constantly trying to automate much of the day-to-day information processing required to efficiently perform routine tasks so that capacity is available for new tasks.

Mitchell and Hunt (1989) review capacity theories of attention and clearly define the concepts involved. Cognitive capacity refers to all mental resources available for processing. Cognitive effort is the expenditure of mental energy, or "the percentage of the available capacity or resources

allocated to a given task" (Mitchell and Hunt 1989 p. 338). These authors specify that effort is the *result* of processing, not the cause.

A recent opposing view to the attentional capacity model is the "automaticity-as-memory" view (Logan 1988b). Logan posits that "automatization reflects the build-up of information in memory" (p. 587), and is not causally related to attention. Thus, from Logan's perspective, automaticity is a memory phenomenon rather than a reflection of attention and effort.

Once automaticity develops, Fiske and Taylor (1991) suggest it is inconsistent stimuli which do not match prior expectations that capture attention and return processing to conscious awareness and effort. Prior knowledge can be viewed as a collection of expectations to which incoming information is compared. If the stimuli do not meet prior expectations, then controlled processing results.

At one level, the two views of automaticity are compatible. The concept of accessibility offers a general explanation for the development of automaticity and the integration of these two views. However, to conceptually understand the accessibility concept, a model of human memory must be presented and relevant terminology explained.

### Memory

Human memory is commonly interpreted as a network of interconnected nodes. An associative network model suggests that the cognitive structure of memory resembles a network of nodes subject to

activation from external stimuli and from connecting nodes (Anderson and Bower 1976).

Spreading activation occurs when one concept is activated and subsequently activates the surrounding, closely connected concepts. This phenomenon suggests that the more nodes connected to concept, the more likely a concept and the surrounding ones will be activated (Collins and Loftus 1975). For example, a consumer sees an advertisement for a camera, and immediately the concept "camera" is activated in memory. As a result of the initial first activation, related nodes linked to the original concept may be activated. These nodes may include specific brands or characteristics of cameras. The more prior concepts and linkages in memory, the easier new information can be assimilated into memory. Additionally, the stronger the link between two concepts, such as a specific brand and a certain characteristic, the more likely it is that one concept will be activated when the related one is initially activated.

Fiske and Taylor (1991) summarize the assumptions of an associative network model. First, each link is strengthened by activation. A link represents a connection between one concept and another. Repetitive activation increases the strength of the connections and increases the ease with which concepts can be accessed. Additionally, Srull and Wyer (1979, 1980) and Higgins, Bargh, and Lombardi (1985) provide further support that frequent or recent activation will also increase accessibility.

Second, ideas are more accessible when there are a greater number of links connected to them. Accessibility denotes the ease with which a given stimulus input is encoded into the existing memory structure (Bruner 1957).

For example, for one concept such as camera, there could be multiple associations in memory relating to cameras, including characteristics of the camera, specific brands of cameras, etc. The more linkages that exist, the more complex the associative network is for cameras, and thus the easier information about cameras is processed.

There are a variety of ways to create linkages between concepts. Linkages come from increased knowledge concerning a concept, such as a consumer product. The more knowledge that exists about a product like cameras, the more linkages there are to related concepts such as type of cameras and their particular characteristics. The more interwoven the memory network is, the greater the accessibility of the concepts connected.

Additionally, increased linkages may develop from the processing of pictorial information formats. In advertisements, both pictorial and verbal components may exist. A fair amount of literature exists on the specific area of pictorial versus verbal information. Since recall can be better when a pictorial stimulus is involved (see Houston, Childers, and Heckler 1987; Edell and Staelin 1982; Kisielius 1982), it is likely that pictorial information is processed differently than verbal information (Childers, Heckler, and Houston 1986). One explanation for the effect of pictorial information is the dual code theory (Paivio 1971) which implies that pictures create more pathways in memory, and thus can be more easily retrieved. Another explanation (Bower 1972) suggests that pictures may produce a distinctive memory trace. Pictures create linkages in memory that are somehow different than those created by verbal information.

The findings by Lutz and Lutz (1977) suggest that it is the dual code theory that applies to the advertising context of mixed verbal and pictorial components. These authors compared three conditions: verbal advertisement alone, interactive pictorial and verbal components, and noninteractive components. Interactive refers to a condition where the picture reinforces the verbal words. For example, a company claiming fast delivery may use a picture of a rocket for reinforcement. Significant differences in recall resulted only for interactive pictures, that is pictures that corresponded with the verbal information. If there was a picture that did not reinforce the verbal information, then better recall over just verbal information did not result.

The relationship between automatic processing, either from increased knowledge or pictorial information processing, and memory is not unequivocal. On one hand, Kolars (1975) found an indirect relationship between automatic processing and memory, and he attributed the difference not only to faster processing, but to different organization in memory.

On the other hand, Mitchell and Hunt (1989) reviewed articles studying the relationship between task difficulty (an operationalization of effort) and recall/recognition measures and concluded that cognitive effort is not causally related to memory. The study described here addresses these issues in the context of inference making.

### Inferences

The context of inference making represents a prime area for the study of automatic processing because the inference making process follows the automatic process described in this paper. In addition, research into inference

making traditionally assumes an analytical, or effortful, approach (Holland et al. 1986) as opposed to emotional responses which can be quickly processed and applied to new stimuli (Fiske 1982). Thus, the idea of automatic inference making is an interesting one in marketing, for it presents an opportunity for marketers to learn how consumers make efficient use of limited processing capacity when exposed to new product information.

An inference is defined as the construction of meaning that goes beyond what is explicitly given (Harris 1981). Within marketing, most research concerning inferences focuses on inference making when some product information is missing. Either estimations of missing information (Ford and Smith 1987) or discounting of given information (Simmons and Lynch 1991) results.

Inference making is part of broader domains, such as comprehension and perception. Harris (1981) believes inference making is a natural part of the ongoing information processing. Winter and Uleman (1984) further suggest that inferences occur spontaneously as part of the routine comprehension of events. Garrod et al. (1990) state that comprehension involves the interaction of explicitly stated information and knowledge stored in memory. Kintsch (1977) describes inferences as the constructive processes that occur during the comprehension process itself. In the encoding stage, constructive processing occurs as new information is assimilated or accommodated into the existing knowledge structure. The existing cognitive structure influences the encoding and retrieval of incoming information (Bartlett 1932; Alba and Hasher 1983). Additionally, when retrieval is activated, reconstructive processing occurs as the information to be retrieved is changed by the cognitive structures from

which it was stored (Barclay et al. 1984). Active reconstruction may occur at retrieval if recall yields incomplete information; however, reconstruction is primarily an automatic process.

Kardes (1988a) suggests that errors in inference making can be used to identify automatic processes. Logan (1988b) also states that automaticity may lead to errors, such as unintentionally driving to wrong place. Jacoby (1991) notes that errors have been particularly useful for revealing some automatic, or unintentional, processes, for example the Stroop effect and the Freudian slip.

One important type of error, reality monitoring, refers to accurately recalling the origin of information (Johnson and Raye 1981). In a marketing context, accurate reality monitoring results in a person distinguishing between an inference he/she made concerning a product and a specific fact stated in an advertisement he/she saw about the product.

Failure to correctly identify the origin of information is referred to as origin confusion. The origin confusion of interest in this paper occurs in the direction of misattributing internally generated information to external sources. Johnson and Hasher (1987) suggest origin confusion is a function of expertise. It occurs in this direction because people assume that they would remember information they generated, and thus misattribute unknown retrieved information to external sources (Johnson et al. 1981). Alba and Hutchinson (1987) suggest that those inferences easily generated are the most difficult for which to discriminate the origin of the information. This error indicates that the origin of internally generated information tends to be less accessible than externally provided information (Lichtenstein and Srull 1985).

Marketing theorists have also discussed the implications of origin confusion. Kardes (1988a) posits that origin confusion for information not explicitly stated in the ad suggests that an inference was formed prior to measurement, and this process was relatively effortless. However, the absence of origin confusion may indicate two different things: (1) that an effortful inference resulted prior to measurement or (2) that no inference was formed prior to measurement (Kardes 1988a).

The following sections describe several hypotheses which explain how product category knowledge and pictorial information will influence how new product information is processed and inferences generated. Response latencies are the primary method for measuring and tracing these processes. Detailed reasoning underlying the hypotheses and the measurement approaches is given in subsequent sections.

