THE EFFECTS OF ADVERTISING SCHEMA-CONGRUITY
ON EMOTIONAL RESPONSE

By

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The current study investigated the relationship between schema-congruity and emotional response in an advertising context. The theoretical bases of the thesis are in schema-congruity and emotional response. Schema theory and congruity theory have been studied by psychologists to explain how individuals process information by categorizing it and then evaluating it based on their expectations of the activated category. These theories are relevant in advertising research because they can help advertisers predict how consumers will use schema-congruity to process and evaluate ads. Furthermore, the emotional responses connected to schema-congruity can be important determinants of the success of ads.

The emotional response measures used in previous schema-congruity studies may have distorted the role of emotional response by relying on incomplete cognitive techniques to assess emotion. The typical attitude scales used to determine feelings about congruent versus incongruent information ask for a verbal interpretation of complex
internal feelings, usually using Likert or semantic differential scales. Most schema-
congruity studies simply ask subjects whether they like the ad or not. The current study,
however, utilized AdSAM®, a scale developed to more effectively measure emotional
responses to advertising. The AdSAM® model accounts for each of the three dimensions
that have been found to accurately represent emotional response: pleasure, arousal, and
dominance, or PAD.

To test the emotional responses to schema-congruity, an experimental design was
used. First, a series of photographs with known PAD scores were used to create
advertising stimuli. The ads were designed and pre-tested to ensure that they were
congruent, moderately incongruent, and incongruent with an advertising schema.
Emotional response to the ads was then measured. The independent variables were the
SAM quadrants of the pictures and the congruity levels of the ads. The dependent
variables were the emotional response scores (PAD), attitude toward the ad, and attitude
toward the brand.

A relationship was found between congruity level and emotional response,
especially pleasure. However, schema-congruity alone did not determine the specific
emotional response. An interaction between congruity level and emotional response to
the stimulus picture in the absence of advertising schema activation contributed to
emotional response. The results can help advertisers determine when to use unexpected,
or incongruent, information in their advertising messages based on the picture or other
visual they are using in the advertising.
A television commercial opens with an idyllic scene of a woman hanging laundry on a clothesline in the country. The background music is soft; the voiceover is soothing as it describes the fresh scent of springtime. Then, suddenly, a cockroach darts across the television screen, followed by another. The viewer realizes then that the commercial is for pest control, not laundry detergent. Having prepared the audience for a specific, familiar type of commercial, the advertiser quickly disrupted expectations, a tactic which got so much attention from viewers that some people broke their television sets trying to kill the roaches. This commercial demonstrates schema-incongruity, a strategy used by some advertisers to break through the abundance of advertising messages in the media.

The increasing clutter in the advertising landscape has forced advertisers to work harder than ever just to be heard. Consumers can only attend to a small amount of information at a given time, so a single ad must compete with hundreds of other messages for consumers’ limited attention (Webb and Ray 1979). Furthermore, consumers are so used to being bombarded with advertising messages that they have developed effective mechanisms for ignoring the ads that are not of interest to them (Webb and Ray 1979). Despite these setbacks, advertisers try to capture consumers’ attention by being unique, which often means being as different as possible from other ads in the media. Trying to be “different” can lead to ads that are provocative, highly creative, or just plain confusing. As advertisers seek new ways to make their ads stand out and be noticed, they
can benefit from the research in two separate theoretical frameworks: schema-congruity and emotional response.

Schema-congruity theory was developed in social psychology to explain how individuals process information by categorizing it and then evaluating it based on their expectations of the activated category, which are either confirmed or disconfirmed by the new information (Hastie 1980; Srull et al. 1985). In other words, some piece of new information, such as an advertisement (Stoltman 1991), activates a schema. The viewer then prepares for the content of the ad based on the activated schema, which contains cumulative information about what advertisements usually consist of based on other ads the individual has seen (Stoltman 1991). According to schema-congruity theory, the viewer’s reaction to the ad depends on whether the rest of the ad, such as the visual (Heckler and Childers 1992), matches schema expectations. This theory is relevant to advertising because it can help advertisers predict how consumers will process ads based on already-formed knowledge structures.

Even more valuable, however, is the link between schema-congruity theory and affect. Mandler (1982) first theorized that schema-congruity could lead to approach or avoidance behavior in consumers. He stated that congruent information is processed less elaborately than incongruent information and therefore creates positive feelings because the new stimulus fits established schemas and is familiar. However, because less processing is required, congruent information is not as memorable as incongruent information. On the other hand, an incongruent stimulus leads to more elaborate processing, but it can lead to negative feelings if the new information cannot be reconciled with previous schemas. Mandler proposed that the best scenario to maximize
cognitive processing and positive affect was moderate incongruity, which is different
from established schemas enough to be remembered, but not enough to create confusion
or dissonance in the viewer.

Mandler’s theory was applied by other researchers in the consumer behavior and
advertising fields. Meyers-Levy and Tybout (1989) and Stayman et al. (1992) found that
new products that were moderately incongruent from their product class were evaluated
more favorably on attitude scales. Goodstein (1993) found that television ads
incongruent with ad schemas for their product category were processed more extensively
but not more well liked than congruent ads. However, all of these studies measured
“feelings” or “liking” of the ads on attitude scales. The current study, however, will use
emotional response as a measure of affect.

Emotional response has received increased attention in consumer behavior
literature as having a greater effect on consumers’ reactions to ads than previously
believed. Early research of attitude formation ignored emotions altogether (Fishbein
1963; Fishbein and Middlestadt 1995) or gave them a separate, secondary role (Petty et
al. 1983). As emotions gained acceptance in research, they were believed to be mediators
of attitude toward the ad (Lutz 1985; Batra and Ray 1986; Burke and Edell 1987;
Holbrook and Batra 1987), which then influenced attitude toward the brand and purchase
intention. However, recent research has expanded the role of emotions. Studies have
shown that emotions have a direct influence on attitude toward the brand (Stayman and
Aaker 1988; Burke and Edell 1989), purchase intentions (Morris et al. 2002) and
behavior (Allen et al. 1992). These studies have determined that a measure of attitude
that does not include emotions leaves out a fundamental element for determining behavior.

Furthermore, an effective scale must be used to measure emotional response in order to get accurate results. Researchers have found that a multi-dimensional scale is better than a unidimensional scale for capturing the totality of emotional response (Osgood et al. 1957; Mehrabian and Russell 1977). The PAD scale, which uses pleasure, arousal, and dominance as the three dimension of emotion, is one of the most widely accepted scales. However, non-verbal measures are even more useful because they do not force respondents to translate complex or vague emotions into corresponding words. Therefore, researchers developed the Self-Assessment Manikin (SAM), a non-verbal scale of the three PAD emotions (Bradley and Lang 1994). Many studies have tested the validity and reliability of the SAM scale (Miller et al. 1987; Bradley 1994; Morris 1995; Morris et al. 1999; Greenwald et al. 1987; Lang et al. 1993). AdSAM®, an offshoot of SAM used for advertising and marketing (Morris 1995), will be used in the current study to gauge emotional reactions to ads at various levels of schema-congruity (See Figure 1-1).

**Need for Present Research**

The synthesis of schema-congruity and emotional response is a natural combination that has not been examined in the literature to date. Schema-congruity has already been studied as it relates to affect, and research has shown that emotions in combination with attitude scales are a better measure of affect than attitude scales alone (Holbrook and Batra 1987, Stayman and Aaker 1988, Burke and Edell 1989, Allen et al. 1992).
Therefore, this study will test Mandler’s (1982) theory to see if emotional responses will be similar to the broader affective responses his theory predicts.

![Figure 1-1: AdSAM® Emotional Response Measure](image)

The current study will expand the current model of schema-congruity by adding an emotional component to the incomplete affective component proposed by Mandler (1982), which will give a more thorough understanding of schema-congruity theory. It will either support or deny the theory that schema-congruent information creates moderately positive feelings, schema-incongruent information creates negative feelings, and moderately schema-incongruent information creates highly positive feelings.

**Research Question**

The current study will attempt to answer the following research question:

Will the level of schema-congruity determine the emotional response?

**Outline of Following Chapters**

Chapter 2 provides a thorough review of literature related to the topics of interest for the current study. It traces the evolution of schema-congruity theory from its roots in social psychology to its applications in the field of advertising. It also examines the role
of cognition and affect in previous schema-congruity research. The emotional response literature review looks at the evolution of the role of emotion in academic research and its growing importance. It also examines the development of more effective scales to measure emotional response. Chapter 2 provides operational definitions for the independent and dependent variables and states the hypotheses of the study.

Chapter 3 outlines the methodology that will be used in this study to answer the research questions. It details the sample size and selection and the step-by-step procedures used in the experiment.

Chapter 4 reports on the statistical analyses conducted on the data gathered during the experiment. This section provides the numerical data and tells whether the findings were significant.

Chapter 5 concludes the paper with a discussion of the meaning of the findings, research limitations, and recommendations for further research.
CHAPTER 2
LITERATURE REVIEW

Schema Congruity

Schemas have been defined as “organized structures of prior knowledge stored in memory” (Stayman et al. 1992). Schemas can include elements such as attributes of a category, prototypes of the category, and attitude toward the category (Goodstein 1993). According to schema theory, people apply their accumulated knowledge about a schema whenever they encounter a new instance of the schema. Using schema-based processing allows for faster, easier evaluations because individuals do not have to reevaluate information that has already been processed (Fiske 1982; Fiske and Pavelchak 1986). For example, when an individual sees a movie, his schema for movies prepares him for characters, dialogue, and a plot. In addition to cognitive information, schema can also contain affect, including attitudes and emotions toward the schema (Fiske 1982; Fiske and Pavelchak 1986). Therefore, if a person who hates action films attends an action movie, his schema for action movies will prepare him to dislike the movie.

Congruity theory goes on to examine how confirmation or disconfirmation of expectations affects individual response, including information processing and evaluation. When people encounter new information that is congruent with prior knowledge structures, they can easily assimilate the new information. If the new information is incongruent, however, it will challenge prior knowledge structures and, therefore, cause extra cognitive processing. (Hastie 1980; Srull et al. 1985) For example, if a person who has only encountered female nurses meets another female nurse, his
expectations will be confirmed, and the instance will elicit little cognitive processing. On the other hand, if he meets a male nurse, he will have to rethink his concept that all nurses are female.

Combining schema and congruity theory results in a hybrid known as schema-congruity effect (Peracchio and Tybout 1996). The congruity of the schema that individuals apply to new information impacts the processing and evaluation of that information. When it matches schema expectations, schema congruity is achieved, and little cognitive processing is required (Hastie 1980; Srull et al. 1985). Furthermore, as described above, an individual’s prior affect toward the schema can be transferred to the new instance of the schema (Fiske 1982; Fiske and Pavelchak 1986). On the other hand, when a mismatch occurs, it produces schema incongruity, which leads to greater cognitive processing in order to reconcile the incongruent information (Hastie 1980). Incongruent information must be evaluated piecemeal—attribute by attribute—which requires more time and effort (Sujan 1985). Schema incongruity can have various effects, both positive and negative, on affective response, which will be discussed in detail in the section titled “Schema-Congruity and Affect.”

**Cognitive Foundations of Schema-Congruity**

Schema-congruity has its roots in social psychology, with most of the early studies focused on person memory. In a benchmark study by Hastie (1980), subjects were asked to integrate an initial impression of a person (i.e., friendly, intelligent, honest, etc.) with instances of behavior that was either congruent or incongruent with the initial impression. Incongruent impressions produced better recall because, in order to make sense of the discrepant behavior, subjects had to retrieve additional information from long-term memory, thus creating more elaborate associative networks.
Srull et al. (1985) continued the study of person memory and schema-congruity. Similar to Hastie’s study (1980), when subjects had a prior impression of a target individual before examining the actual behavior of the individual, memory was greater for behavior that deviated from the initial impression than for behavior that coincided with the impression. Srull et al. added irrelevant information about the target to their study and found that recall was even worse when information did not support or contradict the first impression.

Srull et al. (1985) made an important distinction between recognition and recall, pointing out that incongruent information is remembered better during recall tests, while congruent information performs better in recognition tasks. The researchers theorized that this pattern occurs because recognition tasks do not require retrieval from memory; instead, they call on information from a schema level in which expected information is more easily associated.

The study by Srull et al (1985) also looked for between-subjects differences in response to incongruent information. Using need for cognition as an independent variable, researchers found that high need for cognition resulted in greater memory for all items, especially for incongruent items, because individuals with a greater need for cognition expended more cognitive effort to link the incongruent items to the prior impression.

Sujan (1985) furthered this research by testing the effects of schema-congruity on consumer behavior. She found that consumers process congruent information schematically while they process incongruent information piecemeal. When information did not match consumer expectations, they evaluated products by attribute; however,
when information did match their expectations, they used schema-based processing. The schema approach resulted in faster product impressions because subjects had their preconceived notions of the product readily available. On the other hand, when subjects had to evaluate a product attribute by attribute, their processing time increased. Schema processing led to more verbalizations about the product category than about the product attributes.

Sujan (1985) also found that expertise heightened the effects of schema processing. Knowledgeable consumers tended to shift to attribute processing when information was incongruent with their schema representations, while less knowledgeable consumers relied on schema even in mismatch situations. Again, the use of schema processing depended on how much cognitive effort subjects were willing to expend in order to revise their easily accessible schemas.

The investigation of schema-congruity and consumer behavior extended to personal selling in a study that examined how schemas influence sales encounters (Sujan et al. 1986). When the salesperson appeared “typical,” subjects’ evaluations were not affected by the quality of the arguments for the product. Also, more thoughts about the salesperson were recorded, and recall for the product’s attributes was lower. When the salesperson was “atypical,” subjects’ evaluations of the products depended on the strength of the argument, with stronger arguments eliciting more positive evaluations. These subjects recalled more product features and generated more product-oriented thoughts. The researchers conclude that subjects engaged in schema processing when they encountered a “typical” salesperson, and they evaluated the product without much
extra processing. When the salesperson was “atypical,” the subject evaluated the product by attributes.

Schema-congruity also has implications for visual information, as shown by Friedman (1979). Using real-world picture scenes, Friedman found that schema theory, also known as frame theory, affects the way people process visual images. Subjects examined pictures containing both expected information (i.e. a table in the kitchen) and unexpected information (i.e., a fireplace in the kitchen). Then they looked at slightly altered pictures to determine what changes had been made. Generally, the subjects noticed only the changes in the unexpected information, while changes in expected images remained largely unnoticed. Friedman suggested that expected items were overlooked because information consistent with schema did not have to be encoded, while inconsistent information required additional processing.

Goodman (1980) furthered this research using an action schema in pictures. An action schema, such as reading, is associated with highly relevant items which are expected and connected to the theme, such as a book or other printed material. Low relevance items, however, are not included in the overall schema and are processed instead as single items. Goodman’s study found that highly relevant, schema congruent information was easily retrieved because it was linked to the theme. Less relevant, schema incongruent information was remembered in more detail, but it was recalled separately from the rest of the picture because it was more difficult to form an association between low relevance items and the theme.

Houston et al. (1987) examined the implications on consumer memory of presenting incongruous verbal and visual messages in advertising. Drawing from
previous research stating that people attend to visual messages first (Childers et al. 1986; Edell and Staelin 1983), this study used the pictorial element as an “advance organizer” (362) to establish expectation for the advertising content. The verbal information was then either congruent or incongruent with the schema suggested by the picture by discussing a different attribute than was shown visually. For example, a picture showing the durability of the product establishes the schema for an ad about a durable product. If the headline refers instead to the value of the product, it delivers a schema incongruent message. Recall was greater overall for the ads in which verbal and visual messages were incongruent. Further, interactive pictures, in which the brand name or product was included in a visual representation, heightened the effect of incongruity when the copy was discrepant and made recall even greater.

Schema-Congruity and Affect

Research on schema-congruity has only touched upon the implications of affect, focussing mostly on the cognitive framework. However, researchers have theorized two distinct forms of affective response in relation to schema-congruity. First, there is the affective response contained within the schema itself (Fiske 1982; Fiske and Pavelchak 1986). Second, there is the affective response created by a mismatch with schema expectations (Mandler 1982). However, one of the problems with the study of affective response is the lack of a universal definition or measurement of affect. For the purposes of this paper, affect will be used as a broad term that encompasses attitude toward the ad (A_ad), attitude toward the brand (A_B), and emotions (Burke and Edell 1989). However, the operational definitions of affect are slightly different in each of the following studies.

Schemas were found to contain not only cognitive information, but also affect.
Studies found that, when a stranger reminded a subject of an old flame or a good friend, the subject was more likely to experience positive affect based on a verbal scale measuring emotion (Fiske 1982). Also, people with some knowledge of politics were more likely to express negative emotions toward politicians who looked like stereotypical politicians, but less likely to express negative emotions toward politicians who did not fit the schema (Fiske 1982). Category-based affect, as opposed to piecemeal-based affect, is a faster, more effective way to evaluate many attributes. It is the basis for stereotypes which cause people to form evaluative opinions of others based on accumulated experiences and beliefs stored as schema (Fiske and Pavelchak 1986).

Mandler (1982) advanced the study of schema-congruity affect by theorizing that the level of congruity can be intermediate between congruity and incongruity, which impacts affective response, which he also refers to as emotions. Like the cognitive studies, Mandler’s thesis proposes that schema incongruity increases arousal and cognitive effort, while schema congruity is processed less elaborately. Based on the cognitive differences between schema congruity and incongruity, Mandler adds an affective component to his theory. Because schema congruent information is familiar, Mandler suggests that familiar information will create positive affect, or “familiarity, acceptability, and a basic sense of liking,” because it can be easily processed. Congruent information, however, can also be overlooked because it does not stimulate arousal. For incongruent information, Mandler hypothesizes that the increased cognitive effort required can lead to negative affect when the incongruent stimulus cannot be reconciled with the activated schema. If people are not willing to spend time and effort to revise their schemas, they will become frustrated or ignore the new information, and their
evaluations will be negative. If they can successfully accommodate the information, however, their evaluations will be more positive than the positive evaluations produced by congruent information. Also, Mandler adds a moderate level of incongruity, which can aid attention and cognition without being too unfamiliar as to alienate the audience. According to Mandler, moderate incongruity can be reconciled with the original schema, which requires extra mental effort and also produces a sense of satisfaction when resolution is achieved. (See Figure 2-1) Mandler pointed out, however, that the effectiveness of moderate incongruity will be undermined when affect toward the schema is extreme.

Meyers-Levy and Tybout (1989) tested Mandler’s theory in the consumer behavior context. They gave subjects descriptions of a new product, either a fruit juice or a soft drink, with features either congruent, moderately incongruent, or extremely incongruent from its alleged product category. Their evaluations of the product were then assessed using seven-point semantic differential scales that measured attitude toward the product, including appeal, taste, desirability, quality, interest in trial, satisfaction, and refreshment. The results of this study showed that, in concurrence with Mandler’s theory, moderate schema incongruity produced more favorable evaluations. Even when the moderately incongruent attribute was negatively valenced, such as extra preservatives in a fruit juice, subjects rated the product more positively than products with congruent or extremely incongruent attributes.

Prior knowledge also influences the affective responses to schema-congruity. Perrachio and Tybout (1996) discovered that moderate incongruity will produce more positive product evaluations when consumers’ prior knowledge is low. They measured
Figure 2-1: Schema-Congruity and Affective Intensity

(Mandler 1982)
subjects’ knowledge of the dessert category and found that knowledge level influenced attitude toward a new dessert which was either congruent (high calorie dessert), moderately incongruent (spicy cake), or incongruent (spicy dessert) with the category. Attitude toward the product was measured using seven-point semantic differential scales. Subjects with little knowledge of the product category rated moderately incongruent products more favorably than incongruent or congruent products, while subjects with elaborate knowledge rated incongruent products more favorably. The researchers theorized that people with little knowledge will expend the energy to resolve moderate incongruity, leading to positive affect. Those with greater knowledge can reconcile even extreme incongruity without much effort, so their affective response to moderate incongruity will be equivalent to their response to congruent information.

Stayman et al. (1992) examined how congruity influences consumer satisfaction and disconfirmation. Subjects were given descriptions of either a fruit juice or a soft drink, and then they randomly received a sample of a fruit juice, a soft drink, or a mixture of both. Their evaluations of the product were measured using the semantic differential scales introduced by Myers-Levy and Tybout (1989). Stayman et al. found that when trial did not match schema expectations, participants’ evaluations of the product were more negative. However, consistent with other studies on congruity theory, the researchers found that when a moderately incongruent product (the soft drink/fruit juice mixture) was tested in a trial, it received the most positive evaluations. The study concluded that the confirmation or disconfirmation experienced by a consumer depends not only on the performance of the product, but also on schematic expectations.
Goodstein (1993) tested television commercials to see if the congruity of an ad with schema for ads in the product category would influence attention, cognitive responses, product evaluation, and memory. Congruity was manipulated by collecting subjects’ descriptions of typical ads from various product categories. Ads were then created that were congruent, moderately incongruent, and incongruent with these descriptions as determined by marketing experts. Along with level of schema congruity, the subjects’ prior affect toward ads in the product categories also served as an within-subjects independent variable. Prior affect, operationalized as subjects’ attitudes toward product category ads, was measured on seven-point Likert scales. The researcher found that cognitive responses recorded after watching the ads and viewing time were lower when ads were congruent with other ads in their product class. However, congruent ads were processed more extensively by individuals with strong affect toward previous ads in the product category, which led researchers to suggest that positive schema affect increases motivation to process an ad. Furthermore, Goodstein’s findings showed that incongruent ads, which were processed with more effort, were not evaluated more positively on three seven-point semantic differential scales than congruent ads. Therefore, positive prior affect for the category and incongruity with other ads in the category can cause increased cognitive processing, but incongruent ads are not necessarily more well liked as a result of the extra processing.

The link between schema-congruity and affect leads to a discussion of emotional response, which is one component of affect that has been overlooked in the schema-congruity literature to date.
**Emotional Response**

Emotions are a component of affect that refer to specific subjective feelings experienced during the advertising message exposure, such as feeling amused (Stayman and Aaker 1988; Batra and Ray 1986; Edell and Burke 1987). Emotions can be differentiated from specific affective reaction to an ad (i.e. thinking an ad is humorous) and global affect toward the ad (i.e. liking the ad in general) (Stayman and Aaker 1998). Emotions are also distinct from moods, which are more general and last longer; temperament, which is a chronic disposition for certain emotions; and desires or drives, which are not caused externally (Holbrook and O’Shaughnessy 1984).

The term *emotion* is often incorrectly used interchangeably with the term *affect*. However, as mentioned above, *affect* is a broader term that encompasses emotions. In the context of advertising, affective elements include attitude toward the ad ($A_{ad}$), attitude toward the brand ($A_B$), and emotions (Burke and Edell 1989). It is important to distinguish the different components of affect in order to fully understand its role in advertising response. Many previous studies have measured affect using only $A_{ad}$, which does not provide a complete picture of affective response. Wright (1985) points out the problem with using $A_{ad}$ as the sole measure of affect. Consumers are aware of the purpose of persuasive messages and therefore possess what he terms “schemer schemas,” or expectations about the persuasive tactics of ads. When asked to evaluate advertising, “they’re responding as critics, not as audience members” (Wright 1985). Emotional response measures attempt to bypass “schemer schemas” by tapping into consumers’ internal feelings, not their cognitive evaluations. For example, a consumer may describe an ad as “amusing” because it has the characteristics of a humorous ad even if the person is not amused by the ad.
The role of emotion in advertising has gained more attention in recent years. Researchers now believe that a USF—unique selling feeling—is just as necessary in an ad message as the USP (Holbrook and O'Shaughnessy 1984). Emotion can serve three important functions in the communication process: it can create positive associations, provide an added benefit, and enhance the communication itself (Mizerski 1986). Using emotions in advertising can link positive feelings to the brand in the mind of the consumer. Based on the theory of classical conditioning, positive feelings created in an ad will continue to be associated with the brand even in the absence of the ad. Emotions can also appear in advertising as a benefit of the brand, such as telephone company ads that emphasize the joy experienced when calling friends and family. Finally, emotions can be used to simply improve the message execution, like the emotion elicited in humorous ads.