## HYPOTHESES

### Automatic processing

Automatic information processing can result from increased pathways connecting concept nodes. As described earlier, increased pathways result from increased consumer knowledge and/or prior pictorial processing. The more information a consumer has stored in memory about a product, the more easily incoming information about the product is processed, leading to a more complex network over time. This network results from the accumulation of knowledge in memory (Logan 1988b). Thus, the more complex the cognitive network for a concept, such as a consumer product, the more likely automatic processing can result. Recall from the preceding discussion that consumers with high product knowledge will have a complex cognitive structure which, in turn, permits the formation of automatic inferences. Even if inferences are not made at this time, the more complex cognitive structure will enable faster inference making whenever inferences are prompted. This leads to the following hypothesis.

H1a: High product knowledge will lead to more automatic inference making than low knowledge.

Pictorial information produces more linkages in memory (Paivio 1971). Pictorial information is likely to produce a more complex cognitive structure regardless of prior knowledge and thus increase automatic processing. This leads to the hypothesis stated below.

H1b: Ads with a pictorial component will result in more automatic inference making for all consumers than do verbal ads alone.

When new information is presented in a pictorial format to a consumer with high knowledge, this produces the greatest opportunity for automatic processing. This interaction of product knowledge and pictorial information format suggests hypothesis H1c:

H1c: Consumers with high product knowledge who see ads with pictorial components will produce the most automatic inference making.

The first three components of H1 deal with the ability of consumers with more complex cognitive structures, derived either through expertise or effective information presentation, to more readily generate inferences. Factors affecting the automaticity of inference making are also of interest. Recall that another indicator of automatic inference making is origin confusion (Kardes 1988a). If consumers misattribute information they inferred to an external source, then it is likely that those consumers processed the information automatically. High product knowledge consumers will have made the inference at the time of exposure and thus misattribute its source at a later time (Alba and Hutchinson 1987). This is restated in the following hypothesis.

H1d: High product knowledge will lead to increased errors in differentiating between inferences drawn by consumers and factual information presented in ads than low product knowledge.

### Recognition

The more knowledge one possesses about a concept, the easier it is to make sense of new information. It also is likely that the more knowledge one has, the more likely it is that new information will be remembered (Srull 1983). However, a negative relationship was found between automatic processing and memory (Kolers 1975). Thus, if new information is processed automatically, even though high knowledge may exist, it is likely that memory for the new information may not be high.

Alba and Hutchinson (1987) define knowledge as a concept comprised of two components, familiarity and expertise. With respect to familiarity, Johnson and Russo (1984) found an inverted U-shaped relationship between product familiarity and recall when subjects were given a choice task. Low knowledge consumers and high knowledge consumers recalled less information than consumers with a moderate amount of knowledge. These authors' explanation was that high knowledge people tended to ignore information they felt was irrelevant. On the other hand, Johnson and Russo (198) found a linear relationship between familiarity and recall when subjects were judging quality. Thus, high familiarity leads to better recall than lower knowledge levels. Additionally, Alba and Hutchinson (1987) propose that experts have better memory for product information than novices. Therefore, high knowledge allows for easier comprehension of incoming information

since it serves as a basis for remembering information. This argument leads to the following hypothesis.

H2a: Consumers with high product knowledge will have better memory for factual information from ads than consumers with low product knowledge.

Since pictorially presented information produces a greater amount of memory traces than the same information presented verbally, it is likely that pictorially presented information will be better remembered than verbal information. This is essentially a replication of Houston, Childers, and Heckler (1987) and is restated below.

H2b: Ads that contain an added visual component will be better remembered than ads with just a verbal component.

In summary, this paper proposes that automaticity develops from increased linkages in memory which reduce the effort and cognitive capacity necessary for processing. The foregoing hypotheses are tested in an empirical study, the design and results for which are given in the following sections.

## RESEARCH DESIGN

The empirical component of this research is designed to test for automatic processing in an advertising context. A 2 (product knowledge) x 2 (stimulus information format) full factorial, between subjects design was utilized. Automatic inference making is the process expected to result under certain conditions, and response latencies are used to measure automatic inference making (to be discussed in detail in the operationalization section).

Pretests were conducted to identify products for which knowledge might vary among members of the subject pool (college students). Descriptions and results for the pretests are given in the following sections.

### Pretests

The first pretest was conducted to discover what potential product classes would provide an adequate distribution of variance on product knowledge. Fifty-six subjects completed a pretest questionnaire measuring a self-rating of knowledge for 22 products. A seven point semantic differential scale anchored by "no prior knowledge" and "a great deal of prior knowledge," was used (see Appendix One). Because of the variety of products, variance within products was expected to differ between the two genders. Therefore, frequencies on each product were calculated by gender. Frequencies were used for analyses, as opposed to overall means, since the optimal distribution would be bimodal, and means do not provide this information. Ten products were chosen on the basis of the distribution across the seven response levels. Ten products exhibiting either a bimodal or uniform distribution, indicating

an existence of both high and low knowledge levels among the subject population, were chosen for pretest two.

The second pretest was conducted to determine the content of knowledge for each of the ten product classes. Open-ended questions regarding the content of the subjects' knowledge for all ten products were asked (see Appendix Two). The open-ended questions required responses regarding subjects' experiences with the product classes, knowledge of characteristics and benefits of the product classes, and expected price range of the products. Each verbal response was coded (see Appendix Three), and frequencies of responses were compiled for each product class. In addition, subjects rated themselves on product knowledge using the seven-point semantic differential scale from the first pretest. The resulting data were analyzed to determine if the responses differed by knowledge level and gender and to provide a basis for the advertising stimuli to be created for the experiment.

The means of product knowledge for each product were examined by gender. Three products were chosen based on the fact that the mean of knowledge differed by gender (see Appendix Four). For CD players, males had high knowledge and females low. Skin lotion had a low mean on knowledge for males and a high mean for females. Calculators had a high mean on knowledge across both sexes. Finally, cameras were chosen as the last product on the basis of the open-ended questions. Subjects rated themselves moderate to high in knowledge of cameras, but written responses indicated subjects were primarily referring to automatic cameras. Thus a manual, complex camera was chosen for the experiment, to provide a product for which both sexes were

low in knowledge. In the hope of increasing the probability that a substantial amount of variance would exist for product knowledge (designed to systematically vary with gender), these four products were chosen to serve as the test products for the experiment. An analysis of variance within the general linear model paradigm was conducted to test for significant differences in the means of product knowledge by gender. CD players and skin lotions resulted in significant differences ( $p < .05$  and  $p < .01$ , respectively). As expected, cameras and calculators did not provide significant differences for the means within the two gender categories ( $p > .10$  for both). The remaining six products were retained for use as distractor products in the experiment.

### Stimuli

Advertisements for the four test products and eight distractor products were created. Six of the eight distractor products came directly from the pretests; the other two were created just prior to the experiment to create a balanced stimulus set. A fictitious brand name for each product was used so that any specific brand inferences or biases would be minimized. Each product had two formats of advertisements: (1) verbal information only, and (2) the identical verbal information with a picture of the product added (for examples, see Appendix Five). The verbal portion of the ads was created from two sources. First, pretest two provided possible characteristics to use in the ads for each product and the corresponding questions (see below paragraphs). For cameras, the "ease of use", and "attachments" provided information for stimuli; for CD Players "high quality", "compatible with friends", "better than cassettes"; for calculators "multiple uses", "variety", "confusing", "solar"; for

skin lotions "greasy", "scented", "sunscreen" provided the basis for the stimuli. Second, researching the background for each product, using actual ads from magazines and product packaging, provided additional characteristics for the verbal stimuli.

The pictorial portion of the ad was created using Macintosh computer paint programs. The pictorial component was a fairly detailed rendering of the product accompanied by the fictitious brand name (see Appendix Five for example).

Five questions for each of the twelve products were created (see Appendix Six). Two questions were based on fact; they simply asked whether specific information explicitly stated in the ad was true or false. Factual questions were used to provide a way to test for recognition. The other three questions asked subjects to respond "yes" or "no" to questions about product benefits that were implied by the ads but not directly stated. Inference questions allowed for the testing of automatic inference making. Questions were worded to minimize the opportunity for yea-saying bias.

All advertisements and questions were photographed and developed into 35mm projector slides for presentation during the experiment.

#### Operationalization of Independent Variables

To obtain a measure of prior knowledge, subjects completed a survey prior to the experiment. According to Alba and Hutchinson (1987), there are two primary dimensions of consumer knowledge, expertise and familiarity. Thus, the product knowledge survey consisted of several parts designed to estimate the level for each subject on both dimensions.