In addition to these three important uses of emotion in advertising, it is important to note that all advertising contains some emotional element. Even purely informational appeals produce an emotional response in the viewer (Zeitlin and Westwood 1986). A study by Stout and Leckenby (1986) found evidence for three levels of emotional response based on intensity. They distinguished between descriptive emotional response, which is a cognitive recognition of emotion in an ad; empathy, which is feeling the same emotion as a character; and experiential emotion, which is a reaction to self-relevant thoughts caused by an ad. They found that the most involving level of emotional response, experiential, was positively related to A_ad and content recall. However, over half of their sample was recorded as having “no emotional response,” which neglects the
less intense, but still present, emotions generated in any exposure to advertising (Edell and Burke 1987).

**Emotional Response in the Literature**

The role of emotion in response to advertising and as a predictor of consumer behavior is a relatively new field of interest for researchers. Some of the most influential early studies that influenced advertising and consumer behavior research ignored or downplayed affect. Fishbein’s multiattribute model of attitude formation (Fishbein 1963; Fishbein and Middlestadt 1995), one of the seminal models of consumer behavior, proposes that attitudes are the sum of cognitive beliefs. According to the model, attitudes can be determined by salient cognitive beliefs (i.e. Aspirin is safe.) and the evaluation of those beliefs (i.e. Safety is very important.) Fishbein (1995) contends that noncognitive factors influence attitude only when the cognitive factors used are inappropriate or measured incorrectly. Schwartz (1997) proposes that moods and other feelings are actually cognitive and serve as sources of information that are evaluated just as beliefs are evaluated in Fishbein’s model.

Holbrook (1978) includes affect in his model of behavior, but he gives it a secondary role. His model is based on the traditional consumer behavior paradigm, C-A-B, in which cognition (C) determines affect (A), which leads to behavior (B). He theorizes that a cognitive appraisal occurs in response to a stimulus, which then leads to an evaluation of the stimulus. The evaluation is followed by physiological changes and, finally, to subjective feelings. Finally, a cognitive label is attached to the physiological change. Therefore, cognition plays two important roles in this behavioral model: appraisal and attribution (Holbrook and O’Shaughnessy 1984).
The elaboration likelihood model (ELM) established by Petty, Cacioppo and Schumann (1983) suggests that affective reactions to persuasive messages can influence attitude under certain conditions. The model presents two routes to attitude formation: central and peripheral. The central route emphasizes information about an object and the evaluation of that information, similar to the Fishbein model. The peripheral route, however, does not involve thinking about or evaluating attributes. The peripheral route relies more on affective response to non-factual information. This study found that involvement affects the two routes to persuasion. Under high involvement conditions, factual information such as the quality of arguments had a greater impact on attitudes, while under low involvement conditions, contextual information such as the celebrity of the endorser had a greater impact. These results were consistent with the ELM premise that there are two distinct routes to persuasion, one based largely on cognition and one based largely on affect.

One of the earliest studies to highlight the importance of emotion over cognition was a study by Zajonc (1980). He contested Holbrook’s model, arguing that emotion may precede cognition and be entirely separate from it. He pointed to the mere exposure effect, which shows that repeated exposure to a stimulus increases liking of the stimulus even in the absence of recognition of the stimulus, as evidence of the separation of cognition and affect. While he acknowledged the necessary role of cognition as a simple recognition of the stimulus, he stressed the importance of emotion over cognition. Zajonc and Markus (1982) reported that global affect is often decided before individual attributes are evaluated, and often the attribute evaluations are used to justify an attitude that has already been determined by affect. However, Tsal (1985) counters this
explanation with his suggestion that affective responses may last longer in memory than the cognitive responses that produce them. Also, the cognition that creates the affect can take place unconsciously.

Shimp (1981) introduced a new component into the attitude formation literature: attitude toward the ad (A_ad). He distinguishes between advertising that influences A_ad and advertising that influences A_B. The latter attempts to build positive perceptions of the brand by showing favorable attributes and matching these attributes to consumer needs and wants. On the other hand, advertising that focuses on A_ad creates a positive feeling toward the ad itself which is then transferred to the brand. Shimp links A_ad to the peripheral persuasion route of the ELM, implying that under low involvement conditions in which ambient information, such as music, endorsers, and design, is emphasized over factual information, A_ad will be a prominent predictor of behavior.

Mitchell and Olson (1981) also tested the A_ad construct. They tested Fishbein’s theory to determine if product attribute beliefs are the only mediators of advertising effects on brand attitude. Independent variables included the number of times subjects viewed the ads (once vs. repeatedly) and the ad content (visual image ads vs. ads with product claims). Dependent measurements included evaluation of product attributes, A_B, A_ad, and purchase intention. While repetition had no effects, the ad content produced significant differences in attribute beliefs, A_B, and purchase intention. Researchers found that attribute beliefs and A_ad completely mediated the effects of ad content on A_B. Thus, Fishbein’s model was labeled incomplete because it does not account for the A_ad construct.
Lutz (1985) studied the determinants of $A_{ad}$. He stated that $A_{ad}$ includes reactions to the advertising stimulus that are not cognitive, such as mood at the time of exposure. He also noted that $A_{ad}$ has the greatest impact immediately following ad exposure, but it can influence purchase behavior indirectly. According to Lutz (1985), $A_{ad}$ mediates the impact of both emotions and cognition on brand attitude.

Batra and Ray (1986) focused on the affective component of $A_{ad}$. They examined the effects of three affective responses: elation, quiet pleasure, and acceptance. Subjects were asked to write down their thoughts about a series of ads, and their thoughts were then coded. The study showed that the specific affective responses under consideration contributed to $A_{ad}$ and indirectly to $A_B$.

Edell and Burke (1987) proposed that emotions represent a dimension of $A_{ad}$ entirely separate from thoughts about the ad. Using a feelings scale which contained a list of 169 different feelings, subjects rated their experience of each feeling on a scale from 1 to 5 for each ad. They performed the experiment using both existing and fictional brands. They found that emotions account for unexplained variance in $A_{ad}$ and $A_B$, and positive and negative feelings can occur simultaneously during ad exposure and have separate effects on summary responses. They also discovered that emotion was just as important for informational ads as it was for transformational ads designed to generate feelings. Edell and Burke (1987) recommended adding a feelings scale to existing models of attitude measures, which improves the $A_{ad}$ construct.

Holbrook and Batra (1987) also looked at emotional response as a mediator of ad content on $A_{ad}$ and $A_B$. Using ads as units of observation instead of people, they assumed that ads have “emotional profiles” and that people respond homogeneously to these
profiles. They content analyzed ads into six groups (emotional, threatening, mundane, sexy, cerebral, and personal) and they measured three dimensions of emotion (pleasure, arousal, and dominance) based on previous studies (Mehrabian and Russell 1977). They found a link between content factors, emotional dimensions, $A_{ad}$, and $A_B$. Their results indicated that the three dimensions of emotions are clear mediators of ad content on $A_{ad}$, and they also recognized a possible link between emotion and $A_B$, which they did not test.

Stayman and Aaker (1988) researched the open question posed by Holbrook and Batra. They proposed that $A_{ad}$ does not account for all of the emotions generated during ad exposure; if $A_{ad}$ told the whole story, research on specific emotions would be unnecessary. Stayman and Aaker (1988) supported the hypothesis that $A_{ad}$ does not completely mediate the effect of emotional responses on brand attitude. $A_{ad}$ plays a more important role when the ad has been seen many times, possibly due to wearout of the subjective feelings created by the ad. At lower exposure levels, however, feeling responses are more salient, supporting the idea that emotional response research is important to advertisers.

Burke and Edell (1989) verified Stayman and Aaker’s (1988) study. They found that effects of some of the feelings generated by ads could not be accounted for by $A_{ad}$ and therefore influenced $A_B$ directly. They measured classes of emotions and found that “upbeat” and “negative” feelings have direct influence on brand attitude. They also linked emotions to judgments of the ad’s characteristics and brand attribute evaluations, which also impact $A_B$. Thus, measuring $A_{ad}$ without also measuring emotional response ignores an important element in creating positive brand perceptions.
A study by Allen et al. (1992) also found that the attitude construct did not capture all of the emotional experience that influences behavior. They noted that attitude did a good job of mediating cognitive, or product attribute, information, and attitudes were more predictive when subjects have had direct prior experience with the stimulus unless the prior experience was forced or had become habitual. When prior experience was forced or habitual, emotions were more predictive of behavior than attitudes. This study diverges from Holbrook and Batra (1987) by looking at the effect of emotions on naturally occurring behavior instead of its effect on ad and brand evaluations. This study suggests that there is a direct, unmediated link between emotions and behavior, especially for the emotions of sadness and fear.

MacInnis and Jawarski (1989) proposed a comprehensive model of attitude formation following advertising exposure. They came up with six levels of brand processing based on factors such as attention, motivation, and ability to process the ads. According to their research, each level produces specific cognitive and emotional responses, which in turn impact brand attitudes. At the highest level of brand processing, the subject experiences emotions about the imagined consumption of the product, while at the lowest level, the subject experiences emotions about the viewing context that translate to the brand. Therefore, the source of emotions can vary depending on level of processing. Also, MacInnis and Jawarski (1989) found that emotions can have opposite effects on ad and brand attitudes. For example, a person can dislike ad cues but still maintain a positive attitude toward the brand.

Morris et al. (2002) examined the relationship between emotion and consumer intent. They hypothesized that affect plays a larger role in conative attitude than most
attitude research allows and that cognitive attitude does not necessarily dominate over affective attitude in predicting purchase intention. They measured over 23,000 affective responses to 240 ad messages using AdSAM®, a nonverbal emotional response scale. They also measured cognitive attitude (believability and knowledge) and conative attitude (purchase intention) toward the ads. Results indicate that both cognitive and affective attitudes are correlated with conative attitudes, but affective attitude as measured by emotional response is a stronger predictor of purchase intention in 12 of 13 product categories and in all types of media except radio. Emotional response accounted for more of the variance in conative attitude than cognitive response.

Because studies have shown that emotional response influences attitudes, intentions and behavior, further studies have measured emotional response to determine important information about ads. Morris and Waine (1994) found that emotional responses to storyboards and animatics are reliable representations of emotional responses to finished commercials, showing that preproduction tests of ads are good indicators of the success of the final ads. Other research used emotional response measurements to find differences between groups. Morris et al. (1999) tested African Americans’ emotional responses to political ads and discovered differences between older and younger generations. Another study (Morris, Bradley and Wei 1994) detected cultural differences in emotional response to advertising between Americans and Taiwanese-Chinese. Significant differences were found in ads that were rated the most highly emotional by American standards. However, in another study, little difference was found between males and females in emotional response to television ads and PSAs (Morris 1995).
**Measuring Emotions**

As the importance of emotions to advertising becomes more apparent, researchers are seeking an effective scale to measure emotional response. Some studies have attempted to devise lists of the emotions that consumers experience when they encounter ads (Aaker et al. 1988; Zeitlin and Westwood 1986). However, it is difficult, if not impossible, to create an exhaustive list of the full spectrum of emotions that ads can generate, which makes such studies problematic. Furthermore, the large number of emotions or emotion clusters on these lists make them unwieldy for research purposes.

Rather than looking at specific emotional categories, other researchers have attempted to find the underlying dimensions of emotion. A three-dimensional concept of emotion has received the most acceptance because a unidimensional construct is not robust enough to incorporate all aspects of emotional response (Osgood et al. 1957; Mehrabian and Russell 1977). Havlena and Holbrook (1986) compared the categorical models to the dimensional models of emotions and found that the three dimensional models were more valid, more reliable, and contained more pertinent information about emotion than the categorical models.

Osgood et al. (1957) pioneered the dimensional model of emotional response. They asked participants to rate verbal stimuli on 50 bipolar scales containing opposites such as hot-cold and fast-slow. A factor analysis of the results showed that most of the variance in the responses stemmed from three factors, which they labeled evaluation, activity, and potency. They also found that the same three-dimensional model worked for nonverbal information.

Later, Mehrabian and Russell (1977) formulated one of the most widely accepted models of emotional response that uses pleasure, arousal, and dominance (PAD) as the
three necessary and sufficient dimensions of emotion. The pleasure dimension can range from an extreme positive feeling to an extreme negative feeling. The arousal dimension can range from a state of sluggishness or disinterest to a state of excitation. The dominance dimension can range from submissive and weak to powerful and in control. While most research recognizes the importance of the pleasure and arousal dimensions, the dominance dimension is not as widely accepted. Mehrabian and Russell (1977) provided evidence for the dominance dimension as the distinguishing factor between such similar emotions as anger (high dominance) and anxiety (low dominance) and relaxed (high dominance) and protected (low dominance). Using a multiple regression analysis, they found that the PAD dimensions could predict emotional responses to 42 other emotional response scales.

Based on the PAD dimensions proposed by Mehrabian and Russell (1977), researchers Bradley and Lang (1994) developed the Self-Assessment Manikin, a non-verbal scale that measures pleasure, arousal, and dominance (See Figure 1-2). SAM features a pictorial representation of a human figure for the three dimensions of emotion. The pleasure dimension shows a happy, smiling figure on one end and a frowning, unhappy figure on the other. The arousal dimension ranges from an excited figure on one end to a sleepy figure on the other. Finally, the dominance dimension shows a small, helpless figure on one end and a large, dominant figure on the other. The SAM scale is more effective than common verbal measures of emotional response because it does not require the respondent to use cognition to translate complex emotions into words. It is also useful for cross-cultural measures of emotion because it does not rely on specific definitions of words, which can vary from person to person. Furthermore, people
respond more quickly to SAM because they don’t have to verbalize their emotions. When compared to the semantic differential scales used by Mehrabian and Russell (1977), SAM obtained almost perfect agreement on pleasure and arousal, which are the two primary dimensions that account for most of the variance in emotional response. On the dominance dimension, SAM provided a more accurate measurement than the semantic differential because the human form of SAM let respondents know that they should rate their own level of dominance and not the level of dominance of the stimulus object. Using just three pictorial dimensions, the SAM scale was a more effective measure of emotional response than the 18 item semantic differential scale proposed by Mehrabian and Russell (Bradley and Lang 1994).

SAM has been tested in many different studies and proven both reliable and valid. It has been used to rate responses to emotional imagery (Miller et al. 1987), sounds (Bradley 1994), advertisements (Morris 1995; Morris et al. 1999), and pictures (Greenwald, Cook and Lang 1989; Lang, Greenwald, Bradley and Hamm 1993). A study by Greenbaum, Turner, Cook and Melamed (1990) used SAM to measure the emotional response of children to the behavior of dentists.

SAM was also used to generate the International Affective Picture System (IAPS), a collection of over 700 color photographs that have been rated on pleasure, arousal and dominance dimensions by a large normative sample (Lang et al. 1988). IAPS was developed by researchers at the University of Florida’s Center for Research in Psychophysiology to be used as standardized affective materials. These photographs have been used by researchers at the Center and have also been distributed to over 400 researchers worldwide. Their reliability and validity have been verified in various
research setting and across subjects (Lang et al. 1988). The IAPS photographs can be grouped according to their position on the SAM perceptual map, which plots pleasure on the y-axis and arousal on the x-axis. With 5.0 as the mid-point of each axis, four distinct quadrants are used to group the pictures. The low pleasure/high arousal quadrant contains unpleasant, disturbing pictures, including car accidents, wounded people, and frightening animals. The low pleasure/low arousal quadrant contains dull, boring pictures, including buildings and ordinary household items. The high pleasure/low arousal quadrant contains serene and relaxed images, such as pictures of flowers and still animals. The high pleasure/high arousal quadrant contains pleasant, cheerful and stimulating pictures, including people playing sports, sexually explicit images, and people laughing. The IAPS photos and their quadrant groupings will be used as the stimuli in this study.

Also used in this study will be the AdSAM® measurement tool, which is based on SAM and was developed to measure emotional response to marketing communications stimuli (Morris et al. 1994). AdSAM® is registered and copyrighted by AdSAM Marketing LLC. AdSAM® combines SAM with diagnostic tools that are useful to marketing professionals, including AdSAM Perceptual Maps© and AdSAM adjective frequency analysis©. The AdSAM Perceptual Maps© graph the emotional response scores visually to graphically represent the three dimensions of emotional space. The AdSAM adjectives are also plotted on the AdSAM Perceptual Maps© to link the emotional scores to previously tested words that describe the emotional feelings. AdSAM® has been used to assess responses to television advertising (Morris et al. 2002), pre-production versus post-production advertising (Morris and Waine 1994), and
political messages (Morris et al. 1999). AdSAM® has also been used to compare global advertising between the United States and Taiwan and proved effective in measuring responses to marketing communications across cultures (Morris, Bradley and Wei 1994). AdSAM® will be used in the current study as a quick, efficient way to measure emotional response.

**Advertising Schemas**

However, before emotional response to schema-congruity can be tested for advertising messages, the existence of advertising schemas must be verified. Stoltman (1991) argued the case for advertising schemas based on theory. Previous research has shown that consumers are not interested in spending much time or energy processing advertising. Also, because the advertising landscape is so cluttered, simplification in the form of advertising schemas would allow consumers to wade through the numerous marketing messages presented to them. Ad schemas allow consumers to evaluate an ad immediately with little processing. Ad schemas may provide insight into why consumers “zap” certain commercials before they have had time to determine the product or the brand.

Schemas develop when exposure to a knowledge structure is repeated and consistent. Advertising satisfies both criteria because the ads are shown frequently and employ similar semantic, physical, and structural features (Stoltman 1991). A variety of ad schemas probably exist, but the most common schemas are organized around product class (Goodstein 1993). Ads for cars, for example, tend to look alike and look different from ads for other products, such as sneakers. Still, some product classes have more defined advertising schemas than other product classes. Another way schemas can be
structured is by ad genre. In this case, consumers would have preconceived expectations of the ad type, such as humorous ads. Schemas can also exist on the brand level, such as expectations of the bottle shape in ads for Absolut.

The information contained in advertising schemas, therefore, would depend upon the product class (or another determinant of schema) and the individual consumer. However, some generalities can be drawn about what an advertising schema would look like. Stoltman (1991) writes, “To the degree that they have been experienced, the constituent elements of an ad schema might contain information/expectations regarding the characters, visual devices, execution structures, appeals, camera movement, auditory devices, and the props and scenes contained in advertising, to name a few of the more general headings.” Something as simple as typography can be the trademark of a schema, such as the schema for Coca-Cola based on the recognizable lettering. In another case, the overall appeal of the ad can trigger a schema, such as the schema for Hallmark ads triggered by the combination of soft music, touching images, and emotional vignettes (Stoltman 1991).

Although advertising schemas are individual cognitive structures, they can be generalized to a given population that has been exposed to the same advertising culture (Stoltman 1991). While all Americans may not have seen a specific ad for a Sprint cell phone, they have likely seen similar cell phone ads and therefore developed similar cell phone advertising schemas. Previous research has used advertising schemas based on popular culture to conduct experiments, assuming that subjects have similar advertising schemas for product classes (Heckler and Childers 1992; Goodstein 1993; Perrachio and
Tybout 1996). These schemas are then used to determine the level of schema-congruity, as discussed in the following section.

**Advertising Schema-Congruity**

The importance of advertising schemas leads back to schema-congruity. As discovered in other areas of psychology, schema-congruity influences processing and evaluation (Fiske 1982; Fiske and Pavelchak 1986; Hastie 1980; Srull et al. 1985). Therefore, the schema-congruity of advertising influences the processing and evaluation of the advertising messages, which can play a large role in the success or failure of an ad (Houston et al. 1987; Heckler and Childers 1992; Goodstein 1993).

The schema-congruity of an ad can cause approach or avoidance behavior in the consumer. If the activated schema is distasteful or irrelevant to the consumer, that individual can immediately bypass the ad without having to process its message. Even if the consumer has positive affect toward the schema, a schema-congruent ad elicits little additional processing or attention to ad content. Stoltman (1991) writes, “Schematic processing tends toward being mindless or heuristic.”

On the other hand, when incongruity occurs, there are various possible reactions. Consumers may discontinue processing if they discern that the new information is too unfamiliar and requires more processing than they are willing or able to exert on an advertising message. Consumers can also quickly evaluate the new information by switching to a higher level schema. If they see an ad that does not fit their schema for its product class, for example, the schema for general advertising can be activated to replace the product class schema. In addition to ignoring or generalizing the ads, consumers can make the effort to process the schema-incongruent ad by fine-tuning their existing
schemas or creating new schemas (Stoltman 1991). These reactions produce maximum cognitive processing that can aid recall and recognition of the schema-incongruent ads.

Advertising schema-congruity can have important effects on the success of ads. In an effort to stand out amid the clutter of advertising, many advertisers try to produce ads that are unique, unexpected, and even shocking. However, the research on schema-congruity suggests that incongruent advertising that is too unfamiliar or requires too much cognitive processing will be ignored by consumers. On the other hand, schema-congruent advertising that does not create additional arousal or cognitive processing will be approached mindlessly. Applying Mandler’s (1982) theory to advertising suggests that moderate congruity can increase processing without alienating consumers.

**Measuring Advertising Schema-Congruity**

Heckler and Childers (1992) addressed the problem of more accurately defining schema-congruity. Previous research had used the terms *congruent/incongruent, expected/unexpected,* and *consistent/discrepant* without identifying the dimensions of these terms. Most of the consumer research in congruity up to that point had observed congruity between the verbal and visual elements of an ad (Houston et al. 1987). The study by Heckler and Childers, however, combined visual and verbal information in the form of print ads to determine thematically the congruity of the ad. Using a concept introduced by Goodman (1980), they measured congruity using relevancy and expectancy as its two dimensions. Relevancy was determined by whether or not information contributed to the overall theme of the advertisement, and expectancy was determined by whether or not the information was associated with the schema evoked by the theme of the advertisement. Heckler and Childers manipulated relevancy and expectancy using the picture component of print ads. For example, a congruent ad for an
airline showed a man relaxing comfortably in his airplane seat beneath a headline about adequate leg room. The picture is both relevant and expected in the overall theme of the ad, which is that this airline offers more leg room. The moderately incongruent ad showed an elephant in the same seat. The picture of an elephant was unexpected, yet it was relevant because it emphasized the enormous amount of leg room on the place. The incongruent ad showed a robot in the seat. A robot is both irrelevant and unexpected in the context of the airplane ad.

Heckler and Childers (1992) pre-tested the ads to ensure that they achieved the correct level of relevancy and expectancy for each of three categories: expected-relevant, unexpected-relevant, unexpected-irrelevant. Ads that contained expected-relevant information fit category schema and were therefore congruent. Ads that contained unexpected-relevant information depicted novel ideas that still pertained to the schema and were considered moderately incongruent. Ads containing unexpected-irrelevant information did not pertain to the schema and were therefore considered incongruent.

Using this model, Heckler and Childers (1992) tested memory for the print ads. Findings revealed that advertising containing unexpected and relevant information (moderate incongruity) performed the best overall on both recall and recognition tests. On the other hand, print ads that were considered unexpected and irrelevant (extreme incongruity) produced a strong recall of the picture, which was the incongruent item, but a weak delayed recognition of the ad. The researchers suggested that the unexpected-relevant ads created the strongest associative networks, linking the product or the theme to the unexpected information in the mind of the consumer, while the unexpected-irrelevant ads created weaker associative networks because attention was focussed on the
incongruent item without being linked to the brand or product. Heckler and Childers’ study (1992) was also important in showing that congruity consists of the information’s relevancy to the schema in addition to the expectancy of the information. Relevancy and expectancy will be used in this study as dimensions of congruity.

**Purpose of Current Study**

The current study attempts to determine the effect of schema-congruity on emotional response. Based on the background literature, a revised model of emotional response will be tested in this study (Figure 2-2). The model shows a relationship between recognition of advertising schema, level of schema-congruity, and emotional response to the ad itself. Based on the revised model, the following general hypotheses will be tested:

![Figure 2-2: Proposed Model of Schema-Congruity and Emotional Response](image)

**H1**: When a schema is activated, emotional response will be influenced by the level of schema-congruity (congruent, incongruent, moderately incongruent).

Based on Mandler’s (1982) affective model of schema-congruity, the following sub-hypotheses of H1 will be tested as specific emotional responses to various levels of schema-congruity:
1. When a stimulus is congruent with an activated schema, emotional response will be moderately positive (high pleasure/low arousal).

2. When a stimulus is incongruent from an activated schema, emotional response will be strongly negative (low pleasure/high arousal).