First, each subject rated him/herself subjectively on the level of expertise they felt they had for each of the ten product classes. A semantic differential scale anchored by "a great deal of expertise" and "no expertise" was used. For familiarity measures, subjects estimated how many ads for each product class they thought they had seen in the previous month, how many times they'd used a product in each category over the last month, and how many different brands of a given product class they'd used in the last two weeks and in the preceding month.

The measure of knowledge used in the analyses was derived as follows. First, all of the familiarity measures were summed for each product to create one continuous measure for each product having a potential range from 0 to 100. Then, a median split was calculated based on the 50th percentile for each product's range (the median was 5 for cameras and 34 for skin lotions).

The pictorial/verbal format was manipulated between subjects. As described in the foregoing stimuli section, one condition consisted of verbal information alone while the other condition contained the same verbal information in addition to a computer rendered drawing of the product.

#### Measurement of Dependent Variables

Reaction times served as the primary direct measure of automatic processing, while a measure of origin confusion served as an indirect indicator. The rationales for each are described below.

Automatic processes were described above as effortless processing; thus, they utilize few cognitive resources and require little time for processing (Kahneman 1973). This suggests that the time needed to generate inferences

can serve as a measure of automatic processing. Specifically, the distinction between on-line and computational processing allows for several alternative results from using response latency measures. First, at the time of exposure to information in the advertisement, a consumer may automatically make an inference about the product. At a later time, the inference may be available for retrieval even though it may not be distinguishable from other information that was explicitly stated in the ad and that was subsequently stored in memory along with the inference (Garrod et al. 1990). In any case, the subject matter of the inference is retrieved in a very short time.

On the other hand, computational processing occurs when a consumer is exposed to information and only stores the explicit information in memory, without making any inferences about the product. Then, at a later time, the consumer may need to make an inference and thus must take the time to generate it, while the consumer who made an automatic inference would be able to just retrieve it from memory. These scenarios provide the reasoning for why response time represents automatic inference making and why differences in response times across conditions are predictable.

Additionally, response times allow the measurement of automatic inference making without increasing the likelihood for demand artifacts over other measurement techniques. Verbal protocols and intrusive surveys force subjects to make conscious statements about supposedly nonconscious processes (Nisbett and Wilson 1977). Finally, recognition measures served as the basis for the procedures used in this study. Jacoby (1991) states that recall measures induce intentional uses of memory, while recognition is more appropriate for automatic processing.

Reaction times were obtained quasi-unobtrusively in the first part of the experiment by having subjects input responses to questions directly into the computer. Specifically, the response to each question was either yes or no, and as the subjects input their answer by punching either "y" or "n" on the keyboard, the computer clocked the time in milliseconds.

The measure of origin confusion was obtained from the postsurvey, which contained a series of statements about the products shown in the ads. Each subject responded "yes" or "no" to indicate whether or not they believed the information in the statement was explicitly given in the ad. The subject's response to each implied question was compared to a response predetermined by the experimenter and subtracted from it. The resulting codes were "1" for incorrect and "0" for correct. "Correct" means the subject was correct in indicating that the information implied from the ad was not directly stated in the ad. Incorrect means the subject actually made an inference about the statement and incorrectly identified the source for the information as external.

### Subjects

One hundred and nine undergraduate students from a southwestern university served as the subjects in this experiment. The students were recruited from the introductory marketing course, and participated in the studies as partial fulfillment for course requirements. No students were allowed to participate in both a pretest and the experiment.

### Experiment

As noted above, the primary response variable in the experiment was each subject's reaction time in answering each product question. Recall from the theoretical discussion that the speed of responses to implied questions is assumed to indicate automatic inference making. The main experiment was a 2 (product knowledge) by 2 (information format) full factorial design. Product knowledge was a measured factor, determined for each subject in advance of the experiment, and information format was either verbal (written product description) or pictorial (written description augmented by pictorial renderings) as described in the stimuli section above (see Appendix Five).

Approximately one week prior to the study, each subject individually completed a survey designed to measure product class knowledge (see Appendix Seven). It contained a self-rating scale on expertise for ten distinct product classes. Ten products were used to disguise the actual products in the study. Also subjects estimated how many advertisements they'd seen, how many times they'd used each product class, and how many different brands within each class they'd used in the last month. These measures were collected as alternative measures of prior knowledge as described above in the operationalization section.

At the experiment, subjects were randomly assigned to either a verbal or pictorial condition. Subjects were tested in groups of 9 to 15. At the time of the experiment, each subject was seated in front of a computer screen and keyboard. They were instructed to complete a practice session designed to familiarize themselves with the equipment and procedures. Next, a slide projector sequentially presented three print ads on a screen at the front of the

room, the middle one being the test ad. This triad format was chosen to minimize short term memory effects and primacy and recency effects for the test ads. Each ad was shown for 15 seconds. Subjects were instructed to view the ads as if they were going to buy the product. The intent was to induce inference making rather than memorization of facts at the time of exposure.

Following exposure to the first three ads, subjects were presented with a series of 15 slides, (five questions per product), each containing a question based on a true/false statement about one of the products. Each question was projected for 10 seconds, and reaction times were collected for each question. Subjects responded to each question by pressing the "Y" (for yes) or the "N" (for no) key as rapidly as they could after viewing the question. Each subject's response was automatically recorded. This procedure was repeated four times, each time with a different group of three products, until the subjects had been exposed to all twelve ads and five questions per ad for a total of 60 repeated measures (see Appendix Eight for flowchart of experimental procedure).

Next, subjects completed a survey designed to identify origin confusion. Each of the questions asked in the first part of the study was reworded into a statement, and subjects were asked to indicate (yes or no) whether or not they thought the information in the statement was explicitly stated in the ad.

Additionally, evaluations of each of the product categories and the advertisements were included in the survey. A seven point semantic differential scale was used for each evaluation. Subjects were asked to rate each product and the ad on the following dimensions: liking, goodness, quality, pleasantness, and favorability (see Appendix Nine for posttest survey). Finally, subjects were debriefed, thanked for their time, and dismissed.

## RESULTS

Preliminary analyses, using the statistical procedures described below (ANOVA and logistic regression), on each product revealed that CD players and calculators provided little variance and no significant differences ( $p > .10$ ) on the dependent measures and thus were dropped from subsequent analyses. Both cameras and skin lotions possessed sufficient response variance to test the proposed hypotheses. It is interesting to note that cameras represent a shopping product while skin lotion is a convenience product. The ability to provide analyses across both types of products increases the generalizability of the study in marketing.

The expected distribution of knowledge by gender was obtained for skin lotions but not for cameras (see Appendix Ten). For skin lotions, females accounted for 75% of high knowledge subjects, while 82% of low knowledge subjects were males. On the other hand, high and low knowledge was distributed fairly equally across males and females for cameras. The expected distribution was that the majority of both males and females would be low on knowledge for cameras. One reason for this result may be that the survey for knowledge described cameras only as 35mm. As the pretest indicated, subjects know a great deal about automatic cameras, and there are certainly 35mm automatic cameras. Although the experimenter meant to measure knowledge for manual 35mm cameras, as the picture in the advertising stimuli suggests, the distinction was not made clear in the knowledge survey.

The first set of hypotheses tested for automatic inference making and origin confusion. The statistical analyses for these tests involved only the

implied questions from the experiment. The following two tables contain all the means for the main effects and interactions of the independent variables on the dependent measures, respectively (see Table One and Table Two). For all tables in this section, the dependent measures are abbreviated as follows:

(1) Time is response time in milliseconds; it ranges from 0 to 19220 milliseconds.

(2) Infer is a created variable: the correct response to a question (yes or no) subtracted from the subject's response to the same question. The range of the variable is -1, 0, or 1. A zero signifies a subject's correct response to a question. A positive or negative "one" represents an incorrect response, and thus the absolute value of this variable was used for statistical analyses.

(3) Origin is another created variable. It is computed by subtracting between whether a statement was a factual statement explicitly given in the ad stimulus (coded 1) or not (coded 0) from the subject's response to correct identification of the origin of information (see Appendix Nine, the first section of the posttest survey). Its values range from 0 to 2. If the statement was a fact, then the values can be a 0 or a 1. A 0 signifies a correct response (correct identification of factual information). A 1 signifies incorrect recognition of factual information. If the statement was implied from the ad, then the values can be a 1 or a 2. A 2 represents the correct identification of the source of the statement (the negation of an implied statement being mistaken for factual information). A 1 signifies that the subject identified an implied statement as one explicitly stated in the ad. For consistency in the analysis, all "twos" were recoded into "zeros".

For both the infer and origin data presented in the following tables, the values given range from 0 to 1, 0 representing correct responses.

**TABLE ONE**  
Means on Dependent Measures for Questions Requiring Inferences  
(Main Effects)

| PRODUCT:     | INFORMATION FORMAT     |                     | KNOWLEDGE           |                     |
|--------------|------------------------|---------------------|---------------------|---------------------|
|              | Verbal                 | Pictorial           | Low                 | High                |
| DV = TIME    |                        |                     |                     |                     |
| cameras      | 5797.0 ms <sup>b</sup> | 5211.2 <sup>b</sup> | 5445.6              | 5605.1              |
| skin lotions | 6510.8 <sup>b</sup>    | 5784.7 <sup>b</sup> | 5793.8 <sup>a</sup> | 6599.9 <sup>a</sup> |
| DV = INFER   |                        |                     |                     |                     |
| cameras      | 0.69%                  | 0.59                | 0.55 <sup>b</sup>   | 0.72 <sup>b</sup>   |
| skin lotions | 0.28                   | 0.32                | 0.32                | 0.25                |
| DV = ORIGIN  |                        |                     |                     |                     |
| cameras      | 0.18%                  | 0.24                | 0.17                | 0.23                |
| skin lotions | 0.51                   | 0.59                | 0.53                | 0.60                |

\*note: a =  $p < .01$ ; b =  $p < .05$

To test the first hypothesis, an indirect effect of product knowledge on reaction time, an analysis of variance (ANOVA) using the general linear model procedure in Statistical Analysis Systems (SAS 1989) was performed. The model is as follows:

**Time = information format + product knowledge + interaction**

A significant main effect was found for knowledge on reaction time for skin lotion ( $p < .01$ ); however, it was in the opposite direction than hypothesized. Thus, low knowledge subjects generated inferences faster than

high knowledge subjects. Cameras did not reveal significance for knowledge ( $p > .10$ ). Therefore, low knowledge about skin lotions resulted in faster response times than high knowledge.

**TABLE TWO**  
**Means on Dependent Measures for Questions Requiring Inferences**  
**(Interactions)**

| PRODUCT:     | LOW KNOWLEDGE       |                     | HIGH KNOWLEDGE      |                     |
|--------------|---------------------|---------------------|---------------------|---------------------|
|              | Verbal              | Pictorial           | Verbal              | Pictorial           |
| DV = TIME    |                     |                     |                     |                     |
| cameras      | 5973.1 <sup>c</sup> | 4849.6 <sup>c</sup> | 5691.7 <sup>c</sup> | 5482.4 <sup>c</sup> |
| skin lotions | 6174.2              | 5408.2              | 6789.3              | 6289.1              |
| DV = INFER   |                     |                     |                     |                     |
| cameras      | 0.54                | 0.56                | 0.80                | 0.61                |
| skin lotions | 0.32                | 0.33                | 0.23                | 0.30                |
| DV = ORIGIN  |                     |                     |                     |                     |
| cameras      | 0.13                | 0.23                | 0.22                | 0.25                |
| skin lotions | 0.53                | 0.53                | 0.67                | 0.48                |

\*note:  $c = p < .10$

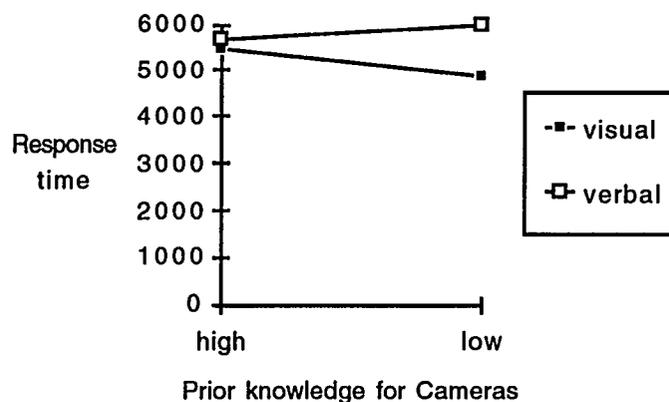
The second part of hypothesis one (H1b) predicted that pictorial stimuli would have faster reaction times than verbal stimuli. Both cameras and skin lotions yielded significant, faster results for visual stimuli ( $p < .05$  and  $p < .01$ , respectively). Thus, people exposed to pictorial ads responded faster to implied questions than those who saw verbal ads. Thus, pictorial ads may have enhanced automatic processing.

The third part of hypothesis one (H1c) predicted a significant interaction between product knowledge and information format. It was expected that high knowledge and pictorial ads would lead to the fastest reaction times.

However, a significant result ( $p < .10$ ) for cameras occurred in the opposite direction (see Figure Two), and no significance resulted for skin lotions ( $p > .10$ ). Thus for the camera category, low knowledge and pictorial ads provided fastest reaction times. This unexpected result is discussed in more detail in the discussion section below.

**FIGURE TWO**

**Interaction effect of Knowledge and Information Format**



A measure of origin confusion served as an indicator of automatic processing. The hypothesis was that greater product knowledge will lead to more errors in identifying the correct source of inference information. To test this hypothesis, a logistic regression was run according to SAS (1989). The dependent variable was dichotomized into a zero/one variable as described in the preceding operationalization section of the research design. The model was run as follows:

$$\text{Origin} = \text{information format} + \text{product knowledge} + \text{interaction}$$

No significant models resulted from the analyses. However, the means on origin for cameras were in the expected direction. High knowledge resulted in a greater probability of errors (see Table One) but not by a significant amount.

Further analyses were conducted to examine the hypotheses just discussed. A possible distinguishing factor in the study was whether or not the correct response to an inference question was "yes" or "no". "No" responses may take longer to respond to than "yes" responses. Therefore, the data set was divided into subsets, one subset consisted of only implied questions for which the correct response was "yes", and the other was implied questions for which the correct response was "no". First of all, there is only one question which falls into the latter category for cameras, and none for skin lotions. Second, there was no significant differences in the dependent variable due to product knowledge, and very few overall significant models.

The remaining hypotheses tested recognition of factual information. A summary table for the means for the main effects and interactions are provided below (see Table Three and Table Four).

Hypothesis H2a stated that consumers with high product knowledge would have better recognition than consumers with low knowledge. Time to respond to a recognition question was tested with an analysis of variance (ANOVA) in the general linear model framework (SAS 1989). Only the pictorial versus verbal manipulation on cameras provided a significant difference in the amount of time needed to respond ( $p < .01$ ). Therefore, people who saw visual ads for cameras responded faster to factual questions than those who saw verbal ads.

**TABLE THREE**  
**Means on Dependent Measures for Factual Question (Main Effects)**

| PRODUCT:     | INFORMATION FORMAT |                     | KNOWLEDGE |        |
|--------------|--------------------|---------------------|-----------|--------|
|              | Verbal             | Pictorial           | Low       | High   |
| DV = TIME    |                    |                     |           |        |
| cameras      | 5658.9 ms          | 4676.8 <sup>a</sup> | 5187.6    | 5247.5 |
| skin lotions | 5778.7             | 4856.3              | 4891.5    | 5842.3 |
| DV = INFER   |                    |                     |           |        |
| cameras      | 0.47%              | 0.49                | 0.50      | 0.47   |
| skin lotions | 0.09               | 0.10                | 0.06      | 0.12   |
| DV = ORIGIN  |                    |                     |           |        |
| cameras      | 0.54%              | 0.38                | 0.50      | 0.44   |
| skin lotions | 1.00               | 0.90                | 0.94      | 1.00   |

\*note: a =  $p < .01$

**TABLE FOUR**  
**Means on Dependent Measures for Factual Questions (Interactions)**

| PRODUCT:     | LOW knowledge |           | HIGH knowledge |           |
|--------------|---------------|-----------|----------------|-----------|
|              | Verbal        | Pictorial | Verbal         | Pictorial |
| DV = TIME    |               |           |                |           |
| cameras      | 5709.2 ms     | 4622.5    | 5630.0         | 4714.4    |
| skin lotions | 5289.1        | 4493.9    | 6166.9         | 5319.4    |
| DV = INFER   |               |           |                |           |
| cameras      | 0.53%         | 0.46      | 0.43           | 0.51      |
| skin lotions | 0.11          | 0.00      | 0.06           | 0.22      |
| DV = ORIGIN  |               |           |                |           |
| cameras      | 0.56%         | 0.42      | 0.52           | 0.34      |
| skin lotions | 1.00          | 0.83      | 1.00           | 1.00      |

Additionally, correct recognition was tested by a logistic regression (SAS 1989). No significance was found ( $p > .10$ ). Examination of means reveals that for cameras, there is no difference across knowledge levels. However, for skin lotions, the results were in the opposite direction. Again, low knowledge people were able to better utilize pictorial information. In both format conditions, low knowledge resulted in nonsignificant, but faster times.