3. When a stimulus is moderately incongruent from an activated schema, emotional response will be strongly positive (high pleasure/high arousal).

**Independent Variables**

**Emotional response without schema activation.** The PAD measurements of the IAPS pictures represent emotional response in the absence of schema activation (Lang et al. 1988). These scores serve as a control group because they contain no headlines or other copy which would activate an advertising schema.

**Level of schema-congruity.** The level of schema-congruity, as determined in pre-tests, will include congruent, moderately incongruent, and incongruent ads.

**Dependent Variables**

**Emotional response with schema activation.** The emotional response to congruent, moderately incongruent, and incongruent ads will be measured using the AdSAM® scale (Morris 1995).

**Attitude toward the ad.** The overall attitude toward the ad will be measured using verbal semantic differential scales (Holbrook and Batra 1987).

**Attitude toward the brand.** The overall attitude toward the brand will be measured using verbal semantic differential scales (Holbrook and Batra 1987).
CHAPTER 3
METHODOLOGY

Research Design

Pictures were gathered from the International Affective Picture System (Lang et al. 1988) that had already been pre-measured on the SAM scale. These SAM measurements represented a control group because emotional response to the pictures was measured without text that would have classified the information as an advertisement and therefore activated a schema.

Schema activation and level of schema-congruity were then manipulated during pre-tests based on the manipulations used in Heckler and Childers (1992). Schema activation was manipulated through generic headlines that clearly established the product category and/or a simple selling point for the print ad. Level of schema-congruity was manipulated by the visual portion of the ad, with relevancy and expectancy used as dimensions of congruity (Heckler and Childers 1992). In Pre-test I, a group of eight undergraduate and graduate university students from various disciplines designed the ads using a selection of pictures predetermined by the researcher. The pictures represented each quadrant of the SAM perceptual map, which plots the pleasure and arousal dimensions of SAM scores (Lang et al. 1988). The participants in Pre-Test I put the pictures into groups of three within their quadrants. Therefore, the groups of pictures fell into four categories: low pleasure/high arousal, low pleasure/low arousal, high pleasure/low arousal, and high pleasure/high arousal. T-tests were conducted to ensure that there were significant differences between the pictures in the different quadrants.
The ads were created in groups of three so that each group was given a single advertising headline for a fictional product such that the headline was congruent with one picture (expected-relevant), incongruent from the second picture (unexpected-relevant), and moderately incongruent from the third picture (unexpected-irrelevant).

A total of forty-eight ads were created in Pretest I. The ads were then pre-tested in Pretest II among a group of ten graduate level advertising and humanities students. The two groups of ads from each quadrant of the SAM perceptual map that best demonstrated schema-congruity, schema-incongruity, and moderate schema-incongruity were selected in Pretest II.

A sample of 114 undergraduate university students participated in the main experiment. Students were shown either the eight congruent ads, eight moderately incongruent ads, or eight incongruent ads. After viewing each ad, the participants rated their emotional response for each ad on the AdSAM® scale and their attitude toward each ad and each brand on verbal semantic differential scales.

**Stimuli**

The pictures were gathered from the International Affective Picture System (Lang et al. 1988). All of the pictures had been previously measured on the SAM scale for the dimensions of pleasure, arousal and dominance. The pictures were chosen in groups of three, with two groups of three representing each of the four quadrants of the SAM perceptual map: low pleasure/high arousal, low pleasure/low arousal, high pleasure/low arousal, high pleasure/high arousal. Scores were labeled high or low depending on whether they were above or below the median score of 5.0 on the 9-point scale. Within each group of three, the pictures had similar scores for each dimension of the SAM scale,
with differences no greater than 1.5. T-tests were conducted to ensure that there were significant differences between the arousal scores of low arousal and high arousal quadrants and between the pleasure scores of low pleasure and high pleasure quadrants. Advertising headlines for various product categories with fictional brand names were then assigned to each group of three pictures. The product categories were selected based on their fit with the pictures. The headlines were chosen so that the headline was congruent with the first picture, moderately incongruent from the second picture, and incongruent from the third. The dimensions established by Heckler and Childers (1992), relevancy and expectancy, were used by the pre-test participants to join the headlines and the pictures. Layouts were designed so that the three ads for the same brand looked similar, with font and type size remaining constant. The twenty-four ads used in the study are reprinted in Appendix A. Figure 3-1 shows the pleasure and arousal scores for the ads that were used in the study.

The selected ads were put into test booklets to be used in the experiment. The first page of the booklet contained instructions on how to use AdSAM® and how to respond to the semantic differential scales. It instructed subjects to look at each ad and then respond to the measurement scales on the following page. Subjects were also asked to provide basic demographic information, including age, sex and race.

Each booklet contained eight ads, either congruent, moderately incongruent, or incongruent. The ads were in random order to reduce primacy and recency effects. Following each ad was a page containing AdSAM®, an ad attitude scale, and a brand attitude scale.
Pre-test I

Pretest I was used to create the ads. Eight undergraduate and graduate students from the University of Florida participated in Pretest I. These students were selected to help create the stimuli as representatives of the sample that would be used in the main experiment. They were shown selected IAPS photos, chosen by the researcher based on appropriateness for the experiment, from each quadrant of the SAM perceptual map. The researcher explained the purpose of the study and then asked the group to combine the pictures in groups of three and then affix a headline to each group to form congruent, moderately incongruent, and incongruent ads on the basis of relevancy and expectancy. Special care was given to grouping pictures with very similar PAD measurements, and the scores were later run through t-tests to ensure that there were significant differences between pleasure and arousal scores in the different quadrants. Product categories were
completely dependent on the available photos, and ranged from bug spray to Walt Disney World. Forty-eight ads were created in Pre-test I, with at least three groups of three from each quadrant of the SAM perceptual map.

**Pre-test II**

Pretest II was necessary to make sure that the anticipated level of schema-congruity was achieved by the ads and also to narrow the number of ads to the two best examples from each quadrant of the SAM perceptual map. The results of Pretest II were used to choose the final ads.

Pretest II was conducted among seven graduate level advertising students and three graduate students in the humanities at the University of Florida. The graduate students were asked to look at each of the forty-eight ads and rate the relevancy and expectancy of each picture to its theme. Detailed instructions explained how to determine the theme of the ad from factors such as product class and selling point. The students rated the relevancy and expectancy on semantic differential scales taken from Heckler and Childers (1992). The ads were selected in which the majority of graduate students rated the congruent ad relevant and expected, the moderately incongruent ad relevant and unexpected, and the incongruent ad irrelevant and unexpected.

**Subjects**

The subjects in this experiment were 114 college students in an undergraduate advertising class at the University of Florida’s College of Journalism and Communications. Subjects ranged in age from 18-31, with a median age of 20, and included both males and females. They were offered extra credit as an incentive to participate in the experiment.
The subjects used in the main experiment were similar demographically to the subjects who participated in each of the pre-tests. It was important to use subjects who were exposed to the same advertising culture as the individuals who had created the ads and verified their congruity levels.

**Administrative Procedures**

The experiment was conducted during the regular class time of an introductory undergraduate advertising class. Subjects were given the Informed Consent document prior to the study. Test booklets were distributed to the students who signed the consent form and agreed to participate in the study. They were not given a time limit for the completion of the study.

Subjects read instructions on how to use AdSAM®, which were contained on the first page of the booklet. Each booklet contained either congruent, moderately incongruent, or incongruent ads only, and were handed out randomly. Within each booklet, the ads were in random order. Subjects looked at each full-page, four-color ad and then responded to the measurement scales on the next page, which asked them to rate their feelings and attitudes about the ads on the previous page. Subjects were asked to turn in their booklets to the researcher when they were finished. Of 120 surveys completed, 114 were properly filled out and used in the study.

**Analysis Performed**

The data gathered in the experiment was entered into SPSS 11.5 for Windows, a software program used for advanced statistical analysis. Statistical analysis was conducted to determine if congruity level (congruent, moderately incongruent, incongruent) within each of the four SAM quadrants influenced emotional response,
attitude toward the ad, and attitude toward the brand. The following chapter contains a
detailed overview of the results obtained in the statistical analysis.
CHAPTER 4
RESULTS

Overview

This chapter contains a review of the results. Statistical analyses were conducted using SPSS 11.5 for Windows. The following statistical procedures were conducted using the data collected during the main experiment:

1. Descriptive Statistics: Mean scores for each dimension of emotion (pleasure, arousal, dominance) and the attitude measures (attitude toward the ad, attitude toward the brand) were calculated for each level of congruity (congruent, moderately incongruent, incongruent) in each SAM quadrant (low pleasure/high arousal, low pleasure/low arousal, high pleasure/low arousal, high pleasure/high arousal).

2. Statistical Assumption Checks: The data was checked to ensure equal variance among groups, normality, and linearity of dependent variables.

3. Hypothesis Testing: A MANOVA was used to find the significant effects of congruity level and SAM quadrant on the dependent variables (pleasure, arousal, dominance, attitude toward the ad, and attitude toward the brand). To clarify these findings, a Between-Within Subject Analysis was used to find significant differences between means of the dependent variables within each SAM quadrant. This analysis was used because congruity level was a between-subjects variable and SAM quadrant was a within-subjects variable. Tukey’s tests were also used to find significant differences between subgroups of congruity levels within SAM quadrants.

Descriptive Statistics

Table 4-1 shows the number of subjects for each congruity level, which was the between-subjects independent variable. Table 4-2 shows the mean score of each dependent variable for each congruity level in each SAM quadrant.
Table 4-1: N-Value by Congruity Level

<table>
<thead>
<tr>
<th>CONGRUITY LEVEL</th>
<th>N-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruent</td>
<td>37</td>
</tr>
<tr>
<td>Moderately Incongruent</td>
<td>39</td>
</tr>
<tr>
<td>Incongruent</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 4-2: Mean Scores of Dependent Variables by Congruity Levels and SAM Quadrant

<table>
<thead>
<tr>
<th>QUADRANT</th>
<th>LOW P/HIGH A</th>
<th>LOW P/LOW A</th>
<th>HIGH P/LOW A</th>
<th>HIGH P/HIGH A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Con</td>
<td>Mod</td>
<td>Incon</td>
<td>Con</td>
</tr>
<tr>
<td>Congruity Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasure</td>
<td>3.781,2</td>
<td>5.191</td>
<td>3.962</td>
<td>4.913</td>
</tr>
<tr>
<td>Arousal</td>
<td>5.04</td>
<td>4.58</td>
<td>5.30</td>
<td>3.411</td>
</tr>
<tr>
<td>Dominance</td>
<td>4.93</td>
<td>5.28</td>
<td>5.29</td>
<td>6.11</td>
</tr>
<tr>
<td>Ad Attitude</td>
<td>2.991,2</td>
<td>3.881</td>
<td>2.922</td>
<td>3.65</td>
</tr>
</tbody>
</table>

*Subscript represents significantly different relationships along each row.
Figure 4-1 is a graph of the emotional response mean scores on the AdSAM Perceptual Map©. When mapped on the graphic emotional space, relationships between the results can be seen more clearly. Figure 4-1 shows that the pleasure and arousal scores were generally low across the board, but moderately incongruent ads had higher pleasure scores and incongruent ads had lower pleasure scores. Figure 4-2 plots the mean scores along with the AdSAM© adjectives. This graph shows that the ads in this experiment made viewers feel “aloof,” “nonchalant,” and “unemotional.” Although these adjectives indicate that emotional response to the ads was insubstantial, the relationships between the different groups show important relationships between congruity levels within each SAM quadrant. Figure 4-3 is the AdSAM Perceptual Map© with dominance included. The colored circles overlap one another to show the effects of dominance, with the circles closer to the surface being more dominant.

In addition to the maps, an AdSAM frequency analysis© was conducted for the mean score results. The results of that diagnostic test will be discussed for each SAM quadrant at the end of this chapter.