Hypothesis H2b replicated findings from previous studies, which found pictures result in better recall than verbal information (Houston, Childers, and Heckler 1987). The visual information format produced faster times, however, accuracy did not differ across format conditions.

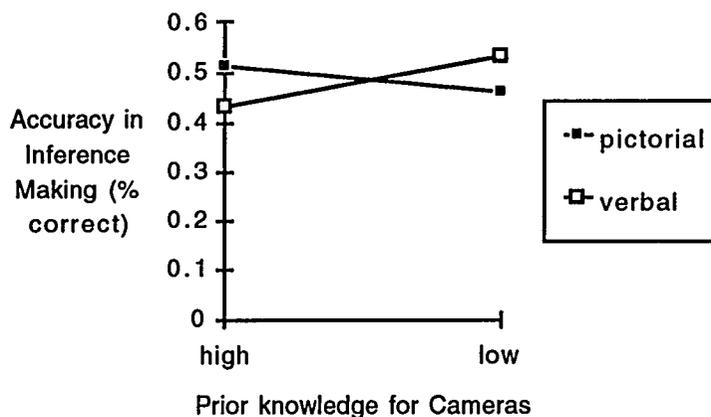
## DISCUSSION

The results of the analyses conducted in this paper provide some support for the theory that increased linkages in memory allow for greater automatic processing. The pictorial/verbal manipulation provided strong results for predicting response time. Although, the result for recognizing factual information was expected as it replicates prior research, the strong findings for automatic inference making conflicts with the Lutz and Lutz (1977) conclusions. Their study found only significant results for pictorial formats that interacted and reinforced the verbal information. Conversely, this study found that the effects of pictorial information formats are robust and thus, a fairly simple picture was enough to create significant differences in processing. Therefore, the pictorial component significantly increased automatic inference making.

Future research could include further examination of the pictorial component of advertisements. Specifically, an experiment could be designed to test whether pictorial processing produces more linkages or distinctive linkages in memory. Also, a purely pictorial condition could be added to an experimental design similar to the one used in this study.

Although a great deal of theory supports the effect of knowledge on processing, such as encoding and retrieval (Alba and Hasher 1983; Barclay et al. 1984), its effects in this study were limited. In fact, the effects predicted for high knowledge on response times actually occurred for low knowledge instead.

Product knowledge produced effects different from those hypothesized. Instead of high knowledge leading to faster response times, low knowledge lead to significantly faster reaction times. The results for hypothesis H1c suggest a change in theory may be needed for future research. It appears that low knowledge consumers more efficiently utilize pictorial information. High knowledge consumers already possess a great deal of information about the product, and thus pictorial information results in a small decrease in the amount of time needed for processing. Low knowledge may have lead to more automatic inference making for the following reason. First, subjects with low knowledge may have had little interest in the stimuli and thus responded quickly to the questions. If this were the case then the correctness of their responses would be worse than high knowledge. A logistic regression procedure was calculated on the following model:  $\text{infer} = \text{knowledge} + \text{format} + \text{interaction}$ . A significance result ( $p < .05$ ) suggests this is the case (see figure below).

**FIGURE THREE****Inference Making predicted by Knowledge and Information Format**

Another explanation for the unexpected results in product knowledge may be due to the measure of knowledge used for the analysis. A summary measure of familiarity may not be the most appropriate indicator for knowledge of cameras. For example, how often one uses a camera may not be as useful as an expertise measure to represent product knowledge. A separate analysis using a continuous measure of expertise as the independent variable was conducted, yet no significance resulted for expertise for any of the models used for testing the hypotheses.

Future research should concentrate on developing better measures of product knowledge among the subject population. Both familiarity and expertise measures should be included, but should specify the reference points on which each person should judge their expertise. An alternative method may try to manipulate product knowledge among the subjects before the

experiment; however, this reduces external validity of the research even more so.

The nonsignificant results for origin confusion indicate two possible problems with the research design. First, the measures used to obtain an indicator for origin confusion may have not been sufficiently sensitive to produce significant results. Secondly, the instructions on the postsurvey may have been confusing, as some subjects remarked during the experiment. Consequently, their responses may not have indicated their true thoughts on the origin of each statement's information. The way in which origin confusion was measured may have been more easily interpreted by subjects, and thus produced more accurate results, if subjects were asked to indicate their responses in only one direction. Another way to improve the measure is to plan the stimuli and origin confusion measures together, so that the correct responses to the questions can be predetermined to be easy to understand.

The use of response latency as a direct measure of automatic inference making is a debatable issue; however, Kardes (1988b) used a similar methodology to measure spontaneous inference making. The assumption behind this dependent measure is that response time is a reflection of cognitive effort, and reduced effort leads to automaticity. Response latency provides a way to get at the processes that cannot be measured overtly.

In addition, accessibility may be a variable to consider in future research. If accessibility is a primary determinant of the amount of effort needed to process incoming information, then manipulation of this concept may be the next step in understanding automatic inference making in marketing. Biehal

and Chakravarti (1983) suggest that the processing goal or task at the time of exposure to information is one way to manipulate accessibility.

## CONCLUSIONS

Within marketing, it is likely that a great deal of information consumers perceive is processed automatically due to the limitations on time and effort. This thesis provided some evidence that certain conditions can reduce the amount of time consumers use to make inferences about advertising information.

The purpose of this paper was to (1) expand the treatment of automatic processing in marketing and (2) to explore the conditions under which automaticity develops. The theory developed in this paper provides sufficient evidence that automaticity is a common phenomenon in marketing and deserves a more extensive treatment in the literature.

Several of the propositions were supported through the empirical study presented here. The specific factors tested suggest that pictorial information has a robust effect across conditions. The combination of verbal and pictorial components in ads is likely to lead to more automatic processing than just verbal advertisements. Therefore, automaticity has the potential to explain how consumers can process information in a saturated marketing environment, where the same information can be presented in different formats and repetitively over time.

## APPENDIX ONE

Pretest One

PLEASE CIRCLE THE NUMBER ON THE SCALE THAT BEST REFLECTS YOUR KNOWLEDGE LEVEL ABOUT EACH OF THE PRODUCTS LISTED.

|                             | No<br>Knowledge |   |   |   | Very<br>Knowledgeable |   |   |  |
|-----------------------------|-----------------|---|---|---|-----------------------|---|---|--|
|                             | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Mountain Bicycles           | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Running Shoes               | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| CD Players                  | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Frozen Dinners              | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Laptop/Notebook PCs         | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Toothpaste                  | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Tanning Lotions             | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Hand Lotions                | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Walkman-type Stereos        | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Alarm Clock Radios          | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Detergents                  | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Deodorants                  | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| 35mm Cameras                | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Phone Answering Machines    | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Calculators                 | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Microwaveable Popcorns      | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Gourmet Ice Creams          | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| LaserDisc Players           | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Cold Relief Medications     | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Instant Soups               | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Salad Dressings             | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |
| Headache Relief Medications | 1               | 2 | 3 | 4 | 5                     | 6 | 7 |  |

Please give your Age: \_\_\_\_\_ and circle your Sex: M F

## APPENDIX TWO

Pretest Two

SSN \_\_\_\_\_

Version One

- Please answer the following questions thoroughly.
- Do NOT turn ahead to the next page until you have finished each section.

**SECTION ONE:****Please discuss the experiences you have had with:****Mountain Bicycles**

---

**CD players**

---

**Tanning lotions**

---

**35mm Cameras**

---

**Running shoes**

---

**Answering Machines**

---

Calculators

---

Salad dressings

---

Frozen dinners

---

Hand lotions

---

**SECTION TWO:**

**List the characteristics you associate with:**

Mountain Bicycles

---

CD players

---

Tanning lotions

---

35mm Cameras

---

Running shoes

---

Answering Machines

---

Calculators

---

Salad dressings

---

Frozen dinners

---

Hand lotions

---

## APPENDIX THREE

Verbal Codes Used For Test Products in Pretest Two

| <u>CAMERAS</u>         | <u>CD PLAYERS</u>     | <u>CALCULATORS</u>     | <u>SKIN LOTIONS</u>    |
|------------------------|-----------------------|------------------------|------------------------|
| best                   | ease of use           | best                   | best                   |
| low price              | quick                 | low price              | uses (how/where)       |
| uses (how/where)       | expensive             | uses (how/where)       | necessary              |
| ease of use            | relaxation            | necessary              | nongreasy              |
| quick                  | social influences     | confusing              | scented                |
| expensive              | good quality          | multiple uses          | ineffective at times   |
| many brands            | multi-disc            | variety                | helpful                |
| prefer certain brand   | high quality          | quick                  | soothing               |
| prefer certain feature | compatible w/friends  | reliable               | soft skin              |
| people who use         | periodicals           | convenient             | look better            |
| good quality           | American made         | helpful                | expensive              |
| family                 | efficient             | accurate               | prevention             |
| summer afternoons      | entertainment         | expensive              | many brands            |
| small                  | better than cassettes | many brands            | prefer certain brand   |
| high quality           | delicate              | prefer certain brand   | prefer certain feature |
| attachments            | can't record          | prefer certain feature | nonsticky              |
| heavy                  | portable              | people who use         | absorbs easily         |
| black                  |                       | competence             | dislike                |
| entertainment          |                       | complex                | smooth                 |
| don't use much         |                       | time savings           | greasy                 |
|                        |                       | small                  | own several            |
|                        |                       | high quality           | sunscreen              |
|                        |                       | durable                | increase self worth    |
|                        |                       | own several            |                        |
|                        |                       | solar                  |                        |
|                        |                       | prefer simple          |                        |
|                        |                       | efficient              |                        |

## APPENDIX FOUR

Means on Product Knowledge by Gender

| KNOWLEDGE LEVEL |             |              |
|-----------------|-------------|--------------|
| GENDER          | LOW         | HIGH         |
| MALE            | LD = 2.60   | MTBK = 5.40  |
|                 | TAN = 2.40  | WKM = 5.00   |
|                 | SKN = 1.80  | RUN = 5.00   |
|                 |             | CD = 5.00    |
|                 |             | DEOD = 5.20  |
|                 |             | CALC = 5.00  |
|                 |             | POP = 5.00   |
|                 |             | ACHE = 5.00  |
| FEMALE          | LD = 2.44   | SKN = 5.44   |
|                 | PC = 2.78   | DETG = 5.22  |
|                 | MTBK = 2.33 | ACHE = 5.89  |
|                 | CD = 2.89   | DEOD = 5.20  |
|                 |             | CALC = 5.11  |
|                 |             | SALAD = 5.56 |
|                 |             |              |

\*note: all other product had means in between the two levels ranging from 3.11 to 4.89

LD = LASER DISC PLAYER

TAN = TANNING LOTION

SKN = SKIN LOTION

SALAD = SALAD DRESSING

DEOD = DEODORANT

WKM = WALKMAN RADIO

PC = LAPTOP PC COMPUTER

MTBK = MOUNTAIN BIKE

RUN = RUNNING SHOES

DETG = LAUNDRY DETERGENT

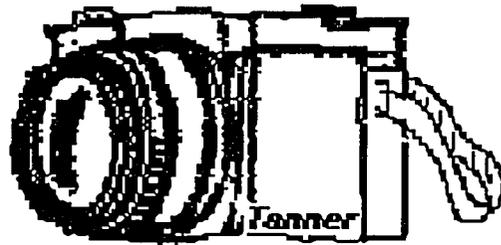
CALC = CALCULATOR

ACHE = HEADACHE MEDICATION

POP = POPCORN

CD = CD PLAYER

## APPENDIX FIVE

Sample Advertisements from Experiment**Tanner 35mm Camera**

- **Flash attachment allows for 3 light levels**
- **Telephoto and Wide Angle lenses available**
- **Tripod stand and Timer**

## **Tanner 35mm Camera**

- **Flash allows for 3 light levels**
- **Telephoto and Wide Angle lens available**
- **Tripod stand and timer**

## Seneca Skin Lotion

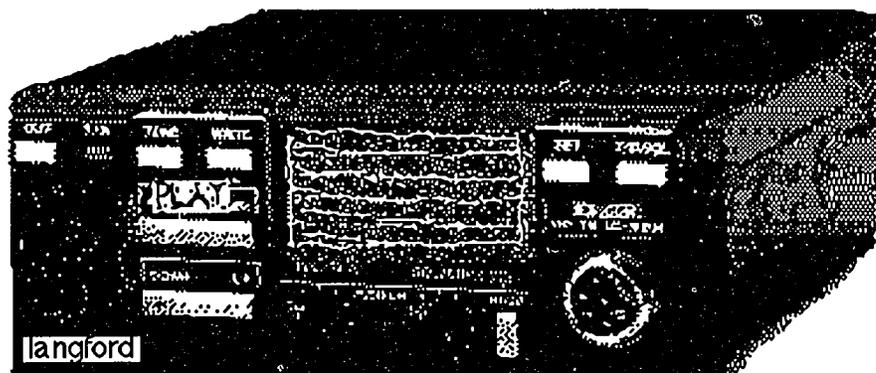


- **Fragrance free, specially formulated for sensitive skin**
- **Available with SPF 5 to 15**
- **Rich emulsion**

## **Seneca Skin Lotion**

- **Fragrance free,  
specially formulated for sensitive skin**
- **Available with SPF 5 to 15**
- **Rich emulsion**

## Langford Compact Disc Player

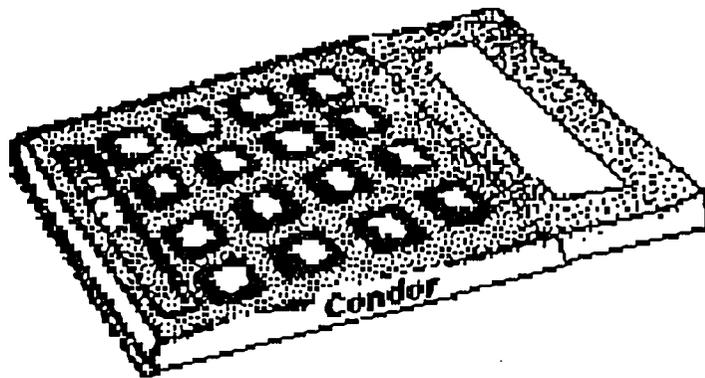


- Includes a stabilizer to reduce unwanted vibrations
- Automatic cassette holds up to 5 discs
- Can program up to 5 hours of music

## **Langford Compact Disc Player**

- **Includes a stabilizer to reduce unwanted vibrations**
- **Automatic cassette holds up to 5 discs**
- **Can program up to 5 hours of continuous play**

## Condor Calculator



- **Solar powered**
- **Easily programmable**
- **Over 50 business and scientific functions**

## **Condor Calculator**

- **Solar powered**
- **Easily Programmable**
- **Over 50 business and scientific functions**

## APPENDIX SIX

Questions Created for Experiment

## FACTS:

- Is the Condor Calculator solar powered?
- Does the Condor Calculator require a battery?
- Is Seneca Skin Lotion fragrance free?
- Can Seneca Skin Lotion be used on sensitive skin?
- Is the Langford CD Player programmable?
- Does the Langford CD Player have a stabilizer?
- Does the Tanner 35mm Camera include 2 other lenses?
- Does the Tanner 35mm Camera include a flash attachment?

## IMPLIED:

- Is the Condor Calculator versatile?
- Is the Condor Calculator useful for business classes?
- Is the Condor Calculator difficult to use?
- Is the Tanner 35mm Camera complex?
- Does the Tanner 35mm Camera take clear pictures of fast-moving objects?
- Is the Tanner 35mm Camera easy to use?
- Does the Langford CD Player produce concert-like sounds in your home?
- Does the Langford CD Player impress music lovers?
- Does the Langford CD Player sound better than other CD players?
- Can Seneca Skin Lotion be used for a night cream?
- Does Seneca Skin Lotion protect you from midday sun?
- Is Seneca Skin Lotion non-irritating?