For congruent ads, the pleasure and arousal mean scores matched the respective SAM quadrant except in the high pleasure/high arousal quadrant. For example, congruent ads in the low pleasure/high arousal quadrant had low mean pleasure scores (below the median 5.0) and high mean arousal scores (above the median 5.0). In the high pleasure/high arousal quadrant, however, the mean score for arousal was 4.51, below the median.
Figure 4-1: AdSAM Perceptual Map© of Congruity Levels by SAM Quadrant
Figure 4-2: AdSAM Perceptual Map© of Congruity Levels by SAM Quadrant with AdSAM Adjectives
Figure 4-3: AdSAM Perceptual Map© of Congruity Levels by SAM Quadrant with Dominance Scores
Comparing the mean scores of congruent ads with moderately congruent ads shows an inverse relationship between SAM quadrant and increasing incongruity for pleasure and arousal. For example, in the low pleasure/high arousal quadrant, the moderately congruent ads received a higher mean pleasure score and a lower mean arousal score than the congruent ads. This inverse relationship was true of every SAM quadrant for pleasure and arousal, showing that a moderate amount of incongruity in the advertising reversed the pleasure and arousal levels of the original IAPS pictures.

The mean scores for the attitude measures show that in all SAM quadrants except low pleasure/high arousal, the congruent ads created the most positive attitudes as measured by attitude toward the ad and attitude toward the brand scales. In the low pleasure/high arousal group, the moderately congruent ads received the highest scores. Based on the mean scores, attitude toward the ad and attitude toward the brand show a direct relationship. The more favorable the subjects’ attitude toward the ad for a given congruity level in a given SAM quadrant, the more favorable their attitude toward the corresponding brand.

**Statistical Assumption Checks**

For the MANOVA and Between-Within Subjects statistical analyses to be valid, several underlying assumptions were checked prior to analysis. These assumptions included equal variance for each independent group, multivariate normality, and linearity among dependent variables.

Equality of variance across the independent groups was tested using both graphical and analytical methods. For four of the five dependent variables, Box’s M indicated equal variance at the 0.05 significance level. Only the arousal dimension showed unequal variance according to Box’s M ($M=48.918$, $p<0.05$). Levene’s Test of
Equality indicated that arousal had equal variance in all SAM quadrants except low pleasure/high arousal (F=4.277, p<0.05), which accounted for the unequal variance in Box’s M. A Q-Q plot compared residual and predicted value and showed divergent trends, so the equality of variance assumption was not satisfied for arousal in the low pleasure/high arousal quadrant. However, if the groups are approximately equal in size, a violation of this assumption has minimal impact on the statistical results. In this case, although the p-value of Box’s M was less than .05, each group has an approximately equal number of subjects between 37 and 39.

The normality assumption was checked using Shapiro-Wilk’s test statistics (n<1000) and a Q-Q plot inspection. Generally, the data set did not satisfy the normality assumption in the exact tests. However, the Shapiro-Wilk’s test is notorious in its sensitivity to outliers and groupings. Thirty-two out of a total of sixty groups (53%) showed normality.

Linearity was checked using Mauchly’s test of sphericity. Sphericity could be assumed for attitude toward the ad (Mauchly’s W=0.98, p>0.05) and attitude toward the brand (Mauchly’s W=0.95, p>0.05) based on this test. For pleasure (Mauchly’s W=0.89, p<0.05), arousal (Mauchly’s W=0.89, p<0.05), and dominance (Mauchly’s W=0.76, p<0.05), sphericity could not be assumed using Mauchly’s test, so the Greenhouse-Geisser correction was used for these variables to check F-values and significance. A larger sample may have satisfied some of the unsatisfactory assumption checks, but in conclusion, the three underlying assumptions were generally satisfied.
Hypothesis Testing

MANOVA Test

A MANOVA was used to determine if there was a significant effect of congruity level and SAM quadrant on the dependent variables (pleasure, arousal, dominance, attitude toward the ad, attitude toward the brand). The results of the MANOVA test, including Wilks’ Lambda, F-Values, and Degrees of Freedom, are displayed in Table 4-3. The results show that both congruity level (Wilks’ Lambda=0.96; F=3.64; p<0.05) and SAM quadrant (Wilks’ Lambda=0.852; F=9.81; p<0.05) have main effects on the dependent variables as a whole. Furthermore, the interaction effect (Wilks’ Lambda=0.90; F=3.07; p<0.05) also has a significant effect on the dependent variables.

Table 4-3: Wilks’ Lambda, F-Values, and Degrees of Freedom for Main and Interaction Effects

<table>
<thead>
<tr>
<th>EFFECT</th>
<th>WILKS’ LAMBDA</th>
<th>F-VALUE</th>
<th>HYPOTHESIS DF</th>
<th>ERROR DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruity Level</td>
<td>0.96</td>
<td>3.64*</td>
<td>10</td>
<td>1790</td>
</tr>
<tr>
<td>SAM Quadrant</td>
<td>0.85</td>
<td>9.81*</td>
<td>15</td>
<td>2471</td>
</tr>
<tr>
<td>Congruity Level*SAM Quadrant</td>
<td>0.90</td>
<td>3.07*</td>
<td>30</td>
<td>3582</td>
</tr>
</tbody>
</table>

*p<0.05

The MANOVA was also used to look at the effect of the independent variables on each dependent variable separately. The results, including Type III Sum of Squares, Degree of Freedom, Mean Squares and F-Values, are listed in Table 4-4.

The results of the MANOVA show that congruity level had an effect on pleasure and the attitude scores, but not on arousal or dominance. SAM Quadrant had a significant effect on each of the dependent variables, but because SAM measurements were used as both an independent variable (SAM Quadrant) and a dependent variable (in terms of pleasure and arousal), these results alone are not as revealing as the interaction effect. Notably, the interaction effect had a significant impact on all dependent variables expect dominance. The interaction effect shows that responses to the ads were influenced
not only by congruity level, but by congruity level within each SAM Quadrant. The following section goes into more detail about this effect.

Table 4-4: Type III Sum of Squares, Degrees of Freedom, Mean Squares and F-Values for Each Dependent Variable by Main and Interaction Effects

<table>
<thead>
<tr>
<th>EFFECT</th>
<th>DEPENDENT VARIABLE</th>
<th>TYPE III SUM OF SQUARES</th>
<th>DEGREE OF FREEDOM</th>
<th>MEAN SQUARE</th>
<th>F-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruity Level</td>
<td>Pleasure</td>
<td>74.76</td>
<td>2</td>
<td>37.38</td>
<td>9.36*</td>
</tr>
<tr>
<td></td>
<td>Arousal</td>
<td>10.33</td>
<td>2</td>
<td>5.17</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>Dominance</td>
<td>4.83</td>
<td>2</td>
<td>2.42</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Att. to Ad</td>
<td>75.74</td>
<td>2</td>
<td>37.87</td>
<td>13.49*</td>
</tr>
<tr>
<td></td>
<td>Att. to Brand</td>
<td>36.20</td>
<td>2</td>
<td>18.20</td>
<td>9.70*</td>
</tr>
<tr>
<td>SAM Quadrant</td>
<td>Pleasure</td>
<td>195.87</td>
<td>3</td>
<td>65.29</td>
<td>16.34*</td>
</tr>
<tr>
<td></td>
<td>Arousal</td>
<td>301.52</td>
<td>3</td>
<td>100.51</td>
<td>19.68*</td>
</tr>
<tr>
<td></td>
<td>Dominance</td>
<td>101.10</td>
<td>3</td>
<td>33.70</td>
<td>7.11*</td>
</tr>
<tr>
<td></td>
<td>Att. to Ad</td>
<td>113.44</td>
<td>3</td>
<td>37.81</td>
<td>13.47*</td>
</tr>
<tr>
<td></td>
<td>Att. to Brand</td>
<td>49.19</td>
<td>3</td>
<td>16.40</td>
<td>8.78*</td>
</tr>
<tr>
<td>Congruity Level*SAM Quadrant</td>
<td>Pleasure</td>
<td>63.34</td>
<td>6</td>
<td>20.97</td>
<td>5.07*</td>
</tr>
<tr>
<td>Arousal</td>
<td>60.56</td>
<td>6</td>
<td>20.23</td>
<td>4.64*</td>
<td></td>
</tr>
<tr>
<td>Dominance</td>
<td>22.30</td>
<td>6</td>
<td>7.44</td>
<td>2.16</td>
<td></td>
</tr>
<tr>
<td>Att. to Ad</td>
<td>32.56</td>
<td>6</td>
<td>10.32</td>
<td>3.73*</td>
<td></td>
</tr>
<tr>
<td>Att. to Brand</td>
<td>27.19</td>
<td>6</td>
<td>9.00</td>
<td>5.06*</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05

**Between-Within Subjects Test**

To clarify the MANOVA results and study the interaction effect more closely, a Between-Within Subjects test was used to test the hypothesis with congruity level as a between-subjects factor and SAM quadrant as a within-subjects factor. For each dependent variable except dominance, there was a significant interaction effect of congruity level and SAM quadrant. The interaction effects show that congruity level alone did not determine viewers’ emotional or attitude responses to the ads. Responses were influenced by congruity level within a given quadrant, and responses varied from quadrant to quadrant for the variables pleasure, arousal, attitude toward the ad, and attitude toward the brand. For dominance, however, no interaction effect was found (F=2.16, p>0.05), nor was there a main effect of congruity level on dominance (F=0.142,
p>0.05). SAM quadrant had a main effect on dominance (F=7.16, p<0.05), but the focus of the study, congruity level, showed no significance for this variable. Table 4-2 shows Type III Sum of Squares, Degrees of Freedom, and F-values for the interaction effect for each dependent variable.

Table 4-5: Type III Sum of Squares, Degrees of Freedom, F-values for the Interaction Effect of Congruity Level and SAM Quadrant

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>TYPE III SUM OF SQUARES</th>
<th>DEGREE OF FREEDOM</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasure</td>
<td>63.34</td>
<td>6</td>
<td>5.07*</td>
</tr>
<tr>
<td>Arousal</td>
<td>60.56</td>
<td>6</td>
<td>4.64*</td>
</tr>
<tr>
<td>Dominance</td>
<td>22.30</td>
<td>6</td>
<td>2.16</td>
</tr>
<tr>
<td>Attitude toward Ad</td>
<td>32.56</td>
<td>6</td>
<td>3.73*</td>
</tr>
<tr>
<td>Attitude toward Brand</td>
<td>27.19</td>
<td>6</td>
<td>5.06*</td>
</tr>
</tbody>
</table>

*p<0.05

Tukey’s test was used to compare the mean scores for each dependent variable by congruity level within each SAM quadrant. The test showed which mean scores of these subgroups were significantly different from each other. For example, moderately congruent ads received significantly higher measurements for pleasure than incongruent ads in the low pleasure/high arousal SAM quadrant. Figures 4-4 through 4-8 illustrate the significantly different relationships between these groups. In each table, congruity levels are listed from largest mean score to smallest, and subscript represents significant difference. The following sections discuss the results of the Tukey’s test for each of the dependent variables.

**Pleasure.** In the low pleasure/high arousal quadrant, moderately congruent ads created significantly higher levels of pleasure than incongruent or congruent ads. In the high pleasure/high arousal quadrant and the high pleasure/low arousal quadrant, congruent ads created significantly higher pleasure levels than the other congruity levels. In the low pleasure/low arousal quadrant, the only significant difference was between moderately congruent ads, which were most pleasurable, and incongruent ads, which
were the least pleasurable. Overall, congruent ads received higher pleasure scores when the original picture was in a high pleasure quadrant, and moderately congruent ads received higher pleasure scores when the original picture was in a low pleasure quadrant. These results suggest that pictures which already generate pleasure in the absence of schema will create the most pleasure when used in congruent advertising. Pictures that do not generate strong levels of pleasure on their own will create more pleasure when used in moderately congruent advertising.

<table>
<thead>
<tr>
<th>Low pleasure/High arousal</th>
<th>High pleasure/High arousal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod. congruent₂ – Incongruent₂ – Congruent₁</td>
<td>Congruent₁,₂ – Mod. congruent₁ – Incongruent₂</td>
</tr>
<tr>
<td>Low pleasure/Low arousal</td>
<td>High pleasure/Low arousal</td>
</tr>
<tr>
<td>Mod. congruent₁ – Congruent – Incongruent₁</td>
<td>Congruent₁,₂ – Mod. congruent₁ – Incongruent₂</td>
</tr>
</tbody>
</table>

*Congruity levels are listed from largest to smallest mean score. Subscript represents significant difference.

Figure 4-4: Significantly Different Relationships of Congruity Levels within SAM Quadrants for Pleasure Dimension of Emotion.