## APPENDIX SEVEN

Survey to Measure Product Knowledge

**I. Compared to other people you know, how would you rate your expertise (expert opinion in an area) in each of these products?**

|                          | Low<br>Expertise |   |   |   |   |   | High<br>Expertise |  |
|--------------------------|------------------|---|---|---|---|---|-------------------|--|
|                          | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Hand Lotions             | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Running Shoes            | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| 35mm Cameras             | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Frozen Dinners           | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Alarm Clock Radios       | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| CD Players               | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Suntan Lotions           | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Phone Answering Machines | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Gourmet Ice Creams       | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |
| Calculators              | 1                | 2 | 3 | 4 | 5 | 6 | 7                 |  |

**II. How many advertisements (magazines, TV, radio) would you estimate you've seen or heard for each of the following products in the last month?**

**How many times in an average month do you use a product in each category below?**

|                          |       |       |
|--------------------------|-------|-------|
| HAND LOTIONS             | ----- | ----- |
| RUNNING SHOES            | ----- | ----- |
| FROZEN DINNERS           | ----- | ----- |
| 35MM CAMERAS             | ----- | ----- |
| ALARM CLOCK RADIOS       | ----- | ----- |
| CD PLAYERS               | ----- | ----- |
| SUNTAN LOTIONS           | ----- | ----- |
| PHONE ANSWERING MACHINES | ----- | ----- |
| GOURMET ICE CREAMS       | ----- | ----- |
| CALCULATORS              | ----- | ----- |

**III. How many different brands have you purchased or used or in the last 2 weeks? month?**

|                                 |       |       |
|---------------------------------|-------|-------|
| <b>CD PLAYERS</b>               | ----- | ----- |
| <b>GOURMET ICE CREAMS</b>       | ----- | ----- |
| <b>PHONE ANSWERING MACHINES</b> | ----- | ----- |
| <b>CALCULATORS</b>              | ----- | ----- |
| <b>35MM CAMERAS</b>             | ----- | ----- |
| <b>HAND LOTIONS</b>             | ----- | ----- |
| <b>RUNNING SHOES</b>            | ----- | ----- |
| <b>SUNTAN LOTIONS</b>           | ----- | ----- |
| <b>FROZEN DINNERS</b>           | ----- | ----- |
| <b>ALARM/CLOCK RADIOS</b>       | ----- | ----- |

**IV. If you were to purchase a brand in each of the product categories below, which are the TWO most important criteria or product characteristics would you use in making your decision? Please list them below:**

**CD PLAYERS**

**GOURMET ICE CREAMS**

**PHONE ANSWERING MACHINES**

**CALCULATORS**

**35MM CAMERAS**

**HAND LOTIONS**

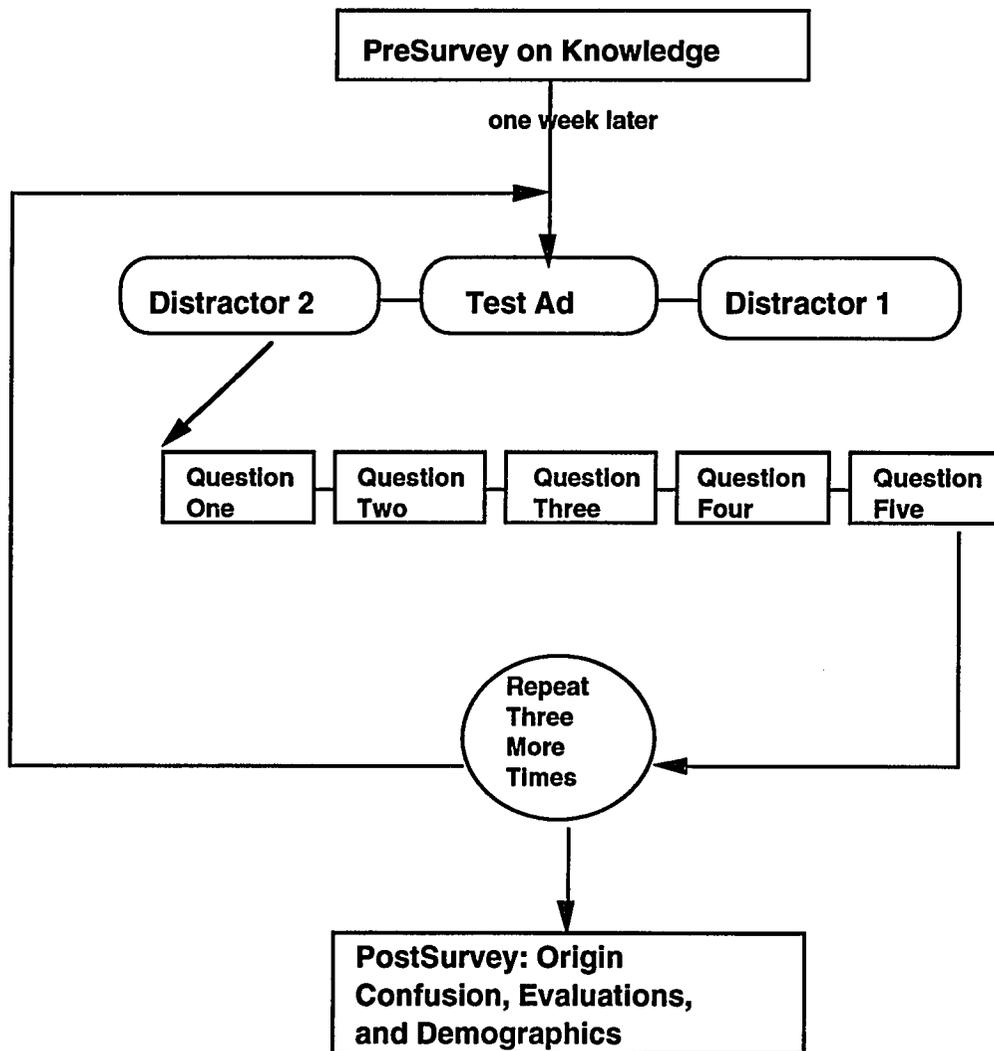
**RUNNING SHOES**

**ALARM/CLOCK RADIOS**

**SUNTAN LOTIONS**

**FROZEN DINNERS**

APPENDIX EIGHT  
Experimental Procedure



## APPENDIX NINE

Posttest Survey**I. PLEASE READ EACH STATEMENT AND TELL US WHETHER OR NOT YOU THINK THE INFORMATION WAS EXPLICITLY INCLUDED IN THE AD.**

For example, if the statement said "Clover Orange Juice is made from Concentrate," and you believe the ad said it was not made from concentrate, then your answer would be "YES" because the needed information was given in the ad.

Another example would be if the statement read "Children like Cardinal Pancake Syrup," and you believe the ad said the whole family likes Cardinal Pancake Syrup, then your answer would be "NO" because the ad did not explicitly state children like it.

|  | YES   | NO    |
|--|-------|-------|
| The Langford CD Player has a stabilizer.                               | ----- | ----- |
| The Glaser Alarm Clock Radio is accurate.                              | ----- | ----- |
| The Condor Calculator is solar powered.                                | ----- | ----- |
| Collier Running Shoes are made of lightweight leather.                 | ----- | ----- |
| Seneca Skin Lotion is fragrance free.                                  | ----- | ----- |
| Sandy's Frozen Entrees are healthy.                                    | ----- | ----- |
| The Tanner 35mm Camera produces clear pictures of fast-moving objects. | ----- | ----- |
| The Condor Calculator is useful for business classes.                  | ----- | ----- |
| Collier Running Shoes have arch support.                               | ----- | ----- |
| Seneca Skin Lotion is non-irritating.                                  | ----- | ----- |
| The Langford CD Player produces concert-like sounds in your home.      | ----- | ----- |
| The Condor Calculator requires a battery.                              | ----- | ----- |
| Bally's Suntan Lotion is oily.   | ----- | ----- |
| The Langford CD Player impresses music lovers.                         | ----- | ----- |
| Sailor's Ice Cream is healthy.   | ----- | ----- |
| The Tanner 35mm Camera includes a flash attachment.                    | ----- | ----- |
| Bally's Suntan Lotion is fragrance free.                               | ----- | ----- |
| The Glaser Alarm Clock is versatile.                                   | ----- | ----- |
| Sandy's Frozen Entrees are microwaveable.                              | ----- | ----- |

|  |       |       |
|--|-------|-------|
| <b>The Condor Calculator is difficult to use.</b>                        | ----- | ----- |
| <b>The Perry Answering Machine allows for remote replay of messages.</b> | ----- | ----- |
| <b>Seneca Skin Lotion protects you from midday sun .</b>                 | ----- | ----- |
| <b>The Tanner 35mm Camera is complex.</b>                                | ----- | ----- |
| <b>Sailor's Ice Cream is low in sodium.</b>                              | ----- | ----- |
| <b>Collier Running Shoes protect your feet from injury.</b>              | ----- | ----- |
| <b>The Langford CD Player is programmable.</b>                           | ----- | ----- |
| <b>The Glaser Alarm Clock has a battery back-up.</b>                     | ----- | ----- |
| <b>The Tanner 35mm Camera includes two other lenses</b>                  | ----- | ----- |
| <b>The Perry Answering Machine is useful when you out of town.</b>       | ----- | ----- |
| <b>Collier Running Shoes are made for different terrains.</b>            | ----- | ----- |
| <b>The Condor Calculator is versatile.</b>                               | ----- | ----- |
| <b>Seneca Skin Lotion can be used on sensitive skin.</b>                 | ----- | ----- |
| <b>Sailor's Ice Cream is available in 10 flavors.</b>                    | ----- | ----- |
| <b>Bally's Suntan Lotion protects you fom skin cancer.</b>               | ----- | ----- |
| <b>The Perry Answering Machine is convenient to use.</b>                 | ----- | ----- |
| <b>Sandy's Frozen Entrees are good tasting.</b>                          | ----- | ----- |
| <b>The Langford CD Player sounds better than other CD players.</b>       | ----- | ----- |
| <b>Seneca Skin Lotion can be used for a night cream.</b>                 | ----- | ----- |
| <b>Sandy's Frozen Entrees cook fast.</b>                                 | ----- | ----- |
| <b>The Tanner 35mm Camera is easy to use.</b>                            | ----- | ----- |
| <b>Bally's Suntan Lotion is for summer sports.</b>                       | ----- | ----- |
| <b>The Glaser Alarm Clock has two alarm settings.</b>                    | ----- | ----- |
| <b>The Perry Answering Machine records up to 30 minutes of messages.</b> | ----- | ----- |
| <b>Collier Running Shoes are durable.</b>                                | ----- | ----- |
| <b>Bally's Suntan Lotion lets you stay in sun 20 times longer.</b>       | ----- | ----- |
| <b>The Perry Answering Machine limits callers to short messages.</b>     | ----- | ----- |
| <b>Sandy's Frozen Entrees are convenient.</b>                            | ----- | ----- |
| <b>The Glaser Alarm Clock is easy to use.</b>                            | ----- | ----- |
| <b>Sailor's Ice Cream is preferred by ice cream lovers.</b>              | ----- | ----- |

**II. PLEASE RATE EACH PRODUCT ON EACH DIMENSION:****Perry Answering Machine**

|                    |          |          |          |          |          |          |          |                    |
|--------------------|----------|----------|----------|----------|----------|----------|----------|--------------------|
| <b>LIKE</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>DISLIKE</b>     |
| <b>GOOD</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>BAD</b>         |
| <b>HI QUALITY</b>  | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>LOW QUALITY</b> |
| <b>PLEASANT</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>UNPLEASANT</b>  |
| <b>UNFAVORABLE</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>FAVORABLE</b>   |

**Collier Running Shoes**

|                    |          |          |          |          |          |          |          |                    |
|--------------------|----------|----------|----------|----------|----------|----------|----------|--------------------|
| <b>LIKE</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>DISLIKE</b>     |
| <b>GOOD</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>BAD</b>         |
| <b>HI QUALITY</b>  | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>LOW QUALITY</b> |
| <b>PLEASANT</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>UNPLEASANT</b>  |
| <b>UNFAVORABLE</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>FAVORABLE</b>   |

**Tanner 35mm Camera**

|                    |          |          |          |          |          |          |          |                    |
|--------------------|----------|----------|----------|----------|----------|----------|----------|--------------------|
| <b>LIKE</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>DISLIKE</b>     |
| <b>GOOD</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>BAD</b>         |
| <b>HI QUALITY</b>  | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>LOW QUALITY</b> |
| <b>PLEASANT</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>UNPLEASANT</b>  |
| <b>UNFAVORABLE</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>FAVORABLE</b>   |

**Bally's Suntan Lotion**

|                    |          |          |          |          |          |          |          |                    |
|--------------------|----------|----------|----------|----------|----------|----------|----------|--------------------|
| <b>LIKE</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>DISLIKE</b>     |
| <b>GOOD</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>BAD</b>         |
| <b>HI QUALITY</b>  | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>LOW QUALITY</b> |
| <b>PLEASANT</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>UNPLEASANT</b>  |
| <b>UNFAVORABLE</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>FAVORABLE</b>   |

**Langford CD Player**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**Glaser Alarm Clock Radio**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**Seneca Skin Lotion**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**Sailor's Ice Cream**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**Condor Calculator**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**Sandy's Frozen Entrees**

|             |   |   |   |   |   |   |   |             |
|-------------|---|---|---|---|---|---|---|-------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE     |
| GOOD        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | BAD         |
| HI QUALITY  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | LOW QUALITY |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT  |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE   |

**III. PLEASE RATE THE AD YOU SAW FOR EACH PRODUCT:****Perry Answering Machine**

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

**Collier Running Shoes**

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

**Tanner 35mm Camera**

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

**Condor Calculator**

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

## Seneca Skin Lotion

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

## Bally's Suntan Lotion

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

## Langford CD Player

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

## Glaser Alarm Clock Radio

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

## Sailor's Ice Cream

|             |   |   |   |   |   |   |   |            |
|-------------|---|---|---|---|---|---|---|------------|
| LIKE        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

| Sandy's Frozen Entrees |   |   |   |   |   |   |   |            |
|------------------------|---|---|---|---|---|---|---|------------|
| LIKE                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | DISLIKE    |
| BAD                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | GOOD       |
| PLEASANT               | 1 | 2 | 3 | 4 | 5 | 6 | 7 | UNPLEASANT |
| UNFAVORABLE            | 1 | 2 | 3 | 4 | 5 | 6 | 7 | FAVORABLE  |

**IV. HOW LIKELY WOULD YOU BE TO PURCHASE EACH PRODUCT?**

|                          | Very Likely |   |   |   |   | Not at all |
|--------------------------|-------------|---|---|---|---|------------|
| Bally's Suntan Lotion    | 1           | 2 | 3 | 4 | 5 |            |
| Tanner Camera            | 1           | 2 | 3 | 4 | 5 |            |
| Condor Calculator        | 1           | 2 | 3 | 4 | 5 |            |
| Clover Orange Juice      | 1           | 2 | 3 | 4 | 5 |            |
| Cardinal Pancake Syrup   | 1           | 2 | 3 | 4 | 5 |            |
| Perry Answering Machine  | 1           | 2 | 3 | 4 | 5 |            |
| Seneca Skin Lotion       | 1           | 2 | 3 | 4 | 5 |            |
| Langford CD Player       | 1           | 2 | 3 | 4 | 5 |            |
| Glaser Alarm Clock Radio | 1           | 2 | 3 | 4 | 5 |            |
| Sailor's Ice Cream       | 1           | 2 | 3 | 4 | 5 |            |
| Sandy's Frozen Entrees   | 1           | 2 | 3 | 4 | 5 |            |

**PLEASE CIRCLE YOUR SEX:** Male or Female

**AGE:** \_\_\_\_\_

## APPENDIX TEN

Crosstabulations for Knowledge by Gender

| GENDER: | Knowledge Level for Cameras |                       |
|---------|-----------------------------|-----------------------|
|         | LOW                         | HIGH                  |
| MALE    | 125<br>42.37<br>54.35       | 170<br>57.63<br>52.15 |
| FEMALE  | 105<br>40.23<br>45.65       | 156<br>59.77<br>47.85 |

| GENDER: | Knowledge Level for Skin Lotions |                       |
|---------|----------------------------------|-----------------------|
|         | LOW                              | HIGH                  |
| MALE    | 225<br>76.27<br>81.82            | 70<br>23.73<br>25.00  |
| FEMALE  | 50<br>19.23<br>18.18             | 210<br>80.77<br>75.00 |

\*note: numbers in cells reflect (1) cell count, (2) row percentage, and (3) column percentage, respectively.

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