**Arousal.** Few significant differences between congruity levels were shown for the arousal dimension. In the low pleasure/high arousal group and the high pleasure/high arousal quadrants, there were no significant differences between any of the congruity levels. This outcome may have been the result of the already high arousal levels caused by the pictures in these groups. Pictures which caused high arousal in the absence of schema may be unaffected by congruity level because arousal will remain high regardless of the advertising context. For low pleasure/low arousal and high pleasure/low arousal quadrants, there were significant differences between only moderately congruent ads, the most arousing, and congruent ads, the least arousing. When the arousal caused by the picture was low to begin with, the moderately congruent ads did the most to increase arousal and the congruent ads kept arousal low.
Low pleasure/High arousal
Incongruent – Congruent – Mod congruent

High pleasure/High arousal
Congruent – Mod congruent – Incongruent

Low pleasure/Low arousal
Mod congruent₁ – Incongruent – Congruent₁

High pleasure/Low arousal
Mod congruent₁ – Incongruent – Congruent₁

*Congruity levels are listed from largest to smallest mean score. Subscript represents significant difference.

Figure 4-5: Significantly Different Relationships of Congruity Levels within SAM Quadrants for Arousal Dimension of Emotion

**Dominance.** No significant relationships were found between congruity levels in any of the SAM quadrants for the dimension of dominance. In fact, congruity level had no significant main effect on dominance. The current study examined the pleasure and arousal dimensions in more depth than the dominance dimension. The original IAPS pictures were not selected with regard to dominance, and the SAM quadrants used to categorize the pictures included only pleasure and arousal. The hypotheses tested in this study also did not include dominance. The role of this variable in advertising schema-congruity is still unclear and requires further research, but these results suggest that congruity level has little influence on the dominance dimension of emotion.

Low pleasure/High arousal
Incongruent – Mod. congruent – Congruent

High pleasure/High arousal
Congruent – Mod. congruent – Incongruent

Low pleasure/Low arousal
Congruent – Mod. congruent – Incongruent

High pleasure/Low arousal
Incongruent – Congruent – Mod. congruent

*Congruity levels are listed from largest to smallest mean score. Subscript represents significant difference.

Figure 4-6: Significantly Different Relationships of Congruity Levels within SAM Quadrants for Dominance Dimension of Emotion

**Attitude toward the Ad.** For three of the four quadrants, the congruent ads were the most well-liked, and they were significantly more well-liked in high pleasure/high arousal and high pleasure/low arousal. In other words, congruent ads received
significantly higher attitude scores in the high pleasure quadrants, which shows that when pictures are pleasant, congruent ads will be the most popular.

In three of the four cases, the congruity level with the highest pleasure score received the highest attitude toward the ad score. Furthermore, the three quadrants in which the congruity level with the highest pleasure score matched the congruity level with the highest ad attitude score had the most significant differences. This trend shows that the quadrants in which the pleasure and attitude scores were similar were more impacted by congruity level than the other quadrant. The low pleasure/low arousal group, which deviated from this trend, showed significance for pleasure between only the highest and lowest mean scores and showed no significance for attitude toward the ad.

In the low pleasure/high arousal and high pleasure/low arousal quadrants, there were significant relationships between all three congruity levels for attitude toward the ad. In other words, congruity level had the most influence on attitude toward the ad in these quadrants. In the high pleasure/high arousal group, there was a significant difference between only congruent ads, the most well-liked, and incongruent ads, the least well-liked. In the low pleasure/low arousal group, there were no significant relationships. For these two quadrants, congruity level had a weaker influence on attitude toward the ad.

<table>
<thead>
<tr>
<th>Low pleasure/High arousal</th>
<th>High pleasure/High arousal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod congruent_{1,2} – Congruent_{2} – Incongruent_{1}</td>
<td>Congruent_{1} – Mod congruent – Incongruent_{1}</td>
</tr>
<tr>
<td>Low pleasure/Low arousal</td>
<td>High pleasure/Low arousal</td>
</tr>
<tr>
<td>Congruent – Mod. congruent – Incongruent</td>
<td>Congruent_{1,2} – Incongruent_{2} – Mod congruent_{1}</td>
</tr>
</tbody>
</table>

*Congruity levels are listed from largest to smallest mean score. Subscript represents significant difference.

Figure 4-7: Significantly Different Relationships of Congruity Levels within SAM Quadrants for Attitude toward the Ad
**Attitude toward the Brand.** The attitude toward the brand mean scores showed identical relationships to the attitude toward the ad mean scores. The similarities between the attitude toward the ad scores and the attitude toward the brand scores show that the attitudes toward the advertising directly influenced attitudes toward the brand.

<table>
<thead>
<tr>
<th>Low pleasure/High arousal</th>
<th>High pleasure/High arousal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod congruent&lt;sub&gt;1,2&lt;/sub&gt; – Congruent&lt;sub&gt;2&lt;/sub&gt; – Incongruent&lt;sub&gt;1&lt;/sub&gt;</td>
<td>Congruent&lt;sub&gt;1&lt;/sub&gt; – Mod congruent – Incongruent&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low pleasure/Low arousal</th>
<th>High pleasure/Low arousal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruent – Mod. congruent – Incongruent</td>
<td>Congruent&lt;sub&gt;1,2&lt;/sub&gt; – Incongruent&lt;sub&gt;2&lt;/sub&gt; – Mod. congruent&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

*Congruity levels are listed from largest to smallest mean score. Subscript represents significant difference.

Figure 4-8: Significantly Different Relationships of Congruity Levels within SAM Quadrants for Attitude toward the Brand

**Analysis by SAM Quadrant**

To better understand the data, the trends in each SAM Quadrant from which the original IAPS pictures were drawn were analyzed. The results from each quadrant are plotted in Figures 4-9 through 4-12 and are discussed in the following sections.

**Low Pleasure/High Arousal.**

The pictures in this quadrant make viewers feel “disgusted,” “troubled,” and “startled.” According to the adjective frequency test, when pictures from this quadrant were used in an advertising context, viewers felt “insolent,” “skeptical,” and “contempt” toward congruent ads, “sensitive,” “sympathetic,” and “repentant” toward moderately incongruent ads, and “insolent,” “skeptical,” and “cynical” toward the incongruent ads. The moderately congruent ads, which created the highest levels of pleasure, were rated significantly higher than the incongruent ads. The incongruent ads, however, created the highest levels of arousal and dominance, with a significant relationship for arousal between moderate incongruity, most arousing, and congruity, least arousing. The
moderately incongruent ads were significantly more well-liked than the congruent or incongruent ads.

![Graph showing mean score values across different ad types with labels: Pleasure, Arousal, Dominance, A-Ad, A-Brand.]

Figure 4-9: Low Pleasure/High Arousal Mean Scores

The emotional response and attitude results of this quadrant are in line with Mandler’s theory and support the hypotheses. As predicted, congruent and moderately incongruent ads created high pleasure, and moderately incongruent and incongruent ads created high arousal. For attitude, moderately incongruent ads were the strongest. These results indicate that Mandler’s theory of affective intensity works best when the original pictures are unpleasant and arousing.

Low Pleasure/Low Arousal

This quadrant featured “weary,” “unemotional,” and “blasé” pictures. The adjective frequency analysis showed that viewers of the ads in this quadrant felt “serene,” “reserved,” and “docile” toward congruent ads, “serene,” “sympathetic,” and “modest” toward moderately incongruent ads, and “skeptical,” “selfish,” and “unconvinced” toward incongruent ads. Moderately incongruent ads were the most pleasant and arousing, and
congruent ads created the highest levels of dominance. For pleasure and arousal, there were significant relationships only between the highest and lowest mean scores. Congruent ads were rated as the most well-liked, but there were no significant relationships for the attitude scores in this quadrant, which shows that congruity level is not a strong influence on attitude in this quadrant.

![Figure 4-10: Low Pleasure/Low Arousal Mean Scores](image)

The ads in this quadrant fit Mandler’s hypothesis for emotions because the moderate ads were highly positive and arousing, the congruent ads were highly positive but not arousing, and the incongruent ads were not positive but highly arousing. However, the results did not fit Mandler’s theory for the attitude measures because the congruent ads were the most well-liked despite the high pleasure and arousal scores of the moderately incongruent ads. The results in this quadrant suggest that the attitude scales are not a complete picture of affective response because the emotional response
scores had more revealing significant relationships that were in line with the theoretical knowledge.

**High Pleasure/Low Arousal**

This quadrant featured “polite,” “relaxed,” and “serene” pictures. When the pictures from this quadrant were introduced into advertising, viewers felt “serene,” “uninterested,” and “modest” toward congruent ads, “selfish,” “disdainful,” and “solemn” toward the moderately incongruent ads, and “solemn,” “bored,” and “listless” toward the incongruent ads. The congruent ads created the highest levels of pleasure, with significant relationship between all three congruity levels. The moderately incongruent ads created the highest levels of arousal, with significant relationships between the most arousing, moderately incongruent, and the least arousing, congruent. The incongruent ads created the highest levels of dominance. The congruent ads were also the most well-liked, with significant differences between all three levels for the attitude scores. The results from this quadrant contained the most significant differences, which shows that congruity level is a strong indicator of emotional response and attitude for high pleasure/low arousal pictures.

The ads in this quadrant did not support Mandler’s theory or the hypotheses because the moderately incongruent ads were not highly pleasurable and the incongruent ads were not highly arousing compared to other congruity levels. Also, the congruent ads instead of the moderately incongruent ads were most well-liked. This trend could be the result of high pleasure scores for the pictures themselves that translate into high pleasure and attitude scores for the ads that are most congruent with these pleasant pictures.
Figure 4-6: High Pleasure/Low Arousal

<table>
<thead>
<tr>
<th></th>
<th>Pleasure</th>
<th>Arousal</th>
<th>Dominance</th>
<th>A-Ad</th>
<th>A-Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruent</td>
<td>5.24</td>
<td>2.86</td>
<td>5.96</td>
<td>3.74</td>
<td>4.13</td>
</tr>
<tr>
<td>Moderate</td>
<td>4.46</td>
<td>3.96</td>
<td>5.33</td>
<td>3</td>
<td>3.39</td>
</tr>
<tr>
<td>Incongruent</td>
<td>4.37</td>
<td>3.34</td>
<td>6.16</td>
<td>3.02</td>
<td>3.61</td>
</tr>
</tbody>
</table>

Figure 4-11: High Pleasure/Low Arousal Mean Scores

**High Pleasure/High Arousal**

This pictures in this quadrant make viewers feel “happy,” “cheerful,” and “stimulated.” When these pictures were transferred to advertising messages, viewers felt “wholesome,” “sympathetic,” and “cooperative” toward congruent ads, “serene,” “cynical,” and “aloof” toward moderately incongruent ads, and “indifferent,” “nonchalant,” and “stoic” toward incongruent ads. The congruent ads created the highest levels of pleasure, arousal and dominance. The arousal scores in this quadrant were not significantly different, possibly because arousal was high to begin with and therefore did not vary much based on congruity level. The congruent ads were the most well-liked and the incongruent ads were the least well-liked, but the attitude scores were not significantly different in this quadrant, showing that congruity level did not have a strong influence on attitude.
Figure 4-12: High Pleasure/High Arousal Mean Scores

The ads in this quadrant did not fit the theory proposed by Mandler and support the hypotheses. The congruent ads were more arousing than the incongruent ads and more pleasant than the moderately congruent ads. The reason for this response could be the high pleasure and arousal scores of the original pictures. The pictures on their own created strong pleasure and arousal, so the ads that were congruent with these pictures maintained these high levels.
CHAPTER 5
SUMMARY AND CONCLUSIONS

Summary

This chapter summarizes the experiment and its results, linking the findings to the theoretical background and examining the proposed hypothesis in light of the evidence gathered in the study. This section also includes the limitations of the current study and suggestions for future research.

Several hypotheses were tested in this study, based primarily on Mandler’s (1982) theory of schema-congruity and affective intensity (See Figure 2-1). The hypothesis predicted that the level of schema-congruity, either congruent, moderately incongruent, or incongruent, would determine the type of emotional response. The more specific sub-hypotheses predicted the specific types of emotional response for each level of congruity. It was expected that a stimulus congruent with the activated schema would create high pleasure and low arousal, an incongruent stimulus would create low pleasure and high arousal, and a moderately incongruent stimulus would create high pleasure and high arousal.

To test these hypotheses, an experiment was designed that would manipulate schema-congruity level. The IAPS pictures were used for the experiment because their pleasure, arousal, and dominance scores had already been measured, and they could therefore be used as a control group because they were free of any elements that would activate advertising schemas. Pictures were chosen from each SAM quadrant to ensure a diverse mix of images that were not all of the same type. When simple advertising
headlines were added to these pictures, they became recognizable as ads and thus activated advertising schemas. The messages communicated by the headlines mentioned a product that would have triggered in the viewer specific advertising schemas. For example, one of the advertising stimuli contained a headline which read, “Everybody Loves to Get Flowers—Fabulous Flowers, Inc.” Someone reading this headline in an ad would call up schema information about florist ads and probably expect to see a picture of flowers.

In addition, this experiment manipulated congruity level to test for specific emotional responses at different congruity levels. Pictures with similar emotional response scores were grouped together and given the same headline so the ad was congruent with one picture, incongruent from the second, and moderately incongruent from the third. Therefore, any differences in emotional response to the ads could be attributed to the different congruity levels caused by the advertising headlines, and not from emotional responses to the images themselves. Using the definition of congruity established by Heckler and Childers (1992), relevancy and expectancy were used as its two dimensions. A series of pre-tests were conducted to ensure that the congruent ads were relevant and expected, moderately incongruent ads were relevant and unexpected, and incongruent ads were irrelevant and unexpected. For example, one group of ads used the headline, “Get the Wrinkles Out with a Smoothline Iron.” The congruent ad showed an ironing board and an iron, which are both expected and relevant in an ad for an iron. The incongruent ad featured an office stacked with boxes, which is both irrelevant and unexpected to the theme of the ad, which is reducing wrinkles with an iron. Finally, the moderately incongruent ad showed an old man. This was unexpected in the context of
the ad, but it was relevant because the ad referred to wrinkles. The ads used for the experiment are contained in Appendix A.

The subjects in the main experiment looked at all 24 ads and responded to AdSAM® as well as two semantic differential attitude scales. The dependent variables in the experiment were pleasure, arousal, dominance, attitude toward the ad, and attitude toward the brand. The data collected during the experiment was then analyzed to test the hypotheses.

The general hypothesis that schema-congruity level would influence emotional response was supported. Emotional response scores differed depending on congruity level, which was caused by the activated schemas. The MANOVA results showed that congruity level had a main effect on all the variables together, and it also had a main effect on pleasure. While it did not have a significant effect on arousal and dominance, it combined with SAM quadrant to produce an important interaction effect.

The study found that an interaction of congruity level and emotional response to the stimulus in the absence of schema activation determined subsequent emotional response. In this case, the emotional response in the absence of schema activation was measured by the SAM quadrant of the IAPS pictures that were used to create the stimuli. Schema-congruity on its own does not account for the emotional responses to advertising messages; the effect of schema-congruity is also related to the type of picture, based on pleasure and arousal scores, used in the advertising.

The results of the Between-Within Subjects test illustrated the importance of the interaction between congruity level and SAM quadrant. This test showed an interaction effect for every dependent variable except dominance, and, using the Tukey’s test, it
showed specific significant relationships within each SAM quadrant. Tukey’s testing revealed that pleasure had the most significant differences within SAM quadrants, while arousal had few and dominance had none. This finding shows that pleasure is the variable most likely to be influenced by congruity level. The results for the pleasure variable also showed that highly pleasant pictures worked best in congruent ads, while unpleasant pictures worked best in moderately congruent ads. The arousal variable showed that high arousal pictures are largely uninfluenced by congruity level, while congruity level has more effect on low arousal pictures. The dominance dimension showed no significant results, which suggests that this variable is not influenced by congruity level. The attitude scores supported the results of the pleasure dimension by showing that highly pleasurable pictures will receive the best attitude scores when used in congruent advertising. Also, the incongruent ads received the lowest attitude scores in three of the four quadrants, which indicates that, overall, incongruent ads are not well liked.

In addition to the examination of each dependent variable separately, an analysis by SAM quadrant was conducted. In the low pleasure/high arousal quadrant, where pictures made people feel “startled” and “troubled,” Mandler’s theory was supported, and moderately congruent ads created the most pleasure and the more favorable attitudes. In the low pleasure/low arousal quadrant, where pictures made people feel “unemotional” and “blasé,” the moderately incongruent ads created the most pleasure and arousal, but congruent ads received higher attitude scores, suggesting that the attitude scores are not a complete measure of affective response and should be used in conjunction with emotional response measures for a clearer picture of response to a stimulus. In the high
pleasure/low arousal quadrant, where pictures made people feel “relaxed” and “serene,” there were the most significant differences, which shows that congruity level has a strong influence. In this quadrant, the congruent ads received the highest scores for pleasure and attitude, which is in line with the idea that highly pleasant pictures will retain their pleasant emotions in congruent ads. The same trend occurred in the high pleasure/high arousal quadrant, where pictures made people feel “happy” and “stimulated.” Here the congruent ads received the highest scores for every dependent variable.

**Importance to Communications Professionals**

The results of this study can be useful to communications professionals when developing advertising messages. Advertisers often attempt to draw consumers’ attention with ads that are unique, arresting, or even confusing. This study shows that advertisers should be cautious when their ads do not match viewer expectations.

The incongruent ads, which featured information that was irrelevant and unexpected in the context of the ad, performed the worst in terms of pleasure and attitude, the variables most influenced by congruity level. Moderately incongruent ads, which featured relevant and unexpected information, received a much better response than incongruent ads. Therefore, if an advertisers plans to use an unexpected stimulus in order to stand out from the clutter, they should make sure that it is somehow relevant to the message they are sending. Otherwise, they may just end up confusing and alienating their audience.

Before using any unexpected information, advertisers should also take note of the emotional response to the elements of the ad, especially the visual, in the absence of schema activation. If the picture in a print ad is very pleasant, for example, placing it in
an incongruent or moderately incongruent ad can make it less pleasurable. On the other hand, if the picture is unpleasant, using it in a moderately incongruent ad can make it more pleasurable. Also, if a stimulus is not arousing, using it in a moderately congruent ad can make it more arousing, which could help the ad get additional viewer attention. In general, the type of stimulus—whether it is stimulating, boring, disturbing, or serene—should be taken into account before it is used in unexpected advertising.

**Limitations of Current Study**

While the results of this study allowed the researcher to draw meaningful conclusions, there were a number of limitations that may have affected the outcome. First, the assumption checks for the statistical analysis were not all met rigorously. The normality assumption was met for only 53% of the 60 groups tested in the study. Also, the Mauchly’s sphericity test was not satisfied for the pleasure, arousal, and dominance dimensions and a Greenhouse-Geisser correction had to be used. The statistical assumption checks were generally satisfied so that the data set could be analyzed, but a larger data set would satisfy more stringent assumption checks and improve the statistical soundness of the study.

The advertising stimuli may also have hindered the study. The ads were created by the researcher on a basic photo-editing computer program. They featured only pictures and simple headlines. The ads lacked the polish and professional appearance of real advertisements, and they were missing elements such as logos, borders, and body copy. Furthermore, some horizontally oriented ads could have been construed as incongruent because most print advertisements are oriented vertically. Restrictions in time and funding made more professional-looking stimuli unavailable.
Another factor that could have hindered the study was the between-subjects grouping, in which each subject saw only one type of ad, either congruent, incongruent, or moderately incongruent. Viewing only one type of ad over the course of the experiment could have activated an additional schema by preparing the subject what to see next. A variety of all three ad types in each booklet could have solved this problem.

Finally, prior affect and experience with the product categories were not taken into account in this experiment. Because these factors both influence emotional response to the ads, they should be considered as covariates.

**Conclusions**

The current study demonstrated a strong link between schema-congruity and pleasure. In other words, when expectations about a category are either confirmed or disconfirmed, pleasure responses will change accordingly. The study also showed a relationship between schema-congruity level and arousal, but it was not as strong as the pleasure relationship. While more research is needed to determine the nuances of these relationships, establishing a connection between these topics builds on the knowledge gained in the fields of both schema-congruity and emotional response.

The current research builds on Mandler’s (1982) model of schema-congruity and affective intensity. While it did not verify his findings for emotional response as predicted, it shows a more intricate relationship between the emotional response to a stimulus and how that emotional response can change when it is included as part of a schema.

As research continues to explore the relationship between schema-congruity and emotions, advertisers will benefit from the results. They will be able to more accurately
predict when it is appropriate and effective to use unexpected stimuli to get attention versus when they should use congruent stimuli to increase pleasure. The practical applications of this study in addition to its theoretical implications make it useful to professionals on both the academic and corporate sides of advertising.

**Suggestions for Future Research**

While the current study sheds some light on the relationship between schema-congruity and emotional response, more research is necessary to gain a better understanding of these topics and their application to the communications field.

An important addition to this study would be a statistical comparison of the original IAPS picture scores to the pleasure, arousal, and dominance scores recorded during the experiment. Using the raw IAPS scores as a control group, rather than just using their SAM quadrants, would better determine the effect of advertising schema activation on emotional response.

Also, experience level and affect toward the product categories in the ads should be measured prior to advertising exposure. These should be used as covariates in the experiment because prior affect and experience with a type of product can influence attitudes and emotional responses toward subsequent ads.

A future study should incorporate some measure of recall or recognition to determine how memory is affected by the level of schema-congruity and how it relates to emotional response. Although this study suggests that people tend to like moderately incongruent and congruent ads better than incongruent ads, a recall or recognition test would show whether they remember the incongruent ads better than the more congruent
ads. A measure of memory will provide a more complete picture of the effectiveness of the ads based on their congruity level.

A cognitive scale can also be added to the study to determine if the variance in attitude scores was caused by a cognitive component in addition to the emotional component. Added to the emotional and attitudinal scales, a cognitive scale will give a clearer picture of the effects of schema-congruity. It will also show whether congruity level influences cognitive responses to advertising messages.

Also, further research could examine the role of dominance in more detail. Instead of grouping the initial pictures by pleasure and arousal only, dominance can be taken into account as an independent variable so changes in dominance can be attributed to congruity level. Current research did not fully investigate the role of this variable.

Instead of showing each subject just one type of ad, either congruent, incongruent, or moderately incongruent, a future study should mix the ads up so that each viewer sees a variety of ad types. This design will prevent subjects from developing schemas for either congruent, incongruent, or moderately incongruent ads as they look at the booklets.

Finally, better stimuli, which can be developed through more stringent pre-testing and professional execution of the ads, could also improve the quality of the study. More convincing ads will make the study more valuable by better replicating real life conditions. Instead of using IAPS pictures and manipulating them to suit the study, future research could develop specific visual stimuli intended to be congruent, moderately incongruent, and incongruent.
APPENDIX
ADVERTISING STIMULI
Protect yourself from intruders with a Bulwark Security System.
Drink Farm Fresh Milk for Healthy Teeth and Bones

Drink Farm Fresh Milk for Healthy Teeth and Bones

Drink Farm Fresh Milk for Healthy Teeth and Bones
Chill Out this Summer at Sweet Tooth Ice Cream Factory

Chill Out this Summer at Sweet Tooth Ice Cream Factory

Chill Out this Summer at Sweet Tooth Ice Cream Factory
LIST OF REFERENCES


BIOGRAPHICAL SKETCH

Christyne E. Ferris was born on February 29, 1980, in Cherry Point, North Carolina. She was raised in South Florida, where she graduated from Chaminade-Madonna College Preparatory in 1998. She received her undergraduate degree from Rollins College in Winter Park, FL. At Rollins, she studied English language and literature with a minor in business administration. During her undergraduate years, she was president of Sigma Tau Delta, the English honor society, copy editor of Brushing, the literary magazine, and an active member of Kappa Delta Sorority. She graduated second in her class with a 3.95 G.P.A.

After graduation from Rollins, Christyne pursued her Master of Arts in Mass Communication degree at the University of Florida with a specialization in advertising. While working toward her master’s degree, she maintained a 4.0 G.P.A. and worked with her advisor on a proposal for a research grant from the National Institute of Health. Post graduation, Christyne plans to apply her advertising education to the corporate world with a career in advertising planning.